

DAFTAR PUSTAKA

- (1) McCusker, S.; Warberg, M. B.; Davies, S. J.; Valente, C. de S.; Johnson, M. P.; Cooney, R.; Wan, A. H. L. Biofloc Technology as Part of a Sustainable Aquaculture System: A Review on the Status and Innovations for Its Expansion. *Aquac. Fish Fish.* 2023, 3 (4), 331–352.
- (2) Hess, S.; Prescott, L. J.; Hoey, A. S.; McMahon, S. A.; Wenger, A. S.; Rummer, J. L. Species-Specific Impacts of Suspended Sediments on Gill Structure and Function in Coral Reef Fishes. *Proc. R. Soc. B Biol. Sci.* 2017, 284 (1866).
- (3) Herath, S. S.; Satoh, S. Environmental Impact of Phosphorus and Nitrogen from Aquaculture. *Feed Feed. Pract. Aquac.* 2015, 369–386.
- (4) Cai, H.; Ross, L. G.; Telfer, T. C.; Wu, C.; Zhu, A.; Zhao, S.; Xu, M. Modelling the Nitrogen Loadings from Large Yellow Croaker (*Larimichthys Crocea*) Cage Aquaculture. *Environ. Sci. Pollut. Res.* 2016, 23 (8), 7529–7542.
- (5) Channa, M. J.; Ayub, H.; Ujan, J. A.; Habib, S. S.; Ullah, M.; Attaullah, S.; Khayyam, K.; Khan, K. Human Health Risk Assessment Due to the Incidence of Heavy Metals in Different Commercial Feeds Used for the Culturing of Biofloc Fish (Nile Tilapia: *Oreochromis Niloticus*). *Biol. Trace Elem. Res.* 2023, No. July.
- (6) Ahmed, W.; Haque, M. R.; Siddique, M. A. B.; Akbor, M. A.; Hasan, M.; Rahman, M. M. Is Biofloc Fish a Safe Alternative to Conventionally Cultivated Fish Regarding Metal Bioaccumulation in Bangladesh? *Environ. Challenges* 2023, 11 (March).
- (7) Ombong, F.; Salindeho, I. R. . Aplikasi Teknologi Bioflok (BFT) Pada Kultur Ikan Nila, *Oreochromis Niloticus*). *e-Journal Budid. Perair.* 2016, 4 (2), 16–25.
- (8) Deswati; Zein, R.; Tetra, O. N.; Pardi, H.; Suparno, S. Development of Biofloc Technology to Improve Water Quality in *Clarias Batrachus* Cultivation. *AACL Bioflux* 2022, 15 (6), 2957–2968.
- (9) Deswati, D.; Khairiyah, K.; Safni, S.; Yusuf, Y.; Refinel, R.; Pardi, H. Environmental Detoxification of Heavy Metals in Flood & Drain Aquaponic System Based on Biofloc Technology. *Int. J. Environ. Anal. Chem.* 2020, 102 (18), 7155–7164.
- (10) Deswati, D.; Zein, R.; Suparno, S.; Pardi, H. Modified Biofloc Technology and Its Effects on Water Quality and Growth of Catfish. *Sep. Sci. Technol.* 2023, 58 (5), 944–960.
- (11) Deswati, D.; Tetra, O. N.; Isara, L. P.; Roesma, D. I.; Pardi, H. Samhong Mustard Cultivation by Utilizing Tilapia Waste in Nutrient Film Technique (Nft) Aquaponics System Based on Bioflocs, and Its Impact on Water Quality. *Rasayan J. Chem.* 2021, 14 (4), 2559–2566.
- (12) Deswati; Safni; Isara, L. P.; Pardi, H. Hydroton-Biofloc-Based Aquaponics (Hydroton-Flocponics): Towards Good Water Quality and Macro-Micro Nutrient. 2021, 14 (5), 3127–3144.
- (13) Faridah; Diana, S.; Yuniati. Budidaya Ikan Lele Dengan Metode Bioflok Pada Peternak Ikan Lele Konvensional. *J. Pengabd. Kpd. Masy.* 2019, 1 (2), 224–227.
- (14) Melaku, S.; Getahun, A.; Mengestou, S.; Geremew, A.; Belay, A. Bioflocs Technology in Freshwater Aquaculture: Variations in Carbon Sources and Carbon-to-Nitrogen Ratios. *Intech* 2016, 11 (tourism), 13.
