



CIFRI NEWSLETTER

Volume 5

January-February 1982

Number 1

☐ BIOGAS SLURRY IN RURAL AQUACULTURE ☐ ON HYBRID
PERFORMANCES ☐ CHEAP FEED FOR MAGUR ☐ AN EFFEC-
TIVE METHOD TO CHECK DROPSY ☐ NEWS ROUNDUP



Prompted by the success attained in Paddy-cum-fish culture in freshwater plots, CIFRI has launched a new project on similar lines in brackishwater plots (See page-8)

RESEARCH HIGHLIGHTS



Biogas slurry—Tomorrow's mainstay in rural aquaculture

A sizeable crop of 762 kg of fish was raised in 11 months from a 0.15 ha pond applied with biogas-slurry. This is a commendable performance in a pond without artificial feeding. Stocking density was 7,500 fry/ha and the application of slurry was based on the oxygen budget of the pond. Two crops of surface feeders viz., catla and silver carp were raised in six months where the fish had grown to 530 g and 900 g respectively. Mrigal, common carp and grass carp attained weight of 500, 600 and 900 g respectively in 11 months. Rohu attained only 250 g. In another pond (0.03 ha) where rock phosphate was also used in addition to biogas slurry, silver carp grew from 1 g to 1 kg and catla from 50 g to 930 g in 7 months. Rohu and mrigal attained 370 g and 350 g respectively in 8 months from their initial weight of 50 and 40 g respectively. Common carp registered a growth of 400 g from its initial weight of 5 g in 7 months. Grass carp grew from 200 g to 1800 g in 7 months.

Biogas slurry is rich in humus and it contains nutrients in available form. Lime requirements of fish ponds are low when biogas slurry is used as it creates lesser acidic condition than by cowdung. Biological oxygen demand also is less for the slurry compared

to that of raw cowdung. Since this is free from ethylene, growth and production of plankton are not hampered. Laboratory experiments on its use as pond fertiliser indicated a high rate of release of nutrients, both nitrogen and phosphorus. In the pond at

Jairambati, the production of zooplankton swarm was so high that the application of slurry had to be stopped for a few days, and then resumed at a low dose of 10 litres, every alternate day. Common carp fry registered a faster growth rate with slurry than with cowdung on an equal nitrogen basis.

Biogas slurry will be an integral part of low cost fish production technology with the installation of the proposed 5 million biogas plants in rural areas in the coming year. Its various uses in pisciculture are under investigation.

A cheap feed for magur

A new cheap feed has been formulated for magur by the scientists of the Extension Section of CIFRI. By using this feed, impressive yield of magur ranging from 2,294 kg/5½ months to 3,884 kg/6 months/ha was obtained from ponds under Lab to Land Programme. This feed in the form of compost comprises cowdung, mustard oilcake and water hyacinth. Successful laboratory experiments were followed by field trials. This experiment suggested a cost reduction to the extent of 15% as against the expenditure incurred on conventional feed for magur.

Research highlights

On hybrid performance

The hybrid between female silver carp and male grass carp is observed to have inherited the feeding habits of both the parents. A seventy day trial with five feed combinations showed their first preference to the combination of plankton and duck weed. Moreover, the hybrid did not display any apathy towards the supplementary feed comprising duckweed, rice bran and groundnut oil cake.

In an aquarium experiment these hybrids recorded a sluggish growth-rate of only 23 g.

An effective method to check dropsy

CIFRI scientists could control dropsy, an epidemic disease often affecting fish population in culture ponds. This was achieved by application of 'Terramycin egg formula' of Pfizer Ltd. presently used as poultry feed additive. By mixing this with supplementary feed for nine consecutive days, the disease could be completely cured.

The widespread dropsy infection when occurs in fish ponds particularly in rural areas, leaves the farmers in a state of despair. Dropsy in fish is considered a bacterial disease, the main etiological agent being *Aeromonas* sp. The main symptom is excessive

in eight months. However, they registered a net growth of 300 g. under field conditions during the same period.

