Fisheries Science

Indian fisheries sector represents an economically important and fast-growing production sector and contributing significantly to the national economy in terms of food, nutrition, socio-economic development and providing livelihood to a large section of the society. Besides, meeting the domestic demand the sector has been substantially contributing to the foreign exchange earnings through export. The sector also generates business avenues and opportunities for number of subsidiary industries. Different resource-specific Fisheries Research Institutes of Indian Council of Agricultural Research (ICAR) have been instrumental for glorious history of the fisheries sector in the country.

The Indian fisheries sector has recorded consistent growth in fish production during the last four decades, reaching a new height of production of over 17.5 million tonnes. The technological advancement and developmental policies have shown large-scale adoption of fisheries and aquaculture activities in meeting domestic demand and export of fish & fishery products over US$ 8.0 billion. Inland fisheries sector is under the control of State Governments while marine sector is a shared responsibility between the Central and Coastal State Governments. Coastal States/UTs are responsible for development, management and regulation of fisheries in the marine waters.

The marine resources of the country comprise an EEZ of 2.02 million sq. km, a continental shelf area of 0.53 million sq. km and a coastline of 8,118 km. The marine fisheries potential in the Indian waters has been estimated at 5.31 million tonnes constituting mainly of demersal and pelagic fishery. With a thrust on development of breeding, seed production and grow-out technologies of finfishes, shrimps, oysters, mussels, crabs, lobsters, etc. avenues have opened of mariculture in the coastal states. Seaweed farming is one of the potential areas to be explored which is expected to open new avenues especially for women in coastal areas, provide source of income for economically-weaker sections of society among rural areas and promote entrepreneurship.

Brackishwater bodies have huge potential for both finfish and shellfish culture. The country possesses over 120 lakh ha of brackishwater/saline area for culturing valuable finfish/shellfish such as seabass, pearlspot, mullets, milkfish, shrimp etc. Further, salt-affected areas are widely spread in northern states such as Haryana, Punjab, Rajasthan and Uttar Pradesh, which are unsuitable for agriculture and is being presently used for brackishwater aquaculture.

The inland fisheries resources are comprised of 0.27 million km of rivers and canals, over 0.5 million ha floodplain lakes, over 2.4 million ha of ponds and tanks, over 3.1 million ha of reservoirs, vast coldwater fisheries resources located at medium to high altitudes of Himalayan corridor such as Jammu & Kashmir, Ladakh, Himachal Pradesh, Uttarakhand, West Bengal and all North-Eastern States in the hill areas for culture of different coldwater fishes.

Realising the potential of fisheries and aquaculture in the country, Indian Council of Agricultural Research (ICAR) has given due emphasis in establishing eight resource-specific research institutes and 30 regional research centres for supporting the fisheries sector. The fisheries and aquaculture sector has grown with an annual growth rate of 6-7% in the last four decades. Present fish production of the country is over 17.5 million tonnes, which is a 23-fold increment since independence. We are now 2nd largest fish producing country, 2nd largest aquaculture producer and 1st in shrimp export.

Fisheries Research Institutes and their centres are given as under:

Institutes

The Fisheries Science Division of ICAR coordinates and monitors the research and academic programmes in fisheries and aquaculture through eight fisheries research institutes viz., ICAR-Central Marine Fisheries Research Institute (CMFRI), Cochin; ICAR-Central Inland Fisheries Research Institute (CIFRI), Barrackpore; ICAR-Central Institute of Freshwater Aquaculture (CIFA), Bhubaneshwar; ICAR-Central Institute of Brackishwater Aquaculture (CIBA), Chennai; ICAR-Central Institute of Fisheries Technology (CIFT), Cochin; ICAR-Central Institute of Fisheries Education (CIFE), Mumbai; ICAR-National Bureau of Fish Genetic Resources

(NBFGR), Lucknow and ICAR-Directorate of Coldwater Fisheries Research (DCFR), Bhimtal.

The ICAR-CMFRI has its Headquarters in Kochi (Kerala) and possessing 11 research Centres located at Mandapam, Tuticorin, and Chennai (Tamil Nadu); Visakhapatnam (Andhra Pradesh); Veraval (Gujarat); Mangalore, and Karwar (Karnataka); Mumbai (Maharashtra); Vizhinzam (Kerala); and Digha (West Bengal). The institute deals with the estimation of marine fisheries landings and effort optimisation for the exploited stocks of finfish and shellfish; coastal mariculture; hatchery technologies for finfishes, shrimp, edible oyster, mussel and clams; culture of seaweeds; biodiversity; and climate change and several other aspects for India's marine fisheries development.

The ICAR- CIFRI has its Headquarters at Barrackpore (West Bengal) and possesses research centres at Allahabad (Uttar Pradesh); Bengaluru (Karnataka); Guwahati (Assam) and Vadodara (Gujarat). The Institute deals with management of inland openwaters viz., rivers, reservoirs, lakes and wetlands for sustainable fisheries management and conservation; culture-based fisheries; and enclosure aquaculture, etc.

The ICAR-CIBA has its headquarters in Chennai (Tamil Nadu) and possess two research centres at Kakdwip (West Bengal) in the east coast and Navsari (Gujarat) in the west coast. The institute deals with strategic research for sustainable brackishwater aquaculture including species and systems diversification; hatchery technologies for finfish and shellfish; nutrition and feed development; health management; and genetics improvement of finfish and shellfish species, etc.

The ICAR-CIFA has its Headquarters at Bhubaneshwar (Odisha) and four research centres at Rahara (West Bengal); Vijayawada (Andhra Pradesh); Bengaluru (Karnataka) and Bhatinda (Punjab). The institute deals with species and systems diversification in freshwater aquaculture; nutrition and feed development; health management; and genetic improvement programmes on selected commercially important species, etc.

The ICAR-CIFT has its Headquarters in Kochi (Kerala) and has three research centres at Veraval (Gujarat), Visakhapatnam (Andhra Pradesh) and Mumbai (Maharashtra). The institute deals with strategic research in

designing and developing energy-efficient fishing crafts; resource-specific fishing gears for responsible fishing; development of fisheries products and byproducts, etc.

The ICAR- CIFE, which is a deemed University has its Headquarters at Mumbai (Maharashtra) and has research centres at Kolkata (West Bengal); Balabhadrapuram and Kakinada (Andhra Pradesh); Rohtak (Haryana); and Motipur (Bihar). The Institute conduct post-graduate and doctoral programmes in fisheries and aquaculture in 11 disciplines; and other human resource development programmes. The institute is dedicated in developing and demonstrating shrimp farming technology in inland saline-waters of Haryana, Punjab, Rajasthan and Uttar Pradesh.

The ICAR-NBFGR has its Headquarters at Lucknow (Uttar Pradesh) and research centre at Kochi (Kerala). The institute deals with assessment, cataloguing, characterization and conservation of fish genetic resources. The institute also assesses the risks associated with exotic germplasm, and is engaged in fish health management including leading national programmes on disease surveillance and antimicrobial resistance.

The ICAR-DCFR has its Headquarters at Bhimtal (Uttarakhand) and deals with development of location-specific culture systems and breeding technologies for potential coldwater species; fish feeds and nutrition; fish health management, etc. The Directorate also works on open-water fisheries management of higher altitudes.