

# Training programmes organised by West Bengal Fisheries Department in South 24 Parganas in the beginning of 2024

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## Fisheries and aquaculture in rural development

I attended the National Conference on 'Aquaculture and Steps to Maintain High Production' for the first time on January 21-22, 2000, and later, a National Workshop on 'Bridging Gaps for Attaining Self-Sufficiency in Inland Fish Production at the Dawn of the New Millennium' a few months later on June 22, 2000, both held in Kolkata. Over the past 23 years, I have come to conceptualise that fisheries and aquaculture, in particular, are crucial sources and contributors of nutrient-rich food, income, and livelihoods for many people in West Bengal and across India, creating valuable rural employment opportunities and fostering integrated rural development. These themes were extensively discussed at the International Symposium on 'Fish for Nutritional Security in the 21st Century' held during December 4-6, 2001, at ICAR-CIFE, Mumbai, in which I actively participated.

Eminent fishery scientists, the late Dr. Nihar Ranjan Chatterjee and the late Dr. Punyabrata Das, played pivotal roles in organising the first two programs, respectively, and dedicatedly worked towards realising rural development through various dimensions of fishery and aquaculture. In this context, I fondly remember and deeply respect the notable contributions of distinguished scientists and fishery experts, the late Dr. Radheyshyam and the late Dr. Satyendra Datt Tripathi, in this field.

## Importance of training and extension

Fish production in West Bengal has increased from 1,472,000 tonnes in 2011-2012 to 1,842,000 tonnes during 2021-2022. This state ranks second in India only after Andhra Pradesh in annual table fish production and possesses open freshwater (warm water and cold water), brackish water, and marine water resources well suited for fishery and aquaculture. In order to keep up the high level of fish production, strengthen livelihoods, and uphold this means of income generation, the West Bengal Fisheries Department has introduced some developmental schemes for fish farmers, fishers, fish vendors by profession, and rural youths interested in adopting fish farming all throughout the state. Training of fish farmers and unemployed fishers is one of the schemes, among others, under the State Plan of the Department of Fisheries, Government of West Bengal.

Efforts are being made by the Fisheries Department to disseminate scientific knowledge about improved techniques of fish culture to fish farmers (progressive farmers, small and marginal farmers) by imparting hands-on training to them. The aim is to increase fish production through various means like bringing more water bodies under scientific fish culture



Training at Canning-1 CD Block.

and ensuring access to nutritionally balanced fish feed and high-quality fry and fingerling-stage fish for fish farmers. Training serves as an important mechanism for the transfer of technology and improving human skills regarding the developmental process<sup>1</sup>.

Recently, short-term training programs for fish farmers were organised in almost all districts of the state, including South 24 Parganas. This initiative was the brainchild of Sri Biplab Roy Chowdhury, Hon'ble Minister of State, Department of Fisheries, Government of West Bengal. Notably, this marked the first such initiative in almost four years since the COVID-19 induced lockdown period began in India on March 16, 2020.

Over the years, numerous research and development activities in fisheries and aquaculture have led to the emergence of new ideas and technologies. However, it is essential for these innovations to reach fish farmers to enhance production sustainably. Fisheries and aquaculture extension plays a crucial role in convincing and assisting fish farmers and fishers communities to improve their quality of life and raise their standard of living through better farming practices and production techniques. This approach not only increases fish production and income but also maintains their good socio-economic condition.

Extension personnel are primarily responsible for transmitting technology among users after receiving it from universities and research institutes. Therefore, extension officers must stay updated with the latest technological developments<sup>2</sup>.

Training serves as a useful and widely adopted system for disseminating new technology, starting from the trainers and ending with the users<sup>3</sup>.

## Fisheries and aquaculture in South 24 Parganas District

In finfish and shellfish production by aquaculture, South 24 Parganas district holds high potential and prospect. It is the largest district in West Bengal in terms of area and ranks second highest in annual table fish production in the state, amounting to 262,000 tonnes in 2021-2022, only after Purba Medinipur district. South 24 Parganas is unique in West Bengal as it is the only district out of 23 in the state which has five kinds of well-established sectors: freshwater aquaculture, brackishwater aquaculture, marine fishery, domestic sewage-fed aquaculture, and aquarium fish culture in its rural and suburban regions. Out of the 29 Community Development Blocks in this district, all of them are freshwater Blocks, 14 are designated as brackishwater Blocks in addition to freshwater, and 17 are marine Blocks in addition to freshwater and brackishwater. The unique location of this district within the active deltaic zone of the Ganga river basin is a favorable factor for the development of both freshwater and brackishwater aquaculture activities, based on aquatic resources in different regions of this district. Being in close proximity to the metropolitan city Kolkata, fish farmers have easy access to transportation routes for their farm produce, including aquarium fishes, shrimps, freshwater prawns, Indian major carps, and other inland finfishes, to big wholesale fish markets both within and outside West Bengal.