Of the number of intergeneric hybrids of Indian major carps produced and experimented by the Institute, the intergeneric hybrid between female *Catla catla* X male *Labeo rohita* has been found to be the best as it could combine many of the desirable characters like faster growth-rate, omnivorous feeding habit and high percentage of flesh. Incidentally, this hybrid is often found in commercial catches from Indian rivers and reservoirs.

accumulation of serous fluid in the body cavity or in the subcutaneous cellular tissue. Scale protrusion, inflammation of intestine and exophthalmic condition are often associated with it. This disease is mainly attributed to insanitary and crowded condition in ponds. Treatment with chloromycetin or potassium permanganate is also reported to help in containing the disease.

In the present treatment, Terramycin egg formula was incorporated in the feed @ 4 g/kg feed for the first three days, 2 g/kg during the next three days and 1 g/kg during the next three days. The disease was brought under complete control. This kindles a ray of hope among pisciculturists.

NEWS ROUNDUP

Footwear with fish skin

This year Chile will be exporting shoes made out of fish skin to U. S. A. Fish skin is found to be 15% cheaper than the traditional skins used for making shoes and it is more durable. The skin generally is taken from sea bass, king chip, sole and hake. It is purely a Chilean idea.

—Fishing Chimes, February, 1982

Sardines lower cholesterol levels

Are you afraid of cholesterol?... and love to eat fish? Then sardine is your fish. According to a study conducted by CIFT scientists at Cochin, consumption of sardines will lower serum cholesterol level due to the high content of poly unsaturated acids in this fish and the nature of fish proteins.

—Fishing Chimes, February, 1982.

Insurance for fish crops

Subsidiaries of the General Insurance Corporation of India have recently introduced a Fish Crop Insurance Scheme in freshwater aquaculture. This scheme covers total loss of fry/fingerlings/fishes due to any accident or disease. The premium amounts to 2.5 per annum on average value of the yield.

Australians to fight Tilapia

The Australian scientists discovered tilapia (*Oreochromis mossambicus*) from pools along the river Gascoyne in Western Australia. This possible threat to native fish has prompted the Australian Minister for Fisheries and Wildlife, Mr. Masters to issue an appeal to aquarium owners not to release exotic fish into natural waterways. The minister felt that the fishes entered the river system through outdoor aquaria being flooded or people emptying the fish into pools or near the river. Two previous occurrences of tilapia in Australian waters have been recorded in 1975 and 1978 and they were eradicated by the prompt action by the authorities. However this time the problem seems to be difficult to solve as the fish have spread extensively throughout the river system.

—FINS Vol. 14 No. 4

VISITORS



Shri R. V. Swaminathan Hon'ble Minister of State for Agriculture (left) talks with Dr. V. R. P. Sinha, National Project Director and the Head of FARTC.

Shri Bhanu Pratap Singh



Shri B. P. Singh at FARTC

Shri Bhanu Pratap Singh, Hon'ble Minister for Agriculture, Animal Husbandry and Fisheries, Government of U. P. visited FARTC, Dhauli on 29th April, 1982. In the farm and Laboratories the scientists apprised him of the achievements and further plans of the centre. Taking note of the progress made in aquaculture research the Minister desired to introduce programmes like integrated farming in the state of U. P. on a wider scale.

Students from CMFRI

A group of nine M. Sc. Students from Centre of Advance Studies, CMFRI Cochin accompanied by Dr. R. Paul Raj, Faculty member visited Barrackpore and Kakdwip centres and FARTC, Dhauli from 24 to 26th February, 1982. The students were taken around the farm and laboratories.

Union Minister visits FARTC

Shri R. V. Swaminathan, Hon'ble Minister of state for Agriculture visited the freshwater Aquaculture Research and Training Centre, Dhauli on 6. 1. 1982. He was accompanied by Smt. Swaminathan and Shri K. Majhi, Hon'ble Minister for Fisheries and Animal Husbandry, Orissa. Dr. V. R. P. Sinha, National Project Director and Head, FARTC, welcomed the guests and took them round the Laboratories of FARTC. They held discussions with the scientists regarding on-going research programmes. The progress made under Lab to Land Programme of the Centre was also discussed. A netting demonstration in a carp culture pond was arranged for the guests.



