



Fish Technology newsletter

Vol. III No. 3

JANUARY-MARCH 1982



Training in Fish Processing at Tuticorin.
Fish wafers ready. (Report on page 7)

CENTRAL INSTITUTE OF FISHERIES TECHNOLOGY

MATSYAPURI P. O.

COCHIN - 682 029

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Foreword

EDITORIAL COMMITTEE

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Secretary

Shri P. MADHAVAN
Member

Dr. P. N. KAUL
Member

Photography Shri K. BHASKARAN

Art Shri G. MOHANAN

Fish Technology Newsletter issued every month is intended to bring the fishery industry in India in touch with some of the important developments in fisheries technology resulting from investigations carried out at this Institute and elsewhere. It is not a research publication. Every effort has been earnestly made to express the ideas in non-scientific language. Its ultimate aim is the application of the results of contemporary research for the advancement of our fishery industry.

Fish Technology Newsletter does not owe allegiance to any manufacturer, patent, product or development agency unless otherwise specified. Its purpose is to open up a communication channel through which useful ideas can be exchanged, problems discussed and success shared. The process of exchanging views and opinions makes it easier to identify the real issues and that is where problem-solving begins.

We welcome contributions from any source which will help to achieve our above-mentioned aim. The sources of all such contributions will be acknowledged. We sincerely hope that the current events and informations contained in the columns "GLEANINGS FROM OTHER JOURNALS" and "LET'S TALK IT OVER" will be of interest to the Indian fishing and fish processing industries.

We also welcome suggestions from our readers for improvement in the contents and get-up of Newsletter. Any part of this publication may be reprinted in any language if the translation is true and the source is acknowledged.

Abbreviation: Fishtech News

Editorial Committee.

Store the fish for off season*

Fish as a delicacy is in use among both affluent and other sections of the population. This is a good source for nutrients and liked by many of the people. The population at the sea-shore gets it at a cheap price during seasons. However, its availability is reduced during off season. Any way, for the interior markets its availability is limited, especially so during off season. During this period the dry and cured fish could be seen in the market. Though the consumer is interested in the fish, its quality and appearance deter him to purchase it. This is so, as the quality of the product is not clean, adhered with mud and unhygienic. Hence, to overcome this situation, the Central Institute of Fisheries Technology has recommended a method which is simple and can be followed by any one. According to this, the consumers can purchase the good fish available during the season and cure it for use during the off season. The curing process is explained below in simple steps.

MATERIALS NEEDED:

a) Fish - Quality of fish as required by the household.

b) Salt - Clean table salt (Sodium chloride), quantity depending on the fish used.

c) Cement tank - A small cement tank

d) Sodium propionate - required in small quantities.

e) a table for curing

f) knife

g) Clean water

h) thick polythene table covers - 2

i) perforated plastic containers - 2

THE METHOD: The following steps should be followed while curing the fish.

1. Clean the fish purchased so as to clear it from the slime and dirt adhering to it, by water.

2. Use clean water for all the cleaning operations during curing process.

3. Now take the fish to be dressed. Here dress the fish by removing the viscera. In the case of sardines etc. it is advisable to remove scales also.

4. The viscera should be immediately removed to a waste basket and disposed off later.

5. The dressed fish is to be washed in clean water and the water should be allowed to drain off. For this purpose perforated plastic containers could be made use of.



Dressing of fish.

6. Bring the fish to the cleaned table and apply good quality of salt uniformly by hand. The salt to fish ratio in general should be 1:4. (One part of salt to four parts of fish.)
7. After salting, stack the fish in cleaned cement tank and keep it for 24 hours.
8. After 24 hours take out the fish and rinse in fresh water to remove excess solid salt adhering to fish.
9. The salted fish is to be sun dried. These can be kept on the house tops or in the verandah either by constructing a cement platform or a bamboo platform at height of more than 4 ft. to avoid dust adhering to it.



Uniform application of salt by hand.

This should be dried to a moisture content of 25 percent or below.

