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Fish technology newsletter

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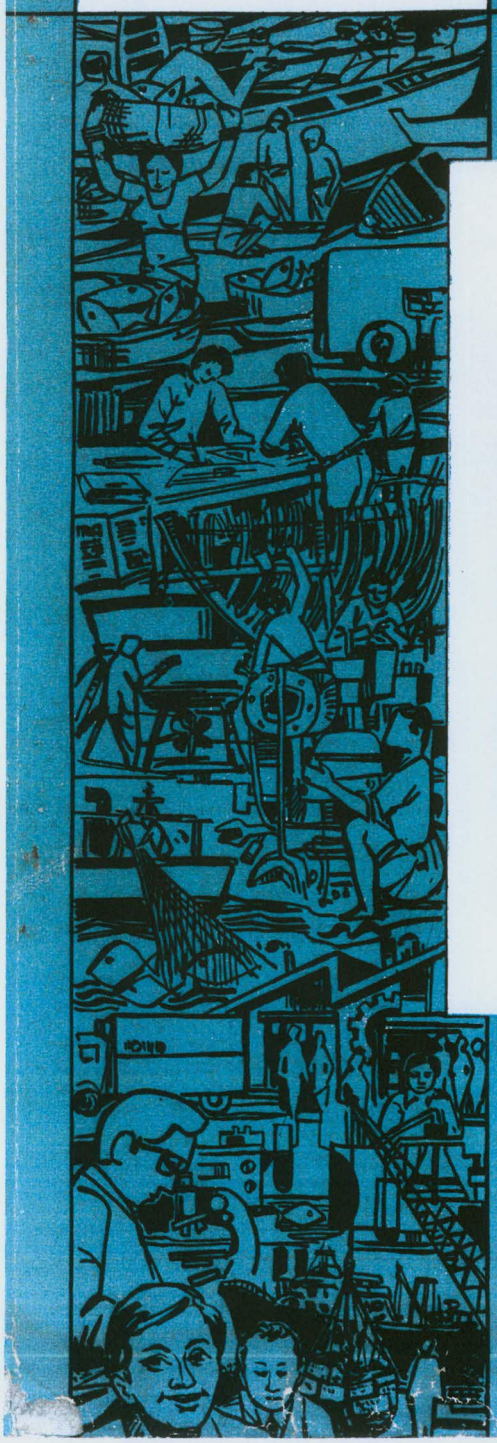


A 38'- OAL traditional Malabar built-up Canoe mechanized with an indigenous inboard - outboard drive has been put to tests and trials by CIFT (Text page 18)

CENTRAL INSTITUTE OF FISHERIES TECHNOLOGY
MATSYAPURI P. O. COCHIN - 682029

CONTENTS

Foreword

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 investingations 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.

A QUALITY CONTROL LABORATORY FOR SEAFOOD PROCESSING PLANT

Quality Control in the seafood industry is a must inorder to create, maintain and continuously improve the product image. As is practiced today in our country, it is mainly carried out by Governmental agencies like the Export Inspection Agency through its compulsory Preshipment Inspection, the Central Institute of Fisheries Technology through its Quality Control Section and the Marine Products Export Development Authority through its field staff. The part played by the industry itself is limited the physical and sensory aspects of quality of raw materials and products are looked after by them to some extent. Only very few of the processing establishments have a quality control laboratory. This is mainly due to very small size of the processing unit, lack of permanent stake in the business and the availability of such facilities on easy terms in the governmental agencies. However, in the recent years there are occasional enquiries on the cost involved and items required to establish a quality control laboratory in the seafood processing units. Also, there has been a suggestion to replace the present Compulsory Preshipment Inspection by a self-inspection system for factories having facilities and personnel for such work. It is also advisable that routine problems related to quality are handled in the factory itself by its own quality coutrol personnel and that only problems of a more serious nature requiring expertise and sophisticated facilities be referred to the governmental agencies. This write - up, it is hoped, will largely satisfy the requirements of a laboratory for routine quality control work.

Scope of the laboratory

In the present set up of the industry in our country, the major items that have to be tested in the quality control laboratory are: raw materials, finished products (frozen & canned), miscellaneous items like bleach liquor, detergents and fish meal. The characteristics to be tested can broadly be divided into four categories; viz., physical, chemical, bacteriological and sensory. Physical charecteristics relate to size, weight, etc. Chemical characteristics require the estimation of sodium chloride and acidity in the brine of canned products; moisture, protein, sodium chloride, fat and acid insoluble ash in fish meal and chlorine content in bleach liquors. Microbiological requirem necessitate the determinat of total plate count, count E. coli, coagulase positive phlococci, faecal steptococii tests for salmonella and c mercial sterlity. Sensory ev tion relates to factors spoilage, discolouration, ma ial appearance, colour, od texture and flavour. A qua control laboratory attached a seafood processing fac shall have facilities and pe nnel to carry out the afore tests.

Staff requirements

A quality contoller a laboratory assistant are minimum staff required. Quality Controller shall b graduate or post graduate Industrial Fisheries/ Fisher Food Technology/ Science b to fisheries and shall have s experience in processing quality control. The laborat Assistant shall be a matricu with some experience in seaf analysis.

Location

The laboratary shall kept separated from the pr ssing area so that fu odours etc. from the laborat do not contaminate the p uct. However, easy access

the processing plant is a must. As far as practicable the area shall be free from foul odours, dust, too much noise etc.

Space requirements

An area of 20 Sq. m is resonably sufficient for the laboratory. It is preferable to have it divided into 2 to 3 separate rooms to accomodate the various categories of tests. Water and electricity shall be available.

Furniture, equipments, glasswares and chemicals

Working tables with attached washing sinks, almirah to store chemicals, drying rack, office table, chairs etc. are the usual pieces of furniture required.