Visitors from University of Helsinki

University of Helsinki, Department of Silviculture, Finland sponsored a team comprising professors, scientists and teachers on a study tour in India during 30 December, 1981-23 January, 1982. The team was headed by Dr. Luukkanen Oavi, Acting Professor of Botany. Dr. A. V. Natarajan, Director, Central Inland Fisheries Research Institute, explained to them the various aspects of work being pursued



Visitors from Helsinki are briefed by the Director on the activities of the Institute (top).

They are taken around the Recirculatory Filtering System in the CIFRI Campus (bottom).

by this Institute in respect of fresh and brackishwater aquaculture, ecology, limnology, environmental

biology, management of natural fisheries etc. The team evinced

keen interest in the wide embracing activities of this Institute and scientific contributions made by this Institute in inland fisheries research and management. The team visited the recirculatory filtering system for fish culture in the Institute campus.

Dr. Tibor Farkas, Lipid Biochemist from Hungary at CIFRI

Dr. Tibor Farkas, Lipid Biochemist from the Institute of Biochemistry, Hungarian Academy of Science, Hungary, visited the Institute on 15 January, 1982 and held discussions with Dr. A. V. Natarajan. The discussions were mainly on problems on lipid metabolism of air-breathing teleosts in which Dr. Farkas has specialised for a number of years. Dr. Natarajan explained varied type of problems which were being taken up at this Institute in inland fisheries research. He also detailed out the work of the Institute on fish biochemistry, fish nutrition, digestive physiology and related aspects with a view to providing adequate and broad-based support for aquaculture system.

Visitors from Bangladesh

Mr. A. K. M. Ahsan and Mr. A. S. M. Kamaluddin, consultants, National Committee on Rural Training, Planning Commission, Bangladesh were at different field centres of CIFRI during 9-16, November, 1982.

MAN POWER DEVELOPMENT

Inservice Training for Technical personal

Seventeen members of the technical staff of CIFRI underwent a one-month training course conducted by the Extension Section of the Institute. The prime objective of the training was to upgrade the skills and professional competence of the technical personnel of category I. The course conducted during January 13- February 1, 1982 was divided into two parts viz., orientation and technical.

The orientation course comprised objectives of ICAR, personnel policies with regard to technical staff in the research programmes, personality development through transactional analysis, motivation techniques creativity and idea generation, interpersonal communication, role of statistics in research, accounts procedures, problems relevant to technical personnel and administrative procedures.

Clifford from Nigeria

Mr. Clifford A. Mbakaogu from Nigeria underwent training at FARTC, Kausalyagang under the FAO fellowship from 6. 11. 1981 to 16. 3. 1982. Mr. Clifford was imparted training in different disciplines of freshwater aquaculture.

The following were the technical personnel of CIFRI who attended this orientation course.

Shri A. N. Mohanty, Shri R. K. Langer, N. Sarangi, K. C. Pani, M. P. Singh, D. P. Verma, R. Tiwari, D. Sanfui, G. C. Sahoo, C. Lakra, K. P. Singh, S. C. Mondal, S. K. Chatterjee, J. P. Mishra, S. Krishnan, B. Das, Bhai Lal.

The technical part of the syllabus included operation of limnological equipment, biochemical/physiological apparatus, preparation of chemical reagents, collection, extraction and preservation of biological samples, sample preparation for biochemical analysis, etc.

Aquaculturists from Sri Lanka

Three aquaculturists from Sri Lanka, Mr. W. B. Wilbert, Mr. W. Padamsena and Mr. Vender Poorten were trained in 'Fish farming and management' at FARTC from 1. 4. 1982 to 30. 4. 1982. These trainees were sponsored under ITEC programme of the Ministry of External Affairs, Government of India.

Shri Narayaskara, Shri Chandrasiri and Shri P. Das (from left to right) with the Director.



Training in Fisheries Extension to the Nationals of Sri Lanka

Shri J. A. Chandrasiri and Mr. N. J. W. Narayskkara, Extension Officers of the Department of Fisheries, Government of Sri Lanka were at CIFRI during 1—15 April, 1982 to participate in a training programme in fisheries extension. Various aspects of

fisheries extension and *modus operandi* of CIFRI, State Governments and voluntary organisations in the field were detailed to them. They were apprised of CIFRI's successful experiences in organising group discussions and fish farmers' days. The participants were also trained in the operation and use of audio-visual equipments in extension programme.

