Category-B

Projects for Strengthening the GAP implementation

Summary of Candidate Project (Project Code: B-1)

1. **Name of Candidate Project**
   Strengthening GAP implementation in primary production of fruit and vegetables

2. **Implementing Agency**
   Post-Harvest and Product Processing Research & Development, Department of
   Department of Agriculture (DOA), Ministry of Agriculture and Cooperatives.
   Chatuchak, Bangkok 10900, Thailand

3. **Type of Scheme**
   Technical Cooperation Project

4. **Project Area**
   Bangkok and regional DOA offices (Specific project area is to be determined before or at the beginning of the Project)

5. **Project Period**
   3 years

6. **Rationale**

Food safety challenge

Everyday the world food industry is faced with new problems, food scare, pesticide residues, antibiotic, poisoning, product recall, litigations – These events effect public perception and cause retailers, insurers, shareholders and regulators to react accordingly. This pressure has been passed down to the supply chain at primary production level. The rapid evolution of information technology, social and economic during the past ten (10) years resulted in changing of "New Consumer Mentality";

- Ecological concerns – food safety, environment concerns
- Appetite for conformation – Health; how it grows, where it comes from...
- Demand for "Quality", not "Quantity"
- Life style changes- convenience.
- Social concerns- occupational health & safety
- Other- animal welfare/ freedom food, organically grown products.

Today's consumers are well informed about food and food related issues – bad news spread out fast. It is important to remember that when the general public is better informed and educated, they do not always make decisions based on "Scientific Evidence", many occasions the decision is made based on "Emotional Factors". Pesticide residues generally

know to have great impact on consumer awareness and concerns. Thailand's newspapers constantly reporting the issues relating to pesticide residues laced on vegetable products and rejected products from Thailand by importing country due to pesticide residues exceed the Maximum Residue Limits (MRLs). These events change the way we produce food and the way we do business.

Present Situation of GAP Implementation

In 2004 Thailand government has issued a national policy of "Food Safety", announcing implementation of the Good Agricultural Practice (GAP) program under the responsibility of the Department of Agriculture (DOA) with the target at 325,000 farms/ orchards of fruits & vegetables (covering 27 kinds of plant products) (see Appendix 1) to be registered under the national GAP standard. The objective is to enhance the quality and safety-related in agricultural commodities and practices aiming at the product for export. The GAP program is voluntary and the registered farms are subject to inspection by the approved DOA's field inspectors and fresh products are sampled for laboratory analysis against the set certification criteria.

The features of the DOA's GAP program for fruits & vegetable can be summarized as follows;

1. The farmer participating the program as voluntary basis and be gone through implementation process based on the national GAP requirements.
2. Application can be done through the DOA's regional offices at no cost.
3. Government by DOA provides technical support, training, consultancy and laboratory analysis of the products.
4. Farmers will be inspected at field production by the DOA's approved inspectors.
5. Successful candidate will obtain GAP certificate and be given identification number (Q-mark no.)
6. Government is responsible for promote the GAP program (Q-mark) in order to create awareness by all interested parties in order to facilitate trade of certified fresh produce.

To achieve the target the DOA has Explanation of GAP Project Methodology can be summarized as follows;

A. Farmers contact the DOA's regional offices and fill in the application form
B. Farmer's field to be conducted pre-assessment for preliminary screening, any field/ plot that fail to meet basic criteria will not be processed for further steps.
C. Farmers are gone through a two (2) days training program on GAP requirement & implementation (one day for GAP requirements and one day for field practice). These training program and consultancy handled by the DOA's approved farm advisor (each farm advisor responsible for supervision of about 50 farms).
D. GAP requirements being implemented by farmers according to instruction of farm

advisors.

E. Once the farmers are ready for formal inspection, farm inspectors at each DOA regional office will conduct field inspection according to GAP standard & requirements, produce are also sampled for chemical residue test (see also table 3 and 4) (each filed inspector responsible and control 25 farm supervisors).
F. If the result of inspection and laboratory analysis indicated that it is not meet the requirements according to the established guidelines, second and/or third inspection is required.
G. Field inspectors prepare inspection report and submit to the DOA's certification committee in Bangkok for official approval from DOA head office, and certificate issued & signed by the Director General.

To facilitate the GAP program, DOA has developed a GAP technical guidelines in each kind of plant for use by three (3) different parties; guidelines for inspector, farm advisor and farmers.

Remarks:
Farm advisors - a farmer leader, individual experienced farmer, or university agricultural students that are approved and employed by the DOA to work for this particular project to facilitate GAP program.
Field inspector - an officer of DOA responsible for farm inspection and supervising farm advisors under his/her geographical areas.

Currently, GAP implementation program by the DOA for the target 27 kind of plants (as of 29 July 2004) as follow;

- Num of farms registered: 192,150- (against the target of 334,100- farms)
- Number of farms inspected: 49,057-
- Number of farms received Q-mark: 2,812-

Many fruits & vegetables packers/ exporters (aprx. 5 companies) already have several years achieved GAP certification based on EUREPGAP for their own & contract farms. These companies are already certified by international/ private certifying bodies, as they want to ensure that the certificates are internationally recognized and be accepted by European retailers in United Kingdom, USA and Europe.

Problems and Constraints
According to our filed study on this particular issue, the problems & constraints obtained from parties involved in the program can be summarized as follow;

1) Limitation of human resources and transportation facilities to effectively operate GAP implementation across a wide range of geographical coverage.