10. Prepare the preservative.

The preservative could be prepared by adding 97 parts of salt to 3 parts of sodium propionate, and mixing it intimately.

11. Dust the dried fish with the preservative on all parts of the fish.

12. Later, store the fish in sealed polythene bags or alkathine lined gunny bags. This prevents excessive dehydration during storage.

With the above process the product can be kept for a minimum period of 8 months without impairing the quality. This exercise would help maintain quality and get as much fish needed for the off season, than to purchase fish with low quality and at exorbitant rate. The materials could be used for the next season also.



Drying of fish on raised platform.

★Written by Shri G. R. Desai and Dr. P. N. Kaul, CIFT, Cochin.

A Survey on the Underutilisation of Fish Processing (Freezing) Plants in India - IV

Maharashtra

Located in the west coast of India, Maharashtra ranks second in the number of fish processing (freezing) plants in the west coast of India. It has a coast line of about 600 kms. The export of frozen prawns from this state was started as early as in 1965. Nearly 40% of the total penaeid prawn catch in the west coast during 1979 is from this state. As good and processable varieties of prawn were available in plenty in this state, a number of fish processing plants came into existence. In the beginning of 1979, there were 32 fish processing plants engaged in freezing of prawn lobster tails, squids and other fishes. Of these, 11 were under 5 tonnes, 10 were 5 to 10 tonnes and 11 were above 10 tonnes daily capacity. For estimating the idle capacity, 9 plants were sampled as per a pre-designed sampling plan. Data on the installed capacity, actual production and factors leading to under-utilisation of the plants were collected from these plants through personal interviews. The total installed capacity, annual production and idle capacity were esti-

mated for the state as a whole and for each stratum for the years 1978 and 1979, by taking 250 normal working days in a year and for single, double and triple shifts per day. These estimates are presented in the table.

The total installed capacity of all the plants with double shift and 250 normal working days in a year for 1978 and 1979 worked out to be 55.5 thousand tonnes each, while the production estimates were 14.20 and 17.6 thousand tonnes respectively. The idle capacity estimates for 1978 and 1979 worked out to be 68.2% respectively. Compared to 1978, an improvement in the capacity utilisation was noticed during 1979, due to improved prawn catch. As per the published landing figures there was an increase of 11% in penaeid prawn landings in 1979 compared to 1978. Next to Goa, plants in Maharashtra were having comparatively less idle capacity among the different maritime states in the west coast of India. The stratum wise estimates of idle capacity showed that plants of 5-10

tonnes capacity per day had least idle capacity compared to plants under 5 tonnes and above 10 tonnes capacity per day.

The major factors responsible for the idle capacity of the fish processing plants in this State were

- (1) Shortage of raw material,
- (2) High cost of production due to rise in raw material price and cost of packing materials,
- (3) Shortage of power,
- (4) Labour troubles,
- (5) Shortage of potable water and
- (6) Unhealthy competition among processors in processing the raw material.

Based on the survey following are a few recommendations which may help to reduce the idle capacity of the plants in this State.

- (1) Subsidy to HSD oil to the class of fishing vessels,
- (2) Diversification of products,

Training in Fish Processing

A six day training course in fish processing was organised at Tuticorin in March, 1982 in collaboration with Department of Fisheries, Tamilnadu. Thirty-nine candidates representing fishermen community, cooperative societies, fish curing industry, cured

fish exporters association and Fisheries Departments participated in the training course.

Shri S. T. Chari, Joint Director, Department of Fisheries, Tamilnadu, inaugurated the programme on March 22. Chevalier C. I. R. Machado, K. S. G., Tuticorin,

presided over the function. S/Shri V. V. D. Nityanandan, President, Chamber of Commerce, Tuticorin and S. Ambrose Fernando, Managing Partner, Gulf Export House, Tuticorin, delivered the felicitation address. Shri M. R. Nair, Senior Scientist of CIFT

(3) Increase the production of raw material (Prawn),

power to processing factories,

water and

(4) Uninterrupted supply of

(5) Supply of good potable

(6) A check on issuing licence to new plants.

