

Bangladesh Fisheries Research Institute: An Overview

The fish and fisheries are integral part of the culture and heritage of Bangladesh. The sector plays a significant role in nutrition, employment generation and foreign exchange earnings. Keeping in view of the immense potentials of the sector in providing better nutrition and job opportunities, particularly to the poorest of the poor, and the urgency for optimum scientific utilization of the aquatic heritage, the President of the Peoples' Republic of Bangladesh was pleased to promulgate an Ordinance entitled "The Fisheries Research Institute Ordinance, 1984" on 11 July 1984. In pursuance of this Ordinance, the Fisheries Research Institute (FRI) was established in July 1984. In 1997, the FRI has been renamed as Bangladesh Fisheries Research Institute (BFRI) through the amendment of the 1984 Ordinance.

Though the Institute was established in 1984, it actually started functioning in 1986 with the recruitment of required manpower and creation of initial research facilities. Since then, the institute has been playing a key role in assisting the nation to achieve the goal of fisheries development as set out in successive development plans.

Mandate of the Institute

- ❑ To carry out basic and adaptive research for development and optimum utilization of all living aquatic resources and coordinate fisheries research activities in Bangladesh,
- ❑ To experiment and standardize techniques for maximizing productions and better management of living aquatic resources,
- ❑ To identify new production opportunities and develop them to usable levels,
- ❑ To develop skilled research manpower through training,
- ❑ To transfer developed technologies to the end users through training of extension workers, planners, fish farmers and other stakeholders,
- ❑ To advise the Government in all matters relating to research and management of our living aquatic resources.

Management of the Institute

The Institute (BFRI) is an autonomous research organization and linked up administratively with the Ministry of Fisheries and Livestock, Government of the Peoples' Republic of Bangladesh. The general direction, administration and supervision of the affairs of the institute is vested in the Board of Governors consisting as follows:

Board of Governors

Chairman	: Hon'ble Minister, Ministry of Fisheries and Livestock
Vice-chairman	: Secretary, Ministry of Fisheries and Livestock
Members	: Executive Chairman, Bangladesh Agricultural Research Council
	: Vice-chancellor, Bangladesh Agricultural University, Mymensingh
	: Member (Agriculture), Planning Commission
	: Director General, Department of Fisheries
	: Two Members of the Parliament to be appointed by the Govt.
	: Two persons to be appointed by the Govt. among the persons having interest in fisheries development
	: Two persons to be appointed by the Govt. engaged in research in BFRI
Member-Secretary	: Director General, BFRI

Board of Governors may exercise all powers and doing all acts and things that may be performed or done by the Institute. The Board may appoint such committees, as it may consider necessary to assist it in the performance of its functions. As the Chief Executive of the Institute, the Director General takes appropriate steps in implementing its programs in the light of the policies and directives formulated by the Board of Governors.

BFRI Organogram

The Headquarters of the Institute is located at Mymensingh. The Institute has five research stations and five sub-stations based on different aquatic ecosystems. The organogram of the institute is shown below.

Stations and Sub-stations

Headquarters, Mymensingh

The Headquarters of the Institute is located at the south-west corner of the Bangladesh Agricultural University, Mymensingh, which is about 120 km north of the capital city, Dhaka. The Headquarter functions through its various divisions in respect of administrative development, coordination and operation of its research programs. The divisions are:

- ❑ Research Coordination & Cooperation
- ❑ Planning & Management
- ❑ Administration & Common Service
- ❑ Technology Testing, Training & Communication
- ❑ Engineering & Instrument
- ❑ Library, Documentation & Public Relations and
- ❑ Accounts & Finance

