

DAFTAR PUSTAKA

- Abarike, E. D., Jian, J., Tang, J., Cai, J., Yu, H. & Chen, L. 2019. Traditional Chinese medicine enhances growth, immune response, and resistance to (*Streptococcus agalactiae*) in Nile tilapia. Journal of Aquatic Animal Health, 31(1), pp.46-55. <https://doi.org/10.1002/aah.10049>.
- Abarike, E. D., Jian, J., Tang, J., Cai, J., Yu, H., Lihua, C. & Jun, L. 2018. Influence of traditional Chinese medicine and *Bacillus* species (TCMBS) on growth, immune response and disease resistance in nile tilapia (*Oreochromis niloticus*). Aquaculture Research, 49 (7), pp. 2366-2375. <https://doi.org/10.1111/are.13691>.
- Abduljalil, A. A., Ali, R. A., Abdalhafid, Y. K. & Ali, S. M. 2022. Seasonal variations in some hematological traits of tilapia zillii (Gervais, 1848) in a Southern Mediterranean Sea Brackish Lagoon. International Research Journal of Natural Sciences, 10(1), 22-38. <https://doi.org/10.37745/irjns.13>.
- Adhikari, P., Lee, C. H., Cosby, D. E., Cox, N. A. & Kim, W. K. 2019. Effect of probiotics on fecal excretion, colonization in internal organs and immune gene expression in the ileum of laying hens challenged with (*Salmonella enteridis*). Poultry Science. 98 (7):1235-1242. <https://doi.org/10.3382/ps/pey443>.
- Adukwu, E. C., Bowles, M., Jones, V. E. & Bone, H. 2016. Antimicrobial activity, cytotoxicity and chemical analysis of lemongrass essential oil (*Cymbopogon flexuosus*) and pure citral. Applied microbiology and biotechnology, 100, 9619-9627. <https://doi.org/10.1007/s00253-016-7807-y>.
- Agbebi, O. T. & Echefu, J. 2016. Phylogenetic Analysis on four species of tilapia (*Oreochromis niloticus*, *Tilapia zilli*, *Sarotherodon galilaeus*, *Sarotherodon melanotheron*) in Nigeria. Journal of Agricultural Science and Environment, 16(2), 61-68. <https://doi.org/10.51406/jagse.v16i2.1707>.
- Agouz, H. M., Soltan, M. A. & Meshrf, R. N. 2015. Effect of some organic acids and organic salt blends on growth performance and feed utilization of Nile tilapia, (*Oreochromis niloticus*). Egyptian Journal of Nutrition and Feeds, 18(2 Special), 443-450. <https://doi.org/10.21608/ejnf.2015.104519>.
- Agustin, R., Sasanti, A. D. & Yulisman. 2014. Konversi pakan, laju pertumbuhan, kelangsungan hidup dan populasi bakteri benih ikan gabus (*Channa striata*) yang diberi pakan dengan penambahan probiotik. Jurnal Akuakultur Rawa Indonesia. 2(1) :55-66. <https://doi.org/10.36706/jari.v2i1.2049>.
- Aketch, B. O., Ang'ienda, P. O., Radull, J. O. & Waindi, E.N. 2014. Effect of stocking density on the expression of glucose transporter protein 1 and other physiological factors in the Lake Victoria nile tilapia (*Oreochromis niloticus*

L.). International Aquatic Research, 6, pp.1-8. <https://doi.org/10.1007/s40071-014-0069-3>.

Alhamad, L., Alrashed, A., Al Munif, E. & Miskimins, J. 2020. Organic acids for stimulation purposes: a review. SPE Production & Operations, 35(04), 952-978. <https://doi.org/10.2118/199291-PA>.

Ali, I. A., Radhakrishnan, D. K. & Kumar, S. 2022. Immunostimulants and their uses in aquaculture. In Aquaculture Science and Engineering (pp. 291-322). Singapore: Springer Nature Singapore. https://doi.org/10.1007/978-981-19-0817-0_11.

Aliyas, S., Ndobe, & Ya'la, Z. R. 2016. Pertumbuhan dan kelangsungan hidup ikan nila (*Oreochromis* sp.) yang dipelihara pada media bersalinitas. Jurnal Sains Dan Teknologi Tadulako, 5(1), 19–27.

Amalia, R. & Arini, E. 2013. Pengaruh penggunaan papain terhadap tingkat pemanfaatan protein pakan dan pertumbuhan lele dumbo (*Clarias gariepinus*). Journal of Aquaculture Management and Technology, 2(1), pp.136-143.

Ambarwati, N., Hidayati, S. & Mujtahidah, T. 2022. Hematologic analysis of tilapia (*Oreochromis niloticus*) on ectoparasite infection of the floating net cages in Rawa Pening. Asian Journal of Aquatic Sciences, 5(1), 55-61. <https://doi.org/10.31258/ajoas.5.1.55-61>.

Astuti, L. P. & Indriatmoko. 2018. Kemampuan beberapa tumbuhan air dalam menurunkan pencemaran bahan organik dan fosfat untuk memperbaiki kualitas air. Jurnal Teknologi Lingkungan, 19(2), 183–190.

Ayoola, S. O., Adejumobi, K. O. & Adamson, O. H. 2014. Haematological indices and enzymatic biomarker of black jaw tilapia (*Sarotherodon melanotheron*) from Lagos Lagoon. Agrosearch, 14(1), 62-75. <https://doi.org/10.4314/agrosh.v14i1.7>

Azhar, F. & Wirasisya, D.G. 2019. Pelatihan penanganan (*Streptococcus* sp.) pada ikan nila (*Oreochromis niloticus*) menggunakan pakan fermentasi di Desa Gontoran Lingsar. Jurnal Abdi Insani, 6(2), pp.229-240. <https://doi.org/10.29303/abdiinsani.v6i2.240>.

Azhari, D. N. I. M. & Tomasoa, A. M. 2018. Kajian kualitas air (suhu, DO, pH, amonia, nitrat) pada sistem akuaponik untuk budidaya ikan nila (*Oreochromis niloticus*). Jurnal Ilmiah Tindalung, Vol 4(1), Hal 23-26.

Suarez, A. J. B., Barreneche, N. O. D. & Montoya, J. E. Z. 2016. Efecto de temperatura, pH, concentracion de sustrato y tipo de enzima en la hidrolisis enzimatica de visceras de tilapia roja (*Oreochromis* sp.). Informacion tecnologica, 27(6), pp.63-76. <https://doi.org/10.4067/S0718-07642016000600007>.

Binning, S. A. 2016. Hot fish hit concrete temperature ceilings. *Journal Of Experimental Biology*, 219(17), 2579-2580.

Boonanuntasarn, S., Jangprai, A., Kumkhong, S., Juan, E. P., Veron, V., Burel, C., Marandel, L. & Panserat, S. 2018. Adaptation of nile tilapia (*Oreochromis niloticus*) to different levels of dietary carbohydrates: new insights from a long term nutritional study. *Aquaculture*, 496, pp.58-65. <https://doi.org/10.1016/j.aquaculture.2018.07.011>.

Broom, L. J. 2015. Organic acids for improving intestinal health of poultry. *World's Poultry Science Journal*, 71(4), 630-642. <https://doi.org/10.1017/S0043933915002391>.

Brotowidjojo, M. D., Tribawono, D. & Mulbyantoro, E. 2014. Pengantar lingkungan perairan dan budidaya air. Liberty. Yogyakarta. 259 hal.