AROUND THE CENTRES

New Centre opened at Puri

A new centre of CIFRI has started functioning at puri (Orissa). This Centre visualises a more effective approach to evolve viable technologies in brackishwater fish and prawn seed aising. Unavailability of ade-

quate quantities of fish/prawn seed has been a major constraint in popularising scientific aquaculture. This is more true in the case of prawn culture. CIFRI has been grappling with this problem over the past few years at its Kakdwip farm and elsewhere. Significant headway has been

made. However, with the decline in salinity and increase in turbidity in Hooghly estuary in the vicinity of the Kakdwip fish farm CIFRI was confronted with the question of searching a new base for its researches in this field.

A survey was conducted along the West Bengal and Orissa coast, and Puri was the apt choice. This centre will concentrate on evolving techniques in brood fish maintenance, breeding and raising young ones of important brackishwater fishes and prawns of India. A team of five scientists has been entrusted with this task at Puri.

Fish nutrition studies at FARTC

Analysis of proximate composition of locally available fish feed ingredients is in progress in the fish nutrition laboratory at Freshwater Aquaculture Research & Training Centre, Dhauli. Twenty two locally available feed ingredients have already been analysed. Analysis of feed ingredients available in different agro-climatic regions is also in hand. This would enable us to formulate cheaper balanced diet from locally available materials for fish seed and brood stock on a regional basis. The formulated feeds are simultaneously being tested for their acceptability, intake, growth and conversion efficiency on major carp fingerlings.

BRACKISHWATER PADDY-CUM-FISH CULTURE

CIFRI is trying to extend a helping hand to the farmers who grow paddy in the upper regions of West Bengal. In near future the Institute would be able to tell them how to raise their income level by integrating brackishwater paddy culture with fish and prawn culture. The Institute's success in integrating paddy and fish culture in non-saline zone is widely known. In the recent past our scientists gained notable successes in their effort to extend paddy-cum-fish culture programme to the saline zones at Gopalpur, Hasnabad, Kulti and Taldi areas in 24-Parganas district of West Bengal.

In order to make an indepth scientific study of brackishwater paddy-cum-fish culture, CIFRI has initiated a project at Canning, 24-Parganas during this year in collaboration with the Central Soil Salinity Research Institute. The experiments now in hand at other places also will continue. Both brackishwater and freshwater fish species will be integrated with paddy culture by judiciously manipulating the salinity level and species combination.

The saline paddy plots in West Bengal usually remain fallow during the summer months. Now efforts are being directed to these plots for their year-round utilisation by introducing fishes and prawns. Saline water of the rivers or creeks can

be taken to these plots during the summer months for the culture of euryhaline fishes and prawns. With the onset of monsoon, salinity level of water and soil comes down when paddy can be introduced. The fishes and prawns will continue to grow along with the paddy.

On an experimental basis, prawns, tilapia and mullets will be stocked at different combinations @ 3,000 to 5,000/ha in sequential and synchronous systems. Four salt-tolerant varieties of rice i. e., CSR-1, CSR-6, SR-26B and Sada Mota will be tried. Ecological studies in the plots and biological investigations on the fishes/prawns are being carried out. Supplementary feeding also will be resorted to. Accumulation of residual salinity in the soil during the culture period and its effects on growth of paddy will also be studied under the project. This integration would lead to a continuous utilisation of these monocrop coastal belt areas thereby adding substantially to supplementary income of the farmers.

Research personnel engaged in this project are Dr. G. N. Chattopadhyay, S/shri P. K. Chakrabarti, B. K. Saha, R. N. Dey and A. K. Roy from CIFRI and Dr. A. K. Bandhopadhyay and Shri C. R. Biswas from CSSRI.

SEMINAR

1. Shri B. N. Saigal, Scientist & Officer-Incharge, Library & Documentation, Dr. V. K. Unnikrishnan, Scientist & Smt. Sukla Das, Librarian attended the National Seminar on 'Library and Information Services

in a R & D Organisation' held at Indian Institute of Chemical Biology, Jadavpur, Calcutta on 26 November, 1981. Shri B. N. Saigal & Smt. Sukla Das attended the 13th All India Conference of the IASLIC held at Andhra University, Waltair during 30

December, 1981-2 January, 1982.

