CIFRI NEWSLETTER

Volume 7 November-December 1984 Number 6

*INDIRA GANDHI 1917—1984*

*"Scientific search is a steep uphill path. Untouched by the spirit's higher values, science has generated fear and uncertainty. Let it be an ally of life, a friend and a guide imbued with faith in our people and in our future".*— **INDIRA GANDHI**

*In the tragic death of Prime Minister Smt. Indira Gandhi on 31 October 1984, the scientific community lost a patron, benefactor, sympathiser and an active supporter. Smt. Indira Gandhi was deeply devoted to the cause of science and strove, during her period of Prime Ministership covering a span of 17 years, to bring out radical transformation of our traditional society into a modern one through the instrument of science and technology. This is reflected by her Technology Policy Statement of 1983 which constitutes a landmark in scientific and technological planning in this country. She was responsible for establishment of National Committee on Science and Technology in*

1970 which functioned as an advisory body to the Government of India in all matters relating to science and technology This Committee has since been replaced by the Scientific Advisory Committee to the cabinet in 1981 with enlarged powers depicting the importance she attached to science and technology in economic development of this country. Her period also witnessed the creation of a number of departments in Science and Technology in addition to the Department of Science and Technology. She was instrumental in the establishment of the Department of Electronics, Department of Space, Department of Environment, Department of Non-conventional Energy Sources and Department of Ocean Development. During her period, the country scaled new heights in utilisation of atomic energy for peaceful purposes. Equally remarkable and glorious are achievements in space research During her leadership, India launched satellites Aryabhatta, Bhaskara I & II and developed technology for Satellite Launch Vehicles. Her approach to space research was to improve the telecommunication system and television broadcast for the benefit of common man. Her pioneering instinct and dedication to the cause of science for harnessing natural resources for the benefit of mankind is further reflected by her sponsoring the expedition to Antarctica in 1981, 1982 and 1983. This enhanced the prestige of the country in ocean sciences. and won a place in Antarctica Treaty Organisation.

CSIR has made tremendous progress under her leadership. She was the President of CSIR from the day she became Prime Minister in January 1966. Her interest in ICAR as the instrument for promoting agricultural research, education and training is very well known. Mrs. Gandhi was not unaware of the importance of conservation of nature and natural resources. This was evident in her creation of Department of Environment. The withdrawal of sanction for the now well-known Silent Valley Project and establishment of various parks and sanctuaries for endangered species of wildlife are ample testimony of her concern for nature.

The enormous progress made by the country in the field of science and technology is well reflected by the advances in the field of industries and agriculture. It was the ambition of Mrs. Gandhi that science and technology should be utilised to improve the quality of life of common man and overall prosperity of all the sections of the people. She never deviated herself from this goal throughout her stewardship.

Mrs. Gandhi was deeply interested in the development of fisheries as a source of important animal protein and its potential to improve the economic lot of fishermen and other backward sections of our society. She laid the foundation stone of CIFRI's prestigious Freshwater Aquaculture Research and Training Centre at Dhauli, Bhubaneswar, in the year 1977. While laying the foundation stone, she expressed the hope that efforts in inland fisheries research would go a long way in the development of aquaculture and inland fish production in the country. To the scientists and staff of CIFRI her passing away was a personal blow and an irreparable loss.

## Water pollution in the River Tungabhadra :

A recent study by CIFRI has revealed a high degree of aquatic pollution in River Tungabhadra due to the effluent discharge from two Rayon manufacturing plants at Kumarapatnam, Dharwad District, Karnataka. The effluents adversely affect the plankton, benthos, and fish fauna at the outfall and downstream. There is a high rate of bio-accumulation of zinc and chromium in fish flesh.

