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REPORT OF THE
ASEAN/CIDA/SEAFDEC REGIONAL TRAINING COURSE
IN FISH HANDLING AND PROCESSING
6-30 March 1985



Training Department
Southeast Asian Fisheries Development Center

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**REPORT OF ASEAN/CIDA/SEAFDEC REGIONAL TRAINING COURSE
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1. BACKGROUND

This training course was organized under the ASEAN-Canada Fisheries Post-harvest Technology Project which is a component of the Development Cooperation Program between Canada and the Association of South-East Asian Nations (ASEAN).

The Project Steering Committee agreed that training in post-harvest technology was required to upgrade the skill of existing personnel, new recruits, and extension officers in ASEAN countries. At the 4th Meeting of the Project Steering Committee (Manila, 20-23 Nov. 1984), the Committee agreed that three training courses would be conducted in 1985, namely:

1. Fish Handling and Processing;
2. Fish Inspection and Quality Control;
3. Handling and Processing of Cultured Freshwater Fish.

In this connection, the Project Steering Committee approached SEAFDEC to organize the first two courses. Since SEAFDEC also shared the opinion that this aspect of fisheries development should receive priority in order to promote rational utilization and minimize wastage of all available fish resources, which is a part of the Center's objectives, SEAFDEC therefore agreed to cooperate with ASEAN in organizing two practical short-term training courses, i.e. Fish Handling and Processing Course at the SEAFDEC Training Department in Thailand from 6 to 30 March 1985, and the training course in Fish Inspection and Quality Control at the SEAFDEC Marine Fisheries Research Department in Singapore from 1 to 27 April 1985.

The present training course was organized in close collaboration with the Fish Technological Development Division of the Thai Department of Fisheries. Twelve participants from all six ASEAN member countries attended the course. The emphasis of the course was on practical training in the laboratory, which employed about 45 per cent of the time. Another 30 per cent of the course time was devoted to the theoretical aspects of fish post-harvest technology. The participants also had an opportunity to engage in shipboard training for practice of fish handling at sea on board M.V. PLATOO in the Gulf

of Thailand. In addition, several visits were organized to various industries for freezing and canning of marine products in Thailand.

It is hoped that the courses such as this one provided by SEAFDEC will contribute to further development in the ASEAN countries.

2. COURSE OUTLINE

In order to fulfil the objectives of the course, the member countries of ASEAN were requested to select suitable participants, preferably graduates in Food Science or Food Technology with at least two years' experience in fish handling and processing.

The course was planned in such a way as to give the participants sufficient theoretical background information, but with an emphasis on practical aspects of fish handling and processing. The main components of the course were as follows;

- Fish handling, both at sea and on shore;
- Fish processing methods;
- Analyses of chemical and microbiological parameters as quality indicators;
- Shipboard training in the Gulf of Thailand; and
- Field trips to landing places, fish markets and processing factories in Thailand.

A total of twelve participants attended the course; one each from Brunei and Singapore, two from Indonesia, Malaysia and the Philippines, and four from Thailand. The names and addresses of participants are given in Annex A.

2.1 Lectures accounted for about one third of the course time. They were conducted at the SEAFDEC Training Department in Samutprakarn, by the staff of the Fishery Technological Development Division (FTDD) of the Thai Department of Fisheries, and by the lecturers from the Kasetsart and Chulalongkorn University. The list of instructors is given in Annex A.

The main lecture topics were as follows:

- 1) Status of fish handling and processing in ASEAN countries;

- ii) Fish handling;
- iii) Quality assessment of fish and fish products;
- iv) Frozen fish products;
- v) Fish curing;
- vi) Fish and shrimp fermentation;
- vii) Fish canning;
- ix) Product development and packaging.

The schedule of lectures and other training activities appears as Annex B.