2) Competency and skills of farm advisors for role out the program at the farm level.
3) Training program for GAP program deployment process was not effective. Training course not standardized in all levels, this lead to ineffective training for farm levels.
4) No incentive for farmers and exporters for implementing GAP.
5) Chemical analysis by the government laboratory taking long time and having to wait with a long listing – does not serve "economic of speed".
6) Limitation of pesticide residue laboratory in terms of number of laboratories, no approved/ certified laboratory other than that of the DOA's.
7) GAP technical guidebook for farm advisors and farmers not a "friendly user" field book – difficult to use.
8) Limitation of basic research information on practical technology regarding pest control and proven production technology.
9) Pesticide residues test by conventional method is very expensive, test kits or other simplified test methods not made available to farmers.
10) Mechanism of to control the use of agrochemical at field level was ineffective.

Without strengthened GAP implementation process, it is difficult to achieve this challenging target (325,000 farms/ orchards). This requires a solid implementation and system maintenance processes with effective management. Strong commitments from top management together with concrete action plans that is defined clear objective & key performance indicators.

7. Overall Goal

Recognition good practice nationwide for food safety (strengthening capacity of human resources of government sectors and extend to the level of primary production)

8. Project Purpose

Improved production system of GAP and strengthen control system relevant to food safety

9. Outputs

a. Governmental Officers are effectively trained concerning farm system and scientific based technology
b. Appropriate system for GAP production and implementation of appropriate quality control system at the farm level.
c. System for accessibility and dissemination of necessary information of primary production is established

10. Activities

a. Collect and review all the existing GAP standard and activities in Thailand.
b. Conduct survey for baseline study of the GAP implementing system in 3 regions,

Chaing Mai, Khonkan and Chanthaburee.

c. To design training course and to prepare material for staffs of DOA for appropriate control system for GAP implementation.
d. To design verification system for the competent registered staff (Government/ private sector) for GAP production and implementation.
e. To set the connection system of 3 laboratories in region need and collect the baseline competency by benchmarking to these criteria of pesticide residue analysis of importing countries.
f. To develop training program of food safety analytical methodology and implement to the laboratory in region office, 3 regional offices.
g. To develop a implementation model to some group growers in the study area.
h. To conduct monitoring and evaluation of the GAP implementation throughout the project period and find solution.
i. To publicize relevant information of the primary production system through various media and establish a mechanism to exchange information.
j. Study visit of JAS Association and related farmer cooperatives.

11. Inputs

(1) Input from the Thai Government

a. Assignment of full-time counterpart staffs
b. Project office with necessary equipment
c. Regional laboratory
d. Buildings/facilities required for the project
e. Office for experts
f. Expenses related with the counterpart staffs

(2) Input from the Japanese Government

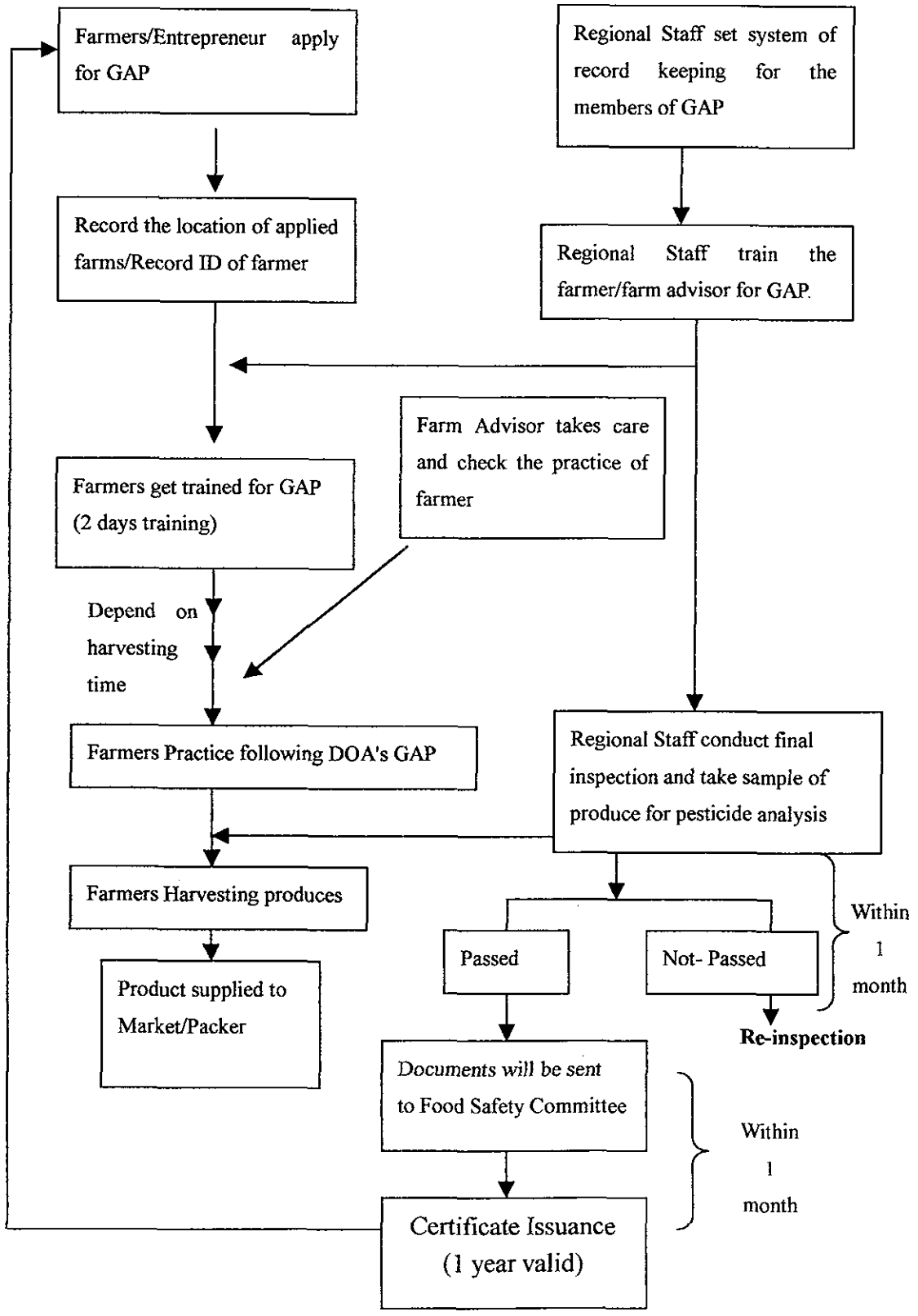
a. Dispatch of long-term experts (3): GAP/Production Technology/ Production management/ Laboratory analytical expert
b. Dispatch of short term experts (3): Production training manager, Production quality and a system of production control, Agronomist
c. Study visit of JAS Association and related farmer and cooperatives
d. Group Training program in Japan