Kumarapatnam is a sleepy village in the bank of Tungabhadra, a tributary of River Krishna in the district of Dharwad, where the two Rayon manufacturing plants, Harihar Poly-Fibre Company and Gwalior Rayon Silk Manufacturing Company are located. Commissioned in 1972, the Harihar Poly-Fibre Company (HPF) produces about 170 tons of rayon grade pulp everyday by pre-hydrolysed process. In the process, about 33,000 $m^3$ of industrial effluents are generated daily. The raw materials used by the plants include caustic soda, sodium sulphate, sulphuric acid, chlorine, sulphur dioxide, sodium chlorate, limeshell, furnace oil, and sodium chloride. The Gwalior Rayon Silk Manufacturing Company (GRASIM) started producing GRASILENE fibre using the rayon grade pulp from HPF since 1977. The plant also produces sulphuric acid, carbon disulphide, and sodium sulphate, for captive consumption. The GRASIM produces 490 $m^3$ of effluents per hour.

The two factories discharge their treated effluents directly into the river.

The river water fouled with HPF effluent displays a dark colour and emits an unpleasant odour, while water mixed with GRASIM effluent is brown in colour.

Water sediments, and biological samples collected from outfall (OF), above outfall (AOF,)and below outfall (BOF) revealed a high degree of environmental degradation due to effluents.

Dissolved oxygen in water dropped in the outfall area to the tune of 3-3.2 ppm compared to 6.4 ppm above and 5.2 ppm below the outfall. The total alkalinity increased from 110 ppm above the outfall to 260 ppm (GRACIM) and 340 ppm (HPF) at the outfall. Below the outfall, total alkalinity again dropped to 180 ppm.

### Bio-accumulation of Heavy metals in Fishes

Zinc, present at the rate of 0.04 ug/ml above the outfall region went upto 3.20 ug/ml and 2.26 ug/ml at the outfall of GRASIM and HPF effluents respectively. Below outfall the concentration of zinc has come down to 1.0 ug/ml. Chromium which was not detected above the point of discharge was found @ 0.08 ug/ml at the outfall point. Even below the outfall, chromium was present at the rate of 0.03 ug/ml.

The studies also revealed accumulation of zinc to the tune of 82-120 ug/g dry weight in tissues of commercial fish ***Puntius kolus*** collected from the outfall region. Concentration of chromium was also detected at the rate of 0.12-0 13 ug/g. Plankton density declined sharply due to effluents. There was a 50% fall in the population of ***Synedra***, while ***Spirogyra*** and ***Conochilus*** got completely obliterated due to the effluents from GRASIM. There was similar effect on planktonic organisms by the discharge from HPF.

( ..... page 4 )

## High Rate of Production of Catla in Cage Culture :

A high production rate of 15.73 kg/sq m or 157.32 t/ha/8 months has been achieved in cage culture experiments of catla conducted in Sankey tank Banglore in 1984. This is the highest production obtained in a series of experiments conducted in the tank since 1980 employing different species under different stocking densities. The production obtained during 1983 was 7.85 kg/sq m or 78.5 t/ha in 6 months.

Experimental cage culture was initiated in Sankey tank Banglore in the year 1981. The trials were continued employing different species under different stocking densities. Catla was tried in the year 1983 resulting in a production rate of 78.5 t/ha/6 months. In 1984 the experiment was continued under a higher rate of stocking i.e. 490 no/cage of 10.56 sqm. There was a significant increase in production rate under higher stocking density though the growth of individual fishes were rather low

Artificial feed comprising rice bran and groundnut oil cake in equal proportions was provided daily at the rate of 5-10% of the total body weight. After a rearing period of 243 days from 8.3.84 the fishes attained a size of 544.12 g from an initial size of 19.64 g.

Earlier, the same cage was used for raising catla at a stocking density of 6.63 lakhs/-ha. (700nos. per cage) in 90 days of rearing the hatchlings were raised to an average size of 19.6 g.

## SEMINAR/SYMPOSIA :

Shri Y. S. Yadava, Scientist, Guwahati Research Centre participated in :—

☐ 'Data Analysis Workshop' held at Indian Statistical Institute, Calcutta from 16-1-84 to 5-2-84.