IDLE CAPACITY OF PROCESSING PLANTS IN MAHARASHTRA

(Based on 250 normal working days)

	Single shift		Double shift		Triple shift	
	1978	1979	1978	1979	1978	1979
Total installed capacity (in thousand tonnes)	27.8	27.8	55.5	55.5	83.2	83.2
Total estimated idle capacity (in thousand tonnes)	14.5	10.1	41.3	37.9	68.5	65.6
% idle capacity	52.1	36.4	73.8	68.2	82.4	78.8
<u>% idle capacity stratum wise</u>						
under 5 tonnes/day	56.8	57.9	78.5	78.9	85.7	85.9
5-10 tonnes/day	56.9	26.3	69.9	63.1	79.9	75.4
above 10 tonnes/day	49.5	35.5	74.3	67.8	62.6	78.5

Prepared by H. Krishna Iyer, P. Sreenivasa Rao, G. R. Unnithan, A. K. Kesavan Nair and R. G. Nair.

welcomed the gathering and Shri Jayabhaskaran, Deputy Director of Fisheries, Tuticorin, proposed the vote of thanks.

With the advancement of fisheries technology in India several scientific methods have been recommended for fish processing and preparation of speciality products from miscellaneous fish. These improved technologies are transferred to the actual users through training programmes, demonstrations etc.

Tuticorin is the renowned centre for the export of cured fish. Here the traditional method is followed for curing fish and so there is good scope for improving the present practice. Similarly, a part of the large quantity of miscellaneous fish landed at Tuticorin can be utilised for the production of fish wafers, fish soup powder, fish pickles etc.

The usual defects observed in the traditionally cured fish is the growth of fungus and red halophiles reducing the shelf life of the product considerably. Moreover, high moisture content, sand content, presence of maggots, brown discoloration, off odor etc. are the defects found in cured



Shri S. T. Chari, Joint Director, Dept. of Fisheries, Tamilnadu, inaugurates the training programme. Next to him (sitting) are: S/Shri S. Ambro Fernando, V. V. D. Nityanandam, Chevalier C. I. R. Machado and Jayabhaskara

fish produced by traditional method. All these defects can be controlled by improved methods of fish curing and packaging.

A large quantity of miscellaneous fish is landed at Tuticorin. Even though miscellaneous fish is having high protein and mineral contents they are not fetching high price mainly due to their small size. Such fish can be utilised for production of fish wafers and fish soup powder etc. These items are likely to have good markets. Similarly, pickles also can be prepared from fish by scientific method. CIFT has developed improved and new

techniques for the production of all the above products. These techniques were demonstrated in detail in the training course.

It may be mentioned that some of the candidates trained by CIFT in other parts of the country have started commercial production of and improved fishery products formulated by this Institute. Nationalised banks are known to provide loan for starting such industry in small scale.