- (15) Mubin, A.; Sidik, A.; Sumoharjo. Perbedaan Pertumbuhan Ikan Nila (*Oreochromis Niloticus*) Yang Dipelihara Dalam Sistem Bioflok Pada Kondisi Indoor Dan Outdoor. 2021, 7 (April), 85–93.
- (16) Marlida, R. Bioflok Sebagai Solusi Mengatasi Permasalahan Lingkungan Untuk Akuakultur Masa Depan Berkelanjutan : Sebuah Tinjauan (Biofloc as A Solution

- in Overcoming Environmental Problems for Sustainable Future Aquaculture : A Review). *J. Sains stiper Amuntai* 2018, 10 (1), 38–45.
- (17) Adharani, N.; Soewardi, K.; Dhamar Syakti, A.; Hariyadi, S. Water Quality Management Using Bioflocs Technology: Catfish Aquaculture (*Clarias Sp.*). *J. Ilmu Pertan. Indones.* 2016, 21 (1), 35–40.
 - (18) Anand, P. S. S.; Kohli, M. P. S.; Kumar, S.; Sundaray, J. K.; Roy, S. D.; Venkateshwarlu, G.; Sinha, A.; Pailan, G. H. Effect of Dietary Supplementation of Biofloc on Growth Performance and Digestive Enzyme Activities in *Penaeus Monodon*. *Aquaculture* 2014, 418–419, 108–115.
 - (19) Ekasari J. Teknologi Biotlok: Teori Dan Aplikasi Dalam Perikanan Budidaya Sistem Intensif. *Jurnal Akuakultur Indones.* 2009, 8 (2), 117–126.
 - (20) Ogello, E. O.; Outa, N. O.; Obiero, K. O.; Kyule, D. N.; Munguti, J. M. The Prospects of Biofloc Technology (BFT) for Sustainable Aquaculture Development. *Sci. African* 2021, 14, e01053.
 - (21) Siswoyo, B. H.; Hasan, U.; Manullang, H. M. Budidaya Ikan Lele Dengan Teknologi Bioflok Di Kelurahan Nelayan Indah. *Reswara J. Pengabd. Kpd. Masy.* 2021, 2 (1), 1–6.
 - (22) Dhiba, A. A. F.; Syam, H.; Ernawati. Analisis Kualitas Air Pada Kolam Pendederan Ikan Lele Dumbo (*Clarias Gariepinus*) Dengan Penambahan Tepung Daun Singkong (*Manihot Utilisima*) Sebagai Pakan Buatan. 2019, 5, 1–18.
 - (23) Ali Rochman, Dewi Hastuti, E. S. Analisis Usaha Budidaya Ikan Lele Dumbo (*Clarias Gariephinus*) Di Desa Wonosari Kecamatan Bonang Kabupaten Demak. *J. Chem. Inf. Model.* 2013, 53 (9), 1689–1699.
 - (24) Hariati, snik msrtinsh; Nursyam, H.; Herawati, endang yuli; Yuniarti, A.; Wiadnya, dewa gede raka. *Modul Budidaya Ikan Lele*; malang, 2011.
 - (25) Manik, R. R. D. S.; Handoco, E.; Tambunan, L. O.; Tambunan, J.; Sitompul, S. Socialization of Catfish (*Clarias Sp.*) Using Semi-Artificial Spawning in Aras Village, Batu Bara Regency. *Mattawang J. Pengabd. Masy.* 2022, 3 (1), 47–51.
 - (26) Haryadi, S.; Kundori; Budiyanto, L.; Sari, A.; Sampurno, H. Pembuatan Bioflok Sebagai Pakan Lele Dan Menjaga Air Di Pokdakan Lele Jaya Desa Sukoharjo Kecamatan Margorejo Kabupaten Pati. *Batuah J. Pengabd. Kpd. Masy.* 2023, 3, 19–25.
 - (27) Devi, P. A.; Padmavathy, P.; Aanand, S.; Aruljothi, K. Review on Water Quality Parameters in Freshwater Cage Fish Culture Ichthyofaunal Diversity of Pechiparai Reservoir, Kanyakumari District View Project Culture of Micro Algae and Live Feed Formations View Project. *Int. J. Appl. Res.* 2017, No. May, 114–120.
 - (28) Verma, D. K.; Maurya, N. K.; Kumar, P. Important Water Quality Parameters in Aquaculture : An Overview. *Agric. Environ.* 2022, 3 (March), 24–29.
