

Present Status of Fish Processing Activities in Malaysia

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Introduction

Malaysians have been fish eaters traditionally and fish is one of the major source of animal protein for a large section of the population especially in the rural areas making up between 35% to 60% of the overall protein intake.

In 1985 the fishing industry provided jobs for 99,208 fishermen or about 2% of the nation's workforce and the figure is higher if those in marketing and processing are considered. The total quantity of fish landed was 462,861 mt of which 63% was consumed fresh, 24% was thrash and 13% was processed.

The processing industry has been expanding unchecked to meet demand by consumers. Lately, however, there has been a decline caused by a shortage in raw materials due to lower landings, due in turn to overfishing. There is overcapacity in some sectors caused by poor planning. Processors are slow to adopt new technology, are inefficient and not cost effective especially where competition is stiff. The industry also neglects cleanliness, sanitation, proper factory layout and is too dependent on local markets.

Status of Fish Processing

Apart from the fish canning factories and prawn/fish freezing factories, most fish processors are small-scale with capital less than M\$100,000. Most are found in coastal area close to fish landing points. Their products consist of dried fish (anchovy, red snapper, squid), fish cracker (fish, squid, prawn, mussel), shrimp paste, fermented fish (fish sauce, shrimp sauce), fish *satay*, canned tuna/sardine, frozen prawn/fish/squid and fish meal for animal feed.

Dried Fish

The most common species turned into dried fish are Queenfish (*Chorinemus lysan*), Red-snapper (*Lutianus malabaricus*), Spanish

Mackerel (*Scomberomerus guttatus*) and Jewfish (*Sciaena* spp.). Production in 1985 was 7416 mt. Preparation of the fish is mostly done in the traditional way. Fish is dipped in 30% brine solution or salt is spread over the cut body. It takes one to five days before they are dried under the sun.

Because there are no standard preparation methods, similar products vary in colour, taste and chemical content.

Some processors use a higher percentage of salt and may even spray insecticide to prevent the growth of blowfly larvae. This industry has not changed much over time.

Dried Anchovy

Dried anchovy (*Stolephorus* spp.) is by far the most important single species with a production of 4583 mt in 1985. Fish fresh from the net are put in rattan baskets which are then dipped in boiling sea water or 10% brine solution for three to five minutes after which they are sundried for about six hours.

There is a standard for dried anchovy. The factors considered are size, species, degree of breakage, smell and colour.

Recently some processor in Tanjung Dawai and Pulau Langkawi have been using hot air driers to dry their anchovy. The dried anchovy is also kept in cold room. This development has been made possible by the high price of dried anchovy.

Dried Squid

Common squid (*Loligo* spp.), cuttlefish (*Sepia* spp.) and octopus (Octopodidae) are cleaned and washed with sea water and then dried under the sun on wooden racks. The processors are mostly wives of fishermen. The production in 1985 was 302 mt.

Fish Cracker

Fish cracker is a popular snack in the country and 5429 mt was produced in 1985.

Mostly, pelagic species are used, including the Wolfherring (*Chirocentrus dorab*), Herring (*Clupea/Sardinella* spp.) and trevally (*Selaroides* spp.).

Most fish cracker processors are found in the east coast states. The level of mechanisation varies. Although most have a mechanised mixer and mincer. Some still use the traditional hand-made method. The ratio of fish meat to sago flour or to tapioca flour is 1:1. Formation into cylindrical shape is still done by hand (although the Malaysian Agriculture Research and Development Institute (MARDI) has suggested use of a forming machine). The product is then either boiled or steamed for one to one and a half hours. The cracker can now be eaten fresh or dried.

There are many variations in quantity and colour reflecting the use of many species of fish, flour, recipes and processing methods. Fish cracker is widely available in plastic packs.

Fish Satay

This food is a recent product and is gaining in popularity. The main species used are goatfish (*Upeneus sulphureus*). Small jewfish and anchovy have been tried but the results have not been as good.

There are two levels of processing. The primary processors gut, clean and dry the fish. The fish is then sold to a secondary processor who rolls the fish and pours sauce on. The fish is then roasted in the oven for 25-40 minutes.

The quality of fish *satay* differ according to the species of goatfish and the sauce used. Only 121 mt were produced in 1985.

Shrimp Paste

Local shrimp paste is orange/red or chocolate in colour and most of it is made by small-scale processors in the traditional way. The raw materials is *Acetes* spp. to which salt is added at eight to ten percent by weight. The mixture is drained for five to eight hours to reduce the water content and then pounded. It is kept in wooden boxes for seven days. Before being sold the paste is shaped into oval or rectangular blocks, packed in paper and labelled. In 1985 the recorded production was 3146 mt.