## Topic of training courses in South 24 Parganas

During the entire month of February and early March 2024, which is towards the end of the financial year 2023-2024, five types of training programs were organised for fish farmers in almost all blocks of this district concurrently, each lasting for three days. These were:

- Training program on scientific fish culture of different fish species with special reference to composite fish culture, where individual fish farmer beneficiaries selected for the scheme 'Composite fish culture with supply of quality fish seed and feed' and 'Jal Bhara Jal Dhara' at the Block level participated as trainees.
- Training program on scientific fish culture of different fish species with special reference to composite fish culture, where individual fish farmer beneficiaries selected for the scheme 'Distribution of Indian major carp fingerlings in small water bodies' at the block level participated as trainees.
- Training program on scientific fish culture of different fish species with special reference to air-breathing fish culture, where members of fish production groups (FPGs)/self-help groups (SHGs) selected for the scheme 'Air breathing fish culture' at the block level participated as trainees.



Training at Baruiipur CD Block.



Training at Basanti CD Block.



Training at Bhangore-1 CD Block.



Training at Bishnupur-2 CD Block.

- Training program on Scientific fish culture of different fish species with special reference to polyculture, where members of FPGs/SHGs selected for the scheme 'Polyculture of pangus catfish with Indian major carps' participated as trainees.
- Training program on scientific fish culture of different fish species with special reference to composite fish culture, where members of FPGs/SHGs selected for the scheme 'Composite fish culture' participated as trainees.

Scientific fish culture has been introduced in small earthen ponds (chambers) excavated under the scheme Jal Bharo Jal Dharo (JDJB) of the Government of West Bengal.

## Other aspects of training programmes

In each of the consecutive three-day training programs, four theoretical classes were scheduled each day from 10:00 am to 5:00 pm, held at the Training hall/Meeting Hall of the respective Block Development Officer's office equipped with modern facilities. In this district, 10-18 villages constitute one Gram Panchayat (GP), 6-18 GPs constitute one Community Development Block, and 29 CD Blocks make up South 24 Parganas. The Fishery Extension Officer (FEO), posted as a State Government officer at the Block level, was the Nodal Officer for each of these trainings, with overall coordination, monitoring, and implementation by the office of the Assistant Director of Fisheries (ADF), South 24 Parganas at the District Headquarters under District administration. Printed booklets covering the topics of the training subject in detail in Bengali language were provided to each trainee.



Training at Kakdwip CD Block.



Training at Mathurapur-1 CD Block.



Training at Budge Budge-1 CD Block.



Training at Joynagar-1 CD Block.

Trainers/Lecturers in each of these training programs included FEOs from adjacent and nearby CD Blocks, the host FEO themselves, officers from the office of the ADF, South 24 Parganas, Subject Matter Specialists (Fishery) from Krishi Vigyan Kendra, personnel from the ATMA project under the Department of Agriculture, Government of West Bengal, and experienced and elderly fish farmers. I was one of the trainers in a few training programs, using audio-visual systems and PowerPoint presentation slides. In addition to the above, separate trainings were organised at the Block level by each office of the ADF (Brackishwater), South 24 Parganas (for brackishwater fish farmers), and the office of the CEO, Fish Farmers' Development Agency, South 24 Parganas. Estimation procedures for the pH of fish pond water, dissolved oxygen content, zooplankton density in pond water, and transparency-turbidity were demonstrated to the trainees. They were encouraged to apply for a Fisher Registration Card (FRC) that would be beneficial for them and made aware of the locations of registered and accredited fish hatcheries and carp seed rearing units in nearby and less-distant regions.

During the question-answer session, trainers addressed queries raised by trainees, including means to control the overgrowth of dense masses of unwanted slimy macroalgae *Spirogyra* sp lying just beneath the water surface of fish culture ponds; natural occurrences where *Chanda nama* and *C. ranga* try to tear off edges of fins of growing Indian major carps in such ponds; concerns that *Penaeus vannamei* culture is no longer as profitable as expected due to the high prices of shrimp feed, medicines, and pond inputs; methods to utilise brackishwater ponds alternatively; strategies to control the overpopulation of *Bellamyia bengalensis* in fish ponds and also tadpoles; the correct proportion of ingredients needed to prepare farm-made fish feed; the proper dosage of potassium permanganate application in ponds (according to effective water area) for prophylaxis; issues related to fishes exhibiting stunted growth and mortality of growing fishes observed in composite fish culture ponds with apparently no external symptoms of microbial disease; sourcing pure varieties and high-quality seeds of Indian major carps and air-breathing fishes for stocking; fish farming in ponds with



*Training at Namkhana CD Block.*

high sand content; rural youths gaining improper concepts on biofloc fish farming and RAS by listening to YouTube channels; and several others.