12. Expected Benefits;

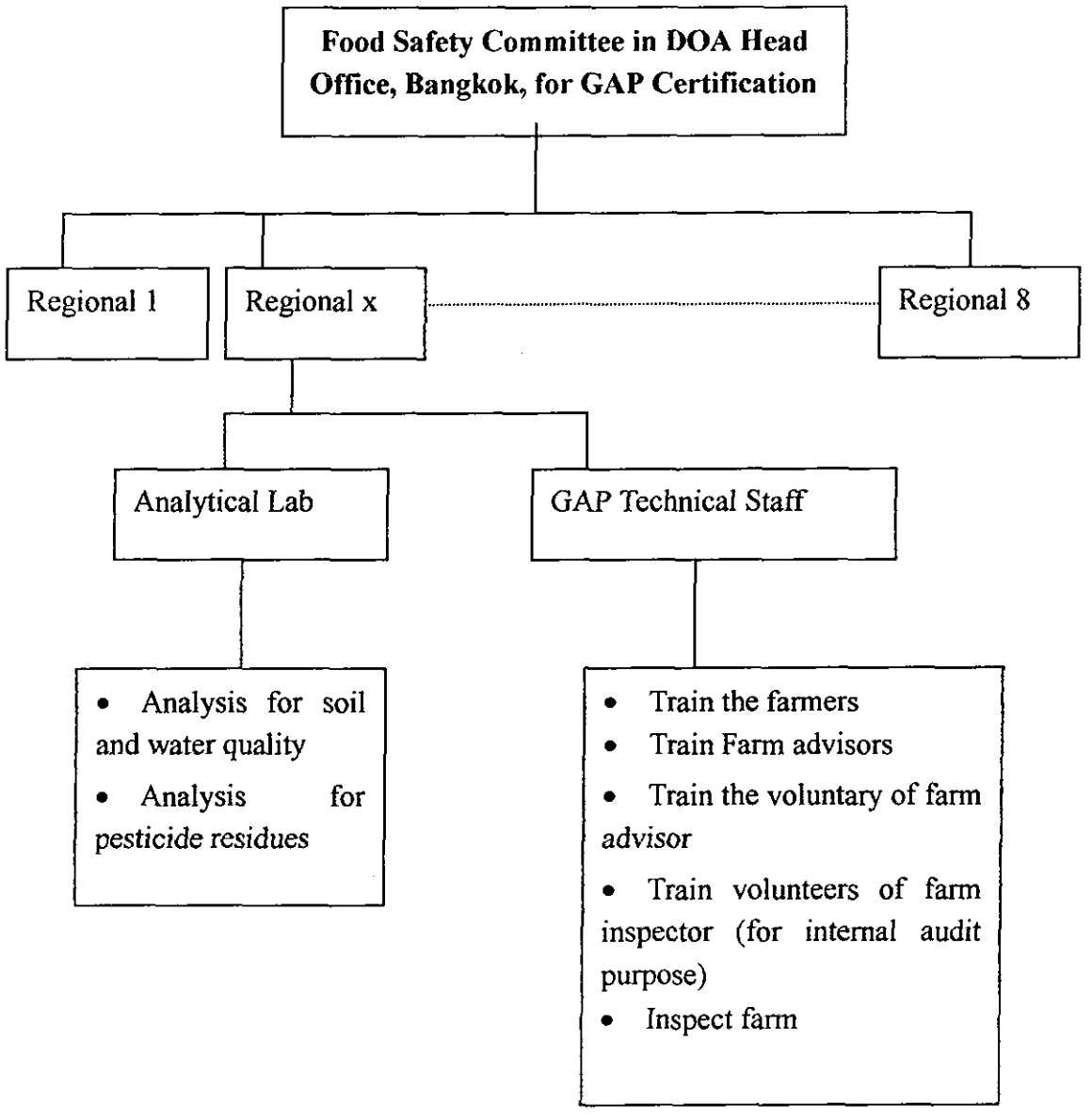
a. Improve Farm's capability and productivity
b. Food industry be able to purchase safe raw material for ingredient
c. Increase sustainability of farmers and providing for a better environment