2.2 The laboratory practice was the most important part of the course; it was carried out throughout the duration of the course, at the laboratories of the Fishery Technological Development Division in Bangkok. The following were the main topics of practice and demonstration:

- i) Fish curing;
- ii) Fish handling;
- iii) Minced fish technology;
- iv) Microbiology;
- v) Frozen fish products;
- vi) Chemistry;
- vii) Fish and shrimp fermentation;
- ix) Fish by-products;
- x) Product development and packaging.

2.3 Training cruise: all the participants of the course also took part in a purse-seining operation and fish-handling and processing exercise on board the SEAFDEC Training Department's vessels M.V. PLATOO and M.V. PLALUNG. The shipboard training was carried out over two days, on 16 and 17 March, in waters off Prachuab Kirikhan Province in the Gulf of Thailand. For some of the participants this was the first opportunity to observe how fish is, or should be, handled immediately after capture.

2.4 Field trips were organized to several landing places, as well as to fish drying, salting, freezing and canning plants, in order to give the participants a wider practical experience of various handling practices and processing techniques. The visits to processing factories were much appreciated by the participants; in subsequent evaluation of the course most of them expressed the view that more course time should be allocated for this activity.

3. EVALUATION

At the end of the training period the participants and the instructors were invited to comment on various aspects of the course, such as the contents of the lectures and laboratory practice, as well as the administrative arrangements. They were asked to evaluate the course critically, so as to enable the organizers to make the necessary adjustments in the future courses of this type.

The participant from Singapore opened the discussion by expressing her satisfaction with the course. She said that she had learnt a great deal, particularly about processing techniques such as curing and fermentation. She was certain that most of the knowledge gained during the course would be useful to her. She gave an example of the course material being directly and immediately applicable to her work; one of the current project at MFRD, undertaken on request by the Department of Fisheries of Malaysia, is to look into the utilization of pelagic fish, particularly Indian mackerel (*Rastrelliger* sp.) for making *surimi* and similar processed products. She stressed that, from the viewpoint of Singaporean participants to a future course, as much time as possible should be devoted to practice and demonstration work. This means, for instance, that study visits to fish processing plants should be properly planned, and much longer than in the present course. The participants should have the opportunity to observe all stages of processing, from the time the fish reaches the factory in the morning up to the finished product stage. The participants should be divided into small groups, to avoid overcrowding in the workshop during observation.

The Indonesian participant stated that a course of this type is very useful to fisheries technologists of his country. One of the greatest problems of Indonesian fisheries is the low quality of many products, due to unsatisfactory handling of catches. It is necessary to impress upon fishermen that by the correct handling procedure, both at sea and after landing, they can increase the quality of their produce and consequently their incomes. There are at present two direct reasons for poor quality of most of the fish landed by artisanal fishermen in Indonesia: first, careless handling of catch causes

physical damage to fish, and secondly, little or no ice is used for fish preservation. Ice is too expensive for the fishermen's income level. The fishermen are thus caught in a vicious circle, which can be broken by educating fishermen in the basic rules of handling their catch. The subject of handling of fresh fish should, therefore, be given more course time in the future. The chemistry and microbiology lectures, although interesting in themselves, are less relevant to the current problems of Indonesian small-scale fishermen.

The Malaysian participant, who works at a provincial fisheries extension center, was strongly in favour of increasing the practical content of the course. He stressed that the artisanal fishermen in Malaysia mostly use primitive fish processing methods and would most benefit if the extension workers were to introduce to them improved techniques of live fish handling and small-scale processing. He also suggested that more course time should be spent at a well-equipped fishery laboratory of a local university.

The participants from the Philippines found the course instructive and the lectures, particularly in microbiology, very interesting. However, much of the knowledge they gained could not be put into practical use at present because of the lack of sophisticated laboratory facilities in their country. They also recommended an increase in the practical content of the course, for example more detailed observation of handling of fish in processing factories.