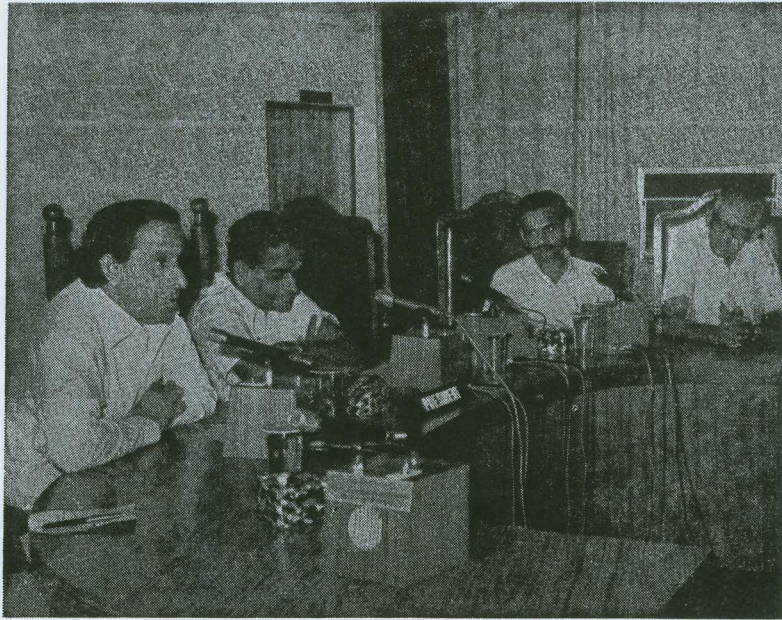


Training Course on FDA Methodology

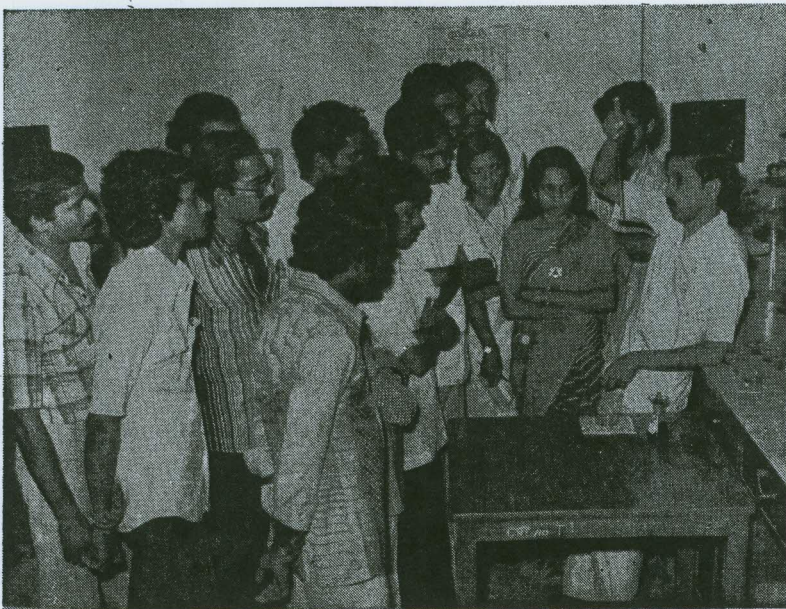
A three-week training course on fish inspection and quality control was conducted at CIFT in Jan-Feb 1982. Forty processing technologists from different fish processing factories in the country attended the training course in three batches.

Sponsored by the Marine Products Export Development Authority (MPEDA) with the assistance of CIFT, the aim of the course was to impart the methodology adopted by the United States Food and Drug Administration and other agencies in regard to the processing of fishery products and its quality control.

Inaugurating the training course on Jan 31, MPEDA



Shri S. N. Rao (extreme left) Director, MPEDA, inaugurates the training course. next to him are: Dr. C. C. Pandurangarao, Director, CIFT, Dr. K. Gopakumar, Scientist in Charge of the Training Course and Shri M. R. Nair, Senior Scientist of CIFT.



Trainees at the CIFT laboratory.

Director, Shri S. N. Rao, said it was the primary responsibility of the processing factories in the country to keep the quality of their products suitable to the International Markets.

“With this end in view MPEDA is implementing a scheme throughout the country to provide subsidy to the processing factories. This will enable them to set up their own quality control laboratories with qualified technicians to supervise and maintain quality of their own processed seafoods meeting all the International standards requested for such products”, he said.

Symposium on Harvest and Post Harvest Technology of Fish

A four-day symposium on Harvest and Postharvest Technology of Fish will commence at Cochin on November 24, 1982.

Organised by the Society of Fisheries Technologists (India), the symposium will deal with subjects like Fishery Resources, Fishing crafts, Fishing Gear and Methods, Machinery, Equipment and Instrumentation, Handling and Transportation of Fish, Biochemistry and Bacteriology of Fish Preservations and Storage, Fish Processing, Fishery Products and By-products, Fish Inspection and Quality Control, and Extension and Education in Fisheries.

