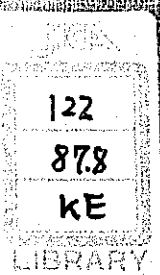


**KINGDOM OF THAILAND**  
**PRE-FEASIBILITY REPORT**  
**ON**  
**MEAT PROCESSING INDUSTRY PROJECT**

SEPTEMBER 1971

OVERSEAS TECHNICAL COOPERATION AGENCY  
GOVERNMENT OF JAPAN



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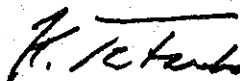
## Preface

The Government of Japan, in response to the request of the Government of Thailand, undertook a pre-feasibility survey for the Meat Processing Industry Project in Thailand and entrusted the execution of the survey to the Overseas Technical Cooperation Agency. Submitted herewith is the report on the said project.

The Overseas Technical Cooperation Agency (OTCA) organized a survey team comprising five members, headed by Mr. Yoshihiko Hasegawa, Director of Japan External Trade Organization, and dispatched the team to Thailand for the period from May 9 to May 30, 1971. The team studied the report on Processed Meat Products Project prepared by the Thai authorities and collected necessary data. Upon returning to Japan, the team reviewed the survey results and reached some conclusions which are incorporated in this report.

I sincerely hope that this report will be of some help for the development of meat processing industry in Thailand and will also contribute to the promotion of friendly relations between the two countries.

I would like to express my sincere gratitude and appreciation to the Government of Thailand and other organizations for their unlimited support and cooperation extended to the team during the survey.



Keiichi Tatsuke  
Director General

Overseas Technical Cooperation Agency

## Acknowledgement

The team would like to take this opportunity to express its heartfelt gratitude to Thai authorities concerned including the Regional, Changwad and other local veterinary institutes under the Department of Livestock Development for providing it with valuable information and support without which the survey could not have attained the assigned objectives.

It is hoped that the team's conclusions and suggestions will be of help for the Thai Government in promoting the project and conducive to the closer friendship between Thailand and Japan.

Acknowledgement is due to the following officials of Thai Government whose unlimited assistance was most instrumental in conducting the survey.

Dr. Chakz	Director-General	Department of Livestock Development
Dr. Siri	Deputy Director-General	"
Dr. Chamrong	Ninth Region Veterinary Officer	"
Dr. La-iad	"	"
Dr. Udom	"	"
Dr. Sayoomporn	"	"

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## A. Introduction

The purposes of the survey were the facts-findings of zoo sanitation and food sanitation conditions of Thai livestock industry, which should be considered firstly for exportation of meat products to Japan (mainly meat and its processed goods), and at the same time, to find the ways and means to cope with the found out problems.

From these points, this report summarizes the present situation and make a short evaluation on the followings (1) livestock resources, (2) zoo sanitation and (3) food sanitation, and then makes a few remarks for countermeasures for them.

As to the countermeasures for further development of Thai livestock industry, various collaboration between Thailand and Japan, for example, further technical assistance in this sector of industry both on the governmental and private levels from Japan is found needed and at the same time, to be fervently expected.

This report also summarizes prerequisites considered for exportation of Thai processed meat in order to realize the possibility of exporting Thai livestock products to Japan.

### Organization of the Team

Following five persons were sent to Thailand by Japanese Government to make a field survey of Thai meat processed products for a period of twenty days from May 9 to May 28, 1971.

Yoshihiko HASEGAWA	(Leader)
Shoji OKABE	(Veterinarian)
Riki FUKUDA	(Economist)
Muneo OGATA	(Veterinarian)
Kaoru SAKAKI	(Veterinarian)

## B. General Aspects of Thai Livestock Industry and its Evaluation

### I. Summary of Thai Livestock Resources and its Evaluation

#### (1) Cattle and Water Buffalo

(a) According to agricultural statistics of 1967, stock population of Thailand is 5.28 million cattles and 7.7 million water buffalos, more than 12 million in total, indicating the largest resources in Southeast Asia.

These cattle and water buffalos are mainly raised for cultivation purpose and are slaughtered for meat when they are not fitted for the above use because of old age and other reasons. Any certain tendency of livestock population growth can not be found out according to the statistics of past ten years, rather indicating irregular increase and decrease of each year.

Thai Government has taken the measures for conservation of livestock resources, as follows:

- (i) Prohibition of slaughtering female cattle (excluding those of reproductive disorder because of their sterility and other reasons)
- (ii) Control on slaughter of male water buffalos (Governor of Changwad now determines the number of slaughter)
- (iii) Control on exportation of cattle and water buffalos (Only castrated oxen can be exported and its annual number is also limited.)

However, it is doubtful whether the above-mentioned conservation program is really effective or not from the viewpoint of above-mentioned changes in the numbers of livestock population. Also the forage crops are poor in general. (Grasses are generally coarse in tropical area, and Thailand is not the exception to this.) and there is a limit in both quantity and quality of pasture land and grass land, and especially in dry season the nutrition condition of livestock drops because of lack of feed.

