



# CIFRI NEWSLETTER

Volume 7

January-April 1984

Number 1 & 2

## **CIFRI'S MAJOR BREAKTHROUGH IN OFF-SEASON CARP BREEDING**

*YEAR-ROUND CARP SEED PRODUCTION IS NO LONGER IN THE REALM OF IMPOSSIBILITY. IT BECAME A REALITY WHEN CIFRI ACHIEVED A MAJOR TECHNICAL BREAKTHROUGH IN BREEDING INDIAN AND EXOTIC CARPS DURING OFF-SEASON MONTHS IN DIFFERENT GEOCLIMATIC REGIONS OF THE COUNTRY.*

Indian major carps and exotic Chinese carps were bred at its Rahara Centre in March-April 1984. Earlier under the All India Coordinated Research Project on Composite Fish Culture, mrigal was bred in November-December, 1983 at Tamil Nadu Centre. Major carps were also bred at the Jaunpur Centre, U. P. as early as May under high temperature (38°C). The Karnal Centre (Haryana) also bred them in May under controlled temperature. Breaking the season barrier in fish breeding through environmental manipulation is a big step forward for evolving an appropriate technology for the year-round breeding of carps thereby making the carp seed available during any season.

### **BREEDING EXPERIMENTS AT RAHARA CENTRE**

Water column in the brood stock ponds was regulated in February and March at such a level that the stock (rohu, mrigal, grass carp and silver carp) were exposed to 29-31°C for at least six hours during the day time. Rohu and mrigal were fed on conventional feed, oil cake and rice bran, daily @ 2-3% body weight. A thick plankton concentration comprising largely of *Spirulina*, *Oscillatoria* and *Chlorella* was maintained in the ponds holding silver carp. Terrestrial grass, banana leaves and cabbage leaves formed the major share of grass carp nutrition. The regulated nutrition and ambient high water temperature helped in accelerating

gonadal maturation by second week of March in silver carp, mid-March in grass carp and by first week of April in rohu and mrigal.

At water temperature 25-26°C the fishes were given fresh pituitary extract from mrigal @ 15 mg/kg body weight in two doses, i. e. 5 mg/kg as priming dose and 10 mg/kg body weight as resolving dose for females and a single dose, 5 mg/kg body weight as resolving dose for the males. Mrigal was given a total dose of 10 mg/kg in three instalments. The fishes bred successfully and the fertilisation and hatching rates were satisfactory. In addition, off-season hybrid seed of silver carp and grass carp were also produced in March through artificial fecundation.

*Indian and Chinese major carps (other than common carp which breeds in ponds) show gonadal maturation upto a point under captivity in ponds. This part of maturation process can be accelerated or retarded through regulation of photoperiod, water temperature and nutrition of brood stock.*

*The final phase of maturation and consequently ovulation or spermiation—does not take place in captivity in these fishes. This part is largely governed by lowering of water temperature. This is mostly carried out by rainfall and this is the basis for bundh breeding as well. Lack of proper environmental stimuli has been the main reason for not achieving the final phase of maturation in ponds. Administration of exogenous gonadotropin is necessary to achieve this part of*

*final maturation process. Once this is accomplished, lowering of temperature even without rainfall will bring about ovulation or spermiation. Infact, this is the rational behind CIFRI's early breeding programme of exotic and Indian major carps this year at Rahara farm in Khardah, West Bengal.*

#### BREEDING EXPERIMENTS IN TAMIL NADU

Mrigal was successfully bred in December, 1983 at Tuticorin Centre of the AICRP on Composite Fish Culture. Two sets of mrigal bred out of the three sets tried. Females were given weekly dose of pituitary extract @ 2 mg/kg of body weight for a month before spawning. Egg release was low with 22% of hatching. About



one lakh of spawn were obtained through the experiments.

#### AT OTHER CENTRES

Similar success was also achieved in breeding rohu, mrigal and silver carp during the month of May at other geoclimatic regions of the country. While spawning occurred under controlled temperature at Karnal (Haryana), the same was obtained at Jaunpur (U.P.) under high temperature (38°C). Though fertilisation and hatching rates were not as high as normally obtained, spawning of these carps about 40-50 days ahead of monsoon clearly indicates the possibility of successful monsoon-independent spawning. This also paves the way for double and multiple breeding of some carp stocks in the same season at these regions.

## INDUCED BREEDING OF ROHU WITH HCG

At the Lingda centre under the All India Coordinated Research Project on Composite Fish Culture and Fish Seed Production two of the seven sets of rohu experimented bred by administering crude human chorionic gonadotropin.