Air ovens, incubators, sterilizer, balances, water bath, arrangement for burners (L.P.G. gas Cylinder & bunsen burners), etc. are the major equipments required.

Glass wares like petridishes, test tubes, graduated pipettes, burettes, conical flasks, beakers, measuring cylinders, funnels, crucibles, microkjeldal distillation apparatus, digestion flasks, soxhlet extraction apparatus etc. are usually required.

Miscellaneous items like filter paper, tripod stand, pipe clay triangle, wire gauge, rubber tubing, innoculating needles etc are also required.

Chemicals required to carry out routine chemical estimations are silver nitrate, potassium chromate, sodium hydroxide, phenolphathalein, Sodium thiosulphate, acetic acid, potassium iodide, soluble atarch etc. For microbiological work items like agar agar, peptone, tryptone, different sugars, bile salts, sodium thiglycollate, some dayes and indicators etc. are essential.

Capital Involved for aQC laboratory

The total investment for a laboratoy which can handle all the items as described earlier is estimated to be Rs. 71, 000/- of which Rs.44,000/- is for equipment, glasswares, chemicals and the rest for building and furniture. Details of Capital required are shown in Table I.

Recurring expenditure

For a freezing plant working for 25 days a month the cost of laboratory work, works out to Rs.5,300/- for a canning plant it is Rs.1,200/- and for a fish meal plant Rs.1,125/-. These costs cover cost of chemicals, gas, electricity and water. A further amount of Rs.1,500/- is to be met as salary to the Quality Control Staff. Details of recurring expenditure are shown in Table II.

Conclusion

The capital outlay of Rs.71,000/- is generally not with in the capacity of individual, small and medium sized processing plants. Hence a cooperative effort may have to be made by such processors to establish their common laboratory facility. Further, it is advisable that the recurring cost does not exceed 1% of turnover.

BEACH LANDING CATAMARAN FISHING BOATS

An Alternative to Harbour Construction

Intermediate Technology Industrial Services (ITIS) is undertaking a joint venture in co-operation with a government body and the private sector to. test a new design of fishing boat (the "Sandskipper") which can operate successfully under monsoon conditions in Sri Lanka. Primary funding for the project is coming from the Ceylon Fishery Harbours Corporation (CFHC) and ITIS with local expenses and support being provided by the Wennappuwa Fishing Co-operative and two privately owned companies, Williamson Ltd. and Hemachandra Ltd., (Kandy).

At present the annual fish catch in Sri Lank is around 160,000 tons. It is proposed to increase this catch to about 300,000 tons by 1982. If this target is to be met, larger vessels such as trawlers must be included in the fleet. Such boats, however, need harbours to protect them against the monsoon. There is a shortage of suitable harbours in Sri Lanka and it has been estimated that the cost of building the necessary harbours around the coast would be more than 200 million Rupees (£6 million). CFHC has recognised that if a beachlanding boat can operate successfully under monsoon conditions, its introduction could significantly reduce the requirement for new harbours. With this in mind, a request for assistance was made to ITIS in July 1979.

The Sandskipper designer, Sh. E. W. Gifford, has already worked with ITIS on a fishing dory project (79/111) in Sri Lanka. This second design for a 24 foot catamaran fishing boat is particularly suited to the needs of a beachlanding craft because the twin hulls provide the necessary stability both in the surf and on land. The large deck between the hulls is also useful providing a space for handling fishing nets.

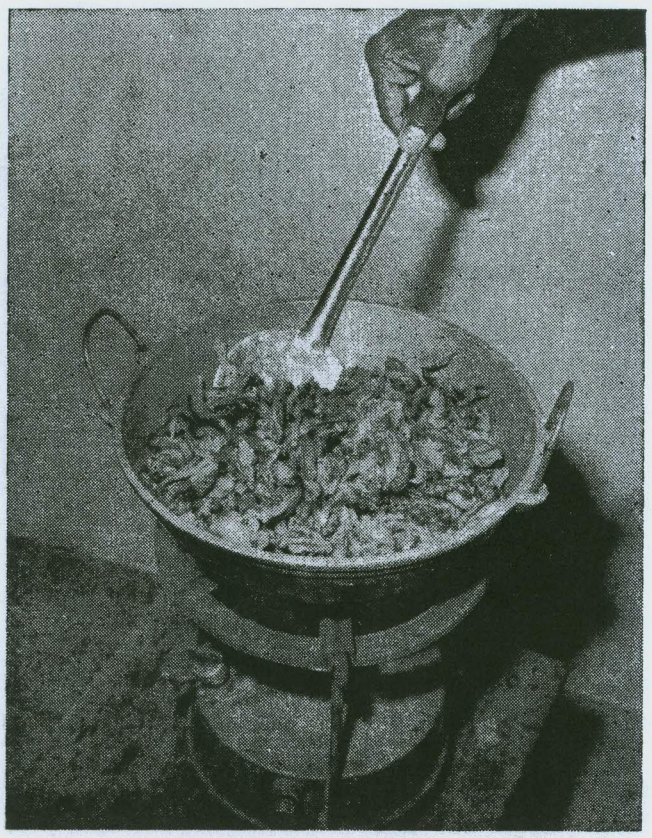
Both the fishing dory and now the Sandskipper are being constructed in Sri Lanka with marine plywood using the stitch and glue method of assembly. This involves wiring sections of the boat together, sealing the seams with epoxy resin and covering them with terylene wedding. After the resin has set the wires are cut and a finish is applied. This system enables the boat to be assembled from kits in small decentralised workshops without the need for sophisticated equipment. A high degree of skill is not required. It is antic ated that the Sandskipper a the dory will compliment ea other, building on the sk established during the fi project and creating sufficie demand to justify local mar facture of marine plywoc The Sandskipper project inv ves sending one complete pr totype, with a Petter lightweig diesel engine and a set templates, from the UK. S Gifford, assisted by a shipw ght, will then oversee t construction of three mo boats in the CFHC worksho During this period, trails testthe landing, fishing andbea hing aspects of the craft w be carried out. The intenti is that part of the trails ta place during the south w monsoon to test the boats the surf.