3. Shri P. R. Sen, Scientist participated in the seminar on 'Fish seed Production' at Nari Seva Sadan, Cuttack during 1-2 February, 1982 and presented the paper 'Fish seed production in freshwater ponds.'

STAFF NEWS

Ph. D. for A. K. Laal

Shri A. K. Laal, Scientist at Bhagalpur Centre has been awarded the Degree of Doctor of Philosophy by the University of Bhagalpur for his work on the studies on 'The ecology and productivity of swamps in North Bihar in relation to production of fishes and other agricultural commodities'.

Welcome, Mrs. Mitra

Dr. (Mrs.) Krishna Mitra, Scientist-1 joined CIFRI on inter institutional transfer from the Indian Institute of Sugarcane Research, Lucknow.

A. N. Ghosh retires

Shri A. N. Ghosh, Scientist of CIFRI on deputation as the Managing Director of West Bengal State Fisheries Development Corporation took voluntary retirement from the services of CIFRI and the Council w. e. f. 16 June, 1981. At the Institute he

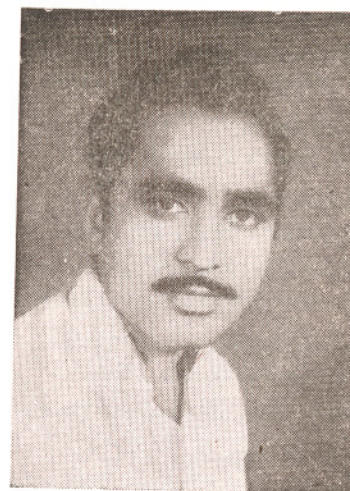
had made significant contribution in the field of estuarine fisheries.

P. Ray promoted

Shri P. Ray has been promoted to the grade of S-2 from S-1 w. e. f. 25 February, 1982.

Sukumaran successful in ARS Examination

Shri P. K. Sukumaran, Scientist at Bangalore Research Centre has been selected for appointment as Scientist-1 through the competitive examinations conducted in 1981. He is one among the 5 scientists selected through the examination.



Dr. A. K. Laal

CIFRimonial

CIFRI Newsletter wishes these newly weds a happy married life—

Y. S. Jadava and Sunita,
Udayan Chatterjee and Deepti,
Samir Bose and Kalyani, D. K.
Deysircar and Mala.

LIBRARY

New arrivals

Books

Kapoor, S. K., A. K. Roy & P. B. Roy *ed.*
I. Organisation of data services in India.

II. User education and training programmes : papers presented at the 13th IASLIC Conference held at Andhra University, Waltair December 30, 1981-January 2, 1982 (IASLIC Special Publication No. 21), 1981
Rajan T. N. *ed*

Indexing systems : Concepts models and techniques, 1981.
Gorbman, Aubrey & Howard A. Bern

LIBRARY

A textbook of comparative endocrinology, 1962

Gulland, J. A.

Manual of sampling and statistical methods for fisheries biology : Part - 1 Sampling methods (FAO Manuals in Fisheries Science No. 3) 1966

Augusthy, K. T.

Fish farming in Nepal, 1979

Macan, T. T.

Freshwater ecology, 2nd edition 1963

Loriane, John A. & E. Trevor Bell *ed.*

Hormone assays and their clinical application, 4th edition, 1976

Lackey, Robert T. and Larry A. Nielsen *eds.*

Fisheries management, 1980

Evaluation of Fish Farmers Development Agency Programme, 1981

T. V. R. Pillay

Planning of aquaculture development an introductory guide, 1977

Agee, Warren K. Phillip H Ault & Edwin Emery

Introduction to mass communications, 6th edition 1979

Federer, Walter T,

Experimental design-Theory and application, 1958

Chen, T. P.

Aquaculture practices in Taiwan, 1976

Odum, Eugene P.