#### (b) Evaluation

The followings are the evaluation from the viewpoint of livestock resources.

- (i) Removal of inhibiting factors of reproduction of cattle and water buffalos (for example, propagation of artificial insemination in relation to under mentioned (v) and removal of other reproductive disorder.
- (ii) Emphasis on preventive program against livestock loss by animal infectious disease
- (iii) Countermeasures for lack of feed during rice season and before rainy season



- (iv) Improvement of breed from working purpose to meat purpose
- (v) Studies on loosening the limit on slaughtering young and female cattles and water buffalos for production of quality meat

## (2) Swine

### (a) Summary

Although the stock population of 1967 amounts to 4.60 million, the price of pork fluctuated greatly to form the pig cycle and the increase and decrease of swine varies from year to year. (The largest in past ten years was 5.25 million in 1961 and the smallest, 3.92 million in 1958.)

Swines are raised in small numbers, mostly from one to three per one farm, and are fed on rice bran and broken rice.

Most breed are foreign improved varieties and native varieties are scarcely found in surrounding area of Bangkok.

### (b) Evaluation

- (i) Selection of variety for production of pork with less fats and improvement of feeding method
- (ii) Emphasis on preventive program against disease

## II. Summary of Zoo Sanitary Condition in Thailand and Evaluation Thereof

### (1) Summary

Zoo sanitary condition is not only necessary for protecting livestock from diseases and increasing the stock numbers but also is an important factor from the viewpoint of international trade of livestock goods. And zoo sanitation is indispensable for supplying meat for human use, together with food sanitation program.

#### (a) Rinderpest

Although rinderpest was eradicated in 1959, still Thailand is trying her efforts on preventing the disease by forming rinderpest immune zone by vaccination on the adjacent area of Laos and Cambodia border.

#### (b) Foot and Mouth Disease

Although it is found sporadically, the Southern region (Malay Peninsula) is regarded as free zone and to prevent the disease to come into the area, the government prohibits the movement of livestock from other region to Southern Region and at the same time, large area in the central plain (Seventh Region) adjacent to the Southern Region is designated as "Special Quarantine Zone". Thai Government's continuous efforts for controlling foot-and-mouth disease are to be highly evaluated. Foot-and-mouth control activities in other regions are not yet sufficient enough due to the lack of production capacity of vaccine and lack of staff to carry out the mission.

(c) Other Livestock Diseases

Hemorrhagic Septicemia is reported in large number, indicating high death rate and is regarded as one of the major diseases. Anthrax, swine fever, tuberculosis and various parasitic diseases are among others. However, their incidences are not well confirmed. Department of Livestock Development appoints regional veterinary officers to each nine regions, Cahgwad veterinary officers to each Changwad, and Amphur veterinary officers to major Amphurs. Department of Livestock Development also has following institutes throughout the Kingdom directly controlled by Department of Livestock Development itself. (This description is based on Directory of Ministry of Agriculture 1969, Department of Livestock Development.)

(i) Veterinary Clinic	23
(ii) Port of Exit	13
(iii) Port of Entry	2
(iv) Inland Quarantine Station	8
(v) Animal check point	21 (in northeast 14, in north 3 and in south 4)
(vi) Vaccine and Serum Division	
(vii) Foot-and-Mouth Vaccine Laboratory	
(viii) Livestock Station	7
(ix) Forage Crop Station	4
(x) Artificial Insemination Center - A. I. Unit	14
(xi) Mobile Unit	5 parties

Although the Department of Livestock Development has more than 880 staffs (1968), its administrative operation cannot be said sufficient enough, due to the lack of qualified veterinarians (about 140, according to the report of F. A. O.) and the lack of Amphur officers. (Only 60% of the seats are occupied.)

(2) Evaluation

The followings are some of the countermeasures for zoo sanitation concluded from above (1).

(a) To expand the capacity and facilities of foot and mouth vaccine laboratory to reinforce the protective program against foot and mouth disease that is;

- (i) to increase the production capacity of foot and mouth vaccine to 5 million to 6 million doses at the earliest opportunity
- (ii) introduction of tissue culture method for production of vaccine and the use of water buffalo tongue should be studied.
- (iii) This laboratory should also have the function of reference laboratory to the Southeast Asia providing diagnostic service, training of the technicians and stocking the vaccines for the area.

(b) In order to reinforce the protection of the foot and mouth disease in the country, not only the establishment of depots of the foot-and-mouth disease vaccine in each region but also more extensive vaccination is required. And further, more comprehensive field materials for diagnosis should be collected and sent to the laboratory.