The organisers have called for contributions on one or more of these topics.

Experience papers contributed to the symposium should present unpublished data. Manuscripts prepared in the format (a) Abstract, (b) Introduction (c) Materials and Methods, (d) Results and Discussion (e) Acknowledgement, if any, and References may ordinarily be limited to 15 typed pages in case of experience papers and 25 pages in case of Review Papers. An abstract in not more than 200 words depicting salient features and results of investigations to be reached to the convener, Matsyapuri

P. O. Cochin - 682 029, not later than May 31 and the text August 31, 1982.

A registration fee of 125/- will be charged per participant from India and U. S. \$ 25.00 or its equivalent per participant from abroad. Registration fee for bonafide members of the Society will be Rs. 15/-

Cost of travel, accommodation, boarding, tourist excursion etc. will have to be borne by participants through their sponsoring organisation.



CIFT Director, Dr. C. C. Panduranga Rao, presided over the function. Dr. K. Gopakumar, Scientist-in-Charge of the programme welcomed the gathering.

The technologists, most of them postgraduates in science, were given training both in

theory and practicals by scientists of CIFT.

The topics covered were: fundamentals of bacteriology of fish and shell fish, salmonella in fish products—detection and identification techniques—source of microbial contamination in fish and fishery

products, examination of frozen and deveined shrimp for fly contamination, hygiene and sanitation in processing unit techniques in food sampling and U. S. FDA methodology on aseptic sampling procedure for imported frozen shrimp for salmonella (Procedure supplied by U. S. FDA).

Let's Talk it Over

M/s Export Inspection Agency, Cochin

There is a proposal from certain quarters to raise the present level of sodium-meta bisulphite from 30 ppm to 300 ppm with a view to overcome the problem of melanosis. Your comments please.

CIFT: Although sodium meta bisulphite inhibits melanosis at a concentration of 30-300 ppm, there is widespread resistance in many countries to the use of sodium/potassium metabisulphite in food formulations. As such it is felt that clearance on the use of the metabisulphite in shell fish processing need not be given at this stage. There is also every possibility of this affecting the seafood industry adversely. Moreover, we are not in a position to monitor the use of the metabisulphite even in limited concentrations and excessive use of this chemical (at higher concentration level) which is very likely to occur, will cause bleaching and will also trigger off several chemical reactions making the product unacceptable to the consumer.

M/s Unisystems Private Limited, New Delhi

It is understood that

CIFT has carried out some studies on chitosan coating on corrugated boxes. Please enlighten us.

CIFT: This Institute has carried out some preliminary studies on the effect of chitosan coating on the properties of corrugated fibre board. About 2% chitosan dissolved in 1% acetic acid is applied carefully on the outer surface of the corrugated fibre board by means of a brush or by passing through a roller coating machine. The treated samples are then dried in sun for a period of 15 mins. and the chitosan is then insolubilised by exposure to ammonia gas. The boards thus treated were seen to have higher bursting strength and low Cobb value.

To coat 6 sq. metre of corrugated board, 10 grams of chitosan is required. We could even advise coating the craft paper itself before converting it into the corrugated board in which case, better results can be expected.

Manager, Industrial Engineering Dept. Bharat Heavy Electricals Ltd., Ranipur, Hardwar

We understand that your organisation has taken up some projects for the deve-

lopment of rural areas. Details please.

CIFT: Some of the schemes recommended by this Institute for adoption on small scale industry basis in rural areas, especially in fishing villages, are listed below.

1. Canning of clam and mussel meat.
2. Production of pickled products from clam and mussel meat as also other varieties of fish available locally.
3. Extraction of rays from fresh or dried shark fins.
4. Production of quality cured product from fish.
5. Fabrication of nets, hooks and other fishing implements.
6. Production of fish ensilage from low quality fish and fish wastes.
7. Production of fish flakes, fish soup powder, fish noodles etc. from low quality fish.
8. Fabrication of insulated fish transport containers.