Appendix B-1-1

The Procedure of GAP Certification



Appendix B-1-1 (Continued)



Appendix B-1-2

Current Status of GAP Implementation Program by the DOA (as of 29 July 04)

No.	Crop	Target area / no. of farms	Registered farms	Inspected Farms	On process of inspection	Q-mark approved Farms	
1	Longan	72,300	58,914	31,015	6,010	22	
2	Durian	24,500	13,701	5,111	348	10	
3	Mangoesteen	20,400	11,739	4,089	460	12	
4	Asparagus	8,250	5,416	3,040	1,918	7	
5	Okra	3,000	2,227	1,647	418	24	
6	Baby corn	4,400	1,815	357	338		-
7	Pomelo	6,500	2,560	313	3	3	
8	Rice	40,000	57,021	80	1		-
9	Lichee	9,000	6,605	2,219	1	1	
10	Tamarin	9,500	1,435	-	-		-
11	Mangoes	18,450					
12	Young coconut	4,100	93	-	-		-
13	Longong	12,400	7,193	3	-		-
14	Ginger	1,300	16	4	-		-
15	Chili	13,000	1,612	51	6		-
16	Pineapple	17,600	1,269	4	-		-
17	Rambutan	11,000	2,036	493	-		-
18	Coffee	20,300	8,806	-	-		-
19	Groundnut	4,400	736	-	-		-
20	Soybean	600	10	-	-		-
21	Orange	11,000	848	23	12	23	
22	Crucifer	1,600	734	551	523	549	*
23	Legume	1,000	448	293	258	285	*
24	Solanum	4,000	311	293	258	255	*
25	Cucurbit	2,000	507	428	409	412	*
26	Herbs	1,500	344	157	87	67	
27	Green corn	7,000	25	101	-		-
28	Banana	5,000	-	-	-		-
29	Others	-	2,101	1,307	1,108	1,134	
	Total	**334,100**	**192,150**	**51,858**	**12,299**	**2,812**	

Remark; * These certification program for the Thai Royal Project

Summary of Candidate Project (Project Code: B-2)

1. Name of Candidate Project

Strengthening GAP implementation and Laboratory capacity in shrimp production

2. Implementing Agency

Project Coordinator:
Fisheries Foreign Affairs Division
Department of Fisheries (DOF)
Ministry of Agriculture and Cooperatives (MOAC)

Project Implementing Agency
Coastal Fisheries Research and Development Bureau
- Marine Shrimp Cultural Research Institute

Freshwater Research and Development Bureau
Department of Fisheries (DOF)
Ministry of Agriculture and Cooperatives (MOAC)

3. Type of Scheme

Technical Cooperation Project

4. Project Area

Bangkok and some pilot regions, two or three pilot regions should be selected through previous study.

5. Project Period

3 Years

6. Rationale

Thailand has been one of the world leading countries in cultured shrimp production for more than a decade. Marine shrimp production has reached approximately 200,000 – 250,000 metric tons since 1993 until 2003 with the value of 70 – 100 billion baht. Thai shrimp production has been contributed to the global market share for approximately 30%. The largest markets of Thai shrimp are the United States of America, Japan, Europe and Canada. These major importing countries have put high values on food safety standard on the products imported. They have also developed sanitary and safety standard criteria not only for food processing but also try to include for farm production to quality and safe fishery products.

In terms of production process for Thai shrimp farming, there are approximately 40,000 shrimp farms – 30,000 as marine shrimp farms and 10,000 as freshwater shrimp farms. Marine shrimp farms mainly located in 22 coastal provinces whereas freshwater shrimp farm located

in inland provinces. During the last decade, Thailand Department of Fisheries (DOF) has developed three quality shrimp programs as Safety Level, Good Aquaculture Practice (GAP) and Code of Conduct (CoC) programs as following table.

Table B-2-1 Requirement for quality shrimp programs

	Safety Level	GAP	CoC
Requirements	1. Farm should be registered	1. Site selection	1. Site selection for New shrimp farms
	2. Never use of prohibited chemical	2. General Pond management	2. General Pond Management
	3. No antibiotic and prohibited chemical	3. Feed Management	3. Stocking Density
	4. Have an Aqua animal movement document (MD)	4. Shrimp Health Management	4. Feed Management
		5. All equipment must be cleaned	5. Shrimp Health Management
		6. Harvesting and distribution	6. Therapeutic Agents and other chemicals
		7. Other records as necessary	7. Wastewater and Solid Waste Management
			8. Harvesting and distribution
			9. Social Responsibility
			10. Educaiton
			11. Date collection

GAP is the program or guideline to produce good quality and safe marine shrimp for consumers; shrimp farms must be standardized, clean, and sanitary and generate no environmental impacts. Furthermore, shrimp health management must avoid use of therapeutic agents and chemical that leads to residues in shrimp. And for CoC program, it is a systematic approach to manage shrimp production to achieve international quality standards and to manage the environment for the whole production line from farm to processing plant to maintain a sustainable marine shrimp culture industry and to produce high quality and safe shrimp for consumer. The whole supply chain for CoC approach includes feed operators, hatchery operators, farm operators, shrimp collectors/distributors, processors, and buyers (e.g. local consumers and exporters)