(c) Repletion of the facilities and staffs of already established veterinary clinics, in order to make these clinics as technical centers of zoo sanitation of the regions in the country, and promotion of more efficient utilization clinics are necessary.

(d) Although the meat inspection at slaughter house is now under the control of Ministry of Interior in Thailand, it is necessary to make closer relationship between meat inspectors and regional and/or Changwad veterinary officers for effective control of livestock disease and also for meat hygiene.

### III. Summary and Evaluation of Food Sanitary Condition

#### (1) Summary

Meat inspection has to be carried out by the experienced veterinary officers both before and after the slaughtering of livestock for all livestock slaughtered and dissected at slaughter house. Adequate numbers of veterinary officers are to be allocated in accordance with the numbers of livestock to be slaughtered, and they should not only make an inspection by observation but also histological and microbiological inspection if necessary.

According to the result of these inspections the said livestock and meat are to be adequately disposed from the viewpoint of public health. To fulfill these above conditions, the first prerequisite is that slaughter house itself should be clean and modernized. The second is that the inspection at the slaughter house should be carried out by and under the established control system of the government. (In consideration of the exportation of meats, it is usual for the importing country to require the inspection certificate issued by Governmental organization of exporting country and Japan is not the exception to this.)

Summarizing the food sanitary condition of Thailand from these points, in general with exception of a few, the slaughter house itself and the facility of it cannot said sufficient enough for maintaining good sanitary condition and at the same time satisfactory meat inspection can not be said to be operated adequately.

#### (2) Evaluation

In case if Japan imports the meat and/or meat processed products from Thailand, livestock should be slaughtered at slaughter house which has or is capable of having equal or better sanitary control to Japanese standard, and the meat should pass actual inspection of equal or better standard to that of Japan. (From the viewpoint of zoo sanitation, it must be emphasized here again that Japan is not in the position to import the meat from any country which has malignant animal infectious diseases -- foot-and-mouth disease, for example.)

Also in case if Japan should import meat processed products from Thailand, they are to be processed from the meat which has passed the above-mentioned food sanitation inspection and should be guaranteed to be processed at the factory which has equal sanitary standard to Japan. At the same time, the processed products should meet with the food and beverage standard of Japan from the viewpoint of food additives and others.

## C. How to Make Access to International Trade of Thai Meat Products to Japan

### I. Basic Concepts

It is necessary to maintain a level of standard of both zoo sanitary condition and food sanitary condition when livestock and meat products are to be traded in international scale. From these two points, as it has been already described in this paper, the Thai meats and its products have not yet obtained admissible level of international trade standard, therefore it is to be concluded that the exportation of Thai fresh meat to Japan at the moment is not possible.

The possible ways for exportation of Thai meats at present are as follows:

(a) From southern region of Thailand, exportation of meat products (such as sausage) processed at processing factory and slaughter house which meets with the food sanitation standard, and using the meat only from the livestock of this region (Although Southern Thailand is said free-zone from foot-and-mouth disease and has few problems regarding zoo sanitation, it has problems in regard to food sanitation due to the lack of modernized slaughter house.)

(b) From the regions other than Southern Thailand, (so-called contaminated area of foot and mouth disease) exportation of frozen boiled meat under the special administrative agreement between Thailand and Japan.

### II. The Exportation of Meat Processed Products from Southern Region

(a) Although the southern region is designated as "free-zone" from the viewpoint of zoo sanitary condition, it is necessary to establish newly the slaughter houses and processing factories with modernized equipments and facilities which are now lacking.

Hadjai and its vicinities may be appropriate location for above facilities from the viewpoint of geographical and livestock resource condition.

(b) The capacity of the facilities in the said area should be decided from the viewpoint of livestock resource and feasibility of the facility. The processing factory should at least have the capacity of producing three thousand tons per year of finished products from economical standpoint.

(c) To maintain and increase the livestock population of the area (Songkla and Nakhon Srithamaraj), it is necessary to reinforce the staff and facility of the veterinary clinic of this area. (Dispatching of Japanese veterinarian and supplying of equipment from Japan should be considered if both governments agree upon.)

(d) Thailand should reinforce the present program against foot-and-mouth disease in the "special quarantine zone" adjacent to this region.

### III. Exportation of Meat Processed Products from the Region other than Southern Region

(a) As the regions, other than southern Thailand are not free from foot-and-mouth disease, exportation of only frozen boiled meat under the special arrangement for treatment of meat is considered possible.

(b) As slaughter houses in Bangkok and Ban Pong are modernized and clean, the exportation of frozen boiled meat is possible, only when such product is processed adequately as described in the next (c), using only the meat which passed meat inspection with Japanese standard in the said two slaughter houses.

(c) It is necessary to establish new facilities which have passed the standard of food sanitary condition for the production of frozen boiled meat, and to carry out the heat treatment and packing in the manner which does not allow the contamination of foot and mouth disease virus.