Candrayani, P. P., Utama, I. H. & Suharsono, H. 2022. Kadar aspartat aminotransferase dan alanin aminotransferase ayam pedaging yang diberi penambahan asam organik dalam pakan. *Jurnal Universitas Udayana Bali*. 11(2): 178-186. <https://doi.org/10.19087/imv.2022.11.2.178>.

Castillo, S., Rosales, M., Pohlenz, C. & Gatlin, D. M. 2014. Effects of organic acids on growth performance and digestive enzyme activities of juvenile red drum (*Sciaenops ocellatus*). *Aquaculture* 433, 6–12. <https://doi.org/10.1016/j.aquaculture.2014.05.038>.

Chervinsky, J. 2014. Environmental Physiology of Tilapia. In R.S.V. Pullin and R.H. Lowe. Mc Connel (editors) the biology and culture of tilapias. ICLARM. Conference Proceeding, ICLARM Manila.

Cholik, F., Artati. & Arifudin, R. 2016. Pengelolaan kualitas air kolam. INFIS Manual seri nomor 26. Dirjen Perikanan. Jakarta. 52 hal.

Cholik, F., Artati. & Arifudin. 2018. Pengelolaan kualitas air kolam ikan . INFIS Manual.Seri No. 36. 52 hal.

Darmapatni, K. A. G., Basori, A. & Suaniti, N. M. 2016. Pengembangan metode GC-MS untuk penetapan kadar acetaminophen pada spesimen rambut manusia. *Jurnal Biosains Pascasarjana*, 18(3), 255–265. <https://doi.org/10.20473/BSN.V18I3.3037>.

Debnath, S. C., McMurtrie, J., Temperton, B., Deboutteville, J. D., Mohan, C. V. & Tyler, C. R. 2023. Tilapia aquaculture, emerging diseases, and the roles of the skin microbiomes in health and disease. *Aquaculture International*, 31(5), 2945-2976. <https://doi.org/10.1007/s10499-023-01117-4>.

Filho, P. R. C. D. O., Reis, P. V. M., Araujo, I. B. D, Raul, L. J., Shinohara, N. K. S. & Daza, T. E. L. 2017. Avaliacao de linguicas de tilapias do nilo (*Oreochromis*

niloticus) submetidas a diferentes metodos de defumacao. Boletim Do Centro De Pesquisa De Processamento De Alimentos, 35(2).

Souza, E. M. D., Souza, R. C. D., Melo, J. F., Costa, M. M. D., Souza, A. M. D. & Copatti, C. E. 2019a. Evaluation of the effects of (*Ocimum basilicum*) essential oil in nile tilapia diet: growth, biochemical, intestinal enzymes, haematology, lysozyme and antimicrobial challenges. Aquaculture, 504, 7-12. <https://doi.org/10.1016/j.aquaculture.2019.01.052>.

Souza, R. C. D., Souza, E. M. D., Costa, M. M. D., Melo, J. F. B., Baldisserotto, B. & Copatti, C. E. 2019b. Dietary addition of the essential oil from (*Lippia alba*) to nile tilapia and its effect after inoculation with (*Aeromonas* sp.). Aquaculture Nutrition, 25(1), 39-45. <https://doi.org/10.1111/anu.12827>.

Dong, G., Yang, Y. O., Chen, L., Yue, D. D., Yu, D. H., Huang, F. & Liu, L. H. 2017. Growth performance and whole-body composition of yellow catfish (*Pelteobagrus fulvidraco* Richardson) under feeding restriction. Aquaculture Nutrition, 23, 101–110. <https://doi.org/10.1111/anu.12366>.

Du, K., Foote, M. S., Mousavi, S., Buczkowski, A., Schmidt, S., Peh, E. & Heimesaat, M. M. 2023. Combination of organic acids benzoate, butyrate, caprylate, and sorbate provides a novel antibiotics-independent treatment option in the combat of acute campylobacteriosis. Frontiers in microbiology, 14, 1128500. <https://doi.org/10.3389/fmicb.2023.1128500>.

Duman, M., Saticioglu, I. B., Suzer, B. & Altun S. 2018. Practices for drawing blood samples from teleost fish. Technical note. North American Journal of Aquaculture 81(2). <https://doi.org/10.1002/naaq.10077>.

Ebrahimi, M., Daeman, N. H., Chong, C. M., Karami, A., Kumar, V., Hoseinifar, S. H. & Romano, N. 2017. Comparing the effects of different dietary organic acids on the growth, intestinal short-chain fatty acids, and liver histopathology of red hybrid tilapia (*Oreochromis* sp.) and potential use of these as preservatives. Fish physiology and biochemistry, 43, 1195-1207. <https://doi.org/10.1007/s10695-017-0365-0>.

Endraswari, L. P. M. D., Cokrowati, N. & Lumbessy, S. Y. 2021. Fortifikasi pakan ikan dengan tepung rumput laut (*Gracilaria* sp.) pada budidaya ikan nila (*Oreochromis niloticus*). Jurnal Kelautan, 14(1), 70-81. <https://doi.org/10.21107/jk.v14i1.9991>.

Enes, P., Meilan, I. G., Guerreiro, I., Couto, A., Ferreira, P. P., Gallardo, M. A. & Teles, A. O. 2015. Utilization of dietary starch by juvenile white sea bream (*Diplodus sargus*) at different feeding frequencies. Aquaculture nutrition, 21(6), pp.926-934. <https://doi.org/10.1111/anu.12227>.

Esmaeili, N. 2021. Blood performance: a new formula for fish growth and health. Biology, 10(12), p.1236. <https://doi.org/10.3390/biology10121236>.

- Fang, L., Liang, X. F., Zhou, Y., Guo, X. Z., He, Y., Yi, T. L., Liu, L. W., Yuan, X. C. & Tao, Y. X. 2014. Programming effects of high-carbohydrate feeding of larvae on adult glucose metabolism in zebrafish (*Danio rerio*). British journal of nutrition, 111(5), pp.808-818. <https://doi.org/10.1017/S0007114513003243>.
- FAO. 2015. El estado mundial de la pesca y la acuicultura. 274. Roma. Italia. <https://doi.org/10.4067/S0718-07642017000500014>.
- Fihurska, L. V. & Thorenko, V. 2019. The characteristic of compound feeds for tilapia fish. Grain Products and Mixed Fodder's, 19(2), 32-36. <https://doi.org/10.15673/gpmf.v19i2.1445>.
- Gabriel, N. N. 2019. Review on the progress in the role of herbal extracts in tilapia culture. Cogent Food & Agriculture, 5(1), p.1619651. <https://doi.org/10.1080/23311932.2019.1619651>.
- Gazali, M., Effendi, I., Husni, A., Nurjanah, N., Wahyuni, S. & Kurniawan, R. 2023. (*Sargassum* sp.) extract improve hematological profile of tilapia fish (*Oreochromis niloticus*) [version 2; peer review. <https://doi.org/10.12688/f1000research.128819.2>.
- Geurden, I., Mennigen, J., Juan, E. P., Veron, V., Cerezo, T., Mazurais, D., Infante, J. Z., Gatesoupe, J., Cassy, S. S. & Panserat, S. 2014. High or low dietary carbohydrate: protein ratios during first-feeding affect glucose metabolism and intestinal microbiota in juvenile rainbow trout. Journal of Experimental Biology, 217(19), pp.3396-3406. <https://doi.org/10.1242/jeb.106062>.
- Farsani, H. G., Gerami, M. H., Farsani, M. N., Rashidiyan, G., Mehdi Pour, N., Ghanad, M. & Faggio, C. 2018. Effect of different levels of essential oils (*Satureja hortensis*) in diet on improvement growth, blood biochemical and immunity of angelfish (*Pterophyllum scalare* Schultze, 1823). Natural product research, 1-6. <https://doi.org/10.1080/14786419.2018.1434635>.
- Goldstein, E. D., Helser, T. E., Vollenweider, J. J., Sreenivasan, A. & Sewall, F. F. 2021. Rapid and reliable assessment of fish physiological condition for fisheries research and management using fourier transform near-infrared spectroscopy. Frontiers in Marine Science, 8, 690934. <https://doi.org/10.3389/fmars.2021.690934>.
- Gomes, V. J., Teixeira, D. A., Almeida, M. V. D., Silva, V. V. & Salomao, R. A. S. 2022. Evaluating the growth of genetically improved tilapia reared at different temperatures. Annals of Animal Science, 22(4), 1393-1400. <https://doi.org/10.2478/aoas-2022-0029>.
- Hadavi, E. & Ghazijahani, N. 2022. Simple organic acids as plant biostimulants. In Biostimulants: Exploring Sources and Applications (pp. 71-105). Singapore: Springer Nature Singapore. https://doi.org/10.1007/978-981-16-7080-0_4.