Ecology : The link between the natural and the special sciences Second edition 1975

Thompson, Louis M. and Frederick R. Troch

Soils and soil fertility, 4th edition, 1978

Macdonald A. M. *ed.*

Chambers Twentieth Century Dictionary, 1972

Sharma, Arun Kumar & Archana Sharma

Chromosome techniques—Theory and practice, Third edition, 1980

Stevenson, John P.

Trout farming manual 1980

Basset, J., R. C. Denney, G. H. Jeffery and J. Mendham

Vogel's text book of quantitative inorganic analysis including elementary instrumental analysis, Fourth edition 1978

Duffus, John H.

Environmental Toxicology : Resource and environmental sciences series 1980

Cook, Christopher D. K. *et. al.*

Water plants of the world : A manual for the identification of the genera of freshwater macrophytes 1974

Balon, E. K. & A. G. Coche *eds.*

Lake Kariba : A man-made tropical ecosystem in Central Africa, 1974.

Journals

1. Australinn Journal of Marine & Freshwater Research, 32 (2 & 4), 1981
2. Australian Journal of Zoology, 29 (2 & 3), 1981
3. Agricultural Situation in India, 35 (10-12) & 36 (1-4 & 6-7), 1981
4. Aquatic Sciences & Fisheries Abstracts, Part I ; Biological Sciences, 11 (12), 1981
5. Agricultural Wastes : An International Journal, 3 (1-3) 1981
6. Aquaculture Abstracts, 3 (1st. quarter), 1981
7. Biological Abstracts, 72 (3, 5-7), 1981
8. Canada Fisheries & Marine Service, Technical Report Nos. 970, 1022, 1026 & 1031, 1980-1981.
9. Current Science, 50 (24), 1981 and 51 (1-2), 1982
10. Doklady Biological Sciences, 254 (1 6), 255 (1-6) & 256 (1-6), 1980
11. Everyman's Science, 16 (5), 1981
12. Environmental Sanitation, 34 (2-3) 8, 1981
13. Environmental Sanitation Reviews, Nos. 4/5, 1981
14. Estuaries ; Journal of the Estuarine Research Federation, 4 (3), 1981
15. Economic and Political Weekly, 16 (52), 1981 and 17 (1 & 2, 3-5), 1982
16. Extension Bulletin, Nos. 161, 162, 164-166, 1981
17. Ex Libris, 10 (11), 1981
18. Freshwater and Aquaculture Contents/Tables, 4 (10-12), 1981
19. Fisheries and Fish breeding in Israel, 16 (2), 1981
20. Fishing News, Nos. 3541-3543, 3545, 3547-3549, 3556-3557, 3539, 3560 & 3558, 1981-1982.
21. Freshwater Biology, 11 (6), 1971
22. Fish Technology Newsletter, 2 (8-10), 1980
23. Fishery Technology, 18 (1), 1981
24. Fishing Chimes, 1 (8-10) 1981-82
25. Freshwater Biological Association, England. Scientific Publication No. 44, 1981
26. A Guide to Current Literature in Environmental Health Engineering & Science, 8 (8-10), 1977 and 12 (10-11), 1981
27. Genetic Abstracts, 13 (12), 1981
28. Indian Farming, 31 (7-9), 1981
29. Indian Journal of Biochemistry & Biophysics 18 (5-6), 1981
30. (The) Indian Journal of Animal Sciences, 51 (12), 1981
31. Indian Journal of Agricultural Economics, 36 (4), 1981
32. Intensive Agriculture, 19 (8), 1981
33. IASLIC Newsletter—for the month of September-October and November-December, 1981
34. Information Leaflet, Department of Fish & Game, No. 195, 1981
35. (The) IDRC Reporter, July-September, 1981
36. ICLARM Newsletter, 4 (3), 1981
37. ICLARM Conference Proceedings, 4 (2), 1981
38. Indian Journal of Fisheries, 26 (1 & 2), 1979
39. ICAR Reporter, July-September, 1981
40. Japanes Journal of Medical Science & Biology, 34 (5), 1980
41. Journal of the Bombay Natural History Society, 78 (3), 1981
42. Journal of Ecology, 69m (1-3), 1981
43. Journal of Experimental Biology, No. 94, 1981
44. Canadian Journal of Fisheries and Aquatic Sciences, 38 (10-11), 1981
45. Journal of Experimental Marine Biology & Ecology, 56 (2, 3), 1981 and 57 (1), 1982