Recently, Thai shrimp products has faced the problem with some antibiotics residue due to the wrong application by the producers. This made the volume of shrimp export reduce drastically. With the concern of Thai Government on the safety products to human health, various Ministries have been working together to solve the problem and to bring in safety food products. These Ministries are such as Ministry of Agriculture and Cooperatives, Ministry of Public Health, Ministry of Commerce and Ministry of Interior. Royal Thai Government has declared the year 2004 as "Food Safety Year" for Thailand. Various agricultural products have been included in Food Safety Year Program including fish and shrimp products. The

Department of Fisheries of Thailand (DOF) has set up the food safety projects for fish and shrimp production in order to improve the quality production.

As of the government's food safety program, GAP guideline or standard application has been emphasized on the primary production process. For fishery products, shrimp, both marine and freshwater shrimp, is one of the products in the DOF strategy for food safety program. All marine and freshwater shrimp farms in Thailand have to comply GAP standard by the end of year 2004. This primary food safety practice, GAP, is to ensure the safety shrimp products from the farm operation to the consumers. Environmental measures for farm operation such as water quality – chemical, biological, microbiological and soil condition need to be analyzed. Shrimp health management is also a focus in the particular the antibiotic residues free in shrimp products. These measures both on environmental and food safety concerns require efficient facilities and competent personnel in operating these tasks so as to strengthen GAP implementation in shrimp production in Thailand.

DOF regional laboratory monitors certified shrimp farm and its shrimp by following analysis once a week in each area.

Table B-2-2 Analysis item in marine shrimp laboratory

Categories	Analysis item	Main equipment	Remarks
Water quality	Ammonium Nitrate	Spectrophotomete	
	BOD		
	Salinity	Refractometer	
	pH	pH meter	
	Alkaline	Titration	
Biological	Plankton	Microscope	
Microbiological	Total count	Agar	
	Vibrio		
	Pathogenic microbes	PCR	
Antibiotics	Oxolinic acid	HPLC	
	Chloramphenicol	ELISA	
	Oxytetracycline	Microbioassay	
	Nitrofuran	Test kit	Only Screening

Existing regional DOF laboratories' facilities are located in 22 coastal provinces (with 25 laboratory units) and 10 inland provinces operating mainly on water quality analyses and some on antibiotic analysis in shrimp products. The facilities and equipments in these laboratory units are still limited. They are also require and improvement in order to strengthen GAP implementation program for shrimp farming operation in the areas of their responsibility. Large number of personnel is also in needs to gain more training in order to provide services for farmers efficiently.

Moreover, with the large number of aquaculture farmers in the region, it is wise to provide training program for farmers to be able to do on-site analysis for some food hazardous

contamination or antibiotic contamination in their feed or suppliers used in the farm operations. It is therefore, hoped that an assistance and/or cooperation with Japanese Government in providing relevant experts on good laboratory practice and other experts on various analytical techniques including the provision of some necessary equipment will enable to improve the laboratories. This is considered a major tool in strengthen the GAP implementation program for shrimp production in Thailand.

7. Overall Goal

Good Aquaculture Practice (GAP) will be recognized and widely used both in marine and freshwater shrimp production

8. Project Purpose

Monitoring system by laboratory for GAP shrimp production both for marine and freshwater shrimp production will be improved.

9. Outputs

a. A total twenty (20) DOF staffs are trained on laboratory system and improvement program in Japan
b. A total of one hundred and fifty (150) DOF central and regional laboratory staffs are trained on laboratory system and improvement program including on-site analytical techniques for GAP implementation in Thailand
c. A total of three hundreds and twenty (320) aquaculture farmers both for marine and freshwater shrimp production are trained on site-analytical techniques.
d. A practical operations of food hazardous analysis for importing countries are developed.
e. A total of twenty five (25) Coastal Aquaculture Laboratories and ten (10) Inland Aqua cultural Laboratories are improved and linked with the same standard-laboratories.
f. Information, via various media, on and improvement laboratory system and techniques of GAP implementation is disseminated to officers particularly shrimp farmers in both coastal and freshwater areas.

10. Activities

a. To improve the capacity of existing DOF regional laboratories, twenty five (25) laboratories in serving coastal aquaculture and ten (10) laboratories in serving freshwater aquaculture. The criteria and practical operation on the food hazardous analysis of import countries will also be emphasized.
b. To develop or apply food hazardous analytical technique mainly on shrimp product for Thailand.
c. To develop training programs of DOF regional laboratories improvement, food safety analytical methodology and implement in thirty five (35) regional DOF laboratories.
d. To provide training for twenty (20) DOF laboratories' officers in Japan on laboratories improvement system, various analytical techniques including food hazardous analytical method and on-site analytical technique.

e. To provide training for one hundred forty (140) DOF officers in thirty five (35) regional laboratories in Thailand on and improvement of laboratory system, various analytical techniques including food hazardous analytical method and on-site analytical techniques.
f. To provide training on an on-site analytical techniques for three hundreds twenty (320) shrimp farmers in thirty two (32) coastal and freshwater provinces.
g. To publish information, via various media, on and improvement laboratory system and techniques of GAP implementation to officers particularly shrimp farmers in both coastal and freshwater areas.