- Hassaan, M. S., Mohammady, E. Y., Adnan, A. M., Abd Elnabi, H. E., Ayman, M. F., Soltan, M. A. & Haroun, E. R. E. 2020. Effect of dietary protease at different levels of malic acid on growth, digestive enzymes and haemato-immunological responses of nile tilapia, fed fish meal free diets. *Aquaculture*, 522, 735124. <https://doi.org/10.1016/j.aquaculture.2020.735124>.
- Hassaan, M. S. & Soltan, M. A. 2016. Evaluation of essential oil of fennel and garlic separately or combined with (*Bacillus licheniformis*) on the growth, feeding behaviour, hemato-biochemical indices of (*Oreochromis niloticus* L.) fry. *Journal of Aquaculture Research & Development* 7(3): 422–429. <https://doi.org/10.4172/2155-9546.1000422>.
- Hassaan, M. S., Soltan, M. A. & Moez, A. M. A. 2015. Nutritive value of soybean meal after solid state fermentation with (*Saccharomyces cerevisiae*) for Nile tilapia (*Oreochromis niloticus*). *Animal Feed Science and Technology* 201:89–98. <https://doi.org/10.1016/j.anifeedsci.2015.01.007>.
- Hassaan, M. S., Wafa, M. A., Soltan, M. A., Goda, A. S. & Mogheeth. N. M. A. 2014. Effect of dietary organic salts on growth, nutrient digestibility, mineral absorption and some biochemical indices of nile tilapia (*Oreochromis niloticus* L.). fingerlings. *World Applied Science Journal* 29(1): 47–55. <https://doi.org/10.5829/idosi.wasj.2014.29.01.81237>.
- Hassan, A. A. M., Yacout, M. H., Khalel, M. S., Hafsa, S. H. A., Ibrahim, M. A. R., Mocuta, D. N., Rahoveanu, A. T. & Dediu, L. 2018. Effects of some herbal plant supplements on growth performance and the immune response in Nile tilapia (*Oreochromis niloticus*). *Sciendo*, 1, pp.134-141. <https://doi.org/10.2478/alife-2018-0020>.
- He, J., Qiang, J., Gabriel, N. N., Xu, P. & Yang, R. 2015. Effect of feeding-intensity stress on biochemical and hematological indices of gift tilapia (*Oreochromis niloticus*). *Turkish Journal of Fisheries and Aquatic Sciences*, 15(2), 303-310. https://doi.org/10.4194/1303-2712-v15_2_12.
- Hendriana, A., Hikmah, P. N., Iskandar, A., Ramadhani, D. E., Kusumanti, I., & Arianto, A. D. 2022. Budidaya ikan nila hitam (*Oreochromis niloticus*) studi kasus usaha pembesaran di tambak H. Umar Faruq Sidoarjo, Jawa Timur. *Jurnal Ilmiah Satya Minabahari*, n.d. <https://doi.org/10.53676/jism.v8i1.180>.
- Huang, Z., Lu, J., Ye, Y., Xu, A. & Li, Z. 2020. Effects of dietary Chinese herbal medicines mixture on growth performance, digestive enzyme activity and serum biochemical parameters of European eel, (*Anguilla anguilla*). *Aquaculture Reports*, 18, p.100510. <https://doi.org/10.1016/j.aqrep.2020.100510>.
- Huang, S. H., Chen, W. H. & Lin, Y. C. 2019. A self-powered glucose biosensor operated underwater to monitor physiological status of free-swimming fish. *Energies*, 12(10), p.1827. <https://doi.org/10.3390/en12101827>.

- Huang, Q., Huang, K., Ma, Y., Qin, X. I., Wen, Y., Sun, L. & Tang, L. 2015. Feeding frequency and rate effects on growth and physiology of juvenile genetically improved farmed nile tilapia. North American Journal of Aquaculture, 77, 503–512. <https://doi.org/10.1080/15222055.2015.1066472>.
- Huda, M. R. & Gusmarwani, S. R. 2020. Pemanfaatan buah mangrove (*Bruguiera gymnorhiza*) sebagai campuran pakan ikan untuk meningkatkan pertumbuhan ikan (variabel perbandingan bahan pokok dengan bahan pendukung dan variabel penambahan tepung tulang sapi). Pap. Knowl.. Towar. a Media Hist. Doc, 5(2), pp.70-79.
- Ighwela, K. A., Ahmad, A. B. & Munafi, A. B. A. 2014. The selection of viscerosomatic and hepatosomatic indices for the measurement and analysis of (*Oreochromis niloticus*) condition fed with varying dietary maltose levels. International Journal of Fauna and Biological Studies, 1(3), 18-20.
- Ikusika, O. O. & Haruzivi, C. 2022. Alternatives to the use of antibiotics in animal production. Antibiotics and Probiotics in Animal Food-Impact and Regulation. <https://doi.org/10.5772/intechopen.105922>.
- Iskandar, A., Nurfauziyyah, I., Hendriana, A. & Darmawangsa, G. M. 2021. Manajerial dan analisa usaha pembenihan ikan nila strain sultana (*Oreochromis niloticus*) untuk meningkatkan performa benih ikan. J. Kemaritiman Indonesia. J. Marit. 2, 50–68. <https://doi.org/10.17509/ijom.v2i1.34646>.
- Jaafar, R. M., Kania, P. W., Larsen, A. H., Nielsen, D. S., Fouz, B., Browdy, C. & Buchmann, K. 2013. Gut microbiota changes in rainbow trout, (*Oncorhynchus mykiss*), during organic acid feed supplementation and (*Yersinia ruckeri*) infection. J. Fish Dis. 36, 599–606. <https://doi.org/10.1111/jfd.12047>.
- Jedi, M. A., Hedayatifard, M., Keshavarz, M. & Mohammadian, T. 2021. Effects of different levels of sodium diformate and formic acid salt on growth performance, digestive enzymes, and innate immunological parameters of Beluga (*Huso huso*) juveniles. Iran. J. Fish. Sci. 20, 879–900.
- Julianto, T. S. 2016. Minyak atsiri bunga Indonesia (1st ed.). Depublish Publisher.
- Kamalam, B. S., Medale, F. & Panserat, S. 2017. Utilisation of dietary carbohydrates in farmed fishes: new insights on influencing factors, biological limitations and future strategies. Aquaculture, 467, pp.3-27. <https://doi.org/10.1016/j.aquaculture.2016.02.007>.
- Khaeriyah, A. 2018. Efektifitas pemanfaatan karbohidrat melalui pemberian krom organik yang diinkorporasi dari jamur (*Rhizopus oryzae*) dalam pakan terhadap kinerja pertumbuhan ikan gabus (*Channa striata*). Skripsi. Universitas Hasanuddin.

