DAFTAR PUSTAKA

Agustina, M., 2016, *Distribusi dan preferensi habitat udang dan kepiting air tawar (Crustacea: Decapoda) di Danau Laut Tawar Aceh Tengah*, Indonesia, Laporan Tesis, Sekolah Pascasarjana IPB, Bogor.

Ali, M.Y., M.I Syarif, R.K. Adhikari, Omar F, 2009, Post mortem variation in total volatile base nitogen and trimethylalamine nitrogen between Galda (*Macrobrachium rosenbergii*) and Bagda (*Penaeus monodon*), *University Journal of Zoology*, Rajsashi University, 28, 7-10.

Allen, F.J., 1983, *Nephridia and Body-cavity of Some Decapod Crusteca*. Q.J. Microsc.Sci. 1983, pp 403-426.

Andrade, A.J., 2011, *Shrimp Immunological Reactions Against WSSV: Role of Haemocytes on WSSV Fate*, Master's dissertation, Master of Science in Aquaculture, Thesis, Faculty of Bioscience Engineering, Universiteit Gent.

Anh, N.T.N., Tran, T.T.H, Wille, M., Nguyen, V.H, Patrick, S., 2009, Effect of fishmeal replacement ith artemia biomass as a protein source in practical diets for the giant freshwater prawn *Macrobrachium rosenbergii*, *Aquaculture Research*, 40, 669-680.

Anonim, 2016, *Sistem Informasi Diseminasi Data dan Statistik Kelautan dan Perikanan : Nilai Ekspor Hasil Perikanan*. http://statistik.kkp.go.id/sidatik-dev/2.php?x=9# diakses pada tanggal 6 Desember 2016 pukul 07.15 WIB.

AOAC, 1995, *Official method of analysis of the association of analytical*, chemist, Washington D.C.

Bachere, E., Mialhe, E., Noël, D., Boulo, V., Morvan, A. and Rodriguez, J, 1995, Knowledge and research prospect in marine mollusk and crustacean immunology, *Aquaculture*, 132, 17-32.

Barraco M.A. Duvic, B., Söderhäll, K., 1991, The ß-1,3- glucan binding protein from the crayfish Pacifastacus leniusculus, when reached will a ß43 man, induces spreading and degranulation of crayfish granular cells, *Cell Tissue Res*, 266, 491-497

Battistella, S, Paolo, B, G. A. Amirante, 1996, Hemocytes and immunological reactions in crustaceans, *Italian Journal of Zoology*, 63 : 337-343

Bintang, M, 2010, *Biokimia teknik penelitian*, Erlangga, Jakarta.

Bodhipaksa, N. & Weeks-Perkins, B.A., 1994, The effect of methyl parathion on phagocytosis and respiratory burst activity of tiger shrimp (*Penaeus monodon*) phagocytes, In : Stolen, J.S. and Fletcher, T.C. (editors), Modulaters of fish immune responses, 1, SOS Publications, Fair Haven, 11-22.

Braak, V.D., 2002, *Haemocytic Defence in Black Tiger Shrimp* (*Penaeus monodon*), Thesis, Wageningen Institut of Animal Science, The Netherlands.

Buchau, A.G., 1981. *Crustaceans. In: Vertebrate Blood Cells*. Academic Press, New York, pp. 385-420

Burnhill, T, 2006, *Identification of freshwater invertebrates of the Mekong River and its tributaries*. Mekong River Commission, Vientiane, pp: 79-92

Burrokovskii, 1985, *Key to shrimp and lobster*, AA. Balkema, Rotterdam

Capinera, J.L., 2008, *Encyclopedia of Entomology*, Springer.

Chan, T.Y., 1998, Shrimp and prawns, lobster, in Carpenter K.E. and Niem V.H (eds), FAO identification guide for fisheries purpose, the living marine resources of the Western Central Pacific, *FAO Rome*, 2, 851-1043.

Cai, Y., P, Naiyanetr, & P.K.L. Ng. 2004. The freshwater prawns of the genus Macrobrachium Bate, 1868, of Thailand (Crustacea: Decapoda: Palaemonidae), *Journal of Natural History*, 38, 593-595.

Cai, Y & P.K.L. Ng, 2001, The freshwater of Halmahera, Indonesia, *Journal of Crustacean Biology*, 21, 665-695.