The Sandskipper offers Lankan fishermen some unic advantages in that the near available equivalent, a 28 fo timber or fiberglass boat conventional design, has beach landing capability and c ts, with engine, about a th more than the Sandskippe target price. Also, use of sail will enable the latter opreate at a lower runn cost and function when f is unobtainable.

READY - TO - SERVE PICKLE FROM MUSSEL MEAT

Recipe

Mussel meat	: 1 Kg.
Refined salt	: 80. 0 gms. dissovled in 400 ml. water.
Chilly powder	: 75.0 gms.
Turmeric powder	: 2.5 gms.
Green chillies (sliced)	: 20.0 gms.
Ginger (sliced)	: 20.0 gms.
Garlic (crushed)	: 10.0 gms.
Curry leaves	: 5.0 gms.
Mustard (skinned)	: 10.0 gms.
Gingelly oil	: Approx. 200 ml. for frying the meat and condiments.
Viniegar (Natural-acetic acid content about 4%)	: 200 ml.



Frying of Mussel Meat

Method

1. Preparation of Meat :

Meat is shucked from clean mussels in the live condition itself (without heating the shell-on mussels to open them up). The extracted meat is washed very well to free it from shell grit and debris.

2. Blanching of the Meat:

The meat is blanched in boiling brine prepared by dissloving 50 gms. of refined salt in 750 ml. of water for every kilogram of meat. The blanching time is 5 minutes of reboiling of the whole mass. The blanched meat is kept for draning well.

3. Cutting of the Meat into pieces :

Individual pieces of the blanched meat are cut into 4 portions after cutting off and discarding the gut protion.

4. Frying of the Meat :

The meat pieces prepared as above are fried in gingelly oil until brown in colour and kept apart.

5. Frying of the condiments and mixing :

Sliced green chillies, ginger

LET'S TALK IT OVER

M/s. Hindustan Lever Ltd., Bombay

What are the main advantages of the conveyer type prawn processing table desinged and developed by CIFT.

CIFT: The material (prawns) as well as waste move to and from the individual worker continuously and as such there is considerable saving in time and labour. There is maximum utilization of labour since the worker cannot remain idle with the constant supply of raw material.

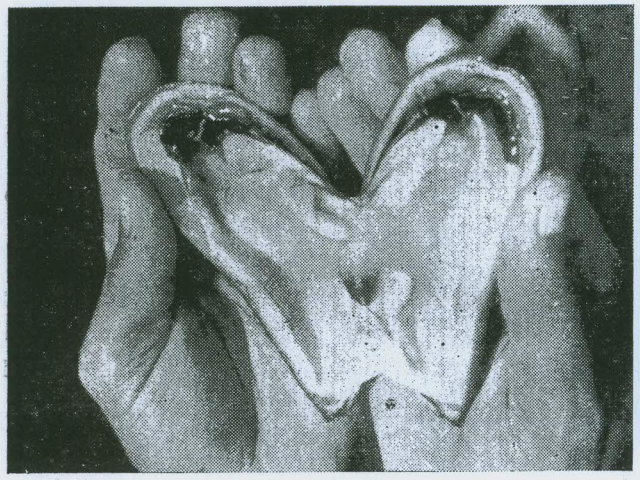
Another advantage is that assorted whole prawns can be fed in the hopper and while peeling there will be automatic size gradation. Big size prawns can be handled by the worker at the fore-end of the table. No separate labour for sorting and size gradation are required. Waste can be dumbed in the dumbing ground by proper modification of the table directly.

Again, the table ensures hygenic peeling of prawns. Inplant quality control can be very well maintained.

M/s. Kauecha & Company, Porbandar

What are the prospects of u dry ice for fish preservation our country?

CIET: This institute has d some preliminary investigati on the use of dry ice for freezing/ cooling. Theoritic dry ice should be an i refrigerant for fish preservat as it has got very high la heat : 136.7K Cals/kg. , 3 ti refrigeration capacity than p ice, compact, non-dripp and inert atmosphere etc.



Opened live Mussel

Mussel Products

currey leaves and crushed garlic are fried in the residual oil remaining in the pan after frying the meat. When they are nearly brown in colour, the chilly powder, turmeric powder and skinned mustard are added and again fried for a short while. The salt solution is added to this and the mixture brought to boil. The pan is removed from the fire, the fried meat is added and mixed thoroughly. After sufficient cooling, the vinear is added and again mixed well.

6. Packing :

The pickle is filled bottles of convenient sizes labelled suitably.

FISH PRODUCTS COLLABORATION WITH U. K. PROPOSED

India and the United kingdom are to collaborate in the development of fish products.

Shri G.K. Kuriyan, Director of the Central Institute of Fisheries Technology made preliminary discussion with the Director, Tropical Products Institute at London. This was under the training arrangement agreed to by the Goverment of U.K (DDA) and Ministry of Agriculture.

with all these properties, dry ice is not considered very ideal for fish preservation for the following reasons:

1) Dry ice is very cold and hence can not be used in direct contact with fish just like ordinary ice. If used, 'freezer burn' may take place.

2) Even if dry ice is used, because of its non-dripping property, uniform cooling is never achieved and ice to fish contact gets seprated soon.

3) Economically, it is 20-40 times as costly as plain ice and is not freely available every where. It is also difficult to produce when compared to plain ice.