- Khalla, E. A., Alnenaei, A. A., Messady, F. A. E. & Hanafy, E. 2021. Effect of temperature rise on growth performance, feed intake, feed conversion ratio and sex ratio of the nile tilapia, (*Oreochromis niloticus*). Egyptian Journal of Aquatic Biology & Fisheries, 25(3). <https://doi.org/10.21608/ejabf.2021.173117>.
- Khanal, M. Lamichhane, S. Bhattarai, A. Kayastha, B. L. & Labh, S. N. 2021. Extract of aloe vera (*Aloe barbadensis* Miller) enhances the growth, protein contents, and gastrosomatic index (GaSI) of common carp (*Cyprinus carpio*). Journal of Nutrition and Metabolism. <https://doi.org/10.1155/2021/8029413>.
- Ngoc, K. T. T., Huynh, S. T., Sendao, J., Nguyen, T. H. Roem, A. J., Verreth, J. H. & Schrama, J. W. 2019. Environmental conditions alter the effect of organic acid salts on digestibility and intestinal morphology in nile tilapia (*Oreochromis niloticus*). Aquaculture Nutrition. <https://doi.org/10.1111/anu.12837>.
- Koh, C. B. N., Romano, A. S. Zahrah. & Ng, W. K. 2016. Effects of a dietary organic acids blend and oxytetracycline on the growth, nutrient utilization and total cultivable gut microbiota of the red hybrid tilapia, (*Oreochromis* sp.) and resistance to (*Streptococcus agalactiae*). Aquaculture Research 47:357–369. <https://doi.org/10.1111/are.12492>.
- Komariyah, S., Suprayudi, M. A. & Jusadi, D. 2014. Preliminary study of rubber seed (*Hevea brasiliensis*) oil utilization for tilapia diet. Jurnal Akuakultur Indonesia, 13(1), pp.61-67. <https://doi.org/10.19027/jai.13.61-67>.
- Kurniawan, D., Santosa. & Andasuryani. 2016. Karakteristik tepung rumput laut (*Eucheuma cottonii*). In Proceeding National Conference of Applied Sciences, Engineering Business, and Information Technology 2016(pp. 346-361). Padang, Indonesia: Politeknik Negeri Padang.
- Lestari, D. F. 2021. Hematological analysis of (*Oreochromis niloticus*) and (*Clarias* sp.) cultivated in integrated fish farming. In 3rd KOBI Congress, International and National Conferences (KOBICINC 2020) (pp. 246-251). Atlantis Press. <https://doi.org/10.2991/absr.k.210621.041>.
- Liu, J., Dias, K., Juan, E. P., Veron, V., Panserat, S. & Marandel, L. 2017. Long-term programming effect of embryonic hypoxia exposure and high-carbohydrate diet at first feeding on glucose metabolism in juvenile rainbow trout. Journal of experimental biology, 220(20), pp.3686-3694. <https://doi.org/10.1242/jeb.161406>.
- Maftuch, M. 2018. Hematological analysis of nile tilapia (*Oreochromis niloticus*) and striped catfish (*pangasius hypophthalmus*) using hematology analyzer tool software at fish breeding center Jojogan, Tuban, East Java. Research Journal of Life Science, 5(2), pp.107-115. <https://doi.org/10.21776/ub.rjls.2018.005.02.4>.
- Magouz, F. I., Din, M. T. S. E., Amer, A. A., Gewaily, M. S., Dahdoh, W. A. E. & Dawood, M. A. 2022. A blend of herbal essential oils enhanced the growth performance, blood bio-immunology traits, and intestinal health of nile tilapia

(*Oreochromis niloticus*). Annals of Animal Science, 22(2), pp.751-761. <https://doi.org/10.2478/aoas-2021-0066>.

Mahmoud, M. A., Tybussek, T., Loos, H. M., Wagenstaller, M. & Buettner, A. 2018. Odorants in fish feeds: a potential source of malodors in aquaculture. Frontiers in Chemistry, 6, 241. <https://doi.org/10.3389/fchem.2018.0241>.

Maji, B. & Choudhury, J. 2022. Reusable water-soluble homogeneous catalyst in aqueous-phase transfer hydrogenation of N-heteroarenes with formic acid: Uracil-based bifunctional Ir-NHC catalyst is the key. Applied Organometallic Chemistry, e6720. <https://doi.org/10.1002/aoc.6720>.

Makofane, V., Ng'ambi, J. W. & Gunya, B. 2022. The effect of citric acid supplementation on growth performance, digestibility and linear body measurement of ross 308 broiler chickens: a review. Indian Journal of Animal Research, 56(4), 387-391. <https://doi.org/10.18805/IJAR.BF-1433>.

Mallappa, V. K. H, Panigrahy, S. R., Nayak, A. K., Pundir, R. & Kumari, P. 2023. Factors influencing the knowledge level of fish consumers: an explanatory analysis. Sustainability, 15(13), 10183. <https://doi.org/10.3390/su151310183>.

Mehisan, M. S., Moghazy, G. M. E., Sayed, A. I. E., Iraqi, M. M. & Soltan, M. A. 2015. Role of probiotics in improving growth and immunity and controlling (*Aeromonas hydrophila*) in nile tilapia. Egyptian Journal of Aquatic Biology and Fisheries 19(4): 55–70. <https://doi.org/10.21608/ejabf.2015.2271>.

Mohammadian, T., Momeni, H., Mesbah, M., Tabandeh, M. R. & Khosravi, M. 2020. Effect of different levels of dietary acidifier "sodium diformat" on the innate immune system and expression of growth and immunological related genes in (*Salmo trutta caspius*). Aquac. Nutr. 25, 2074–2085. <https://doi.org/10.1111/anu.13148>.

Mohammady, E. Y., Goda, A. S. A. M., Mohamed, R. A. & Mohamed, M. S. 2015. Partial and total substitution of dietary fishmeal by conventional or genetically modified soybean meal with or without formic acid supplementation for (*Oreochromis niloticus*) fingerlings. Journal of Scientific Research in Science, 32(part 2), 337-359. <https://doi.org/10.21608/jsrs.2015.24872>.

Mombach, P. I., Adorian, T. J., Goulart, F. R., Martinelli, S. G., Dalcin, M. O., Veiverberg, C. A. & Silva, L. P. D. 2020. The effects of fermentable dietary fiber on performance and metabolism of nile tilapia (*Oreochromis niloticus*). Brazilian Archives of Biology and Technology, 63, e20190396.

Morales, G. A., Denstadli, V., Collins, S. A., Mydland, L. T., Moyano, F. J. & Overland, M. 2015. Phytase and sodium diformate supplementation in a plant based diet improves protein and mineral utilization in rainbow trout

(*Oncorhynchus mykiss*). Aquaculture Nutrition 22(6): 1301–1311. <https://doi.org/10.1111/anu.12340>.

Moushomi, R. & Saha, S. 2015. Landmark based shape variation of normal male, female and sex-reversed tilapia (*Oreochromis niloticus*) in Bangladesh. Progressive Agriculture, 26(2), 168-172.

Muahiddah, N. & Diamahesa, W. A. 2023. The use of immunostimulants from papaya leaves to treat disease and increase non-specific immunity in fish and shrimp. Journal of Fish Health, 3(1), 19-24. <https://doi.org/10.29303/jfh.v3i1.2755>.