 - (29) Supono. *Manajemen Lingkungan Untuk Akuakultur*, Plantaxia: Bandar Lampung, 2015.
 - (30) Yuliantari, R. V.; Novianto, D.; Hartono, M. A.; Widodo, T. R. Pengukuran Kejenuhan Oksigen Terlarut Pada Air Menggunakan Dissolved Oxygen Sensor. *J. Fis. Flux J. Ilm. Fis. FMIPA Univ. Lambung Mangkurat* 2021, 18 (2), 101.
 - (31) Alfatihah, A.; Latuconsina, H.; Prasetyo, H. D. Water Quality Analysis Based on Physical and Chemical Parameters in Patrean River Waters , Sumenep Regency. *J. Aquat. fisheries Sci.* 2022, 1 (2), 76–84.
 - (32) Ilham, A. S.; Masri, M.; Rosmah, R. Analisis Kadar Biochemical Oxygen Demand (BOD) Salah Satu Sungai Di Sulawesi Selatan. *Filogeni J. Mhs. Biol.* 2023, 3 (2), 112–116.
 - (33) Atima, W. Bod dan cod sebagai parameter pencemaran air dan baku mutu air

- limbah. *J. Biol. Sci. Educ.* 2013, 2 (2), 159–169.
- (34) Irianti, T.; Mada, U. G.; Nuranto, S.; Mada, U. G. *Logam Berat Dan Kesehatan*; Universitas Gajah Mada: Yogyakarta, 2018.
- (35) Channa, M. J.; Ayub, H.; Ujan, J. A.; Habib, S. S.; Ullah, M.; Attaullah, S.; Khayyam, K.; Khan, K. Human Health Risk Assessment Due to the Incidence of Heavy Metals in Different Commercial Feeds Used for the Culturing of Biofloc Fish (Nile Tilapia: *Oreochromis Niloticus*). *Biol. Trace Elem. Res.* 2023, No. July.
- (36) Habib, S. S.; Naz, S.; Fazio, F.; Cravana, C.; Ullah, M.; Rind, K. H.; Attaullah, S.; Filiciotto, F.; Khayyam, K. Assessment and Bioaccumulation of Heavy Metals in Water, Fish (Wild and Farmed) and Associated Human Health Risk. *Biol. Trace Elem. Res.* 2023, No. May.
- (37) Paudel, S.; Kumar, S.; Mallik, A. Atomic Absorption Spectroscopy: A Short Review. *Epra Int. J. Res. Dev.* 2021, 6 (9), 322–327.
- (38) Solikha, D. F. Penentuan Kadar Tembaga (II) Pada Sampel Menggunakan Spektroskopi Serapan Atom (SSA) Perkin Elmer Analyst 100 Metode Kurva Kalibrasi. *Syntax Lit. J. Ilm. Indones.* 2019, 4 (2), 1–11.
- (39) Faqihuddin; Ubaydillah, M. I. Perbandingan Metode Destruksi Kering Dan Destruksi Basah Instrumen Spektrofotometri Serapan Atom (SSA) Untuk Analisis Logam. *Semin. Nas. Has. Ris. dan Pengabd. ke-III 2021*, No. 86, 121–127.
- (40) Agency, N. S. How to Test Dissolved Oxygen by Yodometry (Azide Modification). In *National Standardization Agency*, 2004.
- (41) BSN. Air Dan Air Limbah – Bagian 72 : Cara Uji Kebutuhan Oksigen Biokimia (Biochemical Oxygen Demand/BOD). *Badan Stand. Nas.* 2009, 1–20.
- (42) BSN. Air Dan Air Limbah - Bagian 15: Cara Uji Kebutuhan Oksigen Kimiawi (Chemical Oxygen Demand/COD) Refluks Terbuka Dengan Refluks Terbuka Secara Titrimetri. *Badan Stand. Nas.* 2004, 1–10.
- (43) BSN. Air Dan Air Limbah – Bagian 84 : Cara Uji Kadar Logam Terlarut Dan Logam Total Secara Spektrometri Serapan Atom (SSA) – Nyala. *Standar Nas. Indones.* 2019, 1–26.