## The Matsya-karmadhyaksha

The Fishery Extension Officer (FEO) is responsible at the block level for overseeing the proper implementation of the development schemes of the West Bengal Fisheries Department and ensuring the successful completion of trainings. Additionally, the non-governmental position namely 'Karmadhyaksha, Matsya-o-Prani Sampad Bikash Sthayee Samity' exists individually in all 342 Community Development (CD) Blocks in the Panchayat Samity section across the 23 districts of West Bengal. Beneficiary-oriented schemes are successfully implemented when the FEO, Matsya-karmadhyaksha, and beneficiaries in a CD Block work together in close liaison and cooperation. The Matsya-karmadhyaksha serves as a people's representative in a particular CD Block and is associated with the proper implementation of departmental schemes. According to the West Bengal Panchayat (Panchayat Samity Administration) Rules, 2008, the Karmadhyaksha is required to have regular interaction with officers from the relevant government departments through organised meetings of the Sthayee Samity. Their role is to ensure that the programs and schemes, including training programs, implemented by such departmental officers do not have any mismatch and generate a unified impact on socio-economic development in rural areas.

Following the West Bengal Panchayat Election 2023, Matsya-karmadhyaksha were newly appointed individually at the Block level in South 24 Parganas and other districts. However, it is likely that Matsya-karmadhyaksha(s) may not possess extensive knowledge about scientific fish culture and the improved management practices involved. The Hon'ble Minister of State, Department of Fisheries, Government of West Bengal believes that in addition to imparting training to fish farmers, FEO(s) as departmental officers should also instill the idea and concept of improved fish culture in Matsya-karmadhyaksha.

## Epilogue

During the second half of 2023, the Hon'ble Minister of State, Department of Fisheries, Government of West Bengal, held two meetings with the Fishery Extension Officers (FEOs) of South 24 Parganas. While commending the efforts of the FEOs, the Hon'ble Minister emphasised the need to take fish farming more seriously and to work collectively towards achieving significant success. As part of the Fisheries Department's initiative, pH papers have been distributed to fish farmers at the Block level in West Bengal, and it is essential to assess how much they have benefited from this. The Minister urged the FEOs to elevate their level of thinking and be more proactive in updating themselves with newer methods of aquaculture.

The Minister highlighted the potential for youths and middle-aged individuals in villages to build their future by adopting fish farming, which can serve as a means of strengthening their livelihoods. Properly practicing fish farming can provide a continuous source of income for them. There is enthusiasm among youths and aqua-entrepreneurs to leverage research outcomes, technologies, and research facilities, in addition to utilising ponds suitable for freshwater and brackishwater aquaculture. It is crucial to teach rural youth and trainees the techniques for analysing basic pond water and soil parameters, as well as fish feed preparation. They should be inspired and motivated to work hard, adopt improved technologies, and apply their new skills and knowledge effectively.

The Minister expressed hope that a community of self-dependent, progressive, dignified, and honest fish farmers would emerge in different villages of the 312 Gram Panchayats in South 24 Parganas and other districts in the near future. Newly-formed SHGs and FPGs will take aquaculture seriously after receiving training and can access short-term loans for capital investment with interest subvention facilities. The Matsya Jeebi Credit Card scheme, a thrust area of the department, facilitates credit linkage with financial institutions for fish farming. Both individual farmers and FPG members must be guided to increase the fish production level of FPGs. Need-based training on scientific and modern fish culture methods should be provided to them, along with booklets on fish farming. Follow-up programs should reinforce different techniques and methods learned during the training sessions. It is essential to assess whether fish farmers are able to generate profits.



*Training at Sonarpur CD Block.*

The Minister emphasised that culture technologies for Indian major carps, air-breathing fishes, non-air-breathing catfishes, mud crabs, giant freshwater prawns, and shrimp differ in terms of supplementary feed and feeding, manure and fertiliser application, stocking density of early stages, pond water quality, prophylactics, consumer and market demand, nutritional importance, and care.

In the words of Late Dr. Satyendra Datt Tripathi, emphasis is being placed in India on increasing fish production and farmers' income by 200% to meet the challenges of rising demand for protein food and improving the economic status of fishers and fish farmers. I heard him speaking at the National Seminar on 'Priorities in fisheries and aquaculture' during March 11-12, 2017, where he emphasised, "... it will bring about an awakening in the minds of fish farmers that technology, appropriate and sound, if applied following the instructions of scientists and technical experts, would lead to an increase in production from their ponds."

Training programs organised by the West Bengal Fisheries Department at the beginning of this year have undoubtedly increased the knowledge and skills of participating fish farmers in South 24 Parganas and other districts, building confidence and capacity in them. We are at the gateway to a large-scale training and extension program to be launched by this Department in West Bengal.

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