Mulqan, M., Rahimi, E., Afdhal, S. & Dewiyanti, I. 2017. Pertumbuhan dan kelangsungan hidup benih ikan nila gesit (*Oreochromis niloticus*) pada sistem akuaponik dengan jenis tanaman yang berbeda (Doctoral dissertation, Syiah Kuala University).

Mulyani, Y. S., Yulisman. & Fitran, M. 2014. Pertumbuhan dan efisiensi pakan ikan nila (*Oreochromis niloticus*) yang dipuaskan secara periodik. Jurnal Akuakultur Rawa Indonesia, 2(1), 1-12. <https://doi.org/10.36706/jari.v2i1.1958>.

Munni, M. J., Akther, K. R., Ahmed, S., Hossain, M. A. & Roy, N. C. 2023. Effects of probiotics, prebiotics, and synbiotics as an alternative to antibiotics on growth and blood profile of nile tilapia (*Oreochromis niloticus*). Aquaculture Research, 2023. <https://doi.org/10.1155/2023/2798279>.

Nagano, M. S. & Batalini, C. 2021. Triagem fitoquímica, atividade antioxidante e potencial toxico das folhas de (*Azadirachta indica*) A. Juss (nim). Revista Colombiana de Ciencias Químico-Farmaceuticas, 50(1), pp.29-47.

Naseer, S., Hussain, S., Naeem, N., Pervaiz, M. & Rahman, M. 2018. The phytochemistry and medicinal value of (*Psidium guajava*) guava. Clinical phytoscience, 4(1), pp.1-8. <https://doi.org/10.1186/s40816-018-0093-8>.

Ng, W. K & Koh, C. B. 2017. The utilization and mode of action of organic acids in the feeds of cultured aquatic animals. Rev Aquac 9:342–368. <https://doi.org/10.1111/raq.12141>.

Nugroho, B. S. N. B. S. 2016. Kajian limbah padat pengolahan tepung tapioka (onggok) sebagai bahan apung pada komposisi pakan ikan lele (pelet). Jurnal Agronomika, 11(01), pp.1-9.

Nurhayu, A. & Warda, W. 2018. Pengaruh pemberian limbah sereh wangi hasil penyulingan minyak atsiri sebagai pakan ternak terhadap penampilan induk sapi Bali. Biocelebes, 12(3).

- Olapade, J. O. & Tarawallie, S. 2014. The length-weight relationship, condition factor and reproductive biology of pseudotolithus (P) senegalensis (*Valenciennes*, 1833) (croakers), in Tombo Western Rural District of Sierra Leone. African Journal of Food, Agriculture, Nutrition and Development, 14(6), pp.2176-2189. <https://doi.org/10.18697/ajfand.66.13855>.
- Ordonez, G. M., Cortez, B. L., Alvarez, D. A., Chanca, R. P., Julca, R. O. Y., Tamariz, J. V. & Debola, O. O. 2023. Halquinol and nanoencapsulated essential oils: A comparative study on growth performance, intestinal morphology and meat quality in broiler chickens. Scientia Agropecuaria, 14(4), 435-445. <https://doi.org/10.17268/sci.agropecu.2023.037>.
- Osman, A. G. M., Abouelfadl, K. Y., Reheem, A. E. B. M. A. E., Mahmoud, U. M., Kloas, W. & Moustafa. M. A. 2018. Blood biomarkers in Nile tilapia (*Oreochromis niloticus*) and African catfish (*Clarias gariepinus*) to evaluate water quality of the River Nile. Journal of Fisheries Sciences. 12 (1): 01-15.
- Ouedraogo, C. 2014. Analyse comparative, physiologique et moléculaire des effets de trois traitements masculinisants chez le tilapia du Nil, (*Oreochromis niloticus*), et recherche de marqueurs de traçabilité liés à ces approches (Doctoral dissertation, Université Montpellier II-Sciences et Techniques du Languedoc).
- Pan, J., Zhu, Y., Abdel-Samie, M. A., Li, C., Cui, H. & Lin, L. 2023. Biological properties of essential oil emphasized on the feasibility as antibiotic substitute in feedstuff. Grain & Oil Science and Technology, 6(1), 10-23. <https://doi.org/10.1016/j.gaost.2022.11.001>.
- Panchal, P., Miller, A. J. & Giri, J. 2021. Organic acids: versatile stress-response roles in plants. Journal of Experimental Botany, 72(11), 4038-4052. <https://doi.org/10.1093/jxb/erab019>.
- Menacho, L. M. P., Reyes, R. S., Sanchez, J. G., Robles, J. C. & Rojo, C. M. 2015. Estudio comparativo de las características físicas-químicas del aceite de sacha inchi (*Plukenetia volubilis* L.), aceite de oliva (*Olea europaea*) y aceite crudo de pescado. Scientia Agropecuaria, 6(4), pp.279-290. <https://doi.org/10.17268/sci.agropecu.2015.04.05>.
- Poolsawat, L., Yu, Y., Li, X., Zhen, X., Yao, W., Wang, P., Luo, C. & Leng, X. 2022. Efficacy of phytogenic extracts on growth performance and health of tilapia (*Oreochromis niloticus* × *O. aureus*). Aquaculture and Fisheries, 7(4), pp.411-419. <https://doi.org/10.1016/j.aaf.2020.08.009>.
- Prabu, E., Rajagopalsamy, C. B. T., Ahilan, B., Jeevagan, I. J. M. A. & Renuhadevi, M. 2019. Tilapia – an excellent candidate species for world aquaculture: a review. Annual Research & Review in Biology, Vol 31(3): 1-14. <https://doi.org/10.9734/arrb/2019/v31i330052>.

- Pradisty, N. A., Mardatilah, Siwi, W. E. R. & Surana, I. N. 2017. Variabilitas parameter lingkungan (suhu, nutrien, klorofil-A, TSS) di Perairan Teluk Tolo, Sulawesi Tengah saat musim timur. In Prosiding Seminar Tahunan Hasil Penelitian Perikanan dan Kelautan VI (pp. 515-528). Semarang, Indonesia: Fakultas Perikanan dan Ilmu Kelautan, Universitas Diponegoro.
- Putra, W. K. A., Yulianto, T., Miranti, S., Zulpikar, & Ariska, R. 2020. Tingkat kematangan gonad, gonadosomatik indeks dan hepatosomatik indeks ikan sembilang (*Plotus* sp.) Jurnal Ruaya, 8(1), 1–9.
- Rahayuningtyas, A., Sagita, D. & Susanti, N. D. 2023. Rancang bangun sistem monitoring dan kontrol pH air untuk budidaya ikan lele. Agrointek: Jurnal Teknologi Industri Pertanian, 17(1), pp.97-105. <https://doi.org/10.21107/agrointek.v17i1.14129>.
- Raiisy, M., Farsani, H. G., Hoseinifar, S. H., Haroun, E. R. E., Naserabad, S. S. & Van Doan, H. 2022. The effect of dietary combined herbs extracts (oak acorn, coriander and common mallow) on growth, digestive enzymes, antioxidant and immune response, and resistance against (*Aeromonas hydrophila*) infection in common carp (*Cyprinus carpio*). Aquaculture, 546, p.737287. <https://doi.org/10.1016/j.aquaculture.2021.737287>.
- Raja, N., Karuppiah, H., Easwaran, M., Shin, H. J. & Ahn, J. 2022. Herbal biomedicines as immunostimulants and immunosuppressors in fish. In Aquaculture Science and Engineering (pp. 497-516). Singapore: Springer Nature Singapore. https://doi.org/10.1007/978-981-19-0817-0_18.
- Rastiannasab, A., Afsharmanesh, S., Rahimi, R. & Sharifian, I. 2016. Alterations in the liver enzymatic activity of common carp (*Cyprinus carpio*) in response to parasites, (*Dactylogyrus* sp.) and (*Gyrodactylus* sp.) Journal of Parasitic Diseases, 40, pp.1146-1149. <https://doi.org/10.1007/s12639-014-0638-9>.
- Reda, R. M., Murr, A. E., Elhakim, Y. A. & Shahat, W. W. E. 2021. (*Aeromonas veronii*) detection in Egyptian fish farms with summer tilapia mortality outbreaks and the role of formic acid in limiting its spread. Aquac. Res. 53, 940–956. <https://doi.org/10.1111/are.15635>.
- Reda, R. M., Mahmoud, R., Selim, K. M., & Araby, I. E. E. 2016. Effects of dietary acidifiers on growth, hematology, immune response and disease resistance of Nile tilapia (*Oreochromis niloticus*). Fish & shellfish immunology, 50, pp.255-262. <https://doi.org/10.1016/j.fsi.2016.01.040>.
- Neto, R. V. R., Oliveira, C. A. L. D., Ribeiro, R. P., Freitas, R. T. F. D., Allaman, I. B. & Oliveira, S. N. D. 2017. Genetic differences between sexes for morphometric traits of gift tilapia. Aquaculture research, 48(3), 1251-1259. <https://doi.org/10.1111/are.12966>.