Technically, dry ice can be used for cooling refrigerated fish vans in place of mechanical systems. Such vans have, however, not been developed so far in India. As such, for all these reasons, there does not appear to be much prospect of use of dry ice for fish preservation in our curry, atleast for the presant.

Ms Hindustan Lever Ltd. Bombay

It is learnt that CIFT has developed a remote sensing freezer temperature alarm. We would like to know some of the details of this instrument.

CIFT: This instrument measures the temperature of the freezer and displays the same at a remote and convenient place. An alarm has been provided to indicate a change of temperature from its present value. The information can also be fed to continuous recorders for permanent records.

Features

Temperature range	:	+30°C to -40°C (other ranges can be provided)
Accuracy	:	+ 1%of the range
Distance between the freezer and the display point	:	upto 2km
Power supply	:	220 VAC
Meter size	:	30x 12x 20cms
Current consumption	:	Less than 46ma at 6V
Two models are available with alarm and without alarm		
Approximate cost	:	Rs. 3, 000/-without alarm Rs. 5000/- with alarm

Appointments, Promotions, Transfers

S/ Sh. Gopal Chandra Adhikari and Satish Chadra B. Purohit were appointed as Junior Clerks at Burla and Veraval Research Centres rsepectively.

Shri Radhu Pande, S. S. Grade III, Burla Research Centre was promoted as Driver (Launch) on adhoc basis.

Smt. Rani Mary Jacob, Scientist Sl ,CIFT Cochin, was tranferred to Centrel Marine Fisheries Reserch Institute, Vizhinjam.

Sh.M.P.Chandrasekhrran, Superintendent, rejoined CIFT after working for some time at CTCRI, Trivandrum.

Table I

Capital involved for a quality control laboratory (in Rs.)

	For all the plants together	For freezing plant only	For canning plant only	For freezing & canning plants together	For fish meal plant o
Building	18000	18000	18000	18000	18000
Furniture	8850	8850	8850	8850	885(
Equipment	26760	19250	14160	19460	1275(
Glasswares and Miscellanious	11590	8653	5618	8813	643:
Chemicals	5896	5259	1262	5533	73:
Total	71096	60012	47890	60656	4676:

Table II

Recurring Expenditure

	No. of samples to be taken		Cost of chemicals, gas electricity & water (in Rs.)		
	per day	per week	per day	per week	per month
	1	2	3	4	5
For Freezing plant					
1. Bacteriological analysis excluding Salmonella & Shigelle of water	1		1 X 8 = 8		8 X 25 = :
2. " " of ice	1		1 X 8 = 8		8 X 25 = :
3, Bacteriological analysis including Salmonella & Shigell of incoming raw material	5		5 X 18 = 90		90 X 25 = 2
4. " " of frozen product	5		5 X 18 = 90		90 X 25 = 2
5. Sanitary survey (minimum 12 samples)		12		12 X 8 = 96	96 X 4 =
6. Estimation of chlorine in bleach liquor		2		2 X 1 = 2	2 X 4 =
				Total	= 5
For canning plant					
1. Total plate count of can cooling water	1		1 X 3 = 3		3 X 25 = 7
2. Chlorine level of can cooling water	1		1 X 1 = 1		1 X 25 = 2
3. Acidity and Sod. chloride content in bleaching liquor	2		2 X 1 = 2		2 X 25 = 5
4. ,, ,, in filling brine	2		2 X 1 = 2		2 X 25 = 5
5. Commercial sterility at 37° C of finished product	5		5 X 2 = 10		10 X 25 = 2

From table II

	1	2	3	4	5
6. Commercial sterility at 56° C of finished product	5		5 X 2 = 10		10 X 25 = 25(
7. Cans for product quality	5		5 X 1 = 5		5 X 25 = 12:
8. Sanitory survey minimum (12 samples)		12		12 X 8 = 96	96 X 4 = 38
9. Estimation of chlorine in bleach liquor		2		2 X 1 = 2	2 X 4 =
				Total	= 121

For fish meal plant

1. Chemial analysis (Moisture, fat, protein, acid insoluble ash and salt) of fish meal	3	3 X 15 = 45	45 X 25 = 112

Salary of Staff

1. Quality Controller	Rs. 1000/- per month
2. Laboratory Assistant	Rs. 500/- per month

ANNEXURE - 1

FURNITURE	*Quantity*	*Cost*	*Remark*
1. Work table made of hard wood (size suitable to the room with drawers, cupboards and shelf)	3 Nos.	Rs. 4500.00	A
2. Almirah with glass doors	1 No.	Rs. 800.00	A
3. Office table and two chairs	1 ,,	Rs. 1000.00	A
4. Laboratory stool	1 ,,	Rs. 100.00	A
5. Drying rack	1 ,,	Rs. 200.00	A
6. Wash basin, large	1 ,,	Rs. 250.00	A
7. Sink with accessories-attached to work table	3 ,,	Rs. 2000.00	A