Chan, S.M., Rankin, S.M., Keeley, L.L, 1998, Characterization of the molt stages in *Penaeus vannamei*: Setogenesis and hemolymp levels of total protein, ecdysteroids, and glucose, *Biological Bulletin*, 175, 185-192

Chang, E.S., 1995, Physiological and Biochemical Changes During the Molt Cycle in Decapod Crustaceans: an Overview. *Journal of Experimental Marine Biology and Ecology* 193: 1-14

Chong, S. S. C & Khoo, H.W., 1987, Abbreviated larval development of the freshwater prawn, Macrobrachium pilimanus (De Man, 1879) reared in the laboratory, *Journal of Natural History*, 21, 763-774.

Cobb, B.F., Conte F.S., Edward M.A., 1975, Free amino acid composition in muscle and hemilymph of the prawn Penaeus monodon in different salinities, *Nippon Suisan Gakkaishi*, 58, 1095-1102.

Collins, A.P., 1998, Laboratory evaluation of freshwater prawn Macrobrachium borellii, as a predator of mosquito larvae, *aquat*, Sci, 60, 22-27.

Coyle S.D., Alston D.E., & Sampaio C.M.S., 2010, *Nursery systems and management. Freshwater prawns : Biology and farming*, Wiley-Blackwell, Oxford, pp. 108-126

Correa, A.M.A., Matos, M.R.B., Gomes, M.G.S., Santos, G.V. & Amaral, A.D. 1996bO Orgao-X ganglionico do pedunculo ocular de *Macrobrachium acanthurus* (Wiegmann, 1836) (Crustacea, Decapoda, Palaemonidae). *Revista Brasilirea de Biologia* 56:65-77.

Daryanto, Hamidah .A., Kartika W.D., 2015, Keanekaragaman jenis udang air tawar di danau teluk Kota Jambi, *Biospecies*, 8, 13-19.

De Grave, S. & C. Fransen, 2011, Carideorum catalogus: the recent species of the Dendrobranchiate, stenopodidean, procarididean and Cariden shrimps (Crustacea: Decapoda), *Zoologische Madedelingen*, 195-558.

De Grave, S., Klotz, W., Cai, X. & Wowor, D., 2013, *Macrobrachium pilimanus*, The IUCN Red List of Threatened Species 2013 : e.T198331A2521341. http://dx.doi.org/10.2305/IUCN.UK.2013-1.RLTS.T198331A2521341.en. Diakses pada 05 Januari 2017 pukul 19.20 WIB.

De Grave, S., Wowor, D. & Cai, X., 2013, *Macrobrachium lanchesteri*, The IUCN Red Lst of Threatened Species 2013 : e.T197834A2502036. http://www.iucnredlist.org/details/197834/0. Diakses pada 05 Januari 2017 pukul 19.25 WIB.

Devi, P DV, K. Hareesh, M.S. Reddy, Studied on the Proximate Composition of Tropical Freshwater Prawn *Macrobrachium rosenbergii*, *International Journal of Fisheries and Aquatic Studied*, 2015; 3(1); 329-336.

Dwiono, S.A.P., 1981, *Suatu studi tentang preferensi substrat dan beberapa aspek reproduksi udang regang* Macrobrachium sintangense *(de Man),* Karya Ilmiah sarjana Perikanan, IPB.

Effendi, H, 2003, *Telaah kualitas air bagi pengelolaan sumber daya dan lingkungan perairan*, cetakan kelima, Penerbit Kanisius, Yogyakarta.

Eguia M.R.R., Dejarmine H.E., Rosario W.R., Roxas E.C.. and Wowor D, 2009,

Philippine freshwater prawns (*Macrobrachium* spp.), *Aquaculture, Extension Manual*, 43, 50.

Fang L.S., Tang C.K., Lee D.L., Chen I.M, 1992, Free amino acids composition in muscle and hemolymph of the prawn *Penaeus monodon* in different salinities, *Nippon Suisan Gakkaishi*, 58, 1095-1102

Faraldo, A.C., & Lello, E., 2003, Defense reactions of Dermatobia hominis (Diptera: Cuteribridae) larval haemocytes, *Biocell: Official Journal of the Sociedades Latinoamericanas De Microscopia Electronica*, 27, 2, 197-203

Fincham, A.A. & Wickins, J.F., 1976, Identification of commercial prawn and shrimps. *British Museum Publication* 779, British Museum, London.