- Oliveira, C. G. D., Olmeda, J. F. L., Costa, L.S., Santo, A. H. D. E., Santos, F. A. C. D., Luz, R. K. & Ribeiro, P.A.P. 2022. Gastrointestinal emptying and daily patterns of activity of proteinolytic enzymes in nile tilapia (*Oreochromis niloticus*). Aquaculture, 546, p.737338. <https://doi.org/10.1016/j.aquaculture.2021.737338>.
- Rizky, P. N., Aisy, W. R. & Primasari, K. 2022. Budidaya ikan nila jatimbulan (*Oreochromis* sp.) dengan sistem semi intensif. *Chanos Chanos*, 20(2), 69-76. <https://doi.org/10.15578/chanos.v20i2.11846>.
- Robisalmi, A., Alipin, K. & Gunadi, B. 2021. Effect of different feed restrictions on growth, biometric, and hematological response of juvenile red Tilapia (*Oreochromis* sp). *Jurnal Ilmiah Perikanan dan Kelautan*, 13(2), pp.243-254. <https://doi.org/10.20473/jipk.v13i2.26302>.
- Rocha, F., Dias, J., Geurden, I., Dinis, M. T., Panserat, S. & Engrola, S. 2016. Dietary glucose stimulus at larval stage modifies the carbohydrate metabolic pathway in gilthead seabream (*Sparus aurata*) juveniles: an in vivo approach using ¹⁴C-starch. *Comparative Biochemistry and Physiology Part A: Molecular & Integrative Physiology*, 201, pp.189-199. <https://doi.org/10.1016/j.cbpa.2016.07.016>.
- Rusydi, R., Hartami, P. & Khalil, M. 2017. Nutrition characteristic and stability of feed combination from tofu waste and fish pellet. *Acta Aquat*, 4(1), pp.4-7.
- Saad, M., Shaleh, F. R., Rahayu, A. P. & Fanni, N. A. 2022. Effect of Different pH on embryogenesis and hatching rate of srikandi strain tilapia eggs (*Oreochromis aureus* X *Oreochromis niloticus*) in Incubator. *Indonesian Journal of Limnology*, 3(2), 86-94.
- Samaddar, A., Nispen, J. V., Armstrong, A., Song, E., Voigt, M., Murali, V. & Jain, A. K. 2022. Lower systemic inflammation is associated with gut firmicutes dominance and reduced liver injury in a novel ambulatory model of parenteral nutrition. *Annals of Medicine*, 54(1), 1701-1713. <https://doi.org/10.1080/07853890.2022.2081871>.
- Saparuddin, S., Yanti, Y., Salim, S. & Muhammad, H. 2020. Hematological response of tilapia (*Oreochromis niloticus*) in laundry wastewater. *Biogenesis: Jurnal Ilmiah Biologi*, 8(1), 69-78. <https://doi.org/10.24252/bio.v8i1.13137>.
- Saputra, D. R., Kurtini, T., & Erwanto, D. 2016. Pengaruh penambahan feed aditif dalam ransum dengan dosis yang berbeda terhadap bobot telur dan nilai haugh unit (HU) telur ayam ras. *Jurnal Ilmiah Peternakan Terpadu*, 4(3): 230–236.
- Sardar, P., Shamna, N. & Sahu, N. P. 2020. Acidifiers in aquafeed as an alternate growth promoter: A short review. *Anim. Nutr. Feed. Technol.* 20, 353–366. <https://doi.org/10.5958/0974-181X.2020.00032.3>.

- Sari, M. R., Windarti, & Heltonika, B. 2017. Manipulasi fotoperiod untuk memacu perkembangan gonad ikan selais (*Ompok hypophthalmus*). Berkala Perikanan Terubuk. 73-74. <https://doi.org/10.31258/terubuk.45.1.112%20-%20124>.
- Sarjito, Prayitno, S. B., Rochani, N. Q. S., Haditomo, A. H. C., Amalia, R. & Desrina. 2020. Potensi epibiotik campuran ekstrak daun binahong (*Anredera cordifolia*) dan temulawak (*Curcuma zanthorrhiza*) pada pakan untuk mengatasi infeksi (*Aeromonas hydrophila*) pada ikan lele (*Clarias gariepinus*). Saintek Perikanan: Indonesian Journal of Fisheries Science and Technology. 6(1): 52-58. <https://doi.org/10.14710/ijfst.16.1.51-58>.
- Sembiring, A. Y., Hendrarto, B. & Solichin, A. 2015. Eel (*Anguilla bicolor*) respond toward artificial food in laboratory scale. Journal of Maquares 4 (1): 1-8. <https://doi.org/10.14710/marj.v4i1.7809>.
- Shah, S. Z. H., Muhammad Afzal, M. A., Khan, S. Y., Hussain, S. M. & Habib, R. Z. 2015. Prospects of using citric acid as fish feed supplement.
- Shahin, K. & Adams, A. 2022. Francisellosis in tilapia and other warmwater fish. In Aquaculture Pathophysiology (pp. 379-393). Academic Press. <https://doi.org/10.1016/B978-0-12-812211-2.00029-9>.
- Shendurse, A. M., Sangwan, R. B., Kumar, A., Ramesh, V., Patel, A. C., Gopikrishna, G. & Roy, S. K. 2021. Phytochemical screening and antibacterial activity of lemongrass (*Cymbopogon citratus*) leaves essential oil. Journal of Pharmacognosy and Phytochemistry, 10(2), 445-449.
- Shi, Y., Pu, D., Zhou, X. & Zhang, Y. 2022. Recent progress in the study of taste characteristics and the nutrition and health properties of organic acids in foods. Foods, 11(21), 3408. <https://doi.org/10.3390/foods11213408>.
- Shofura, H., Suminto. & Chilmawati, D. 2017. Pengaruh penambahan "probio-7" pada pakan buatan terhadap efisiensi pemanfaatan pakan, pertumbuhan dan kelulushidupan benih ikan nila gift (*Oreochromis niloticus*). Jurnal Sains Akuakultur Tropis, 1(1), 10-20. <https://doi.org/10.14710/sat.v1i1.2459>.
- Sihombing, P. C. 2018. Pengaruh perbedaan suhu air terhadap kelangsungan hidup benih ikan nila (*Oreochromis niloticus*). Repositori Institusi USU.
- Silva, E. M. P. D. & Oliveira, R. H. F. 2017. Physiological responses of lambari *Astyanax altiparanae* (Garutti & Britski 2000) to air exposure. Aquaculture Research, 48(6), pp.3268-3271. <https://doi.org/10.1111/are.13018>.
- Silva, B. C., Soria, H. N., Barajas, F. M., Cerecedo, R. C., Hernandez, R. C. & Seiffert, W. 2016. Improved digestion and initial performance of whiteleg shrimp using organic salt supplements. Aquaculture Nutrition 22:997–1005. <https://doi.org/10.1111/anu.12315>.