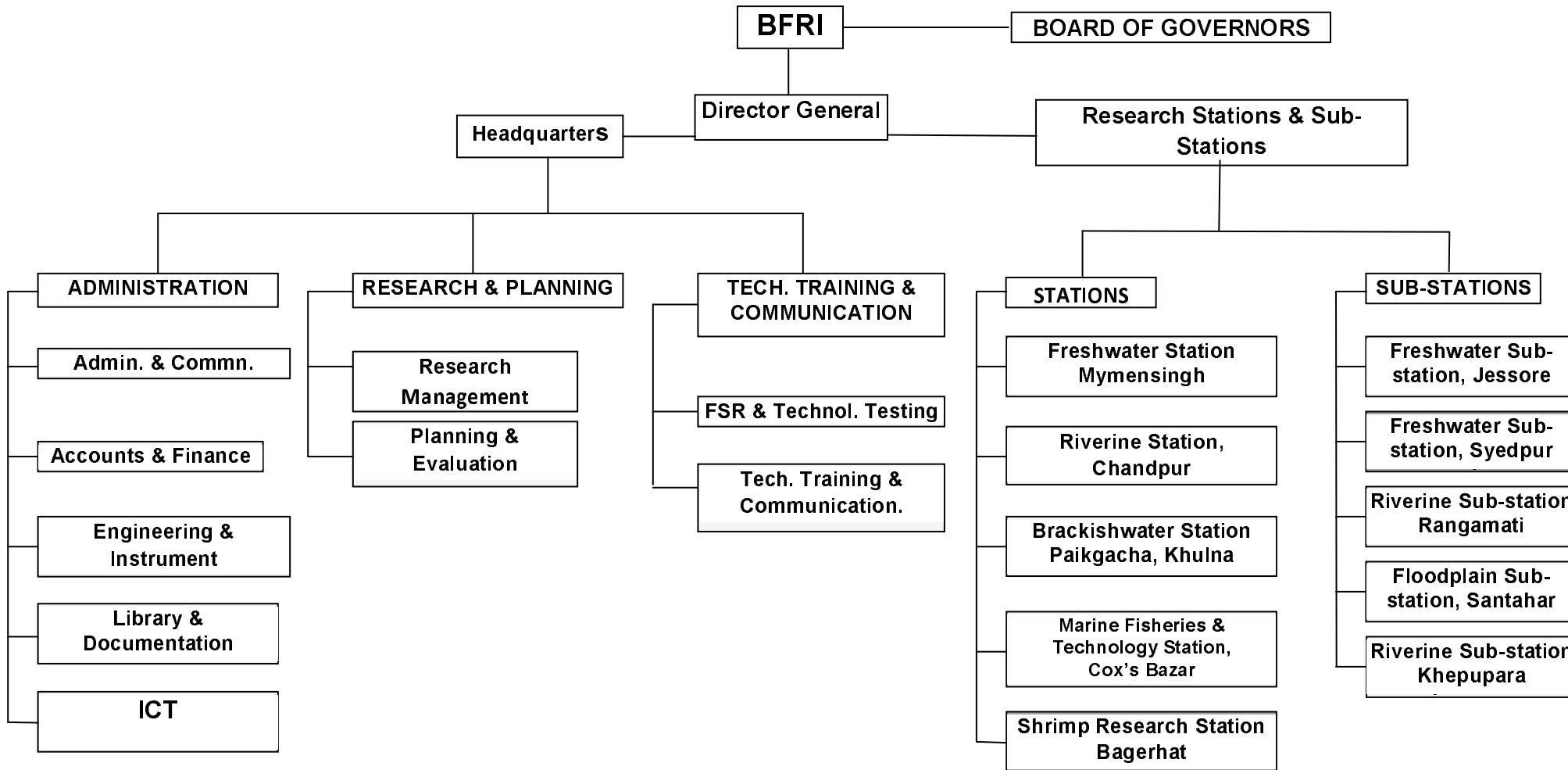
Freshwater Station (FS), Mymensingh

The largest station of the Institute, with an area of 40 ha is located at Mymensingh attaching to the BFRI Headquarters. The station has well established and sophisticated carp and prawn hatcheries. The station has as many as 118 drainable ponds consisting of 20 mini ponds; 52 nursery ponds (0.1 ha each), 47 rearing ponds (0.25 ha each) and 16 grow-out/broodstock ponds (1.6-2.6 ha each). Other physical facilities include a feed store, office buildings, residential quarters, a 35 bed constructed dormitory, a community center and a 5-bed guesthouse. The station is actively involved in conducting research on hatchery management, fish genetics and reproduction, nursery management, prawn nursery and production system, fish farming in seasonal ponds, carp polyculture, integrated fish farming, fish feed and nutrition, pearl culture, fish disease, health management and socio-economic aspects. The various research activities of the station are implemented by the following divisions:

- ❑ Reproductive Physiology & Genetics,
- ❑ Aquaculture & Farming System,
- ❑ Nutrition, Food & Feed Technology,
- ❑ Fish Disease Diagnosis & Health Management;
- ❑ Soil, Water & Productivity Management;
- ❑ Fisheries Socio-economics.

ORGANOGRAMME

Bangladesh Fisheries Research Institute
Mymensingh 2201



Three sub-stations are attached to the Freshwater station. These are:

Floodplain Sub-Station, Santahar: To support the floodplain fisheries development program taken up by the Government, studies on the ecology, limnology and gear selectivity of floodplains are being undertaken at the Santahar Sub-station.

Freshwater Sub-Station, Jessore: To support freshwater aquaculture farmers and hatchery operators of greater Jessore region, the Freshwater Sub-Station has been conducting research on breeding and culture of BFRI super Tilapia, carp disease diagnostic services and also farming system research and development.

Freshwater Sub-Station, Saidpur: To support the fisheries development program in northern region of Bangladesh, a freshwater sub-station is established in Saidpur Upzilla under Nilphamari District. The prime objective of the sub-station is to conduct need based research to suit with the ecosystem of northern Bangladesh and to transfer technology to the farmers and entrepreneurs through effective training and demonstration.

