# Aquaculture in India

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**Carp**

Carp farming in the country started between 1970 and 1980 due to the demonstrated high production levels of 8 to 10 tonnes/hectare/year in an incubation center. Late 1980s saw the dawn of aquaculture in India and transformed fish culture into a more modern enterprise. With the economic liberalization of the early 1990s, fishing industry got a major investment boost.[5]

India's breeding and culture technologies include primarily different species of carp, including the important Indian major carp species (notably catla, mrigal and rohu); other species such as catfish, murrel and prawns are recent additions. The culture systems adopted in the country vary greatly depending on the input available in any particular region as well as on the investment capabilities of the farmer. While extensive aquaculture is carried out in comparatively large water bodies with stocking of the fish seed as the only input beyond utilising natural productivity, elements of fertilisation and feeding have been introduced into semi-intensive culture. The different culture systems in Indian practice include:[6]

- Intensive pond culture with supplementary feeding and aeration (10–15 tonnes/ha/yr)
- Composite carp culture (4–6 tonnes/ha/yr)
- Weed-based carp polyculture (3–4 tonnes/ha/yr)
- Integrated fish farming with poultry, pigs, ducks, horticulture, etc. (3–5 tonnes/ha/yr)
- Pen culture (3–5 tonnes/ha/yr)
- Cage culture (10–15 kg/$m^2$/yr)
- Running-water fish culture (20–50 kg/$m^2$/yr)

**Prawn or shrimp**

Freshwater prawn farming in India has grown rapidly since 2000 with Andhra Pradesh and Kerala contributing to approximately 60 percent of the total water area dedicated to prawn farming, followed by West Bengal.[6] In fiscal 2016, India became the biggest exporter of shrimps by overtaking Vietnam. Frozen shrimp is the top item of export among seafood, accounting for 38.28 per cent in quantity and 64.50 per cent of the total earnings in dollar terms in 2016–17. The overall export of shrimp during 2016-17 was pegged at 434,484 MT, worth US$3.726 billion. USA was the largest import market for frozen shrimp (165,827 MT), followed by the European Union (EU) (77,178 MT), South East Asia (1,05,763

MT), Japan (31,284 MT), Middle East (19,554 MT), China (7,818 MT) and other countries (27,063 MT). Shrimp exports from India are expected to nearly double to US$7 billion by 2022, driven by strong demand, high quality, improved product mix, and an increase in aquaculture area in Andhra Pradesh, Kerala, Gujarat, Odisha and West Bengal.[26][27]

The giant tiger prawn (*Penaeus monodon*) is the dominant species chosen for aquaculture, followed by the Indian white prawn (*Fenneropenaeus indicus*) and Pacific white shrimp (*Litopenaeus vannamei).* In 2015–16, West Bengal (61,998 MT) was the largest producer of tiger shrimp for export, followed by Odisha (9,191 MT). Andhra Pradesh (295,332 MT) was the largest producer of Pacific white shrimp.[28]

**Freshwater aquaculture**[edit]

Freshwater aquaculture accounts for nearly 55% of the total fish production in India and Second Largest Producer of Inland fish in the world.[29][30] Aquaculture resources in India include 2.36 million hectares of ponds and tanks, 1.07 million hectares of *beels*, *jheels* and derelict waters plus in addition 0.12 million kilometers of canals, 3.15 million hectares of reservoirs and 0.72 million hectares of upland lakes that could be utilised for aquaculture purposes. Ponds and tanks are the prime resources for freshwater aquaculture in India. However, less than 10 percent of India's natural potential is used for aquaculture currently. For bringing more areas under scientific fisheries and aquaculture, the Indian government and premier fisheries research institutes are trying hard to sensitize the fish farmers and entrepreneurs regarding the package of practices and prospects of the highly promising 'culture-based fisheries technology (CBF)' in inland waters. Utilization of untapped inland waters through CBF is one of the foremost strategies for achieving blue revolution. CBF is generally practiced in inland waters having areas between 100 and 1000 ha (lakes, wetlands and small reservoirs) and cautiously in 1000–5000 ha (medium-sized reservoirs) [10]

**Brackishwater aquaculture**[edit]

The FAO of the United Nations estimates that about 1.2 million hectares of potential brackishwater area available in India is suitable for farming, in addition to this, around 8.5 million hectares of salt affected areas are also available, of which about 2.6 million hectares could be exclusively utilised for aquaculture due to the unsuitability of these resources for other agriculture based activities. However, just like India's fresh water resources, the total brackishwater area under cultivation is only just over 13 percent of the potential water area available. Carp hatcheries in both the public and private sectors have contributed towards the increase in seed production from 6321 million fry in 1985–1986 to over 18500 million fry in 2007. There are 35 freshwater prawn hatcheries in the coastal states producing over 200 million seed per annum. Furthermore, the 237 shrimp

hatcheries with a production capacity of approximately 11.425 billion post larvae per year are meeting the seed requirement of the brackish water shrimp farming sector.[6]

**Ornamental Fish**[edit]

India's domestic ornamental fish Industry is 300 crore rupees worth. In 2017, India exported ornamental fish worth Rs 9.5 crore, a 40% increase from the previous year.[31]

**Sea Weed**[edit]

Tamil Nadu is the largest producer of seaweed in India producing 22 thousand tonnes followed by Gujarat, Maharashtra and Lakshadweep. The red seaweed is the most cultivated variety of seaweed in India. In 2018 the Indian government set up 10,000 seaweeds culture units in Andhra Pradesh under the Central government's Blue Revolution scheme. [32]