- (44) BSN. (Metode Pengujian Kadar Logam Tembaga (Cu), Seng (Zn) Besi (Fe) Dalam Daging, Telur, Susu Dan Olahannya Dengan Menggunakan Spektrofotometer Serapan Atom (SSA) SNI 7854:2013). *Badan Stand. Nas.* 1–20.
- (45) BSN. Air Dan Air Limbah – Bagian 69: Cara Uji Kalium (K) Secara Spektrofotometri Serapan Atom (SSA) – Nyala. SNI 6989.69:2009. Jakarta (ID): Badan Standarisasi Nasional. *Badan Stand. Nas.* 2009, 1–10.
- (46) Satriawan, E. F.; Widowati, I.; Suprijanto, J. Pencemaran Logam Berat Kadmium (Cd) Dalam Kerang Darah (Anadara Granosa) Yang Didaratkan Di Tambak Lorok Semarang. *J. Mar. Res.* 2021, 10 (3), 437–445.
- (47) Peycheva, K.; Panayotova, V.; Merdzhanova, A.; Stancheva, R. Estimation of THQ and Potential Health Risk for Metals by Consumption of Some Black Sea Marine Fishes and Mussels in Bulgaria. *Bulg. Chem. Commun.* 2019, 51 (D), 241–246.
- (48) Tatangindatu, F.; Kalesaran, O.; Rompas, R. Studi Parameter Fisika Kimia Air Pada Areal Budidaya Ikan Di Danau Tondano, Desa Paleloan, Kabupaten Minahasa. *e-Journal Budid. Perair.* 2013, 1 (2), 8–19.
- (49) Kurniaji, A.; Yunarty, Y.; Anton, A.; Usman, Z.; Wahid, E.; Rama, K. Pertumbuhan Dan Konsumsi Pakan Ikan Nila (*Oreochromis Niloticus*) Yang Dipelihara Dengan Sistem Bioflok. *Sains Akuakultur Trop.* 2021, 5 (2), 197–203.
- (50) Deswati; Zein, R.; Dwisani, R.; Fitri, W. E.; Putra, A. Biofloc-Based Catfish

- Cultivation and Its Effect on the Dynamics of Water Quality. *AACL Bioflux* 2023, 16 (6), 3123–3137.
- (51) Deswati; Sutopo, J. *Budidaya Lele Berbasis Bioflok*; Plantaxia: Yogyakarta, 2022.
 - (52) Pemerintah Republik Indonesia. Lampiran VI Tentang Baku Mutu Air Nasional - PP Nomor 22 Tahun 2021 Tentang Penyelenggaraan Perlindungan Dan Pengelolaan Lingkungan Hidup. *Sekr. Negara Republik Indones.* 2021, 1 (078487A), 483.
 - (53) Jamal, M. T.; Broom, M.; Al-Mur, B. A.; Al Harbi, M.; Ghandourah, M.; Al Otaibi, A.; Haque, M. F. Biofloc Technology: Emerging Microbial Biotechnology for the Improvement of Aquaculture Productivity. *Polish J. Microbiol.* 2020, 69 (4), 401–409.
 - (54) Fatkhul Mubin, A.; Syafei Sidik, A.; Sumoharjo. Perbedaan Pertumbuhan Ikan Nila (*Oreochromis Niloticus*) Yang Dipelihara Dalam Sistem Bioflok Pada Kondisi Indoor Dan Outdoor. *Sains dan Teknol. Akuakultur* 2021, 7 (1), 85–93.
 - (55) Ali, B.; . A.; Mishra, A. Effects of Dissolved Oxygen Concentration on Freshwater Fish: A Review. *Int. J. Fish. Aquat. Stud.* 2022, 10 (4), 113–127.
 - (56) Berliana, M.; Budijono; Windarti. Kondisi do dan bod5 pada budidaya ikan patin (*pangasianodon hypophthalmus*) sistem bioflok dan manipulasi fotoperiod conditions. *Berk. Perikan. Terubuk* 2021, 49 (2), 1113–1121.
 - (57) Raza, B.; Zheng, Z.; Yang, W. A Review on Biofloc System Technology, History, Types, and Future Economical Perceptions in Aquaculture. *Animals* 2024, 14 (10), 1489.
 - (58) Tamyiz M. Perbandingan Rasio BOD/COD Pada Area Tambak Di Hulu Dan Hilir Terhadap Biodegradabilitas Bahan Organik. *J. Res. Technol.* 2015, 1 (1), 9–15.