- Simanjuntak, S. B. I., Indarmawan, I. & Wibowo, E. S. 2018. Impact of fed containing different levels of diets supplementation Spirulina platensis on growth, haematological, body composition and biochemical parameters, of Gurami (*Oosphronemus gouramy*). Turkish Journal of Fisheries and Aquatic Sciences. 18: 681-690.
- Simanjuntak, M., Siregar, R. & Wanna, C. 2017. Studi pengaruh beberapa jenis pakan terhadap pertumbuhan dan sintasan ikan nila (*Oreochromis niloticus*). Jurnal Samudra Akuatika. 1 (2).
- Sinaga, M. A., Andriani, Y., Hasan, Z., Hamdani, H. & Subhan, U. 2020. The effect of stocking density on survival rate of siamese catfish (*Pangasianodon hypophthalmus*) fry in recirculation system. Asian Journal of Fisheries and Aquatic Research, 7(4), pp.8-14. <https://doi.org/10.9734/ajfar/2020/v7i430124>.
- Singh, S. K., Kaldate, R. & Bisht, A. 2022. Citric acid, antioxidant effects in health. Elsevier. In Antioxidants Effects in Health (pp. 309-322). <https://doi.org/10.1016/B978-0-12-819096-8.00045-8>.
- Singh, S. K., Bhandari, M. P. & Timalsina, P. 2020. Effect of dietary inclusion of citric acid with phytase as supplement on growth responses of rainbow trout. Turkish Journal of Agriculture-Food Science and Technology, 8(11), 2355-2360. <https://doi.org/10.24925/turjaf.v8i11.2355-2360.3574>.
- Soethe, G. C. 2014. Aproveitamento da massa visceral da tilápia (*Oreochromis niloticus*) para producao de biogas.
- Soltan, M. A., Hassaan, M. S. & Meshrf, R. N. 2017. Response of nile tilapia (*Oreochromis niloticus*) to diet acidification: effect on growth performance and feed utilization. Journal of applied aquaculture, 29(3-4), 207-219. <https://doi.org/10.1080/10454438.2017.1357063>.
- Song, Y., Durante, H. A., Cassy, S. S., Marandell, L. & Panserat, S. 2019. Higher glycolytic capacities in muscle of carnivorous rainbow trout juveniles after high dietary carbohydrate stimulus at first feeding. Nutrition & metabolism, 16, pp.1-14. <https://doi.org/10.1186/s12986-019-0408-x>.
- Souza, E. M. D., Souza, R. C. D., Melo, J. F., Costa, M. M. D., Souza, S. A. D., Souza, A. M. D., & Copatti, C. E. 2020. Cymbopogon flexuosus essential oil as an additive improves growth, biochemical and physiological responses and survival against (*Aeromonas hydrophila*) infection in nile tilapia. Anais da Academia Brasileira de Ciencias, 92(suppl 1), e20190140. <https://doi.org/10.1186/s12986-019-0408-x>.
- Stratev, D., Zhelyazkov, G., Noundou, X. S. & Krause, R. W. 2018. Beneficial effects of medicinal plants in fish diseases. Aquaculture International, 26, pp.289-308. <https://doi.org/10.1007/s10499-017-0219-x>.

Sulaswatty. & Adilina. 2019. Serai wangi dan potensinya. Lembaga Ilmu Pengetahuan Indonesia.

Sulawesty, F., Tjandra, C. & Endang, M. 2014. Laju pertumbuhan ikan mas (*Cyprinus carpio* L.) dengan pemberian pakan lemna (*Lemna perpusilla* Torr) segar pada kolam sistem aliran tertutup. Jurnal Limnotek, 21(2), 177-184. <https://doi.org/10.14203/limnotek.v21i2.10>.

Suryaningrum, L. H. & Samsudin, R. 2020. Nutrient digestibility of green seaweed (*Ulva* sp.) meal and the influence on growth performance of nile tilapia (*Oreochromis niloticus*). Emirates Journal of Food and Agriculture, 488-494.

Sutili, F. J., Gatlin III, D. M., Heinzmann, B. M. & Baldisserotto, B. 2018. Plant essential oils as fish diet additives: benefits on fish health and stability in feed. Reviews in Aquaculture, 10(3), 716-726. <https://doi.org/10.1111/raq.12197>.

Sutili, F. J., Velasquez, A., Pinheiro, C. G., Heinzmann, B. M., Gatlin , D. M. & Baldisserotto, B. 2016. Evaluation of (*Ocimum americanum*) essential oil as an additive in red drum (*Sciaenops ocellatus*) diets. Fish & shellfish Immunology ,56, 155-161. <https://doi.org/10.1016/j.fsi.2016.07.008>.

Syarif, A. F., Putri, D. F. A. & Robin, R. 2021. Induksi maturasi ikan seluang (*Rasbora einthovenii*) betina menggunakan hormon GnRH analog+ anti dopamin melalui pakan. Sains Akuakultur Tropis: Indonesian Journal of Tropical Aquaculture, 5(1), pp. 22-33. <https://doi.org/10.14710/sat.v5i1.10570>.

Syawal, H., Kurniawan, R., Effendi, I. & Austin, B. 2021. Fermented medicinal herbs improve hematological and physiological profile of striped catfish (*Pangasianodon hypophthalmus*). F1000 Research, 10. <https://doi.org/10.12688/f1000rese arch.52640.3>.

Trznadel, A. S. & Rzasa, A. 2023. Feed additives of bacterial origin as an Immun oprotective or immunostimulating factor—a review. Annals of Animal Science , 23(4), 1009-1020. <https://doi.org/10.2478/aoas-2023-0021>.

Thong, H. T. & Duc, H. V. 2022. Potential substitutes of antibiotics for swine and poultry production. In Antibiotics and Probiotics in Animal Food-Impact and Regulation. IntechOpen. <https://doi.org/10.5772/intechopen.106081>.

Thuong, H. N., Tran, T. L. N., Le, T. N. T. & Vo, V. T. 2022. Hematological parameters of red tilapia (*Oreochromis* sp.) fed lemongrass essential oil (*Cymbopogon citratus*) after challenge with (*Streptococcus agalactiae*). <https://doi.org/10.46989/001c.57781>.

Tian, H. Y., Zhang, D. D., Li, X. F., Zhang, C. N., Qian, Y. & Liu, W. B. 2015. Optimum feeding frequency of juvenile blunt snout bream (*Megalobrama amblycephala*). Aquaculture, 437, pp.60-66. <https://doi.org/10.1016/j.aquaculture.2014.11.032>.

