Milkfish (*Chanos chanos*)

Milkfish (*Chanos chanos*) is a warm-water, euryhaline, and benthopelagic species that can thrive in both freshwater and marine environments, tolerating a wide range of temperatures between 15 and 43°C. Milkfish is highly regarded in aquaculture for its fast growth rate, efficient use of natural food sources, herbivorous feeding habits, disease resistance, and adaptability to various environmental conditions (Jana et al., 2006). Historically, milkfish farming has been an integral part of Southeast Asian culture, with traditional practices relying on tidal ponds and brackish water lagoons. In 2019, global aquaculture production of milkfish reached 573,000 tonnes, with the majority of production originating from the Asia-Pacific region. The Philippines (296,900 tonnes), Indonesia (98,850 tonnes), and Taiwan (62,623 tonnes) were the top three producers (FAO, 2021).

Milkfish can be cultivated using various aquaculture systems such as ponds, pens, and cages. Among these, pond culture is the most widely practiced globally (PCAARRD, 2012). Production systems are categorized based on stocking density, feeding strategies, and water management into four levels: extensive, modified extensive, semi-intensive, and intensive. In extensive systems, milkfish rely primarily on natural food sources like plankton, algae, and small crustaceans, with minimal infrastructure (e.g., aeration or pumping) used. Stocking densities range from 1,000 to 3,000 juveniles per hectare, yielding 0.5 to 1 tonne per hectare per cycle. Semi-intensive systems use a combination of natural food and supplemental feeding, with stocking densities of 8,000 to 12,000 fish per hectare and production levels of 1.5 to 3.5 tonnes per hectare per cycle.

Intensive pond culture is characterized by higher stocking densities (more than 20,000 fish per hectare) and the use of aeration, pumping, and feeding to support higher biomass. Production in intensive systems can exceed 4 tonnes per hectare per cycle. Intensive farming is also practiced in marine pens and cages. Stocking densities in fish pens range from 5 to 20 fish per square meter, while floating stationary cages hold 10 to 30 fish per cubic meter. Offshore cages support higher densities, with 35 to 100 fish per cubic meter, and milkfish are fed exclusively on commercial feeds. During the grow-out period, milkfish require a high-protein diet (30–40%) with relatively low lipid levels (5–10%) (Tacon & Metian, 2008).

Milkfish is usually harvested at 200 to 300 grams, which typically takes 6 to 8 months. After harvest, milkfish can be sold fresh or processed into products like smoked, dried, or canned fish. In regions such as the Philippines, milkfish is a popular food fish and a key source of protein. It also provides significant livelihood opportunities for coastal communities. The average farm-gate price of milkfish in the Philippines was approximately PHP 100/kg (USD 2/kg) in 2020 (Philippine Statistics Authority, 2020).

Despite its established role in aquaculture, milkfish farming faces challenges such as environmental degradation of coastal ecosystems, fluctuating market prices, and disease outbreaks that can affect production efficiency. The availability of affordable, sustainable feeds remains a critical issue, with continued reliance on fish meal and fish oil raising concerns about environmental sustainability (Tacon & Metian, 2008). However, the sector holds significant potential for growth, with advances in breeding, nutrition, and disease management. The development of cost-effective, sustainable feeds and improved water management practices can further enhance production. As demand for affordable, protein-rich fish rises, milkfish continues to be a vital species for food security in Southeast Asia.

References:

1. Food and Agriculture Organization of the United Nations (FAO). (2021). Fishery and Aquaculture Statistics. Retrieved from http://www.fao.org/fishery/statistics/global-production/en
2. Jana, S.N., Garg, S.K. and Patra, B.C., 2006. Effect of inland water salinity on growth performance and nutritional physiology in growing milkfish, Chanos chanos (Forsskal): field and laboratory studies. *Journal of Applied Ichthyology*, *22*(1), pp.25-34.
3. Philippine Council for Agriculture, Aquatic, and Natural Resources Research and Development (PCAARRD). (2012). Milkfish (Chanos chanos) Culture in the Philippines. Retrieved from https://www.pcarrd.dost.gov.ph/home/portal/index.php/quick-information-dispatch/3217-milkfish-chanos-chanos-culture-in-the-philippines
4. Tacon, A. G. J., & Metian, M. (2008). Global overview on the use of fish meal and fish oil in industrially compounded aquafeeds: trends and future prospects. Aquaculture, 285(1-4), 146-158.
5. Philippine Statistics Authority. (2020). Fisheries Situation Report. Retrieved from https://psa.gov.ph/sites/default/files/Fisheries%20Situation%20Report%20-%20June%202020.pdf