A few of the above were tried successfully by this Institute in selected fishing villages in different parts of the county as part of the Lab-to-Land Programme launched by ICAR.

CIFT Appointments, Promotions etc.

Appointments

Shri T. Mathai	Supporting staff-Headquarters
Shri P. T. Anthappan	„ „
Shri T. K. Viswanathan	„ „
Shri G. M. Vaghela	Technician I Headquarters
Shri N. A. Kunjikannan	Technician II Headquarters
Smt. P. V. Thankamma	Jr. Clerk Headquarters
Shri Aravindkumar Premlal Joshi	Technician II Veraval Research Centre
Shri Dhana Bhima Chuda Suna	Supporting staff-Veraval Research Centre
Shri N. N. Goswami	„ „
Shri Damodar Rout	Technician I Burla Research Centre
Shri Subash Chandra Behera	„ „
Shri Kusuma Haranath	Technician I Kakinada Research Centre
Shri C. Sree Hari Babu	Technical Assistant Kakinada Research Centre
Shri Koruth George	Engine Driver Goa Research Centre

Promotion

Shri T. T. Velayudhan SSG I - SSG II - Headquarters

Transfers

- S/Shri N. Padmanabha Pillai &
C. Sreedharan, SSG I of Headquarters-CTCRI Trivandrum
- S/Shri A. Harnath, Tech. Asst. Burla Research Centre-CTRI Rajmundry
- S/Shri T. Velayudhan Achari, Asst. Accounts Officer relieved to assume charge as Account Officer at CRRI, Cuttack

Reversion

On reversion from National Bureau of Soil Survey and Land Use Planning, Bangalor
Shri P. J. Joseph rejoined CIFT as Superintendent.

Shri Vasudev G. Kubal T-2 of Goa R. C. reverted to Supporting Staff Grade-II

Gleanings from Other Journals

More Polish aid for Fisheries likely

The Polish Ambassador to India, Mr. Ryszard Fijalkowski who is on a visit to Kerala, on Thursday discussed with the Chief Minister, Mr. K. Karunakaran, the prospects of further collaboration between Poland and Kerala.

Poland and India are having long-term agreements on technical collaboration to develop fishing industry in Kerala and other States.

The discussion was mainly about chances and feasibility of extending the collaboration.

The Ambassador later told newsmen that Poland would collaborate with the State in manufacturing fishing trawlers and setting up of fishing harbours and fish processing facilities.

—HINDU

Steps to Boost Marine Products Export

The Union government has initiated a number of measures, including surveys of important potential foreign markets, to double the export earnings from marine products by the end of the Sixth Plan. The earnings are to be stepped up to Rs. 600 crores by 1984-85 from the current financial year's projected level of Rs. 300 crores.

The market surveys will cover various items of marine products in the U. S., Canada, West Europe, Japan, Australia and West Asia. The India Trade Centre in Brussels has already started work for such studies in Spain, Italy and Greece.

Besides, it is proposed to send sales-come-study teams to Japan, the U. S., West Europe, Australia, Singapore, Malaysia and Hong Kong.

Moreover, Indian participation in important trade fairs and exhibitions to be held in Australia, the UK, Belgium, the Netherlands, West Germany and Italy would be made more effective.

Apart from these steps, a task force set up by the commerce ministry for promoting the export of marine products, is expected to submit its report shortly.

Export earnings from marine products in the first six months (April-September) of the current financial year provisionally placed at Rs. 130 crores recorded an increase of 18 percent over the level of Rs. 110 crores in the same period last year. The target of Rs. 300 crores likely to be attained as exports in the latter half generally are considerably higher than the level touched in the first half of the year.

According to the Sixth Plan targets, export of marine products would have to be increased from Rs. 300 crores in 1981-82 to Rs. 412 crores in 1982-83, Rs. 493 crores in 1983-84 and Rs. 591 crores in 1984-85.

The government has already taken some steps to raise the seafood export earnings. These include chartering of deep sea fishing vessels, prawn culture, setting up of peeling sheds, distribution of insulated boxes on subsidy, and assistance for developing new items in new foreign markets.