☐ Seminar on 'guidelines for Science and Technology policies' during 4-6th June 1984 at Guwahati, and

☐ a training programme on 'Planning and control systems' at Assam Administrative Staff College, Guwahati from 10-22 September 1984.

## Course on aquacultural Engineering in IIT Kharagpur.

IIT, Kharagpur has started a programme of Aquacultural Engineering from the academic session 1984-85 leading to M. Tech. degree. At present seven students including one sponsored by the government of Kerala are undergoing the course who will complete their M. Tech. in December 1985. The programme is drawn into three semesters comprising Fishery Biology and Fish culture Techniques, Planning and design of aquaculture projects, open channel & tidal hydraulics, (first semester), Unit operations in aquacultural product processing, water resources system analysis, projects and thesis. Besides, each semester has three electives covering a variety of subjects like statistical methods, engineering, mathematics, fisheries, naval architecture, fishing crafts, coastal hydraulics, etc.

## Talks :

Dr, H. C. Joshi delivered a lecture on 'pesticide pollution in India' at a seminar on 'Environment Pollution' organised by the Rotary Club of Barrackpore on 14th December 1984.

( Pollution..... from page 3 )

The fishermen of the area complained about the heavy fish kill in the river downstream of HPF effluent discharge point There was also a reported decline in catch, especially of bigger fishes. The fishermen are of the view that the nets are now less durable and the catch gets spoiled quickly. ☐

## VISITORS

### ASRB Chairman visits CIFRI :

Dr. Yadav in discussion with Shri B. B. Ghosh, Scientist in the water pollution laboratory.

The ASRB Chairman in CIFRI library, Shri V. V. Sugunan, Scientist showing the recent CIFRI publications to Dr Yadav.

*Dr J. S. P, Yadav, Chairman, Agricultural Scientists' Recruitment Board, paid a visit to CIFRI on 14-12-1984 Evincing keen interest in the Institute's activities, Dr Yadav visited all the laboratories of the headquarters and had lengthy discussions with each of the scientists. Himself being an eminent soil scientist and an expert in soil salinity, Dr Yadav offered many valuable suggestions and tips to the scientists specially those working in limnology and soil science*

*Earlier, Dr. Yadav was briefed by the Director about the recent achievements of the Institute in the fields of prawn seed production, off-season breeding of carps, pen culture, cage culture, etc*

*Later, addressing the scientists of the Institute at the auditorium, Dr Yadav told that he was highly impressed by the significant achievements made by the Institute in various aspects of inland fisheries research. He stressed the need for proper maintenance of records regarding the progress of research under various projects. He pointed out that even significant contributions often went unnoticed due to want of proper presentation of facts and figures before the various bodies assessing the performance of the projects. It was very essential to keep proper records on the contribution to the projects by each scientist. He explained the various steps taken by the ASRB in streamlining the procedures for five yearly assessments, recruitments, promotions etc., so that meritorius work is recognised and rewarded expeditiously. In this connection, he exhorted the scientists to project their work before the Board properly.* □

*Shri S. S. Pillai, Senior Scientific Officer, and Mrs. Pillai both of Ordnance Factory, Kirkee, Pune, Dr. (Mrs.) Kamala Kumar, Principal Scientific Officer, Department of Science & Technology, New Delhi and Dr. R. S. Yadav Senior Research Officer (Eng ), IIT Kharagpur visited the Institute during November-December 1984.* □

# Fourth Advisory Committee Meeting of NACA at FARTC, Dhauli

*The Fourth Advisory Committee meeting of NACA (Network of Aquaculture Centres in Asia) was held at Bhubaneswar during 3-5 December, 1984. The meeting held in Hotel Konarak was inaugurated by Dr. O. P. Gautam, Director General of ICAR. Dr. R. K. Nayak, I.A.S. Secretary for Fisheries, Government of Orissa presided over the function. About thirty delegates representing eight participating Governments in Asia, FAO, UNDP, SEAFDEC (South East Asian Fisheries Development Centre) and University of Philippines attended the meeting.*