Riverine Station (RS), Chandpur

The station is situated in the riverine port city of Chandpur, with an area of 17.2 ha and has 36 non-drainable ponds ranging in size from 0.12 to 0.37 ha each and with a total of 8.6 ha. water area. In addition, the station has one carp, one catfish and one prawn hatchery, two deep tube-wells, specialized laboratories, library, office buildings, residential quarters and a 8-bed guest house. One research vessel, one mechanized wooden boat equipped with research facilities, and three speed boats are available for undertaking riverine survey and studies relating research and management to hilsa and other riverine fisheries resources. The Riverine Station consists of 6 research divisions, which are as follows:

- ❑ Stock Assessment & Resource Dynamics;
- ❑ Fisheries Resource Management & Conservation;
- ❑ Culture-based Fisheries Management;
- ❑ Reproductive Biology of Riverine Species;
- ❑ Environment & Aquatic Pollution.

Two Sub-Stations are attached with the Riverine Station, and these are:

Riverine Sub-Station, Rangamati: To devise sustainable management and development strategies for the Kaptai lake fishery, Riverine Sub-Station (RSS) undertakes various adaptive research programs. Priorities are given on continuous monitoring of biological productivity, stock assessment, natural spawning, and population dynamics of various commercially important fishes and major carps, in particular. Recently, RSS has been introducing pen and cage aquaculture programs in the creeks and lagoons of Kaptai lake to culture fingerlings of major carp and thus to support artificial stocking of the lakes by Bangladesh Fisheries Development Corporation (BFDC), Kaptai lake project. Extension works are being carried out through adaptation of pen and cage aquaculture, installation of pens and cages in the creeks/coves in Kaptai lake on participatory basis.

Riverine Sub-Station, Khepupara, Patuakhali: The fish landing and wholesale center of BFDC at Khepupara Upazilla has been handed over to BFRI to develop as a Sub-Station and carry out research mainly on hilsa fishery. The old infrastructure has now been renovated by BFRI. Due to manpower, funds and logistic constraints, research is being conducted on hilsa in a limited scale. In addition to this, technical advice to the fish farmers are being provided and improved fish seeds are distributed to the local farmers time to time.