Females were given crude HCG @ 6-7 mg/kg body weight in the first dose and 10-12 mg/kg body weight in the second dose with an interval of 7 hrs in between the doses. Males responded well with single dose of 4-5 mg/kg given along with the 2nd dose

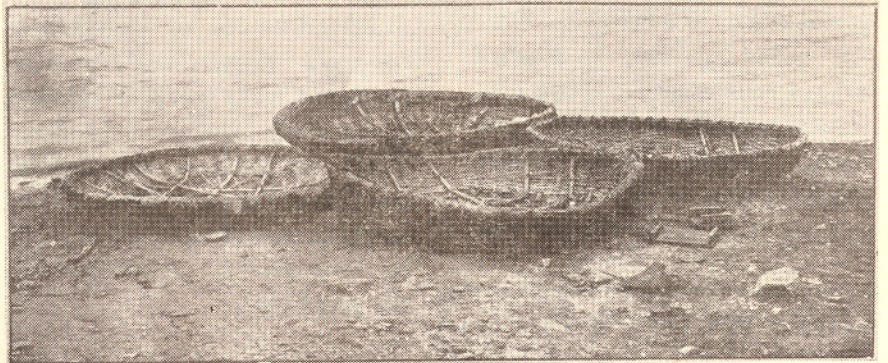
to females.

Human chorionic gonadotropin has been repeatedly tried to induce breeding in Indian major carps. However, so far HCG dose alone is found to be of limited success. □

## CIFRI DEVELOPS A NEW LOW-COST CORACLE FOR FISHERMEN

A low-cost coracle suitable for fishing in peninsular tanks and small reservoirs has been fabricated at the Bangalore Centre of the Institute. In this new coracle, buffalo hide used in conventional ones is substituted by high density polypropylene (HDPP) or high density polyethylene (HDPE) woven sack material (16×16 counts in running length). A thin coating of melted bitumen is applied on the outer side of the material (HDPP/HDPE) to make the coracle waterproof. The fabrication cost of such a coracle works out to be only one fifth of the traditional ones. As regards to durability both types have same economic life.

Coracle is the most common craft widely used for fishing in peninsular India, especially in Karnataka, Tamil Nadu and Andhra Pradesh. It is operated in small irrigation tanks as well as in large reservoirs. Conventionally it is a saucer-shaped craft of about 6 feet in diameter made with cattle hide, reinforced with a split bamboo wicker work. The texture and strength of the coracle is maintained by the application of about 2 kg of vegetable oil every alternate month. At present such a coracle would cost around rupees one thousand.



*The low-cost coracles fabricated at the Bangalore centre*

### LOW MAINTENANCE COST

In the new coracle the application of vegetable oil is totally eliminated. When leakage develops due to usage, another coating of bitumen is done. The damaged part of the coracle can also

be repaired easily by the fishermen by applying a little bitumen around the holes and sticking a piece of HDPE/HDPP material and giving another coating of bitumen on the piece.

( Contd .....Page 4 )

## BLEACHING POWDER AS FISH TOXICANT

The use of bleaching powder calcium hypochlorite as a fish toxicant in culture ponds has shown excellent results at the Freshwater Aquaculture Division of the Institute at Dhauli, Orissa. In recent trials conducted at Dhauli and other places, bleaching powder (chlorine 30 percent) when applied @ 25-30 ppm was found effective in killing all the fish species present in the treated water.

### EFFECTIVE IN LARGE PONDS

Even in larger ponds of 2 ha area in K. Ileru lake area, bleaching powder when applied @ 25 ppm killed *Channa striatus*, *C. gachua*, *Glossogobius giuris*, *Heteropneustes fossilis*, *Mystus cavasius*, *M. bleekeri*, *Ompok bimaculatus*, *Wallago attu*, *Anabas testudineus*, *Etrophus suratensis*, *Nandus*, *Labeo calbasu*, *Puntius sarana*, *P. ticto*, *Oxygaster bacaila*, *Amblypharyngdon mola*,

*Ambassis ranga*, *A. nama* etc. The plankton and benthic fauna in the pond started developing eight days after treatment showing that bleaching powder retained toxicity in the pond only for a shorter period. The powder can be applied by dissolving in water and making a slurry and applying or spraying as a soluble solution. The cost of treatment at the rate of 25-30 ppm (250-300 kg/ha.m) worked out to be about Rs. 1500-1800 per ha/m. for the chemical exclusive of other operational cost.