11. Inputs

(1) Input from the Thai Government

Allocation of staffs for working group and counterparts
Operation cost (in Thailand) for the working group and counterparts
Provision of office space
Necessary transportation for field survey

(2) Input from the Japanese Government

A long-term expert on Good laboratory Practice for Fishery
Quality Assurance Program, Test System, Test and Reference Items and Standard Operation Procedure
Six short-term experts on
-Antibiotics analysis
-Soil analysis
-Water quality analysis
-Microbial analysis
-Food hazardous analysis
-On-site analysis
Training in Japan i.e. arrangements, traveling costs including accommodation costs.
Training in Thailand i.e. provision of experts/trainers and costs for various training program

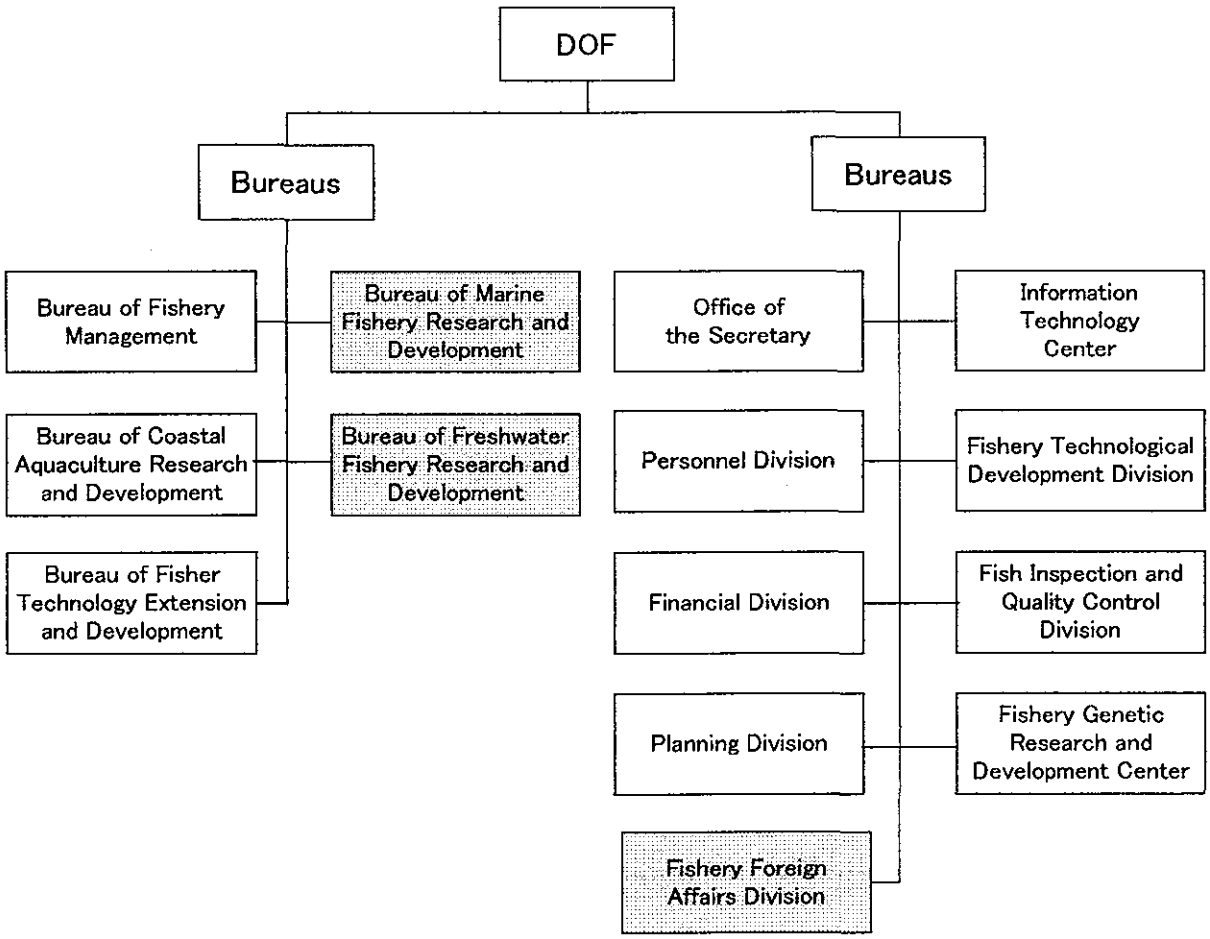
12. Expected Benefits

Beneficiaries

35 government laboratory units
25 coastal aqua cultural laboratory units
10 freshwater aquaculture laboratory units
350 government laboratory staffs
40,000 aquaculture farmers