Fish Sauce

Production of fish sauce in 1985 was about 90.45 mt, most of it produced and consumed by people in the east coast states of Peninsular

Malaysia. The species used are anchovy, small goatfish or herring. The fish is gutted and cleaned before being put in brine solution in concrete tanks where it is kept for six to twelve months. The fermented solution is filtered and then boiled with brown sugar and lime juice. It is cooled before being bottled.

There has been little change in the method of preparation. A suggestion has been made by MARDI that the industry use starter culture/enzymes to reduce the fermentation time.

Shrimp Sauce

This product is produced commercially in Malacca with a process in which cleaned *Acetes* are mixed with 20% salt and 6% cold rice. The mixture is kept in airtight earthen pots of 20-30 days.

Processors are now adding colour to their products to give them enhanced consumer appeal. Production in 1985 was 84 mt.

Fishball-Fishcake

Fishball factories are found mostly on the West Coast of Peninsula Malaysia. Most factories are partially mechanised with deboner and mixer. The bigger ones may have ball forming machines while the smaller factories shape the products by hand.

The recipe of the mixture is always a trade secret. Usually fish is mixed with salt, flour, chilli powder, onions, sodium borate and polyphosphate. The fishball is left to set in cold water for two to three hours. Production in 1985 was 1264 mt.

Tuna/Sardine Canning, Prawn/Fish Freezing

These are the products of big companies which usually practice quality control and which must meet the standards of the foreign countries to which they are mainly exported. In 1985, 5518 mt of fish and prawn was frozen and 14,184 mt of fish, prawn, molluscs and cuttlefish was canned. The factories are mostly mechanised except in cleaning and filling of raw materials.

Fish Meal

Most unwanted fish is converted to fish meal, and 21,367 mt was produced in 1985. The technology and the product quality are low.

Problems Faced by The Industry

Malaysia's fish landings have been declining in recent years and since fish is the most important raw material, this has severely affected some sectors of the industry. In 1981 the reported number of fish *satay* factories in Pulau Pangkor was 23 units. That figure has since decreased (Dr Mohd Ismail b. Abdullah *et al* 1987). The problems are made worse by the concentration of similar types of processors in the same areas — a situation that causes stiff competition for the raw materials and makes processors too dependent on a particular species — in this case the goatfish.

The Northeast Monsoon limits the numbers of boats and the types of fishing operations. Fish landings during these months are greatly reduced and the fish cracker industry in the East Coast States comes to a stop due to fish shortages to high prices for pelagic species.

The quality of fish landed varies with the handling method, with ice used, in some cases in insufficient quantity to prevent fish from rotting. The quality differences make it more difficult for processors to achieve high or consistent product grades.

Low level technology and the use of traditional processing methods contribute to high production costs and to much wastage. Since little attention is given to packaging and marketing of products processors depend only on local markets.

Role of Government, Statutory Boards and Other Institutions in Upgrading the Industry

In developing countries the government plays an important role in the development of the industry. In Malaysia a number of government agencies help in the growth and development of the industry.

Department of Fisheries (DOF)

DOF is responsible for managing the fish resource and is now encouraging the building up of the nation's deep-sea fishing fleet. The use of bigger and more sophisticated vessels will mean that the monsoon will not affect fish landing to the extent that it now does. DOF is also trying to introduce new and better fish handling methods to achieve more consistent quality of fish. DOF also does extension and

training work in fish processing, though only on low technology processing methods and in cooperation with the industry.

Fisheries Development Authority (LKIM)

This agency is helping processors, especially fish cracker manufacturers, to produce a standard cracker for export.

In the area of fisheries development LKIM sets up model factories run by fishermen as business entities.

MARDI

All fisheries research and development work is done by MARDI. They also do extension work through an 'adoption' scheme in which selected processors are given regular training advice and monitoring by MARDI's staff.

Ministry of Health

All regulations and enforcement of food matters, including sanitation and cleanliness of factories are under the jurisdiction of the Ministry of Health.

Agriculture Bank

This bank offers loans at a lower interest rate than the prevailing commercial one.

With all these inputs, it is expected that the fish processing industry will be improved in the future.

Regular training by MFRD is also helping our industry because it offers a chance for our processors to see a good processing centre and new products which they make. Unfortunately the training is limited. I hope more training can be provided in the future.

DOF is setting up four regional extension centres which will be equipped with fish processing facilities. We hope to train more processors and impart new technology in a good, clean and properly planned workplace.

The industry has potential. We intend to develop it.

Department of Fisheries of Malaysia. 1986. Annual Fisheries Statistic 1985.

Dr Mohd Ismail Abdullah b. Omran Noorman. 1978. Status industri memproses ikan masa kini — Seminar Galakan Pemproses Ikan, 21-23 September 1987. Kuala Trengganu (in Malay).