Brackishwater Station (BS), Paikgacha, Khulna

The station was established in 1987 with a view to undertake research and development activities on various aspects of coastal aquaculture and fisheries management. The station is located at Paikgacha Upazilla under Khulna District and has an area of 30.56 ha. The station has got 53 drainable experimental brackishwater ponds of different sizes ranging from 0.05 to 1.0 ha, an experimental hatchery for the production of prawn and commercially important brackishwater fin-fish seeds and a number of laboratories. The station has 5 research divisions, such as:

- ❑ Nutrition & Feed Technology;
- ❑ Disease Diagnostic & Health Management;
- ❑ Brackishwater Aquaculture;
- ❑ Estuarine Ecology & Environment;
- ❑ Soil, Water & Productivity Management.

This station is involved in conducting research on increasing productivity of coastal ghers, environment friendly shrimp culture development, crab seed production and fattening, seed production and culture of commercial finfishes, disease management, aquatic environment monitoring etc. The research work undertaken so far by this station includes socio-economic studies on shrimp farming, survey and assessment of shrimp fry resources and its breeding ground, production potential of gher fishery (with improved management practices), polyculture of shrimp and mullet, culture and fattening of mud crab (*Scylla* spp.), breeding and nursing of *Macrobrachium rosenbergii*, improved method of shrimp farming etc.

Marine Fisheries & Technology Station (MFTS), Cox's Bazar

This station, with an area of 4 ha, was established at Cox's Bazar in 1991. The station is being equipped with five specialized laboratories, and one outdoor complex with 39 cisterns (200 m² each), a two-storied office building including laboratory, eight residential buildings for officers and staff accommodation, one seminar room, one library, one service building and a 8-bed guest house. The laboratories of the station are:

- ❑ Water quality;
- ❑ Fish technology;
- ❑ Biology;
- ❑ Marine museum;
- ❑ Live Feed Lab.

The mandate of the station includes research on marine fish and shrimp seed production, marine ecology, environmental studies, production systems for marine shrimp, fin-fish and shell-fish, stock assessment and population dynamics of commercially important species, oceanographic studies, diseases diagnosis and control, development of processing and preservation technologies, socio-economic studies of marine and coastal fisherfolk and quality control of marine products.

Shrimp Research Center (SRC), Bagerhat

The station was established on 2010 at Sadar Upazilla under Bagerhat District with an area of 8.0 ha. The mandate of the station is to conduct research on enhancing shrimp production, shrimp health management, shrimp feed & nutrition, post harvest handling & quality control of shrimp and shrimp products. The station consist of a 2-storied Office-cum-Laboratory building, 3-storied Staff dormitory,

and 4-storied Training dormitory of the station. Moreover, a pond complex composing 9 experimental ponds of different sizes are being used for experimental purposes. The laboratories of the station are:

- ❑ Shrimp Health Management;
- ❑ Quality Control;
- ❑ Shrimp Feed & Nutrition;
- ❑ Water & Soil Quality Management.

Manpower

The manpower status of the Institute is highlighted in the following table:

Head	Approved posts			Filled up posts		Vacant posts	
	Officer	Staff	Total	Officer	Staff	officer	Staff
Revenue	162	295	457	116	228	46	67
Development	27	30	57	21	26	06	04

During 2015-2016 period, 2 Officers were appointed and 2 Officers retired from the service.