Appendix B-2-1

DOF organization chart



Appendix B-2-2

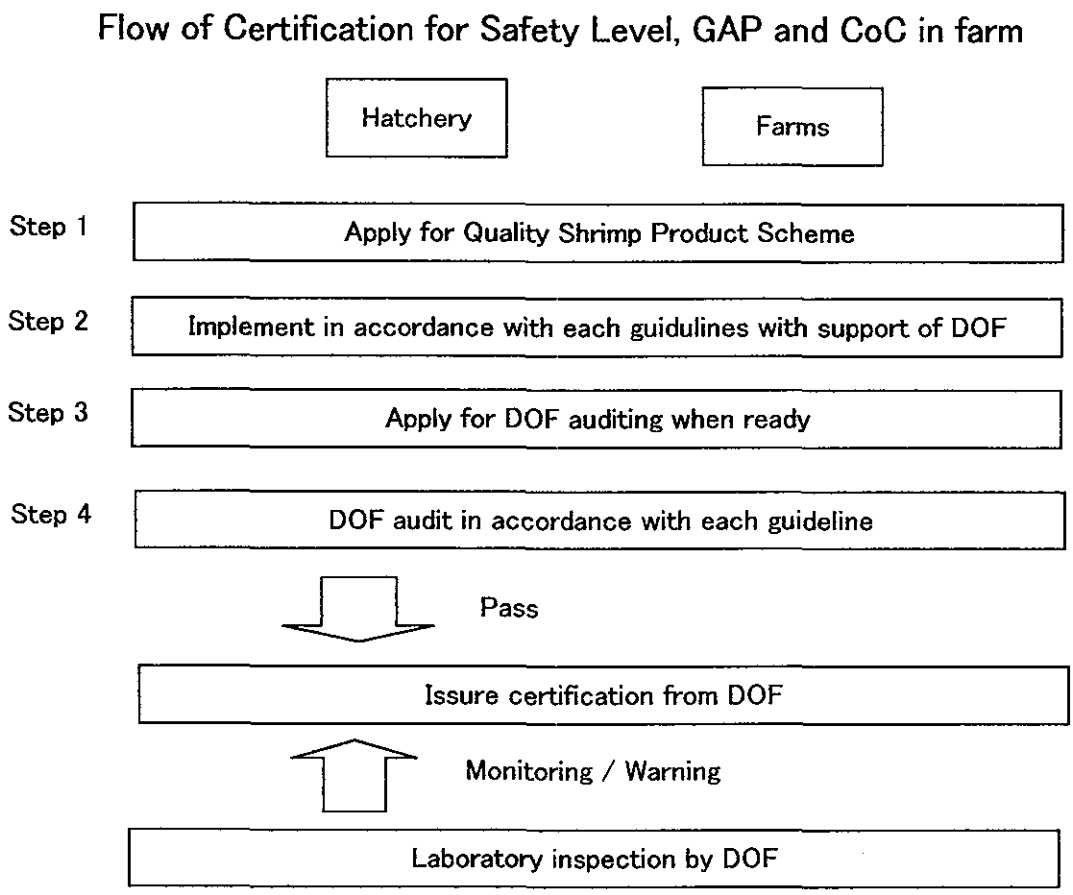
The Department of Fisheries' Food Safety Project

Food Safety Strategies in DOF

	Measures	Unit	Target
First Stragegy	1. Imspection of imported aquatic animals	Place	14
	– Increase proficienty of fisheries inspection points		14
	– Sample imported aquatic animal concerning tuna, chrimps and fish diseases	samples	6000
	2. Control of fish feed quality		
	– Inspect antibiotic contamination in fish feed	samples	7200
	– Control and monitor producers and importers	Persons/ samples	220/270
	– Check and certify fish feed factories	factories	5
	– Control the feed formulas whichi were registered with the DOF	formulas	2000
	– Certified fish feed products	documents	800
Second Stragegy	1. Certification of freshwater farms		
	– Inspect and farms	farms	8000
	– Provide training to fish farmers	famers	31000
	– Inspect and certify standard farms	farms	31000
	– Inspect raw materials/inputs used in farms	materials	93000
	2. Certification of marine shrimp and coastal aquatic animals		
	– Provide training to shrimp farmers	farmers	24000
	– Inspect and certify standard farms	farmers	24000
	3. Monitoring farms		
	– Inspect and monitor farms in provinces	farms	75
Third Stragegy	1. Inspect sanitation and provide quality certification factories and primary fish processing plants	factories	810
	2. Monitor hygiene of fishing vessels, transportation boats, fishing ports and unloading places		
	– Sampling of water, ice and raw fish	vessels	68
	– Laboratory bacterial inspection	samples	680
	– Hygienic inspection of fishing vessels, fishing ports, fish markets and primary fish processing plants	inspection	50
	3. Issure quality certification		
	– Issuring HACCP and GMP quality certification	documents	340
	4. Meet the producers to clarify food safety standard, measures and problem solving		
Fourth Stragegy	1. Inspect quality of fisheries raw materials and products	samples	17500
	– Inspection of fisheries raw materials	samples	34000
	– Inspeciton of imported raw shrimps and tuna	samples	850
	– Inspection of exported fisheries producted	samples	37000
	– Issuring quality fisheries product certification	documents	55350
	2. Sending fisheries technicians to work as coordinators in some important cities oversea for 3 months	contries	4

Appendix B-2-3

Flow of certification for quality shrimp product scheme



Summary of Candidate Project (Project Code: B-3)

1. Name of Candidate Project

Strengthening GAP Implementation in Poultry Production

2. Implementing Agency

Bureau of Livestock Standard and Certification
The Department of Livestock Development (DLD)
Ministry of Agriculture and Cooperatives (MOAC)

3. Type of Scheme

Technical Cooperation Project

4. Project Area

Bangkok/ Regional Station (Specific project area is to be determined before or at the beginning of the Project)

5. Project Period

3 Years

6. Rationale

Thailand is one of food self-sufficiency country in Asia and exporting food to all around the world. In agriculture, Thailand is emphasizing in strengths as one of food-exporting countries and focus on developing of new kinds of value-added and nutritious foods, to accommodate the new tests and stringent standards and demands of more discerning and definitely more health-conscious generation.