 - (59) Samudro, G.; Mangkoedihardjo, S. Review on Bod , Cod and Bod / Cod Ratio : A Triangle Zone for Toxic , Biodegradable and Stable Levels. 2010, 2 (4), 235–239.
 - (60) Kumar Jatav, S.; Dhruve, D.; Singh, P.; Pandey, S.; Dhansukhbhai Patel, N. Heavy Metal Toxicity in Fishes and Their Impact on Human's Health: A Review. ~ 1448 ~ *Pharma Innov. J.* 2023, 12 (10), 1448–1452.
 - (61) Yousif, R.; Choudhary, M. I.; Ahmed, S.; Ahmed, Q. Review : Bioaccumulation of Heavy Metals in Fish and Other Aquatic Organisms from Karachi Coast , Pakistan. *Nusant. Biosci.* 2021, 13 (1), 73–84.
 - (62) Wenzel, L. C.; Strauch, S. M.; Eding, E.; Presas-Basalo, F. X.; Wasenitz, B.; Palm, H. W. Effects of Dissolved Potassium on Growth Performance, Body Composition, and Welfare of Juvenile African Catfish (*Clarias Gariepinus*). *Fishes* 2021, 6 (2), 1–13.
 - (63) Deswati; Ulya, N.; Yusuf, Y.; Tetra, O. N.; Edelwis, T. W.; Pardi, H. Improvement of Water Quality (Cu, Fe, Zn) in Biofloc Aquaponics Systems by Utilizing Fish Waste as a Source of Micronutrients. *AACL Bioflux* 2021, 14 (6), 3440–3449.
 - (64) BSN. Garam Konsumsi Beryodium. *Standar Nas. Indones.* 2010, SNI 3556:2, 1–7.
 - (65) BSN. SNI 3556:2016 Garam Konsumsi Beriodium. *Badan Stand. Nas.* 2016, No. 1, 1–12.
 - (66) BSN SNI 02-2804-2005. Pupuk Dolomit. *Badan Stand. Nas.* 2005, 1–7.
 - (67) Atikah, N.; Karim, A.; Baharin, H. Determination of Iron (Fe) and Potassium (K) in Closed Aquaponic Systems by Using Atomic Absorption Spectroscopy and Flame Photometer. *eProceedings Chem.* 2019, 4, 190–196.
 - (68) Deswati, D.; Zein, R.; Dwisani, R.; Putra, A.; Fitri, E. Biofloc-Based Catfish (

- Clarias Gariepinus) Cultivation in Fishpond and Its Effect on Heavy Metal Content (Cu , Fe , Zn , Cd and Mn). *Biofluc (in Press)*. 2024.
- (69) Kaligis, E. Y. laju pertumbuhan, efisiensi pemanfaatan pakan, kandungan potasium tubuh, dan gradien osmotik postlarva vaname (litopenaeus vannamei, boone) pada potasium media berbeda. *J. Perikan. Dan Kelaut. Trop.* 2010, 6 (2), 92.
- (70) Wu, D.; Feng, H.; Zou, Y.; Xiao, J.; Zhang, P.; Ji, Y.; Lek, S.; Guo, Z.; Fu, Q. Feeding Habit-Specific Heavy Metal Bioaccumulation and Health Risk Assessment of Fish in a Tropical Reservoir in Southern China. *Fishes* 2023, 8 (4).
- (71) Edelstein, M.; Ben-Hur, M. Heavy Metals and Metalloids: Sources, Risks and Strategies to Reduce Their Accumulation in Horticultural Crops. *Sci. Hortic. (Amsterdam)*. 2018, 234 (June), 431–444.
- (72) Mohammed, A.; Seid, K.; Woldegbreal, B. Heavy Metals Accumulation in Water and Human Health Risk Assessment via the Consumption of Labeobarbus Intermedius Samples from Borkena River, Ethiopia. *Sci. World J.* 2023, 2023.
- (73) Akbar, S. A.; Rahayu, H. K. Tinjauan Literatur: Bioakumulasi Logam Berat Pada Ikan Di Perairan Indonesia. *Lantanida J.* 2023, 11 (1), 51.
- (74) Alam, M.; Rohani, M. F.; Hossain, M. S. Heavy Metals Accumulation in Some Important Fish Species Cultured in Commercial Fish Farm of Natore, Bangladesh and Possible Health Risk Evaluation. *Emerg. Contam.* 2023, 9 (4).