Gargioni, R., Barracco, M.A., 1998, Haemocytes of the palaemonids *Macrobrachium rosenbergii* and *M. Acanthurus*, and of the penaeid *Penaeus paulensis*, *J. Morphol*, 236, 209-221. http://dx.doi.org/10.1002/(SICI)1097-4687(199806)263:3<209:AID-JMOR4>3.0.CO;2-Y. Di akses pada 29 November 2016 pukul 18.24 WIB.

George, J.C., Patel B.S., The Seasonal Variation in the Fat Content of The Liver and Gonads in a Marine and Freshwater Decapod. *Journal Animale Morphology Physiology*, 1956: (3) 49-55

Gillot, C., 1995, *Entomology* 2nd Ed, Springer

Gollas-Galvan, T., Hernandez-Lopez, J., Vargas, A., 1999, Prophenoloxidase from brown shrimp (*Penaeus californiensis*) hemocytes, Comparative Biochemistry and Pgysiology Part B, Biochemistry and Molecular Biology, 77-82.

Giribet, G., Edgecombe, G.D., 2012, Reevaluating the arthropod tree of life, *Annu, Rev, Entomol*, 57, 167-186. http://dx.doi.org/10.1007/s00427-012-0428-2. Diakses pada 19 Januari 2017 pukul 13.42 WIB.

Greenberg, S & Grinstein, S., 2002, Phagocytosis and innate immunity, *Current Opinion in Immunologycal*, 14,1, 136-145

De Grave, S., Charles H.J.M.F., Timothy J., 2007, Let's be pals again : major systematic changes in Palaemonidae (Crustacea: Decapoda), *PeerJ*.2015, 3, e1167. https://www.ncbi.nlm.nih.gov diakses pada 19 Januari 2017 pukul 13.50 WIB

Hanamura, Yukio, Imai, Hideyuki, Lasasimma, Oulaytham, Souliyamath, Pany, Ito, Sayaka, 2011, Freshwater Prawns of the genus *Macrobrachium* Bate, 1868 (Crustacea, Decapoda, Palaemonidae) from Laos, *Zootaxa*, 1-37.

Heng, L. & Lei, W., 1998, On the ultrastructure and Classification of the haemocytes of penaeid shrimp, *Penaeus vannamei* (Crustacea, Decapoda). *Chinese Journal of Oceanology and Limnology*, 16(4), 333-338.

Hose, J.E and Martin, G.G, 1989, Defense functions of granulocytes in the ridgeback prawn *Sicyonia ingentis*, *Journal of Invertebrate Pathology*, 53, 335-346.

Hose, J.E., Martin, G.G., Gerard, A.S., 1990, A Decapoda hemocyte classification scheme integrating morphology, cytochemistry, and function. *Biol. Buli*, 178, 33. http://dx.doi.org/10.2307/1541535. Diakses pada 10 Februari 2017 pukul 16.45 WIB.

Holthuis, L.B., 1980, Shrimps and prawns of the world : an annotated catalogue of species of interest to fisheries, *FAO Fisheries synopsis*, 125 (1), 271

Hutchinson, G.E., 1957, *A treatise on limnology*, John Wiley and Sons, New York, pp. 1015.

Irmawan, R.F., 2015, Keanekaragaman udang air tawar di Sungai Winongo yang melewati kota Yogyakarta, Seminar, Fakultas Biologi UGM.

Iwata, T., Mikio I., Shigeru N., Hitoshi, M., Shrimp abundance and habitat relationships in tropical rain-forest streams, Sarawak, Borneo, *Journal of Tropical Ecology*, 2002, 387-395

Jayanti N. W, 2016, *Morfotipe udang* Macrobrachium pilimanus *Jantan di Sungai Winongo Yogyakarta*, Laporan Seminar, Fakultas Biologi UGM

Jiravanichpaisal, P., Lee, B., Söderhäll K., 2006, Cell mediated immunity in arthropods: hematopoiesis, coagulation, melanization and opsonization, *Immunobiology*, 211,4, 213-236

Johansson, M.W, Pia K, Kallaya S, K. Söderhäll, 2002, Crustacean haemocytes and haematopoiesis, *Elsevier Aquaculture* 191, 45-52

Johansson, M.W., Keyser, P., Sritunyalucksana, K. Söderhäll, K., 2000, Crustacean haemocyte and Haematopoiesis, *Aquaculture*, 191, 45-52. http://dx.doi.org/10.1016/S0044-8486(00)00418-X Diakses pada 10 Februari 2017 pukul 17.05 WIB.