Development of Technologies

Regular research activities of the institute lead to generate various aquaculture and management technologies for better management of the resources and increase the fish production. Till 2015-16, the Institute has evolved more than 57 aquaculture, biotechnological and fisheries management technologies. Among them, 3 package technologies have been developed during 2015-16 and these are as follows :

- ✓ Induced breeding and seed production of tengra
- ✓ Polyculture of koi with shingh and tilapia
- ✓ Production of quality dried fish using mechanical fish dryer

Technology transfer: Subsequent to development of technologies or management practices, the generated research results were transferred through various mechanisms. Different government agencies including Dept. of Fisheries, NGOs, farmers and entrepreneurs were offered training on research-evolved technologies. After successful maturation of technologies, printing materials like manuals, booklets, leaflets, posters etc. were published and distributed among the users.

On-Farm trials: Field trials of the on-station research findings were conducted for adaptation of technologies in on-farm conditions through government and non-government extension agencies, private entrepreneurs and NGOs.

Farmer's Advisory Services: The Institute through its different Stations and Sub-Stations provided advisory services to the farmers on improved fish farming technologies, water quality monitoring, feed quality, diseases control etc. Scientists of the institute also provided service on national crises related to fisheries and environmental issues as and when deemed necessary.

Training Programs

Research activities of the institute tends to develop the fisheries sector by generating suitable and modern aquaculture technologies for better management of aquatic resources and increase fish production. The institute organizes series of well structured training programs every year to disseminate the research evolved technologies to the end users. Meanwhile for effective transfer and dissemination of the

technologies and management procedure the institute undertakes elaborate programs such as training of extension workers both of Government and NGOs, teachers, journalists setting up demonstration ponds, arranging field days with fish farmers, publishing training and extension materials and preparing audio and visual materials. The training programs organized on different aspects are as follows:

- ✓ Improved fish culture and management
- ✓ Supplementary fish feed preparation and management
- ✓ Fry production & culture of GIFT and monosex Tilapia
- ✓ Fish disease and health management
- ✓ Seed production and culture techniques of endangered fish species
- ✓ Rice-cum-fish farming
- ✓ Pearl culture techniques in freshwater ponds
- ✓ Effect of drugs and chemicals in aquaculture
- ✓ Shrimp nursery, culture and management
- ✓ Crab fattening techniques
- ✓ Pen and cage culture techniques
- ✓ Fisheries and Aquaculture Research management

The Institute also implements training on research methodology, foundation training and other research oriented programs for researchers and teachers of different organization including universities.

Training programs conducted: BFRI organizes series of training programs every year for farmers, entrepreneurs, unemployed youth, rural women and university students, extension workers both of Government and NGOs, teachers, journalists and LGED fisheries facilitators. The main objective of offering such type of need and opportunity based training is to transfer and disseminate technologies among various stakeholders and end users. During 2015-16 a total of 9 training batches were completed and 213 nos. of people were trained by the Institute.

Institutional manpower development: The Institute is strengthening the capabilities of scientists, administrative and management personnel through in-country and overseas short-term and long-term training programs, study tour etc. During the reporting period, a total of 6 scientists achieved overseas short-term and long-term training in 2 programs. Besides, 2 different in country training programs have been organized for the scientists and officers. A number of 5 delighted scientists have been awarded with abroad higher studies opportunity.

Workshop/Seminar organized: The Institute organizes and participate to a number of national and international workshops and seminars in different disciplines to identify the problems and sharing and exchanging knowledge generated through research. During 2015-16, a total of 12 scientists participated to different international seminars and workshops to exchange their knowledge along with the scientists of different countries. The institute and it stations organized regional and national workshops every year to review the research projects and to present the research progress of the institute. Besides, the Institute organized 4 seminars and workshops locally.