### AS A DISINFECTANT TOO

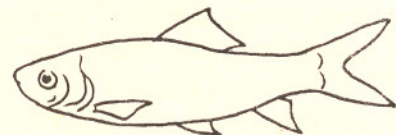
Bleaching powder has an additional advantage of disinfecting the pond. When added to water the hypochlorite iron from calcium hypochlorite reacts to form  $Cl_2$ ,  $HOCl$  and  $OCl$  in proportions determined by the pH. These three are called residuals and all the three have the same disinfecting properties.

Bleaching powder has been long known as a powerful antiseptic chemical used in sterilisation of hatchery and also used for disinfecting pond to control bacterial problems. Its use for eradication of fish and tadpoles, in partially drained ponds, has been known as early as 1960. However, till now

no largescale application of bleaching powder as a fish toxicant has been attempted in this country. The present experiments clearly suggest the bleaching powder as an effective substitute for mahua cake as a fish toxicant.

Toxicity of mahua cake is dependent on the active principle of saponin content and bulk of the material in the product is inert organic matter. Hence, the high rate of its application of 200-250 ppm adds to heavy organic load, though it is offset to some extent by its manurial value and contribution to organic production. Moreover, mahua oil cake availability is highly uncertain due to limited supplies. Devoid of these limitations, bleaching powder is found to be an effective substitute.

The comparative growth performance of carps in ponds treated with bleaching powder and mahua oil cake is now under investigation. □



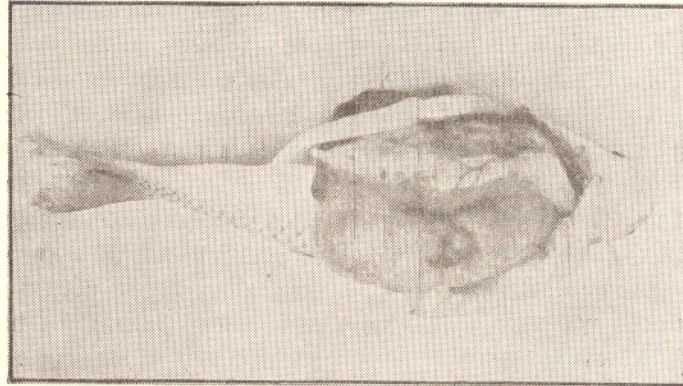
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Taking on to the HDPE/HDPP woven sack coracle, financial burden on the fishermen is substantially reduced in possessing and maintaining a craft. This coracle has already become popular with the fishermen in Karnataka and parts of Tamil Nadu and is fast replacing the conventional one in these States. □

## FISH DISEASE IN SEWAGE-FED CULTURE SYSTEM

Neoplasm, a pathological manifestation of tumorous growth has been reported for the first time in *Puntius javanicus*, an exotic carp from a sewage-fed pond at Barasat, West Bengal. Some of the specimens exhibited ovarian fibroma while some others showed papilloma on the caudal fin (epithelial tumor).

Neoplasm is a tumorous growth initiated by any number of factors including virus, parasites, chemicals, irradiation and injury. The new growth of tissue is composed of cells similar to these normally found in the body but usually less differential in type and less organised in structure. The terms neoplasm and tumors are often used synonymously. All except skin tumors are generally far advanced and beyond treatment by the time they are diagnosed. Some surface tumors regress automatically within one to two



A specimen of *P. javanicus* showing ovarian fibroma

months. Several cases need surgical removal, X-ray therapy and other developing treatments. This state is quite common in domestic animals.

Though cyprinid species form an easy target for neoplasm, *Puntius javanicus* did not find a place therein so long. In the present pathological screening of the eight specimens encountered, six had

ovarian fibroma while the other two had papilloma on caudal fin. Environmental stress contributed by high pH ( $8.6 \pm 0.2$ ) of ambient water, persistent algal bloom (either *Euglena* or *Microcystis*) and the high bacterial load of the pond is considered to be a predisposing factor for the present incidence. Further investigations are underway. □

## EFFECT OF SULPHADIAZINE ON INDUCED DERMAL ULCERS OF SINGHI

Experiments were conducted at the fish pathology laboratory of the Institute at Barrackpore in order to ascertain the efficacy and effectiveness of the dose of sulphadiazine to control the dermal ulcers in fishes caused by *Pseudomonas*. A strain of *Pseudomonas* was isolated from the water of a

sewage-fed pond. Isolation was done on nutrient agar, and five fishlets (10-15 g) of singhi, *Heteropneustes fossilis* were injected with 0.1ml aliquot intramuscularly. To prepare the aliquot slant culture of *Pseudomonas* was suspended in one ml of 0.8% NaCl solution. The recipient fishes

developed dermal ulcers on 5th day after inoculation. Prolonged illness showed loss of barbels.