Johansson, M.W., *et al*., 2000, Crustacean haemocytes and haematopoiesis. *Aquaculture*, 191, 24-52

Johnson, 1961, Biology of Potentially Valuable Fresh-Water Prawns with Special Reference to the Riceland Prawn *Cryphiops (Macrobrachium) lanchesteri* (de Man)

Johnson, D.S., 1961, A synopsis of the Decapoda Caridea and Stenopodidea of Singapore, with notes on their distribution and a key to genera of Caridea occurring in Malayan waters, *Bulletin of the National Museum*, Singapore, 20, 44-79.

Johnson, D.S, 1963, Distributional and other notes on some freshwater prawn (Atyidae and Palaemonidae) mainly from Indo West Pacific region, Bull, Raffles Mus, 32, 5-30.

Johnson, D.S., 1966, *Some factors influencing the distribution of freshwater prawn in Malaya*, Symposium of Crustacea, Ernakulum, India,1, 418-433.

Kobayashi, M., Johansson, M.W., Söderhäll, K., 1990, The 76 kD cell-adhesion factor from crayfish haemocytes promotes encapsulation in vitro, *Cell Tissue Res*, 260, 13-18. http://dx.doi.org/10.1007/BF00297485. Diakses pada 6 Desember 2016 pukul 08.20 WIB.

Liu, F. *et al*., 2009, Molecular cloning and characterization of a pattern recognition protein, lipopolysaccharide and beta-1,3-glucan binding protein (LGBP) from Chinese shrimp *Fenerropenaeus chinensis*, *Molecular Biology Reports*, 36(3), pp.471-477.

Lochhead, J.H., Lochhead, M.S., 1941, Studies on the blood and related tissue in Artemia (Crustacea Anostraca). *J. Morphol*. 68, 593-632. http://dx.doi.org/10.1002/jmor.1050680309 diakses pada 20 Februari 2017, pukul 09.30 WIB.

Mardiyanti, R, 2013, *Keanekaragaman jenis udang di hilir Sungai Opak, Kabupaten Bantul, Daerah Istimewa Yogyakarta pasca erupsi Merapi 2010*, Seminar, Fakultas Biologi UGM, Yogyakarta.

Martin, G.G., Lin, H.M., Luc, C., 1999, Reexamination of hemocytes in brine shrimp (Crustacea, Branchiopoda), *J.Morphol*, 242, 283-294. http://dx.doi.org/10.1002/(SICI)1097-4687(199912)242:3<283::AID-JMOR7>3.0.CO;2-# Diakses pada 20 Januari 2017 pukul 20.30 WIB.

Martin & Cooper,1997, Morphology of Hemocytes From the Freshwater Prawn *Macrobrachium rosenbergii, Journal of Morphology*, 234, 147-153

Mark, McGinley, 2012, *invasive species in : Encyclopedia of Earth. Eds. Cutler J. Cleveland*, (Washington, D.C. : Environmental Information Coalition, National Council for Science and the Environment). http://eol.org/info/460 diakses pada 27 Ferbruari 2017, pukul 19.15 WIB.

Matozzo, V. & Marin, M.G., 2010, The role of hemocytes from the crab Carcinus aestuarii (Crustacea, Decapoda) in immune responses: a first survey, *Fish and Selfish Immunology*, 28, 4, 534-541

Mullen B.J. & Martin R.J., The effect of dietary fat on diet selection may involve central serotonin, Am, *J. Physiol*, Regul, Integr, Comp, Physiol, 1992, 263, 559-563.

Muzdalifah, 2013, Fekunditas *Macrobrachium pilimanus* dan *M. sintangense* di Sungai Gajahwong dan Sungai Opak Daerah Istimewa Yogyakarta, Laporan Seminar, Fakultas Biologi UGM.