*After the inaugural ceremony, the meeting unanimously elected Dr. R. M. Acharya, Deputy Director General, ICAR as the Chairman of the Fourth ADCOM Meeting Dr. A. V. Natarajan, Director CIFRI was elected as Vice Chairman.*

*Earlier, in his inaugural address Dr. O P. Gautam stressed the importance of aquaculture research and training in Asia in general and India in particular. He pointed out the role of the four research Institutes in advancing the cause of aquaculture research and development in this Country. While appreciating the achievements of Freshwater Aquaculture Research and Training Centre (FARTC) Dhauli, he thanked FAO and UNDP on behalf of ICAR and Government of India for their assistance. He assured the members that the recommendations of the advisory Committee would receive full attention at the Council and Government level.*

*Welcoming the delegates, Dr. A. V. Natarajan, Director, Central Inland Fisheries Research Institute commended the services of NACA in the dissemination of technologies through its training programmes and information services. He also thanked the UNDP and FAO for their support.*


( *Left* ) Dr. O. P. Gautam, Director General, ICAR delivering the inaugural address. Also seen in the picture are ( from left ) Dr. A, V. Natarajan Director CIFRI, Dr. T. V. R. Pillai, Programme Leader, ADCP, FAO and Dr. R.K. Nayak, Secretary to Govt. of Orissa. ( *Right* ) A section of the delegates.

*Talking on the occasion, Mr. David M. Thorup, Leader of UNDP evaluation Team for NACA Project, said that the team was highly impressed by the progress achieved at various centres in the brief span of time. He informed the meeting that UNDP is favourably considering the proposal to continue the Project and to continue the funding support at least over the next two years. He also indicated a modest additional funding even beyond that period.*

*Dr T. V. R Pillay, Programme Leader, Aquaculture Development and Coordination Programme (ADCP) of FAO also addressed the delegates. He emphasised the relevance of the network especially in the Third World. He suggested that the new technologies developed might be listed and passed on to the countries of the region for suitable modification and adoption He pointed out that the new computerised information system would go a long way in the development of aquaculture not only in the participating countries but also the whole region.*

*Dr. R. K. Naik, Secretary to the Government of Orissa suggested that microsituation oriented research should be considered a part of the system as it would be of direct benefit to the farmers. He also emphasised the need for extension research for effective transfer of technology.*

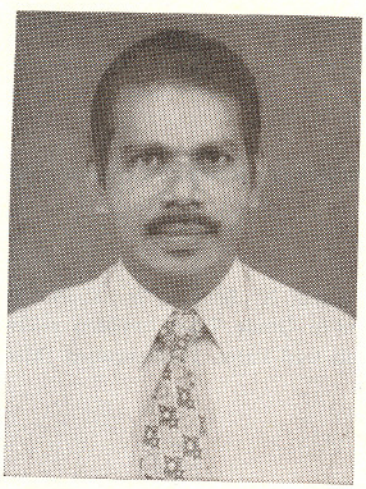
*Dr. V. R. P. Sinha, National Project Director, Regional Lead Centre of Asia proposed a vote of thanks to the Chair*

Shri Kuldip Kumar exptains the working of a pellet making machine to the delegates who attended the NACA Advisory Committee meeting.

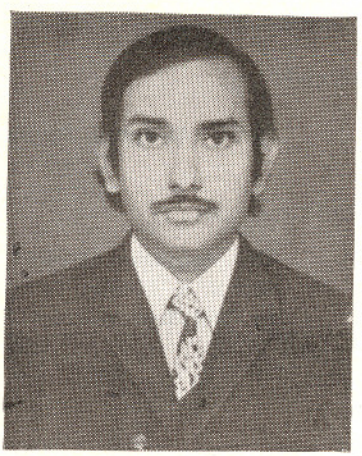
*The meeting reviewed the programmes and progress of work of NACA and provided fresh guidance and assistance in fulfilling its objective of expanding aquaculture development in Asia and Pacific.* □