The infected specimens were then provided with feed containing sulphadiazine @ 100 mg/kg feed. Treatment could cure the disease within a week.

## SRC MEETING 1984

The Annual Staff Research Council meeting of CIFRI was held at Barrackpore during 17-18 April, 1984. The progress made under each project during the preceding year was critically assessed by the Staff Council. In the meeting, Institute's research project programme for the year 1984, was given a final shape with modifications wherever required taking into consideration the views of the Quinquennial Review Team.

The meeting was chaired by Dr. A. V. Natarajan and was attended by over 80 scientists including Heads of Divisions and Centres and Project Coordinators. The Chairman in his opening remarks expressed his overall satisfaction on the performance made

under various research projects. Dr. Natarajan desired an indepth planning for each research project and a proper statistical design and economic evaluation. He reemphasised the need of more basic studies in carp nutrition, reproductive physiology and genetics. The techniques of breeding of catfishes, mahseer, snow trout and penaeid prawns needed more perfection. Hence a thorough attention to these aspects was called for. A breakthrough in isolation of carp gonadotropin and LHRH was urgent, the chairman observed. He called upon the scientists to look for a reliable substitute for carp pituitary extract for induced breeding in fishes.

The review of the progress done highlighted many salient findings made in the preceding

year as well as in early 1984 under various projects. While reports and proposals were presented by Heads of Divisions, Project Coordinators, Heads of Centres and Project Leaders, the gaps in knowledge under various subjects were discussed and necessary modifications were made in the workplan of various projects. Fifteen new projects were also approved by the Staff Council to be incorporated in the Institute's project programme of the year 1984.

The two days meeting ended with a note of cautious optimism and the chairman reposed confidence in the ability of the scientists to rise to commanding heights in their respective field of specialisation.

## NEWS AROUND

## Danes develop a new shrimp peeler

It is an entirely new nonmechanical method for peeling shrimp. The prototype was developed at the Jutland Technological Institute. The peeler uses heat and pressure to loosen the adhesion between the shrimp shell and the meat. It can be applied to peeling very fresh shrimp. The process is quick - a tonne/hour!

—*Fishing News International*

## Harvester that also cleans pond

Looking like a fishing version of a combine harvester in agriculture; this ingenious machine aggregates, picks up and sorts fish and also cleans ponds. It is reported to reduce harvest time eight fold and to cut cleaning time by 90%. It is developed by the Beaurepaire based firm SA les Fils de Ch. Murget in conjunction with Ets Gilbert - a French firm.

—*Fish Farming International*

## Bacteria against dangerous pollutants

Soviet Scientists have discovered 30 strains of bacteria on the surface of the Baltic sea which help render the dangerous pollutants—cancerogenic hydrocarbons—harmless. Each variety of these microorganisms assimilate, oxidise and transform the cancerogenic substances in industrial effluents. In some cases the concentration of benzopyrene derivatives in water was cut by 50% in a week due to the activity of these bacteria.

—*PTI Science Service*

## EXTENSION HIGHLIGHTS

### FISH FARMERS' DAY

A Fish Farmers' Day was organised for the benefit of 45 fish farmers at Jangalpara (West Bengal) on 25.1.84. The farmers were appraised of the scientific fish husbandry techniques. Problems encountered by the farmers in fish culture operations were discussed and remedies were suggested. Films on induced breeding and composite fish culture were screened on the occasion.

The scientists of Extension Section conducted a few demonstrations and delivered several lectures on various occasions. About 220 fish farmers, 70 students, 20 visitors and 20 extension personnel were benefited of the demonstrations and lectures.

During the period under report, about 40 lakhs of spawn and 10,000 fry of common carp were produced resultant to the fish breeding demonstration programme in farmers' ponds under Lab to Land Programme.

### EVALUATION COMMITTEE COMMENDS CIFRI'S LAB TO LAND PROGRAMME

The ICAR Evaluation Committee on the Lab to Land Programme consisting of Dr. L. M. Jeswani, Dr. S. K. Raheja, Dr. H. N. Patel and Dr. B. N. Chaudhury visited the CIFRI's Lab to Land Centre at Chanditala, West Bengal. The members were highly impressed with the production figures obtained in farmers' ponds. They also held an on the spot discussion with the farmers adopted under the programme as well with the extension scientists of the Institute.