Nail A.L., Prabu P.V., Protein concentrate from tiny prawns, *Journal marine Biology*, India, 1990: 32(1-2): 198-200

New, B.M., Wagner C.V., James, H.T., Louis R.D., Methil, N.K.,2010, *Freshwater Prawns Biology and Farming*, Blackwell Publishing Ltd, UK

Ng. P.K.L. 1995. The Freshwater Crabs and Prawn (Crustacea: Decapoda) of Bako National Park, Sarawak, Malaysia, with Description of One New Genus and Three New Species. *The Raffles Bulletin of Zoology*, 43 (1), 187-189

Ng, P.K.L. & S.C. Choy, 1990, Notes on Some Freshwater Carideans Prwans (Palaemonidae and Atyidae) From the Endau-Rompin Area, Johore-Pahang, Peninsular Malaysia. *Raffles Bulletin of Zoology*, 38(1), 11-20

Padma, P.M., 2010, *Studies on the monitoring of growth potentials of tiger prawn Penaeus monodon during feed with commercial aqua feed*, a field study, PhD Thesis, University Tirupathi.

Purnamasari, L.,2013, Keanekaragaman udang air tawar pada berbagai tipe habitat di Provinsi Jambi, Tesis, Sekolah Pascasarjana IPB, Bogor.

Pillay K.K., Nair N.B., Observation on the biochemical changes in the gonads and other of *Ucca annulipes*, *Portonus palagicus* and *Metapeneas affinis* during reproductive cycles, *Marine Biology*, 1973: 18 : 167-198.

Pilrang, W.G. & S. Djojosoebagio, A.H., 2002, *Fisiologi Nutrisi*, Vol 1, Edisi ke-4, IPB Press, Bogor.

Ravichandran, R., 2000, *Biodiversity, litter processing, leaf preference and growth, biochemical and microbial aspect in crabs of Pichavaram mangrove*, PhD thesis, Annamalai University, India

Reddy, S.K.V., K.R. Babu, M.R. Raju, 2013, Proximate composition of the prawn, *Macrobrachium rosenbergii* from Andhra Pradesh Coast, India, *Research Article*, INT J CURR SCI, 8, 16-20 .

Sabar, F, 1979, Kehidupan Udang Regang, *Macrobrachium sintangense*, *Berita Biologi*, 2 (3), hal 45-49.

Said D.S & Maghfiroh M, 2012, Kemampuan Adaptasi Udang Air Tawar Asli Indonesia Macrobrachium sintangense (de Man, 1892) pada Habitat Terkontrol, *Limnotek*, 19 (2),176-184.

Said D.S, M. Maghfiroh, D. Wowor, Triyanto, 2012, Kondisi Populasi, Kondisi Ekologis dan Potensi Udang Macrobrachium sintangense Studi Kasus Wilayah Bogor - Jawa Barat dan Brebes - Jawa Tengah, *Prosiding Seminar Nasional Limnologi* VI, 400 - 411.

Siregar, A.S., T.P. Sinaga, Setijanto, 2001, Studi Ekologi Fauna Benthik (*Macrobrachium* spp) pada Sungai Banjaran, S. Pelus dan S. Logawa, Banyumas, Biosfera 19.

Siswaningsih, 2014, *Warta Ekspor : Kinerja Ekspor Indonesia Tahun 2014*, Kementerian Perdagangan Republik Indonesia, Jakarta.

Söderhäll, K & Cerenius, L., 1992, Crustacean immunity, Annual Review of Fish Disease, 2, 3-23.

Söderhäll, Irene, 2016, Developmental and Comparative Immunology, *Elsevier* (2016) 129-141

Sriraman, K., 1978, *Biological and Biochemical Studies on The Prawn of* Portonova coast (Crustacea: Decapoda: Macrura), PhD Thesis, Annamalay Uniersity, India

Sun, J., Wang, A., Zhang, T., 2010, Flow cytometric analysis of defense functions of hemocytes from the Penaeid shrimp, Penaeus vannamei, *Journal of the World Aquaculture Society*, 41, 92-105

Sung, H., Hwang, S., Tasi, F., 2000, Responses of Giant freshwater prawn (*Macrobrachium rosenbergii*) to challenge by two strains of Aeromonas spp., *Journal of Invertebrate Pathology*, 76, 278-284

Tan, B.C. & T.K. Siang, 2003, *Invasive alien species in South-Southeast Asia* (*Singapore)*, National Reports & Directory of Resources, National University of Singapore, 85-88.