The participant from Brunei, who is a fishery extension officer, said that most of the course material was not at present relevant to the fisheries industry in his country, although the situation may change. The small amount of total catch, which barely satisfies domestic requirements, does not justify the development of processing industry, especially not for export purposes. Only a small proportion of fish is processed by salting, and that mostly for own consumption. On the other hand, fish handling, especially on board ship, is a topic of interest for Brunei. Although sufficient quantities of ice are used for preservation of catch during the fishing trip, the participant said that suitable good and cheap packing materials should be found for transportation of catch destined for local consumption. The course should place more emphasis on the problem of containers for marine products, but not necessarily only for export purposes. He also said that he was impressed by various quality control measures with which he became familiar during the course and which he plans to introduce in Brunei.

The participants from Thailand said that they found the course very useful. Regarding the theoretical part of the course, even though its duration was too short, the course provided a basis for further study which the participants can pursue on their own. As for the practical content, a future course should have more of that, particularly as regards methods of assessment of freshness and quality.

In conclusion, the meeting agreed that although broadly speaking the various problems of fish handling and processing were similar in the Southeast Asian region, each country has identified its own most pressing point of interest. Singapore, for example is mostly concerned with fish handling and processing at the level of large commercial enterprises, while in Indonesia the problem arises with handling of small catches on board very small fishing vessels with no refrigeration facilities. Handling of fish encompasses a very wide variety of activities, and even interpretations. The course should not only cover all stages of handling, from shipboard to canning, salting etc, but specify differences between handling of catches destined for, for example, immediate consumption or fermentation. The participants were unanimous that for all types of handling more practice and demonstration would be useful.

In summing up, it was agreed that the program for future courses should be based on the current requirements of the countries concerned. Their most acute problems in the matters of fish handling and processing could be identified by means of questionnaires and country reports. Several instructors also that, for the course to have the greatest possible impact, each country should select suitable participants, preferably fisheries technologists, rather than chemists and biologists.

4. CONCLUSION

The ASEAN/CIDA/SEAFDEC Regional Training Course in Fish Handling and Processing was conducted to the satisfaction of all concerned. Most of the participants had a background as food technologists and fisheries quality control officers and were therefore able to benefit substantially from the course. The curriculum was generally well received and the quality of instruction was judged to be high. The participants were enthusiastic and showed a great interest in particularly the practical work. A shared complaint, however, was that the duration of the course was rather short.

Finally, the SEAFDEC's stand regarding this and similar courses can be summarized in the words of Dr. Veravat Hongskul, the Secretary-General of the Center in his final address to the participants of this course:

"I would like to conclude by saying that SEAFDEC considers such successful joint-effort between regional institutions and donor agencies as a very effective way to promote the development of the fisheries industry and to improve the socio-economic condition of fishing communities in the region without duplication of effort".

**ASEAN/CIDA/SEAFDEC REGIONAL TRAINING COURSE
IN FISH HANDLING AND PROCESSING
6-30 March 1985**

List of Participants and Instructors

I. Participants

BRUNEI

Mr. Idris bin Abdul Hamid
Assistant Fisheries Officer
Fisheries Department
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Bandar Seri Begawan
Negara Brunei Darussalam

INDONESIA

Mr. E.A. Johnny Joa
Quality Control
Fisheries Service
Central Kalimantan
Directorate General of Fisheries
Jl. Salemba Raya 16
Jakarta Pusat
Indonesia

Mr. Hamid Umar
Chief, Sub-Quality Control and Fish
Marketing
Fisheries Service of Lampung
Directorate General of Fisheries
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Indonesia

MALAYSIA

Mr. Jamlus bin Mohd. Nor
Fisheries Assistant
Fishery Extension Center
Kg. Raja Besut
Terengganu
Malaysia

MALAYSIA (cont'd)

Mr. Samsuddin Othman
Fisheries Assistant (Special Grade)
State Fisheries Department
Ipoh, Perak

PHILIPPINES

Miss Nalda V. Repito
Fishery Technologist
Bureau of Fisheries and Aquatic Resources
Fisheries Utilization Division
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Mrs. Nimfa L. Lumitao
Food Technologist
Bureau of Fisheries and Aquatic Resources
Fisheries Utilization Division
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Quezon City
Philippines