ANNEXURE - 2

EQUIPMENT	Quantity	Cost	Rema
1. Air Oven, temperature 100-200°C	1 No.	Rs. 2500.00	B
2. Air Oven, adjustable between 100-105°C	1 ,,	Rs. 2500.00	D
3. Incubator, adjustable to 37°C	1 ,,	Rs. 3500.00	B & C
4. Incubator, adjustable to 42 and 56° C	1 ,,	Rs. 3500.00	B & C
5. Sterilizer (autoclave)	1 ,,	Rs. 1200.00	B & C
6. Distilled water still	1 ,,	Rs. 2000.00	A
7. Vaccum pump with motor	1 ,,	Rs. 2000.00	B
8. Analytical balance, 200 gm. capacity with weight box	1 ,,	Rs. 2500.00	A
9. Two pan balance, to weigh 2 kg with weights from 1 kg to 1 g	1 ,,	Rs. 300.00	B & C
10 Muffle furnace adjustable between 400-1000° C	1 ,,	Rs. 2500.00	D
11. Petroleum or cooking gas cylinder with 3 bunsen burners	1 ,,	Rs. 700.00	A
12. Seitz filter	1 ,,	Rs. 500.00	B
13. (a) Microkjeldal digestion set (for 6 flask) with 500 ml digestion flask, complete with stand, heaters, absorption arrangement for acid fumes	1 ,,	Rs. 1000.00	D
(b) Microkjeldal distillation unit	1 ,,	Rs. 300.00	D
I4. Vaccum gauge	1 ,,	Rs. 200.00	C
15. Can opener	1 ,,	Rs. 10.00	C
16. Hot plate/Kerosene stove	1 ,,	Rs. 250.00	A
17. Dessicator cabinet	1 ,,	Rs. 300.00	B
18. Water bath to hold 6 flasks electrically heated	1 ,,	Rs. 1000.00	D

ANNEXURE - 3

GLASSWARES AND MISCELLANEOUS			
1. Petri dishes, corning 17 X 100mm	2 gross	Rs. 4000.00	B
2. Sample dishes, corning	3 doznes	Rs. 350.00	B
3. Test tubes corning 18 X 150 mm	2 gross	Rs. 400.00	B & C
4. Test tubes corning 12 X 100 mm	1 ,,	Rs. 125.00	B
5. Pipettes, 1 ml. eapacity, 0.1 ml. graduation, corning	1 ,,	Rs. 1250.00	B & C
6. Pipettes, graduatedto 0.1 ml divisions, 5 ml capacity	1 doz.	Rs. 125.00	B
7. Pipettes graduated to 0.1 ml divisions, 10 ml capacity	2 doz.	Rs. 300.00	A

	Quantity	Cost	Remarks
8. Bulb pipettes 25, 20, 10 & 5 ml capacity	3 Nos. each	Rs. 345.00	
9. Burette 25 ml capacity	2 Nos.	Rs. 100.00	A
10. Microburette 10 & 5 ml capacity	2 Nos. each	Rs. 200,00	A
11. Conical flasks, corning			
2 L. capacity	6 Nos.	Rs. 180.00	B
1 L. ,,	6 Nos.	Rs. 100.00	B
250 ml. ,,	50 Nos.	Rs. 400.00	A
150 ml. ,,	1 gross	Rs. 1100.00	B
100 ml. ,,	2 doz.	Rs. 130.00	A
12. Measuring cylinders			
1 L. capacity	2 Nos.	Rs. 175.00	B
500 ml ,,	2 ,,	Rs. 126.00	A
250 ml ,,	2 ,,	Rs. 95.00	A
100 ml ,,	2 doz.	Rs. 720.00	A
13. Beakers, corning 2 L, 1 L, 500 ml. & 250 ml capacity	2 Nos. each	Rs. 130.00	A
14. Standard volume flask 250 ml & 100 ml capacity	3 Nos. each	Rs. 135.00	A
15. Funnels, corning 15 cm dia.	3 Nos.	Rs. 60.00	B
16. Funnels, corning 10 cm dia	6 ,,	Rs. 90.00	C
17. Funnels, corning 175 cm dia.	6 ,,	Rs. 75.00	A
18. Durhom tubes	6 doz.	Rs. 75.00	B
19. Thermometer upto 100°C	2 Nos.	Rs. 60.00	A
20. Thermometer upto 360°C	2 ,,	Rs. 60.00	A
21. Watch glass (assorted size)	6 Nos.	Rs. 60.00	A
22. Mortar and pestle, glass, to hold 150 - 200 ml water	1 doz.	Rs. 75.00	B
23. Seitz filter pad	50 Nos.	Rs. 100.00	B
24. Filter paper Whatman No. 1 & 40	1 packet each	Rs. 200.00	D
25. Spirit lamp	2 Nos.	Rs. 20 00	A
26. Glass tubes	1 M	Rs. 25.00	A
27. Glass rod	1 M	Rs. 25.00	A
28. Slotted aluminium baskets	6 Nos.	Rs. 75.00	B
29. Wire gauze	6 Nos.	Rs. 12.00	A
30. Innoculating needles	3 ,,	Rs. 30.00	B
31. Cotton, non-absorbant	10 kg	Rs. 60.00	B & C
32 Cotton, absorbant	10 kg	Rs. 60.00	B & C
33. Wash bottle 1 L. polythene	2 Nos.	Rs. 20.00	A
34. Wash bottle 500 ml polythene	2 ,,	Rs. 15.00	A

	Quantity	Cost	Rem
35. Test tube brush	6 Nos.	Rs. 10.00	A
36. Nickle spatula	3 ,,	Rs. 30.00	A
37. Iron stand with clamps	3 ,,	Rs. 75.00	A
38. Propipetter	3 ,,	Rs. 75.00	B
39. Glass marking pencil	2 doz	Rs. 25.00	A
40. Soxhlet extraction apparatus	6 units	Rs. 1450.00	A
41. 250 ml round bottomed flask with quickfit neck to be connected with soxhlet apparatus	6 Nos.	Rs. 150.00	D
42. Asbestos thimble 25 ml capacity	24 ,,	Rs. 50.00	D
43. Silica crucibles with lid	6 ,,	Rs. 900.00	D
44. Tripod stand	3 ,,	Rs. 10 00	A
45. White porcelain tiles	3 ,,	Rs. 5.00	A
46. Clony pipe triangle	12 ,,	Rs. 12.00	D
47. Towels	5 ,,	Rs. 10.00	A
48. Rubber tubing 10 mm	10 M	Rs. 40.00	A
49. Pipette stand plastic	1 No.	Rs. 25.00	A
50. Tongs	3 Nos.	Rs. 15.00	D
51. Hand lens	1 No.	Rs. 30.00	B &
52. Dessicator (Glass)	1 No.	Rs. 250.00	A
53. Cutting player	1 No.	Rs. 10.00	D
54. Reagent bottles, 500 ml capacity	2 doz.	Rs. 100.00	A
55. Indicator bottles, 100 ml capacity	6 doz.	Rs. 25.00	A
56. Can seam measuring scale Micrometor screw gauge	1 No.	Rs. 60.00	C