Publications

The Institute publishes research findings, annual reports, newsletters, journals, workshop proceedings, training manuals, extension materials in the form of booklets, leaflets and posters. The publications are available at the Library and Documentation Center as well as at different regional stations and sub-stations of the Institute. The following publications were published during the reporting period:

Sl. No.	Title	Publication time & place	Author/Editor/ Publisher	Pages
01	BFRI Evolved Technologies and Research Achievements 2009-2016. Fish Week Publication No. 8.	2016 BFRI, Mymensingh	eds. Mahmud <i>et al.</i> Bangladesh Fisheries Research Institute	56 p.
02	Training Manual on Freshwater Pearl Culture	2016 Pearl Culture Technology Development & Extension Project, BFRI, Mymensingh	eds. Mahmud <i>et al.</i> Bangladesh Fisheries Research Institute	116 p.
03	Impact Assessment on Upstream Water Withdrawal to Conserve Natural Breeding Habitat of Major Carps in the River Halda- Final Report	2016 BFRI, Mymensingh BUET, Dhaka	-	10 Vols.
04	Techniques of Seaweed Culture in the Coast (Leaflet in Bangla)	2016 MFTS, BFRI, Cox'sBazar	Islam, M. Mohidul, M. S.K. Khan and Hoq, M. Enamul	-

Institute gives special value to publication and documentation of aquaculture and management technologies for their wider adoption. For this reason, extension manuals, leaflets, posters, handouts etc. were well circulated to govt. and non-govt. extension agencies, farmers, entrepreneurs etc.

Library and Documentation

Bangladesh Fisheries Research Institute Library and Documentation Centre (FRILDOC) act as a repository of literature and technical information and provides latest information on scientific research and experimental development in all branches of fish and fisheries. The FRILDOC has 7,749 technical and general books, 174 titles of scientific periodicals, 2793 miscellaneous publications. The various activities of the centre have been computerized using Library Management Information System (LMIS) software. The FRILDOC provides the following documentation services:

Document Delivery Service Current Awareness Service i) Current Content Service ii) Monthly Accession List iii) Monthly Newspaper Articles	Reference service Bibliographical service Abstracting service SDI (Selective Dissemination Information) service Photocopy service
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The library maintained exchange programme with more than 75 leading National and International organizations. The category wise list are shown below:

During the reporting period about 63 scientists and research support personnel the institute used the library. Moreover, about 115 users from outside BFRI consulted FRILDOC. The library maintained free mailing of institutional publications to various research organizations.

Working Linkage

The overall research, training and management activities of the institute were carried out in close cooperation and linkages with various national and international organizations/agencies. The institute also maintained close contact with public extension organizations, different NGOs working in the country, for dissemination of technologies and obtaining feed-back from them. BFRI collaborated with national

universities and maintained close liaison for fisheries research and development (R & D). Among the national collaborators, definitely the main focus implies to the Department of Fisheries (DOF) followed by Bangladesh Agricultural Research Institute (BARI), Bangladesh Rice Research Institute (BRRI), Department of Agricultural Extension (DAE) and have close cooperation, linkages and joint research and development programmes with different NOGs. The national universities including Bangladesh Agricultural University (BAU) were linked with BFRI through contract research programmes and exchange of expertise and training.

Infrastructure Development

BFRI undertakes various development projects to generate technology for sustainable aquaculture production and formulation of policy guidelines to increase fish production in the country. Such activities need considerable support of infrastructures. During reporting period, pond complex with gravitational drainage line were constructed. Although, hatchery facilities with other infrastructures under implementation.

Finance and Accounts

The sources of funds of the institute comprise grants from the government, and grants from different donor agencies. Government grant from the revenue budget is usually provided to meet only salaries and allowances of staff small portion of operational costs. The cost of development, maintenance and research is also borne by the government from its development budget provided in the form of development project. The budget provided from its revenue head is quite insufficient to meet the recurring expenditures and research as well. Again, processing and flow of fund through development project is not continuous.

Receipts and expenditure: The institute received an amount of Tk. 2175,20,000 lakh during the year 2015-16 from the government revenue budget and the expenditure incurred was Tk. 2132,70,329 lakh.

Income: During reporting period, the institute earned Tk. 24.96 lakh from the sale of by-products obtained from various ongoing research projects. These include sale of spawn, fish, short tender schedules, conveyances and other miscellaneous items.

Research Progress 2015-16