SINGAPORE

Mrs. Ng Mui Chng
Fishery Research Officer
Marine Fisheries Research Department
SEAFDEC, Singapore 1749

THAILAND

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Charoenkrung Road
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Thailand

Mr. Sumate Supichayangure
Food Technologist 4
Fishery Technological Development Division
Department of Fisheries
Charoenkrung Road
Yannawa, Bangkok 10120
Thailand

THAILAND (cont'd)

Miss Suwimon Keerativiriyaporn
Food Technologist 4
Fishery Technological Development
Division
Department of Fisheries
Charoenkrung Road
Yannawa, Bangkok 10120
Thailand

Mr. Sompong Koopramongarak
Food Technologist 4
Songkhla Fish Quality Control Subsection
Fishery Technological Development
Division
Department of Fisheries
Songkhla 90000
Thailand

II. Instructors

- Mrs. Bung-orn Saisithi : Deputy Director-General
Department of Fisheries
Thailand
- Mr. Hamid Madakia : Canadian Expert
Fishery Technological Development
Division (FTDD)
Department of Fisheries
Thailand
- Dr. Gadman Sand : FTDD
Department of Fisheries
Thailand
- Dr. Poonsap Viroonhakul : FTDD
Department of Fisheries
Thailand
- Mrs. Rerngrudee Pruthiarenun : FTDD
Department of Fisheries
Thailand
- Mrs. Pongpen Rattagool : FTDD
Department of Fisheries
Thailand
- Dr. Prasert Saisithi : Department of Microbiology
Faculty of Science
Kasetsart University
Bangkok, Thailand
- Dr. Chaiyute Thanpittayakul : Department of Food Technology
Faculty of Science
Chulalongkorn University
Bangkok, Thailand
- Dr. Pantipa Jantawat : Department of Food Technology
Faculty of Science
Chulalongkorn University
Bangkok, Thailand

**ASEAN/CIDA/SEAFDEC REGIONAL TRAINING COURSE
IN FISH HANDLING AND PROCESSING,
6-30 March 1985**

Schedule of Activities

DAY/DATE	A.M.	P.M.
Wed. 6 March 1985	Opening ceremony Lecture: Status of fish handling and processing in ASEAN Countries (Mrs. Bung-orn)	Lecture: Fish handling (Mr. Madakia)
Thu. 7 March 1985	Lecture: Quality assessment of fish and fish products (Dr. Poonsap & Mr. Madakia)	Lecture: Frozen fish products (Mr. Madakia)
Fri. 8 March 1985	Laboratory: Fish curing (Mr. Madakia & Mrs. Rerngrudee)	Laboratory: Fish handling (Mr. Madakia & Mr. Saengthai)
Sat. 9 March 1985	Excursion	
Sun. 10 March 1985	Free	
Mon. 11 March 1985	Lecture: Fish curing (Mr. Madakia)	Lecture: Principle of fish and shrimp fermentation (Dr. Prasert)
Tues. 12 March 1985	Lecture: Fish curing (Mrs. Rerngrudee)	Lecture: Fish by-products (Mr. Sand)