*The members of ICAR Evaluation Committee on Lab to Land Programme at a discussion with Dr. A. V. Natarajan, Director, CIFRI.*

### EXHIBITIONS

● CIFRI participated in a national exhibition organised at the territorial army ground, Calcutta from 27.12.83 to 11.1.84. Visitors, estimated to be over 50,000, were explained about the Institute's contribution to the research and development of inland fisheries. The exhibition was aided by posters, charts, models, live fishes etc.

● The Extension Section conducted an exhibition at the Institute campus at Barrackpore during 10-11 March, 1984, in connection with ICAR Regional Committee II meeting.

● The Institute participated in a science exhibition at Belgharia which lasted from 5.2.84 to 9.2.84. The exhibition was organised by *Dewanpara Krira O Sanskriti Sangha*, Belgharia. About 15,000 visitors paid visit to the CIFRI pavilion.



*Visitors at CIFRI pavilion at Belgharia*

### **CIFRI'S EXTENSION PROGRAMME ACCLAIMED**

A team of press correspondents also visited the Lab to Land Centres at Krishnarampur village of Chanditala area adopted by the Extension Section of the Institute. They had a discussion with the beneficiary and non-beneficiary farmers under the programme. A netting demonstration of carps and magur was arranged for them. The correspondents expressed their deep satisfaction on the performance of the adopted farmers as well as the Institute's activities towards transfer of technology to the ultimate users.



*An induced breeding demonstration at Basirhat under the extension programme of the Institute*

### **LAB TO LAND PROGRAMME AT KRISHI VIGYAN KENDRA, KAKDWIP**

The phase II of the Lab to Land Programme was launched at Kakdwip by the KVK of CIFRI in September 1982. Twenty five farm families belonging to the weaker sections at the village Rajnagar, Srinathgram under Budhakhali Anchal, 8 km away from the Kendra were adopted under the programme. Twenty one of them were marginal farmers, three of them small farmers and one an agricultural labourer. Ten of them represented

the scheduled caste community.

#### **INCREASED YIELD FROM FISH CULTURE**

The transfer of technology to the farmers by KVK helped increasing the yield substantially (fig). On an average basis the per hectare production from composite fish culture ponds increased from 1,700 kg to 4,000 kg in an year. The yield from brackish-water polyculture plots was raised from 275 kg/ha/yr to about 1,000 kg/ha/yr.



**PADDY CUM FISH CULTURE**

The technology of paddy-cum-fish culture in freshwater phase and the salt resistant paddy-cum-prawn farming in the saline phase introduced for the first time in this tract through Lab to Land Programme yielded 2,500 kg of paddy and 2,250 kg of fish/ha under freshwater and 1,800 kg paddy and 80 kg of tiger prawn under brackishwater farming.