ANNEXURE - 4

CHEMICALS	Quanitity	Cost	Rem
1. Agar agar, Shreds/powder for bacteriological work	1 kg	Rs. 250.00	B
2. Beef extract, (Oxoid/Difco)	500 g.	Rs. 190.00	B &
3. Tryptone, (Difco)	500 g.	Rs. 150.00	B
4. Proteose peptone No. 3 (Difco)	500 g.	Rs. 250.00	B
5. Yeat extract (Difco)	500 g.	Rs. 300.00	B &
6. Peptone (Difco)	500 g.	Rs. 106.00	B &
7. Bile salts (Difco)	500 g.	Rs. 170.00	B
8. Bile salts No. 3 (Difco)	100 g.	Rs. 395.00	B

9.	Dextrose, A. R.	500 g.	Rs. 22. 00	B & C
10.	Potassium dihydrogen phosphate A. R.	500 g.	Rs. 36. 00	B
11.	Sodium glcerophosphate A. R.	500 g.	Rs. 300. 00	B
12.	Maltose, A. R.	500 g.	Rs. 260. 00	B
13.	Lactose A. R.	500 g.	Rs. 36. 00	B
14.	Sodium azide	100 g.	Rs. 100. 00	B
15.	Sodium chloride A. R.	4 X 500 g.	Rs. 50. 00	B & C
16.	Sodium carbonate A. R.	500 g.	Rs. 171. 00	A
17.	Tergitol-7	100 ml.	Rs. 25. 00	B
18.	Liihium chloride (anhydrous)	500 g.	Rs. 120. 00	B
19.	Sulphamezathiue	10 g.	Rs. 35. 00	B
20.	Glycine A. R.	500 g.	Rs. 100. 00	B
21	.Potassim tellurite	100 g.	Rs. 100. 00	B
22.	Sodium pyruvate	100 g.	Rs. 240. 00	B
23.	L-Cystine	25 g.	Rs. 40. 00	B&C
24.	Disodium hydrogen phosphate A. R.	500 g.	Rs. 25. 00	B
25.	Sodium acid selenite	100 g.	Rs. 100. 00	B
26.	Sodium thiosulphate A. R.	500 g.	Rs. 19. 00	A
27.	Iodine (sublimed, pure)	25 g.	Rs. 10. 00	B
28.	Pottassium iodide A. R.	100 g.	Rs. 26. 00	A
29.	Sucrose A. R.	500 g.	Rs. 43. 00	B
30.	Sodium cintrate A. R.	500 g.	Rs. 55. 00	B
31.	Ferric citrate A. R	500 g.	Rs. 25. 00	B
32.	Ferrous sulphate G. R.	500 g.	Rs. 18. 00	B
33.	Bismuth sulphite	100 g.	Rs. 100. 00	B
34.	L-Lysine A. R.	25 g.	Rs. 17. 00	B
35.	Ferric ammonium citrate A. R.	500 g.	Rs. 50. 00	B
36.	Urea A. R.	500 g.	Rs. 24. 00	B
37.	Vmmonium sulphate A. R.	500 g.	Rs. 27. 00	B
38.	Dipotassium phosphate A. R.	500 g.	Rs. 35. 00	B
39.	Sodium malowate	100 g.	Rs. 125. 00	B
40.	P. dimethylamino benzaldehyde	25 g.	Rs. 25. 00	B
41.	Amyl alcohol A. R.	500 ml	Rs. 57. 00	A
42.	Hydrochloricacid A. R.	500 ml.	Rs. 15. 00	A
43.	L-Naphthal	100 g.	Rs. 90. 00	B
44.	Pottassiu hydroxide	500 g.	Rs. 38. 00	B
45.	Sodium hydroxide	500 g.	Rs. 15. 00	A
46.	Sodium ammonium phosphate A. R.	500 g.	Rs. 25. 00	B
47.	Megnesium sulphate A. R.	500 g.	Rs. 13. 00	B
48.	Glacial acetic acid A. R.	500 ml.	Rs. 21. 00	A
49.	Soluble starch A. R.	500 g.	Rs. 57. 00	A
50.	Phenolphthalein	10 g.	Rs. 2. 00	A
51.	Bromocresol purple	5 g.	Rs. 50. 00	B
52.	Methyl violet	5 g.	Rs. 7. 00	B
53.	Brillient green	5 g.	Rs. 10. 00	B
54.	Phenol red	5 g.	Rs. 18. 00	B

