

TECHNICAL DATA SHEET

Section A: **General** Information about Mariculture

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| <h3>A.1</h3> | <h4>Aquaculture</h4> | <p>Aquaculture: is the cultivation of aquatic organisms including both freshwater and marine plants and animals. Three types of aquaculture or water cultivation can be differentiated: freshwater, land-based ponds, and open sea.</p> |
| <h3>A.2</h3> | <h4>Mariculture</h4> | <p>Mariculture: is a specialized branch of aquaculture involved in the cultivation of marine organisms for food production or other products in the open sea, a closed section of the ocean, or in tanks, ponds filled with seawater.</p> <ul style="list-style-type: none"> • Example: Cultivation of marine fish, including fish and shellfish, for example, shrimp or oysters, and algae in saltwater ponds. • Non-food products produced by mariculture include: fishmeal, nutrient agar, jewelry (cultured pearls), and cosmetics. |
| <h3>A.3</h3> | <h4>Global Context (FAO, 2020).</h4> | <p>In 2018, the global production of aquaculture products, including mariculture, reached 114.5 million tons, the highest volume observed in the last 30 years, according to FAO statistics.</p> <p>It is estimated that about 80% comes from continental aquaculture and the remaining 20% from coastal and marine aquaculture. Of these activities, about three-quarters constitute the production of aquatic animals, within which fin-fish, mollusks, and crustaceans dominate; while the other quarter corresponds to species such as aquatic algae (mainly marine), ornamental shells, and pearls.</p> <p>The development of aquaculture has contributed to improving nutrition and food security in many regions, as an alternative to marine overexploitation and a mechanism for the development of relatively less developed areas, especially coastal zones.</p> <p>Fish farming allows greater control over production processes than capture fisheries, while favoring vertical and horizontal integration in production and supply chains. As a result, aquaculture has expanded the availability of fish to regions and countries that otherwise would not have access; even at low prices.</p> <p>China is the main producer, consumer, and exporter of aquaculture products. It is estimated that 72% of global production is generated in this country. Other relevant actors in global aquaculture production are Norway and Chile, with a relative participation of 6% each. The United States, on the other hand, accounts for 4% of the total production of fish and shellfish, which is mainly concentrated in oysters. However, it is the world's leading importer of fish.</p> |



A.4

Characteristics of Mariculture in Costa Rica

a) Costa Rica, similarly to the Mesoamerican and Caribbean region, has comparatively very large sea extensions relative to its land area. In the Pacific, the country has more than 1,000 km of coastline and 11 times the land area in territorial and patrimonial sea. In fact, the country borders Colombia and Ecuador by sea. On a smaller scale, the Caribbean has 212 km of coastline and a patrimonial sea of a size similar to the entire land extension. Additionally, these seas are characterized by an almost absence of hurricanes, although of course, there are areas and times with strong currents, rough sea, and aggressive climate. The majority of the seafood consumed in the country comes from fishing in the Pacific, particularly in the Gulf of Nicoya (Una-Jica-Incopesca 2005).

b) The most experience in Costa Rica in this marine activity has been developed in small and large-scale projects in the cultivation of snapper, shrimp, and oysters. In Costa Rica, mariculture began with shrimp farming in the Chomes area, and then expanded towards Parrita and Quepos.

c) By the end of 2019, 619 tons were produced under this modality, of which 98% corresponded to snapper and a very small proportion to oyster production.

d) The United States is the destination for 82% of the exports from the fishing sector, a trade that is mainly concentrated in three varieties: tilapia, snapper, and tuna, fresh, refrigerated, or frozen.

A.5

Sistemas productivos Maricultura en Costa Rica (Radulovich, 2008).

These production systems can vary greatly in terms of scale and technological level, ranging from rustic planting of juvenile bivalves in bags a few meters off the coast, to the most sophisticated large offshore floating cages that can contain thousands of fish in a technified and automated fattening process, including treatments with biocides and genetic manipulation.

The main production systems in Costa Rica are cages, tanks, ponds, or other enclosures for fattening more mobile animals such as fish, shrimp, and crustaceans. There are several methods for cultivating mollusks ranging from floating bags or lanterns to simply growing them tied or glued to ropes or pieces of wood, or sown on the bottom.

Specifically, land-based pond production uses seawater in natural or artificial ponds on land, taking advantage of the tides or pumping the water and then returning it after use. Although this type of mariculture is used worldwide for a variety of species, including herbivorous fish like tarpon, in Costa Rica, as in several other countries of the American tropics, it has been widely developed for the semi-intensive cultivation of shrimp in artificial land ponds.

SOURCES:

The references provided are:

Food and Agriculture Organization (FAO). 2020. *The State of World Fisheries and Aquaculture 2020. Sustainability in Action*. Available at: <https://doi.org/10.4060/ca9229es>

Organisation for Economic Co-operation and Development (OECD). 2019. *Key findings and recommendations from the assessment of dam and aquaculture policies in Costa Rica by the OECD Fisheries Committee*.

Radulovich, R. 2008. *Open-sea Mariculture in Costa Rica*. 14p.