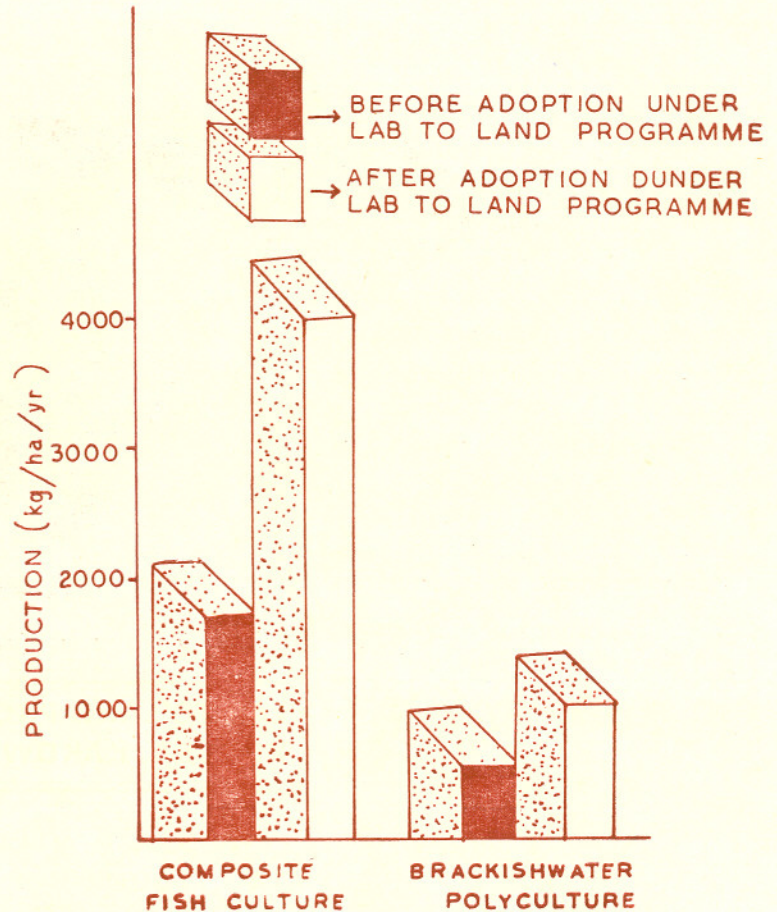
**INCREASED YIELD FROM RICE PLOTS**

Remarkable achievement was obtained in paddy crop from KVK adopted farmers' plots by introducing high yielding varieties like CSR-4, SR 26B, Pankaj, Mashari, Jaya and IR-8. The farmers could raise their rice yield to 4,000 kg/ha from 2 000 kg/ha.

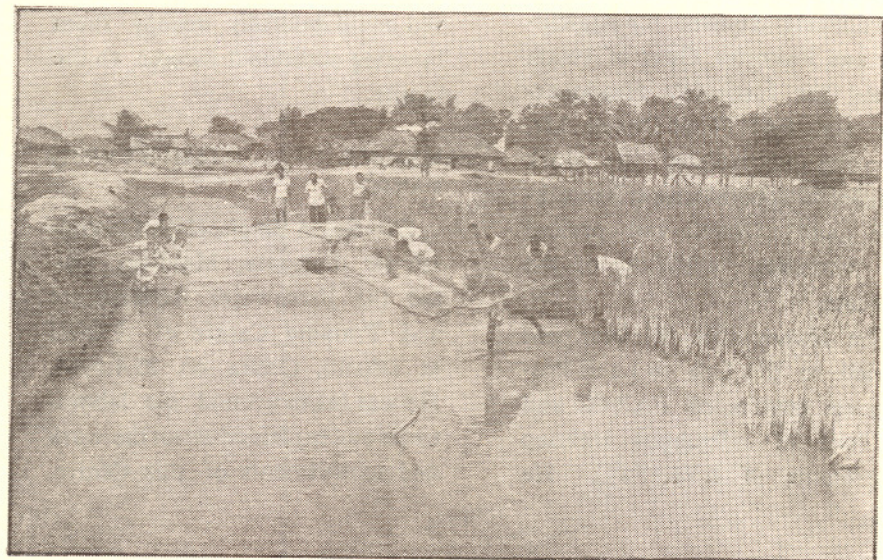
**IMPROVED TECHNOLOGY**

The adopted farmers under Lab to Land programme were exposed to the modern practices in agriculture such as plant protection through pest management, mixed cropping patterns, crop rotation etc. The outcome was evident from a higher yield obtained by these farmers.

*A netting demonstration in a paddy-cum-fish culture plot of a farmer adopted by KVK, Kakdwip*



*Fish production obtained in KVK adopted farmers' plots at Kakdwip.*





*The women of KVK adopted families at Kakdwip receive vocational training in embroidery.*

### FISH SEED PRODUCTION

Of late, through the Lab to Land Programme, the farmers of the village have got acquainted themselves to the fish breeding techniques. Incidental to the breeding programme, 2.5 million spawn of Indian major carps and 0.616 million spawn of common carp were produced by the farmers.

### TRAINING TO YOUTH

Apart from the transfer of technology to the 25 farm families adopted, 121 youth engaged in farming received training through eight problem-oriented training programmes conducted by the KVK, Kakdwip. □

## VISITORS

### HON'BLE MINISTER OF FISHERIES, ASSAM AT CIFRI

Shri Lakhi Prasad Hazarika, Honourable Minister for Agriculture and Fisheries, Govt. of Assam visited the Institute's Headquarters and FARTC at Dhauli. Mr. Hazarika appreciated the work at different laboratories at Barrackpore and Dhauli and praised the extension activities of the Institute.

The Honourable Minister paid a visit to the Lab to Land Programme centres of FARTC and the site of offcampus training programme of KVK/TTC. He

evinced keen interest in the training in net weaving imparted to the womenfolk which he observed could gainfully occupy them bringing additional income to the family.

### MEMBER OF PARLIAMENT VISITS FARTC

Shri Sujan Singh, High Commissioner designate, Maldives visited the Freshwater Aquaculture and Training Centre of CIFRI at Dhauli, Orissa on 25.4.1984. He was taken around the laboratories and explained about the work and achievements of this Centre.