—ECONOMIC TIMES

Boost to Deep Sea Fishery Planned

The government proposes to expand the fleet of deep sea vessels from 57 to 350 by the end of the current five year plan, the Union minister of state for agriculture and rural development, Mr. R. V. Swaminathan, said in New Delhi.

Inaugurating the day-long national workshop on fisheries development, the minister said, marine fish production for 1982-83 has been fixed at 1.86 million tonnes against 1.69 million tonnes in the previous year.

The target for inland fish production has been increased to 1.1 million tonnes this year against 955,000 tonnes in 1981-82, the minister added.

—TOI

P. MADHAVAN



Shri P. Madhavan, Scientist-S2, is working in the Processing Division of CIFT. Born on May 5, 1941, Shri Madhavan matriculated from the R. S. R. V. High School, Velur. Graduating from the St. Thomas College, Trichur, he took his M. Sc Degree in Applied Chemistry with 1st class and 1st Rank in 1963 from the Kerala University.

Joining CIFT in July 1963 as Research Assistant, Shri Madhavan was subsequently promoted as Assistant Research Officer in 1964, Junior Fishery Scientist in 1973 and Scientist-S2 in 1976.

Shri Madhavan has worked on different aspects of fish processing and fish waste uti-

lisation. In the field of fish processing he has worked on the canning preservation of marine fishes like tuna, sardine, mackerel and lactarius. He has studied the suitability of ice stored sardine and mackerel for canning. He has also developed a process for canning oil Sardine in its own juice which dispenses with the use of costly vegetable oil. Substantial quantity of such cans were processed in the laboratory in collaboration with MPEDA for the 'ASIA '72 Fair' in Delhi.

In the field of waste utilization like oil for industrial use, production of fish protein concentrates and shark fins he has made creditable contributions. Presently, he is devoting his time on the industrial utilization of prawn shell waste.

Shri Madhavan was the Scientist-in-Charge of the adhoc scheme, "Studies on production and utilization of Chitosan and allied products from prawn waste", in collaboration with Bombay Textile Research Association and Cotton Technological Research Institute, Bombay. Now he has come out successful in

accomplishing the task of perfecting this technology and constructing a pilot plant for production of chitin and chitosan at CIFT. The ultimate success of the work saw the realisation of the export of an industrial waste, prawn shell, in the form of chitosan from our country to overseas market.

Shri Madhavan has participated in the International Conference on Chitin/Chitosan organised by the Massachusetts Institute of Science and Technology at Boston, USA, April, 1977. He will participate in the II International Conference on Chitin and Chitosan scheduled to be held at Sapporo, Japan, in July 1982. The conference is being organised by the Japanese Society of Chitin and Chitosan.

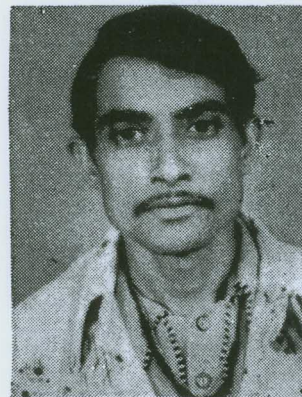
A founder member of the Society of Fisheries Technologists (India), Shri Madhavan was the Assistant Editor of the Journal, Fishery Technology. He is also one of the members of the Editorial Committee of Fish Technology News Letter.



OBITUARY



A group of senior Journalists from Delhi visited CIFT to study its activities and achievements.



Shri N. L. Chorwadi, 31, Supporting Staff (Grade I) Veraval Research Centre, died of long illness on January 12 1982.



Dr. D. Sunderesan (extreme right), Lab-to-Land Zonal Co-ordinator, inspects a net being fabricated by fisherwomen at Chellanam, Cochin. These women are being trained by CIFT Scientists.



Shri C. S. Govindan, 48, Supporting staff (Grade III) of Head quarters Cochin, died of long illness on Feb. 9, 1982.