55.	Nentral red	5 g.	Rs. 15. 00	B
56.	Crystal violet	5 g.	Rs. 4. 00	B
57.	Bromothymol blue	5 g.	Rs. 30. 00	B
58.	O-tolidine	25 g.	Rs. 90. 00	A
59.	Pot. chromate A. R.	500 g.	Rs. 25. 00	C&I
60.	Silver nitrate A. R.	25 g.	Rs. 70. 00	C&I
61.	Salicine	10 g.	Rs. 350. 00	B
62.	Dulcitol	10 g.	Rs. 30. 00	B
63.	Gelatine	500 g.	Rs. 45. 00	B
64	Mannitol	500 g.	Rs. 190. 00	B
65.	Triphenyl Tetrazolium chloride	5 g.	Rs. 65. 00	B
66.	Alchohol (Rectified spirit)	1 L.	Rs. 10. 00	A
67.	Dettol	110 ml.	Rs. 3. 00	A
68.	Oxalic acid A. R.	500 g.	Rs. 29. 00	C
69.	Resazusin tablets	50 nos.	Rs. 50. 00	C
70.	Thioglycollocte - Sodium	100 g.	Rs. 100. 00	C
71.	Copper sulphate A. R.	500 g.	Rs. 30. 00	D
72.	Pot. sulphate A. R.	500 g.	Rs. 49. 00	D
73.	Methylene blue	25 g.	Rs. 24. 00	D
74.	Methyl red	5 g.	Rs. 8. 00	D
75.	Methyl orauge	25 g.	Rs. 22. 00	D
76.	Boric acid A. R.	500 g.	Rs. 20. 00	
77.	Petroleum ether A. R. (50-60°C)	500 ml.	Rs. 20. 00	D
78.	Pot. dichromate A. R.	50 gm.	Rs. 20. 00	D
79.	Nitric acid	500 ml.	Rs. 40. 00	D
80.	Sulphuric acid	500 ml.	Rs. 50. 00	D
81.	Ferric alum A. R.	500 g.	Rs. 40. 00	D
82.	Vmmonium thiocyanate A. R.	500 g.	Rs. 5. 00	B&C

Note : D - required for lab in fishmeal plant only
C - ,, canning plant only
B - ,, freezing plant only
A - ,, in all plants.

Books recommended :

1. Horwrits, William 1975: Official Methods of Analysis, Association of Official Analy Chemists, Washington.
2. Indian Standard Specifications (for exported seafood items).
3. Herschdoerfer S. H. 1967-68. Quality Control in the Food Industry. Vol. I & II Acada Press London.
4. Kreuzer, Rudolf 1971. Fish Inspection and Quality Control. Fishing News (Bo Limited, London.
5. Anon 1979. Quality Control in Fish Processing, Central Institute of Fisheries Techno Cochin.

Meet Our Scientists—10

CYRIAC MATHEN

Shri Cyriac Mathen, Scientist S-2, is in charge of the Quality Control Laboratory at CIFT, Cochin. Born in 1940 in Alleppey District, he had his education up to school leaving stage in his native village. He studied at St. Berchman's College, Chaganacherry and got his B. Sc Degree in Chemistry in 1960. He took his Msc Degree from the Vikram University, Ujjain, in the year 1962.

Shri Mathen joined CIFT in 1962 as Research Assistant. Later on he got selected to higher posts-Assistant Research Officer, Quality Control Officer and Fishery Scientist. He was inducted to Agricultural Research Service from 1975.

He had his advanced, training in Fishery Technology, Processing and Quality Control in Norway for one year under the Norwegian Agency for International Development. In 1978 he was deputed to attend the FAO/DANIDA work shop on Fish Technology and Inspection held in Colombo.

Shri Mathen's favourite fields of work are Sea Food Processing, Quality Control and training of Industrial personnel from Industry. His major contributions are phosphate treatment for frozen and cured products, prevention of blackening of prawns, methods for production of frozen froglegs cooked and frozen prawns-all of industrial significance.

Shri Mathen was closely associated with Preshipment Inspection in the early stage of the scheme under the late Dr. V. K. Pillai. He has forty publications to his credit in the above fields.

XVth International Congress of Refrigeration

The experiments conducted by the Central Institute of Fisheries Technology, Cochin and other organisations on the design and developments of refrigerated sea water plant for small fishing vessels have been prescribed in detail in a paper prepared by Shri S. Ayyappan Pillai, Scientist of the Central Institute of Fisheries Technoloy, Cochin.

The paper entitled "Developments in the Chilling and Freezing on board fishing vessels in India" was presented by F A O Fishery Industry Officer, Shri Lisac, on behalf of Shri Pillai at the XVth International Congress of the Refrigeration held at Venice in September, 1979. It was organised by the International Institute of Refrigeration, Paris.

The author has discribed the various methods of chilling and freezing of fish employed on board fishing vessels in India. The paper discussed and appreciated by the Congress has now been published in the proceedings of the Congress.

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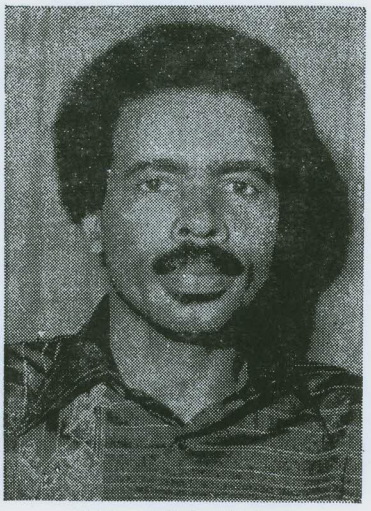
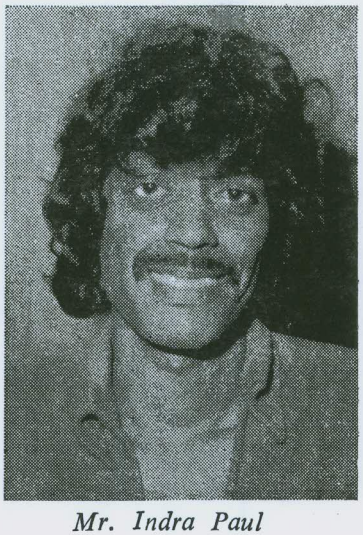
Training Under I T E C Programme



Mr. Mitford John



Mr. Indra Paul

Two Guyanese Scholars, Mr. Mitford John and Mr. Indra Paul, have completed their nine - month training course on Fish Processing Technology at CIFT, Cochin. The Training was arranged by the Government of India under the Indian Technical and Economic Cooperation (ITEC) programme.