Shri Singh deeply appreciated the work done in fish nutrition, fish genetics and fish pathology laboratories which he observed to have a great relevance in aquaculture. He said these well equipped laboratories would provide our scientists ample opportunities to produce excellent results in aquaculture. He was also impressed by the training imparted to a number of scientists of the Institute by foreign experts as well as the advanced training given to the scientists at leading laboratories of the world. □

## MANPOWER DEVELOPMENT

Dr. P. Das, Senior Fishery Scientist (S-3) was deputed for a research attachment/training on fish genetics in U. K. for a period of six months from September 1983 to March 1984. He was attached to Dr. Brandan McAndrew, Fish Geneticist of the Institute of Aquaculture, University of Stirling, U. K. His studies on genetics applicable to aquaculture broadly included sex manipulation, genetic engineering, breeding and hybridization, heritability estimation and selection for genetic gain, bio-chemical analysis for genetic variation in fish etc. He also familiarised himself with population genetics.

During the above period Dr. Das also visited the genetics laboratories at the University College of Swansea of the University of Wales and the Fisheries Laboratory, Directorate of Fisheries Research, Ministry of Agriculture, Fisheries and Food, Government of U. K. at Lowestoft. □

Dr. B. N. Singh, S-2 at FARTC, Dhauli completed a four months advanced training in fish digestive physiology (fish nutrition) at Department of Fisheries and Allied Aquaculture, Auburn University, Alabama, U. S. A., under an FAO fellowship programme. His training programme included practical evaluation of the nutrient requirements of warmwater fishes and shellfishes, digestibility determinations and



*After successful completion of the training, Dr. P. Das receiving certificate from Dr. Ronald J. Roberts, Professor and Director, Institute of Aquaculture, Univ. of Stirling, U. K. Dr. B. J. McAndrew is also seen in the picture.*

absorption of nutrients in digestive tract of the fishes and feeding practices adopted in aquaculture. In addition, Dr. Singh also got acquainted himself with the latest knowledge in fish processing technology. He also attended the University courses on aquaculture as well as extension programmes and methodology. This was also an opportunity for him to know more about the aquaculture practices adopted in USA, to visit

some fish farms in Alabama and to meet a few eminent fishery scientists in the university. □

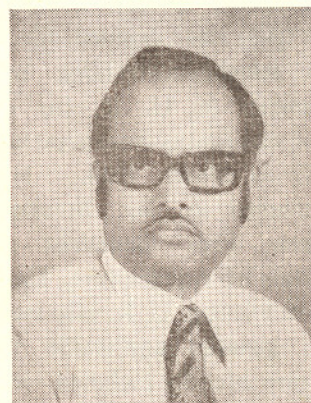
S/shri Y. S. Yadava and A. K. Roy attended the *Data Analysis Workshop For The Life Sciences* conducted at Indian Statistical Institute, Calcutta during 16 January—4 February, 1984. □

# STAFF NEWS

## PH. D. AWARDED

Shri Maniranjana Sinha, Scientist at Kalyani Centre was awarded the Doctor of Philosophy by the University of Calcutta for his work on 'Biology and fishery of the canine catfish-eel, *Plotossus canius*, Hamilton. The thesis dealt with the aspects like raciation and morphometrics ; food and feeding habits (along with morphology,

anatomy and histology of alimentary canal and its associated structures); breeding cycle and fecundity and age and growth of this fish inhabiting Hooghly-Matlah estuary and Chilka lake. The cultural possibilities of the species in brackishwater has also been discussed.



### *Dr. Jhingran rejoins CIFRI :*

Dr. Arun Gopal Jhingran, S-3 rejoined CIFRI at Allahabad centre on 12.12. 1983 as the Head, Riverine & Lacustrine Division. He was serving at ICAR Headquarters at Delhi on deputation. Dr. Jhingran will also serve as the

Officer on Special Duty, Bureau of Fish Genetic Resources.

*Halder as Head, Extension Section :* Shri D. D. Halder, S-3 has taken over the charge of Extension Section of CIFRI at Barrackpore w.e.f. 17.2.1984.

*Wedding bells :* Pradeep Dasgupta, Artist-cum-photographer at Barrackpore centre wedded Keka in the evening of 24 January, 1984. The CIFRI family wishes the couple a happy long married life.