**Amitabh, Prasadam get Ph. D**

**Shri R. D. Prasadam,** *Scientist of Madras Research Centre is awarded Ph.D by Agra University on his work 'Studies on the grey mullets of Pulicat Lake.'*



**Shri Amitabh Ghosh,** *Scientist at Barrackpore obtained Ph. D. from the University of Burdwan, based on his work on Histophysiology of the digestive organs and their relationship with the food and feeding habits in* ***Notopterus spp.***



## Extension :

*The Institute continued its extension activities through demonstrations, talks, field visits, etc. A large number of visitors comprising fish farmers, entrepreneurs and co-operative functionaries who turned up at the Institute were benefitted by the activities of the section. Besides, fourteen fish farmers were provided with necessary information in their aquaculture ventures through correspondence.*

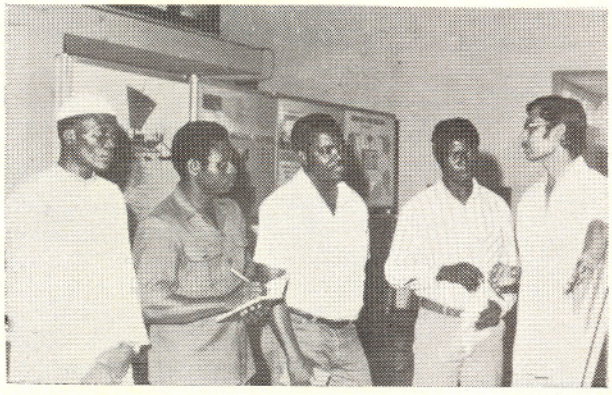
*Forty trainee fish farmers from Barasat were briefed on 19-2-84 on fish diseases and their control, and paddy-cum-fish culture.*

*A batch of 16 students from Bethun College, Calcutta visited the Institute on 14. 11. 84.*

*Eight Fisheries Extension Officers from FFDA, Uttar Pradesh visited the Institute on 16. 11. 84.*

*Twelve fish farmers from Mandra Unnayan Sanstha, Hooghly visited the Institute on 16. 11. 84. They were briefed about the common fish diseases and their cure.*

*A batch of 30 fish farmers from Howrah District who visited the Institute on 27. 11. 84 were briefed about the latest methods of aquaculture. A talk 'Rural aquaculture to uplift the economy of poor fish farmers' was delivered to them.*



Four Nigerian Officials representing Fisheries Department and Cooperative Societies (from left) M. Saibu, D. P. Oyenusi, J. A. Gaffar and K. Ephaine visited CIFRI from 19. 10. 84 to 22. 10 84 Shri P. K. Pandit ( righr extreme ) explains CIFRI's activities to the Nigerian Officials. They have also visited the Rahara Research Centre of CIFRI, State Fisheries Department, Apex Fisheries Cooperative Society and Captain's Fisheries at Salt Lake, Calcutta.

**TRANSFER :**

Shri S. Ayyappan, Scientst—1 of Bangalore Research Centre is transferred to FARTC, Dhauli.

**RESIGNATION :**

The resignation tendered by Miss. Anjali K. Bhagali, Jr. Clerk Pune, has been accepted by the Director.
Shri R. K. Langer, Technical Assistant in Grade T-1-3 has been relieved from the Srinagar Centre for joining duty as Farm Superintendent (T-5) at Fish seed Farm, Hoshangabad (M.P.) under CIFE, Bombay.

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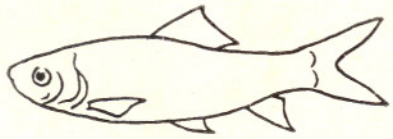

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*Published by :*
D. D. Halder, on behalf of The Director, Central Inland Fisheries Research Institute, Barrackpore.

*Printed by :*
ROMAN PRINTERS ( S. S. I. Regd. Unit ) 37 Andul Road Howrah 711 109 West Bengal.