They have joined their parent organisation, Guyana Food Processors Ltd, from where they were nominated by the Government of Guyana.

The training was mainly on fish by products and waste utilization, artificial drying of fish including solar drying and accelerated freeze drying and determination of quality of processed fish products.

MOTORIZATION OF A MALABAR FISHING CA

Run-in tests of the 9 Lombardini engine along the newly developed gear t mission and drive was ca out by CIFT, Cochin as standard schedule and the formance found satisfacto

The engine and the mounted on a wooden be a 38'-0" OAL malabar bui canoe (Kettuvallam) was pu actual field operations fro Paravoor Beach of the Pu ppra coast of Alleppy f period of one week.

Free runs under light fully loaded conditions (6 on board + fishing gear & wet) and the fish catch ing from 200 Kg to 800 were made.

Launching and bea under varying sea and surfc tions (morning and evening) made.

Test and trial runs u full ahead and full a gear conditions were made a with manoeuvarability test

The lifting arrangemer the propeller was tested u varying operational condit

The reaction of the a operators and the local fi men consequent to the der tration was recorded.

GLEANINGS FROM OTHER JOURNALS

Shrimp: US plea rejected

The Union Commerce Ministry has turned down a suggestion made by the United States Commerce Department to provide an approved list of shrimp exporters who would abide by the conditions prescribed by the US Food and Drug Administration for import of sea food into that country.

Delhi's contention is that all exports of sea food effected from India are subjected to close inspection by the governmental Inspection Agency and hence there was no need for a special approved list.

Hindu

Home Fish Gardening by Farmers

The money spinning capacity of homestead ponds is quite often ignored in Kerala due to the abundant supply of sea fish Thanks to fast increse of marine product export and heavy demand for the fish in rural areas 'flooded with Gulf money' many enterprising farmers are continuing methods to take up fish culture in homestead ponds.

"I am confident fish costing about Rs. 4,000 to Rs. 6,000 could be raised from a pond covering an area of fifteen cents"says Mr. Joseph Vettikkadan, a sturdy farmer of Changanacherry in Kerala. Narrating his own novel experience Mr. Vettikkadan revealed rearing of fish in homestead ponds will be a very profitable subsidiary occupation to small farmers. Within two years he could raise over one hundred and fifty each of *cyprinus carpio*, *mrigal*, and *rohu*, in the pond. Apart from these, one thousand five hundred *Etroplus*, *Suratensis* (Karimeen) also could be grown in the pond without any difficulty.

Of the fish population fingerlings of cyprinus, mrigal, etc. were bought from fisheries Depatment farm. The fingerlings grow fast eating kichen waste, cooked rice, rice bran, etc. The vegetation in ponds too are consumed well by the fish. Mr. Joseph Vettikkadan is of opinion that out of the fresh water fishes grown, rohu is outstanding for its delicacy. The greatest advantage is that "we can catch fish when we really need them. This is the

Call to strengthen fisheries co-ops.

Union agriculture minister Brahm Parkash has called for steps to place fisheries cooperatives on a sound footing.

In a letter to state chief ministers, he has emphasised the need to improve through cooperative efforts the economic status of fishermen in the country.

Fishermen were among the weakest in society and it was recognised that a cooperative approach was necessarv to improve their lot. Apart from giving managerial assistance to make them effective, it would also be necessary to settle the "inland" fishermen on government-owned tanks against a nominal lease, rather than to lease out such tanks to the highest bidders in open auctions.

Times of India

Breakthrough in prawn breeding

A significant breakthrough in the production of the scarce seed of giant fresh water prawn, 'machro brachium', has been achieved by the prawn breeding centre at Kakinada. The centre, the only one of its kind in the country, is run by the Central Inland Fisheries Research Institute of the Indian Council of Agricultural Research (ICAR).

The Centre has also evolved technology for culturing fresh water prawns under controlled conditions.

A notable feature of the achievement is that the unit has found the right feed for prawn development.

Juvenile prawns obtained in ponds are grown on supplementary diet like apple, tapioca roots, small shrimp and broken rice. The survival rate is as high as 74 per cent.

As part of the silver Jubilee celebrations of ICAR, the unit proposes to produce 50,000 seeds this year for distribution to farmers.

Times of India

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key for getting good prices too." Mr. Vettikkadan said that thousands of ponds in the homesteads of Kerala can be converted into home fish gardens like our famous back yard poultry system. But there must be good arrangements for the supply of fingerlings and some timely extension service.

The growth and size of the fish grown in his pond are quite encouraging. The growth of cyprinus, rohu, etc. are very good and fish weighing over 2 kilograms of two years age are very common. The price of such fish at the most "sought after periods" enhance their "money spinning capacity". "I got a rohu which had a length over $3\frac{1}{2}$ feet and it was really an unforgetable experience", Vettikkadan concluded the narration of his success story.

The entire family join in the programme as pretty and paying hobby. The pond which was a neglected area in the campus with all sorts of unwanted weeds has changed into as busy, neat, recreation spot, thanks to the theme of home fish gardening.

HINDU

Seafood quali Control tighte ned

Union minister of state commerce and civil supplies, Henry Austin said that government had initiated urg action for tightening up the quality control inspect procedures following a new sis in the marine prodt export from the country.

He told newsmen Cochin that the governm had urged seafood proces to be cautious accepting materials and to reject same if they had the sligh doubt about their quality.

The new crisis in mai products export was created a result of the United St market "black listing" Indian products following pected decomposition or ba rial contamination. These c modities thus kept in sepa list would be allowed to m to the market only after putt them to hundred per cent t

Economic Tin

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CIFT is at your Service

It transfers Fishery Technology by way of:

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- Answering Technical queries
- Supplying project reports and design drawings
- Training courses on fishing and fish processing

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