DAY/DATE	A.M.	P.M.
Wed. 13 March 1985	Lecture: Fish and shrimp fermentation (Dr. Prasert)	Lecture: Principle of canning and fish canning (Dr. Chaiyute)
Thu. 14 March 1985	Lecture: Product development & packaging (Dr. Pantipa)	Minced fish technology (Mrs. Pongpen)
Fri. 15 March 1985	Laboratory: Microbiology (Dr. Poonsap)	Laboratory: Minced fish technology (Mrs. Pongpen)
Sat. 16 March 1985	Shipboard training (Mr. Saengthai)	Shipboard training (Mr. Saengthai)
Sun. 17 March 1985	Shipboard training (Mr. Saengthai)	Shipboard training (Mr. Saengthai)
Mon. 18 March 1985	Free	
Tues. 19 March 1985	Laboratory: Frozen fish products (Mr. Madakia & Mr. Saengthai)	Laboratory: Fish handling (Mr. Madakia & Mr. Saengthai)
Wed. 20 March 1985	Laboratory: Frozen fish products (Mr. Madakia & Mr. Saengthai)	Laboratory: Fish curing (Mrs. Rerngrudee)
Thu. 21 March 1985	Field trip to freezing and canning plants (Dr. Poonsap)	
Fri. 22 March 1985	Laboratory: Chemistry (Mrs. Pongpen)	Laboratory: Fish and shrimp fermentation (Dr. Prasert & Mrs. Pongpen)
Sat. 23 March 1985	Visit landing place, fish drying and salting plants (Mrs. Rerngrudee)	
Sun. 24 March 1985	Free	
Mon. 25 March 1985	Laboratory: Fish canning (Dr. Chaiyute)	Laboratory: Fish canning (Dr. Chaiyute)

DAY/DATE	A.M.	P.M.
Tues. 26 March 1985	Laboratory: Fish by product (Mrs. Pongpen)	Laboratory: Product development & packaging (Dr. Pantipa)
Wed. 27 March 1985	Laboratory: Microbiology (Dr. Poonsap)	Laboratory: Chemistry (Mrs. Pongpen)
Thu. 28 March 1985	Laboratory: Microbiology (Dr. Poonsap)	Laboratory: Chemistry (Mrs. Pongpen)
Fri. 29 March 1985	Discussion	
Sat. 30 March 1985	Free	Closing ceremony

CLOSING CEREMONY OF THE
ASEAN/CIDA/SEAFDEC REGIONAL TRAINING COURSE
IN FISH HANDLING AND PROCESSING
30 March 1985

Keynotes Address

Mr. Vanich Varikul*

Mr. Secretary-General, distinguished guests, participants, ladies and gentlemen:

On behalf of the Department of Fisheries Thailand, it gives me much pleasure to bestow the certificates of achievement to the participants who completed the Training Course in Fish Handling and Processing. May I personally congratulate the twelve participants who have come from Brunei, Indonesia, Malaysia, the Philippines, Singapore and Thailand to undergo the strenuous training, both in the classroom and aboard the training vessel, during the past three weeks. It is hoped that the participants have learned many useful things about fish handling and processing in order to promote the rational utilization of the fish resources in the ASEAN countries and especially to minimize wastage both on shore and at sea. This training course was organized to upgrade the skills of fisheries personnel involved in fisheries post-harvest technology in ASEAN countries and it is hoped that the practical information will be put to good use.

Owing to the fact that I have been involved with both ASEAN and SEAFDEC activities for a number of years, I welcome the opportunity for the two organizations to be working together in order to develop the fisheries in the region. We should also express our heartfelt appreciation to the Canadian International Development Agency (known as CIDA) which has made this course possible through its funding support.

Again I congratulate the participants on their achievement and wish them all a safe journey back to their home countries.

* Director-General of the Department of Fisheries, Thailand.

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List of Lecture Notes

Title	Author/Instructor
Some recent research on traditional fish product in the IPFC region (reprint)	N.V. Sripathy
Status of fish handling and processing in Southeast Asian countries	Mrs. Bung-orn Saisithi
Fish handling	Mr. Madakia
Cold storage	Mr. Madakia
Freezing of fish	Mr. Madakia
Fish products	Mrs. Rerngrudee Pruthiarenan
Fish curing	Mrs. Rerngrudee Pruthiarenan
Curing of dried salted and pickled fish products in eastern Canada	Mr. Madakia
Fish and shrimp fermentation	Dr. Prasert Saisithi
Minced fish products	Mrs. Pongpen Rattagool
Fish canning	Dr. Chaiyute
Quality assessment	Mr. Madakia