(d) It will be necessary for Japan to dispatch the veterinary specialist as co-inspector for slaughter inspection and sanitary control under the technical assistance and so, if the agreement between Thailand and Japan is agreed upon.

### IV. Conceivable Necessary Treatment to Open Trade of Thai Meat Processed Products to Japan

(a) In order to initiate the export of frozen boiled meat from the regions other than Southern Thailand, it is definitely necessary for both countries to conclude a special agreement which includes several articles establishing provisions to prevent the contamination of foot-and-mouth disease from Japan.

(b) The Zoo Sanitary Agreement between Japan and Brazil is attached hereunder for the reference for consideration of exportation of frozen boiled meat from Thailand. Japan has concluded such agreement between Brazil and Argentina and imports frozen boiled meat from both countries.

Zoosanitary Treatment  
of frozen boiled meat to be imported  
into Japan from Brazil

The zoosanitary treatment of frozen boiled meat of Brazilian origin will be made as follows:

1. Measures to be taken by the competent authorities of the Governments of Japan and of Brazil

The competent authorities of the Government of Japan and the Government of Brazil will adopt the following measures with a view to preventing the possible invasion into Japan of infectious diseases of domestic animals, particularly foot-and-mouth disease, through frozen boiled meat of Brazilian origin.

(1) Measures to be taken by the competent authorities of the Government of Brazil

The following measures will be taken by the competent authorities of the Government of Brazil, and frozen boiled meat will be subjected to thorough inspection and supervision in its whole course from production to shipment for export and exported only upon confirmation of its safety.

A. Processing plants

The competent authorities of the Government of Brazil will designate the plants listed in the Annex as the processing plants for frozen boiled meat to be exported to Japan. Furthermore, the competent authorities of the Government of Brazil will guarantee that all designated plants provide facilities to the competent authorities of the Government of Japan for the investigation which the latter may conduct in future in the course from production to shipment for export of the frozen boiled meat.

B. Processing etc.

The competent authorities of the Government of Brazil will give confirmation on the following points:

- (a) Meat for processing will be derived from normal animal in the light of antemortem and postmortem inspection, and will be completely boneless.
- (b) Meat shall be boiled so that the temperature in its center part is maintained at the level of 158°F (70°C) or above for not less than one minute.
- (c) The meat, after being processed, will be free from the virus of foot-and-mouth disease.
- (d) The containers and packings of the frozen boiled meat will be new, and free from the causative agent of any infectious diseases of domestic animals.

C. The certificate to be issued by the competent authorities of the Government of Brazil

The competent authorities of the Government of Brazil will, upon confirming the following items in respect of frozen boiled meat, issue a certificate in English, containing the statement of the said items:

- (a) Name and location of the processing plant;
- (b) Name of the exporter;
- (c) Name of the importer (in Japan);
- (d) Condition of treatment by boiling;  
(date of processing, size of cut meat, heat applied, heating time)
- (e) Condition after boiling;  
(result of inspection after boiling, place of storage, port of export, date of shipment, proper precautions against contamination by the foot-and-mouth disease virus)

Furthermore, all package materials for the frozen boiled meat will have a seal stuck on them, indicating the completion of inspection by the competent authorities of the Government of Brazil.

D. Other items

Measures other than those mentioned in each item under (1) above will be taken under the laws and regulations of Brazil.

(2) Measures to be taken by the competent authorities of the Government of Japan

The competent authorities of the Government of Japan will adopt the following measures.

A. Measures at the time of arrival

The competent authorities of the Government of Japan will admit the bringing in, at the ports designated by the laws and regulations of Japan, of frozen boiled meat accompanied by the health certificate issued by the competent authorities of the Government of Brazil certifying that the sanitary measures prescribed in (1) above have been taken.

B. Other matters

Measures other than those under A above will be taken, in accordance with the laws and regulations of Japan.

2. Consultations between the competent authorities of the Government of Japan and the Government of Brazil.

In case where addition, amendment or abolition is required in respect of any of the items mentioned above, there will be consultations between the competent authorities of the two governments and required actions will be taken with their mutual understanding.

### 3. Others

The competent authorities of the Government of Japan and the Government of Brazil will notify each other, every month, of the sanitary condition of dangerous animal diseases in their territory, in their Monthly Bulletin on Infectious Diseases of Domestic Animals.

## ANNEX

### LIST OF THE PROCESSING PLANTS FOR FROZEN BOILED MEAT TO BE EXPORTED TO JAPAN

		Attestation Number
1.	S/A Frigorifico Anglo Barretos, Sao Paulo	2
2.	Cooperative Rural Serrana Ltda. Tupancireta, Rio Grande do Sul	5
3.	Prigorifico Armour Do Brasil S/A Santana do Livramento, Rio Grande do Sul	7
4.	S/A Frigorifico Anglo Pelotas, Rio Grande do Sul	30