Taufik, 2011. *Keanekaragaman Udang Air Tawar di Danau Kerinci Provinsi Jamb*i. Tesis. Fakultas Matematika dan Ilmu Pengetahuan Alam, Institut Pertanian Bogor.

Trijoko, 1994, *Keanekargaman Jenis Udang* Macrobrachium sp. *di daerah aliran Sungai Code Daerah Istimewa Yogyakarta*. Laporan Penelitian. Fakultas Biologi UGM

Utami, D.T., 2015, *Keanekaragaman udang air tawar (Macrobrachium spp.) di Sungai Gajah Wong Daerah Istimewa Yogyakarta*, Seminar, Fakultas Biologi UGM.

Vargas-Albores, F. & Yepiz-Placencia, G., 2000, Beta glucan binding protein and its role in shrimp immune response, *Aquaculture*, 191(1-3), pp.13-21.

Vazquez, L., Perez, A., Millan, D., Agundis, C., Martin, G., Cooper, E.L., Lascurain, R., Zenteno, E., 1997, Morphology of hemocytes from the freshwater prawn Macrobrachium rosenbergii, *J. Morphol*, 234, 147-153. http://dx.doi.org/10.1016/j.bcmd.2010.01.006 diakses pada 20 Januari 2017 pukul 20.56 WIB.

Wenli, C & J.D. Shields, 2003, Characterization and primary culture of hemocytes from the blue crab, *Callinectes sapidus*, Virginia Institute of Marine Science, The College of William & Mary, USA.

Widianawati, A, 2012. *Keanekaragaman Jenis Udang di Muara Sungai Progo Kabupaten Kulon Progo, Daerah Istimewa Yogyakarta Pasca Erupsi Merapi Tahun 2010*, Seminar, Fakultas Biologi UGM

Widianawati, 2014, *Karakter morfologis dan molekular Macrobrachium spp. dari Sungai Opak Daerah Istimewa Yogyakarta*, Laporan Skripsi, Fakultas Biologi Universitas Gadjah Mada.

Widigdo, B., 2013, *Bertambak udang dengan teknologi BIOCRETE*, Penerbit Kompas, Jakarta.

Wilson, R.P., 2002, *Amino acids and protein, In J.E., Halver & R.W., Hardy (Eds), Fish Nutrition*, Academic Press, San Diego, CA, USA, 143-179.

Winarno, F, 2008, *Kimia pangan dan gizi*, MBrio Press, Bogor.

Wenli, C & Jeffrey D.S, 2003, *Characterization and Primary Culture of Hemocytes from the Blue Crab*, Callinectes sapidus, Virginia Institute of Marine Science The College of William & Mary, pp. 26-35.

Wowor, D. & S.C. Choy, 2001, The freshwater prawns of the genus Macrobrachium Bate, 1868 (Crustacea: Decapoda: Palaemonidae) from Brunei Darussalam, *Raffles Bulletin of Zoology*, 49, 269-289.

Wowor, D., 1983, Pengaruh Pemberian Tiga Macam Makanan Buatan Terhadap Laju Pertumbuhan Udang Regang *Macrobrachium sintangense*, *Berita Biologi*, 2 (4), 127 - 131.

Wowor, D., 1985, *Struktur Populasi dan Masa Reproduksi Udang Regang*, *Berita Biologi*, 3 (3), 116-120.

Wowor, D, 2010, *Studi Biota Perairan dan Hepertofauna di Daerah Aliran Sungai (DAS) Ciliwung dan Cisadene: Kajian Hilangnya Keanekaragaman Hayati.* Laporan akhir program insentif peneliti dan perekayasa LIPI tahun 2010, Pusat Penelitian Biologi Lembaga Ilmu Pengetahuan Indonesia.

Wowor, D., Y. Cai & P.K.L. Ng, 2004, *Crustacea: Decapoda, Caridea. In: Freshwater Invertebrates of the Malaysian region* (C.M. Yule & Y.H. Sen, eds.), Academy of Science Malaysia, Kuala Lumpur, pp: 337-339.

Wuryantoro, J., Hadisusanto, S, Purnomo, Trijoko, Chasani, A.R., Eprilurahman, *et al*., 2016, *Profil Keanekaragaman Hayati Daerah Istimewa Yogyakarta Tahun 2016,* Balai Lingkungan Hidup, Yogyakarta.