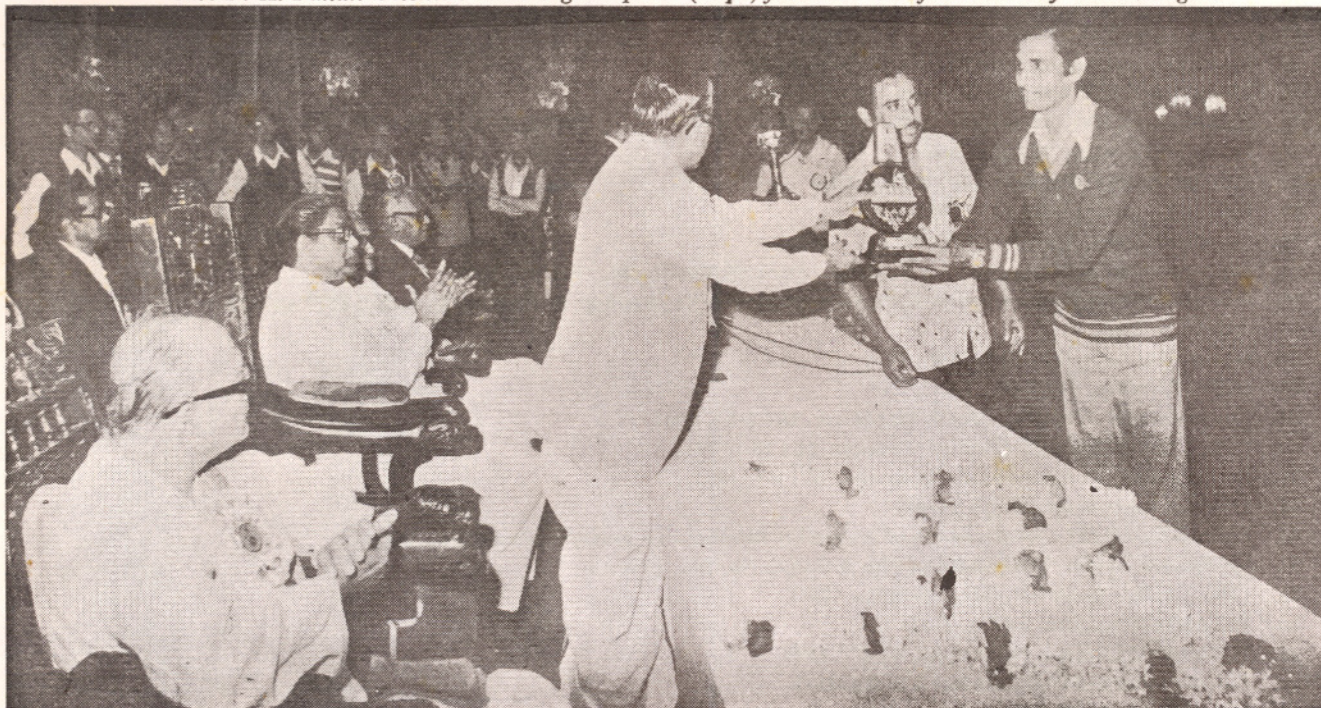
Special prize for CIFRI Pavilion

The CIFRI Pavilion bagged a special prize in the category of Government of India stalls at the 3rd National Agricultural Fair '82 held at Park Circus Maidan, Calcutta. The fair was jointly organised by the Ministry of Agriculture, Government of India and Department of Agriculture, Government of West Bengal from January 23 to February 15, 1982.

The achievements of the Institute were highlighted in the exhibition through posters, blow-up photographs, lighted panels, models, live fishes and prawns etc. The pavilion attracted about 2.3 lakhs people from different walks of life.



Shri P. K. Pandit Scientist receiving the prize (top) from the Chief Minister of West Bengal.



Edited by :

B. N. Saigal, V. V. Suguan, V. K. Unnithan, (Mrs) G. K. Vinci and S. Paul.

Published by :

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.