- Ugbogu, E. A., Emmanuel, O., Dike, E. D., Agi, G. O., Ugbogu, O. C., Ibe, C. & Iweala, E. J. 2021. The phytochemistry, ethnobotanical, and pharmacological potentials of the medicinal plant (*Vernonia amygdalina* L) bitter Leaf. Clinical Complementary Medicine and Pharmacology, 1(1), p.100006. <https://doi.org/10.1016/j.ccmp.2021.100006>.
- Upadhyaya, S. D., Hossiendoust, A. & Kim, I. H. 2016. Probiotics in salmonella challenged hyline brown layers. Poultry Science. 95(7):1894-1897. <https://doi.org/10.3382/ps/pew106>.
- Utama, V. K., Nasution, A. Y., Hendrika, Y. & Safitri, H. 2023. Peningkatan kualitas minyak ikan patin (*Pangasius hypophthalmus*) dengan penambahan minyak sereh sebagai antioksidan. Jurnal Pendidikan dan Konseling (JPDK), 5(1), pp.4482-4486. <https://doi.org/10.31004/jpdk.v5i1.11718>.
- Verma, A. K. & Prakash, S. 2019. Impact of arsenic on haematology, condition factor, hepatosomatic and gastrosomatic index of a fresh water cat fish, (*Mystus vittatus*). International Journal on Biological Sciences. 10 (2): 49-54.
- Wagh, Y. B., Tayade, Y. A., Mahulikar, P. P. & Dalal, D. S. 2023. Citric Acid Promoted Green Synthesis of Bioactive Heterocycles. Current Green Chemistry, 10(1), 73-91. <https://doi.org/10.2174/2213346110666230102120527>.
- Wahyuningtyas, P., Sitasiwi, A. J. & Mardiati, S. M. 2018. Hepatosomatic index (HSI) dan diameter hepatosit mencit (*Mus musculus* L.) setelah paparan ekstrak air biji pepaya (*Carica papaya* L.). Jurnal Biologi, 7(1): 8-17.
- Wardhana, W. A. 2015. Dampak pencemaran lingkungan. Andi Offset, Yogyakarta.
- Wardoyo, S. T. H. 2015. Pengelolaan kualitas air. IPB. Bogor. 41 hal.
- Wijayanti, D., Kurniawan, V. R. B. & Susanto, D. 2019. Perancangan kemasan ramah lingkungan berbahan corugated dan penerapan sistem pemasaran daring pada produk jamu tradisional Kiringen. Abdimas Dewantara, 2(1), 45–52. <https://doi.org/10.30738/ad.v2i1.2888>.
- Wu, Y., Ren, X., Zhou, J., Lin, H., Wang, X. & Ma, H. 2018. Feed intake, growth, feed utilization, body composition and waste output of juvenile hybrid bream at different feeding frequencies. Aquaculture Nutrition, 25, 292–297. <https://doi.org/10.1111/anu.12852>.
- Wulanningrum, S., Subandiyono, S. & Pinandoyo, P. 2019. Pengaruh kadar protein pakan yang berbeda dengan rasio E/P 8, 5 kkal/g protein terhadap pertumbuhan ikan nila (*Oreochromis niloticus*). Sains Akuakultur Tropis: Indonesian Journal of Tropical Aquaculture, 3(2), 1-10. <https://doi.org/10.14710/sat.v3i2.3265>.

Xu, Y., Tan, Q., Kong, F., Yu, H., Zhu, Y., Yao, J. & Azm, F. R. A., 2019. Fish growth in response to different feeding regimes and the related molecular mechanism on the changes in skeletal muscle growth in grass carp (*Ctenopharyngodon idellus*). Aquaculture, 512, p.734295. <https://doi.org/10.1016/j.aquaculture.2019.734295>.

Ye, J. D., Chen, J. C. & Wang, K. 2016. Growth performance and body composition in response to dietary protein and lipid levels in Nile tilapia (*Oreochromis niloticus* Linnaeus, 1758) subjected to normal and temporally restricted feeding regimes. Journal of Applied Ichthyology, 32(2), 332-338. <https://doi.org/10.1111/jai.13004>.

Yong, A. S. K., Ooi, S., Shapawi, R., Biswas, A. K. & Kenji, T. 2015. Effects of dietary lipid increments on growth performance, feed utilization, carcass composition and intraperitoneal fat of marble goby (*Oxyeleotris marmorata*) juveniles. Turkish Journal of Fisheries and Aquatic Sciences, 15(3), pp.653-660.

Yulisperius. 2014. Nutrisi ikan. PT. Raja Grafindo Persada. Depok.

Yulianto, T. 2018. Uji stabilitas, daya apung dan warna serta aroma pada pelet yang berbeda. Dinamika Maritim, 6(2), pp.5-8.

Yusuff, A. & Soyinka, O. O. 2016. Haematology and proximate composition of nile tilapia (*Oreochromis niloticus*) reared on the farm and from the wild. Nigerian Journal of Life Sciences (ISSN: 2276-7029), 6(2), 130-136. <https://doi.org/10.52417/njls.v6i2.333>.

Zahaby, M. A., Shalaby, A. M., Rahman, G. F. A. E. & Ayyat, M. S. A. 2017. Impact of water quality on the blood parameters of nile tilapia in different fish farms. Zagazig Journal of Agricultural Research, 44(2), 571-581. <https://doi.org/10.21608/zjar.2017.53875>.

Zahra, A., Sakinah, S. & Putri, B. 2019. Pengaruh feeding rate (FR) yang berbeda terhadap pertumbuhan dan tingkat kelulusidupan benih ikan nila (*Oreochromis niloticus*) yang dipelihara dengan sistem bioflok. Jurnal Akuakultur Rawa Indonesia, 7(2), pp.86-98.

Zang, L., Shimada, Y., Nishimura, Y., Tanaka, T. & Nishimura, N. 2015. Repeated blood collection for blood tests in adult zebra fish. J. Vis. Exp. (102), e53272. <https://doi.org/10.3791/53272>.

Zayat, A. M. A. 2019. Effect of different levels of citric acid as supplementation on growth performance, feed utilization, body composition, water quality, and blood profile of monosex male nile tilapia (*Oreochromis niloticus*) fingerlings. Egyptian Journal of Aquatic Biology and Fisheries, 23(3), 611-624. <https://doi.org/10.21608/ejabf.2019.63104>.

- Zeitoun, M., Azrak, K. E., Zaki, M., Allah, B. & Mehana, E. 2017. Consequences of environmental stressors on hematological parameters, blood glucose, cortisol and phagocytic activity of nile tilapia fish. *Journal of Agriculture and Ecology Research International*, 10(3), 1-11. <https://doi.org/10.9734/JAERI/2017/29133>.
- Zeng, H., Cheng, C., Xie, Y., McClements, D. J., Zhang, L., Wu, X., Gao, H., Liu, W., Zou, L. & Wei, L. 2023. Encapsulation of propionic acid within the aqueous phase of water-in-oil emulsions: reduced thermal volatilization and enhanced gastrointestinal stability. *Food & Function*, 14(12), 5716-5727. <https://doi.org/10.1039/D2FO04076J>.
- Zhao, S., Han, D., Zhu, X., Jin, J., Yang, Y. & Xie, S. 2016. Effects of feeding frequency and dietary protein levels on juvenile allogynogenetic gibel carp (*Carassius auratus gibelio*) var. CAS III: growth, feed utilization and serum free essential amino acids dynamics. *Aquaculture Research*, 47, 290–303. <https://doi.org/10.1111/are.12491>.
- Zhu, Y., Ding, Q., Chan, J., Chen, P. & Wang, C. 2015. The effects of concurrent supplementation of dietary phytase, citric acid and vitamin D3 on growth and mineral utilization in juvenile yellow catfish (*Pelteobagrus fulvidraco*). *Aquaculture* 436, 143–150. <https://doi.org/10.1016/j.aquaculture.2014.11.006>.
- Zulkhasyni, A. & Utami, R. 2017. Pengaruh dosis pakan pelet yang berbeda terhadap pertumbuhan ikan nila (*Oreochromis sp*). *Jurnal Agroqua*. Vol 15.