## CLUB CORNER

The Annual General Body meeting of the CIF Recreation Club was held at CIFRI auditorium on 11.4.1984. The audited account and report on the activities of the preceeding year was presented before the Body. The Body also elected the Executive Committee for the year 1984-85 consisting of the following members :

President	Dr. A.V. Natarajan
Vice President	Mr. D. D. Halder
Jt. Secretaries	Mr. Dipankar Chatterjee & Mrs. G. K. Vinci
Treasurer	Mr. S. B. Roy
Cultural Secretary	Mr. B. C. Dutta
Cultural Sub-Committee	Mr. Moloy Kr. Das, Mr. U. K. Ghosh, Mrs. Sikha Majumder and Mr. T. Chatterjee
Sports Secretary	Mr. Asit Baran Biswas
Sports Subcommittee	Mr. Ashok Saha, Mr. N. K. Mitra, Mrs. Bani Roy and Mr. S. Bahadur
Library Secretary	Mr. Samir Kr. Roy
Library Subcommittee	Mr. P. Dasgupta, Mr. Samar Ghosh, Mr. K. P. Nath and H. K. Sen

Election was followed by prize distribution when winners of various competitions held by the Club was given away prizes by Mrs. A. V. Natarajan who graced the occasion as Chief Guest.

**Transfers :**

<i>Name</i>	<i>Designation</i>	<i>From</i>	<i>To</i>
Shri. D. D. Halder	S-3	Kakdwip	Barrackpore
Dr. L. H. Rao	S-2	Kakinada	Madras
Shri V. K. Murugesan	S-2	Bangalore	Patna
Dr. K. J. Ram	S-2	Kakinada	Dhauri
Shri P. K. Saha	S-1	Rahara	-do-
Shri D. R. Kanaujia	S-1	Buxar	Muzaffarpur
Dr. K. J. Rao	S-1	Tadepalligudem	Kakinada

**Retirements/Resignations :**

● Shri S. R. Ghosh, S-1 at the FARTC, Dhauri retired voluntarily from the services of ICAR after a long period of service at CIFRI. He stands retired w.e.f. 12.6.1983.

● Shri R. B. Dosad, Supporting grade-III (Fieldman) retired from

the service of CIFRI in the afternoon of 30 November, 1983 on attaining the age of superannuation. CIFRI wishes him a happy retired life.

● Shri N. A. Reddy, S-1 at Puri centre of CIFRI resigned from the services of the Council. His resignation came in to effect on 24 December, 1983.

● Shri P. K. Das, Junior Stenographer resigned from the services of CIFRI. His resignation was accepted w.e.f. 12.6.1983.

● Shri N. N. Sarkar, T-I-3 ceased to be on the rolls of CIFRI retrospectively from 19.6.1980 on termination of his loan to this Institute.

**OBITUARY***Prof. P.N. Ganapati*

Prof. P. N. Ganapati, Honorary Professor in Zoology, Andhra University, Waltair passed away on 5.1.1984 in Bombay after a brief illness.

• Born on the 15th July, 1910 in a village near Palghat in Kerala he had his early education in Ernakulam. After taking his M.A. Degree and later D.Sc from Madras University he joined Central Marine Fisheries Research Institute for a brief period.

Subsequently he joined Andhra University, Waltair. Prof. Ganapati retired as the Head of the Department of Zoology in 1970 and since then continued there as an Emeritus Professor. He was virtually the first scientist to organise systematic oceanographic research in India along with other renowned oceanographers Dr. E. C. LaFond and Prof. C. Mahadevan. A Fellow of the National Academy of Sciences India, Prof. Ganapati served in various capacities on several

national and international academic bodies including UNESCO, INCOR, SCOR, IOBC, ICAR, ASIR, ZSI and numerous universities. Professor Ganapati had a close association with Central Inland Fisheries Research Institute in various fields. He was also a member of the Achievement Audit Committee for CIFRI during the year 1971-1972.

The CIFRI family pays homage to the departed soul.

## LIBRARY

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### BOOKS

Pullin, R. S. V. & R. H. Lowe Mc Connell  
The biology and culture of tilapias.

Rao, P. S.  
Fishery economics and management in India.

Srivastava, U. K. & M. Dharma Reddy  
Fisheries development in India.

Singh, Tej Vir & Jagdish Kaul  
Himalayas mountains and men : Studies in eco-development.

Wilkins, R. P. & E. M. Gosling, *ed.*  
Genetics in aquaculture : Proceedings of an International Symposium held in University College, Galway, Ireland, 29 March to 2 April 1982 (Developments in Aquaculture and Fisheries Science 12).

Aquatic Oligocheta worms : Taxonomy, ecology and faunistic studies in USSR (Translated from Russian)

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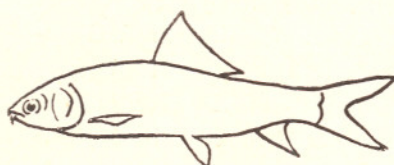
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*Edited by :*

V. V. Sugunan, V. K. Unnithan, (Mrs) G. K. Vinci and S. Paul.

*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.