Livestock products are one part of Thai's food exporting products to the world market. The type of products is chicken meat chilled/frozen/processing, duck meat chilled/frozen/processing, pork live/meat chilled/frozen/processing, egg dairy & dairy products. A poultry products group is a main major exporting which, has approximately exported 545,700 metrics ton of fresh and processing products to EU and Japan market last year.

The trade information data of poultry products shows of U$ Million 840.93 in 2002 and increased U$ Million 980.35 in 2003. In this year, the Government of Thailand estimate volume of poultry product will be slow down, because of Bird Flu outbreaks in the first three quarter. This was affected to the Thai's poultry industry and the growth of country economic. Government of Thailand tries to efforts of all concerned and quickly in preventing the outbreaks from spreading, and officially recognized by the Office International des Epizooties (OIE), the World Organization for Animal Health also the importing country. Now Thailand has in place quarantine measures to present the re-entry of Bird Flu outbreak.

In case to assurance of Thai's poultry product free from Bird Flu or other pathogenic outbreak and to ensure the quality of poultry product is maintained to the requirement of the demands of consumers for high quality healthy meat, Ministry of Agriculture and Cooperatives has lunch a policy on food Safety aims to provide safety and quality of food to consumer domestically and internationally, to accomplish the policy goal, control and supervision by Department of Livestock Development on each step of food production from farm to consumer are currently implement. The standard of poultry farm is the one of Principle of Good Agricultural Practice (GAP).

GAP in Livestock Sector is meaning of good animal farming practice including farming practice, farm sanitation, environmental management, prevention and protection of infection disease in animal farm which, it used to control of safety in animal farm production. It's rapidly an important to improve of GAP in poultry production in primary production. DLD need for more information from international standards to improvement and implemented of Thai's GAP System to increase threshold capability in production of poultry products with safety and quality.

Problems and Constraints

In Thailand, Food Safety System is a newly implement for livestock sector, after the spread of Bird Flu disease and DLD lunch of Food Safety policy. Thai's poultry industry are going to improve in every step of production, GAP Implementation is a first step to control of farm production practice also including human resources practice to ensure of safety in poultry production. It's over the capability of Government agency because of need to clearly all technical matter, the figure from DLD shows 10,000 of poultry farm to be implementation under GAP System for export. Poultry product is the mainly important concern on food safety policy of exporting livestock product than other products. DLD plan to improve of poultry farm production practice with the need of the export requirement and need the expert in Poultry Farm Standard Technology and training also including Laboratory practice to help for advise and design of improving activities programme for implementation of Farm Standard System in Thailand, to accepted the system in domestically and internationally also building capacity of human resources of government and farm section is progressed and substantial. This system practice should be more easily and simple for farmer to understand & practice in fully system. Following 3 basic problems that can identify the situation of Livestock Sector in Thailand for GAP Implementation is the problem to explain that why DLD need to improve GAP System in poultry production is:

1) Implementation of poultry GAP (farm standard) system in primary producer
   - Not enough training programme in poultry farm standard
   - Farmer / Officer lack of standard and regulation information for domestic and

international.
- The system is not yet fully implementing stage

2) Competent Laboratory
- Analytical services from Government takes long time e.g. residue analysis in raw material and products.
- Lack of human resources to analytical laboratory e.g. proficiency test

3) Traceability System
- Insufficient of documentation control and scale of food chain
- Difficulty to trace back additives in food chain

The activities programme were established and contributed on various activities as farm owner training course, standard farm accreditation, standard farm monitoring programme, test of sample collection, examination programme on reports of animal at farm and the monitoring programme on the chemical substances used at farm. All programmes are kept operated as well as new programmes are on process to be designed. However, revision to operated programmes is important and is a significant tool to clarify the strong part to emphasize and weak part to strengthen. Beside, modern GMP concepts and new Information Technology with liable hardware or software are developed and are possibly put to enchant or accommodate the shortage. So, that the standard is consistent and fruitfully

7. Overall Goal

Poultry Farm Standard and good practice are recognized and accepted by consumer domestically and internationally. Building capacity of human resources of government and farm section is progressed and substantial.

8. Project Purpose

GAP in production system is modernized and control system relevant to food safety in primary poultry production is progressed.

9. Outputs

a. 500 officials will be upgraded with the controlling skills and IT know-how as well as GAP innovation at farm level.
b. GAP production and accessible database of primary production will be established.

10. Activities

a-1. Survey and collect data in respects of safety, management record and compliment to define GAP Production System at farm level. Field survey may include the selected statistic population from the whole country that will last 6 months.
a-2. Design the curriculum of the training course within 3 month.
a-3. Develop the laboratory network to verify the criteria of the products following to the

importing country benchmark within 3 months.

a-4. Carry out the case study in Japan to strengthen the pilot project and models for 3 months.

a-5. Develop the implementation model in farm and pilot project within 3 months that includes model in accessible database.

a-6. Implementation of pilot project in Thailand.

a-7. Conduct the monitoring and evaluation of pilot project throughout the pilot project period and recommend the further innovation.

11. Inputs

(1) Input from the Thai Government

Administrative team
C/P from the DLD Staff (4)
Staff Clerk (2)
Selected regional laboratory (2)
Compartment and facilities necessary to the project.

Input from the Japanese Government

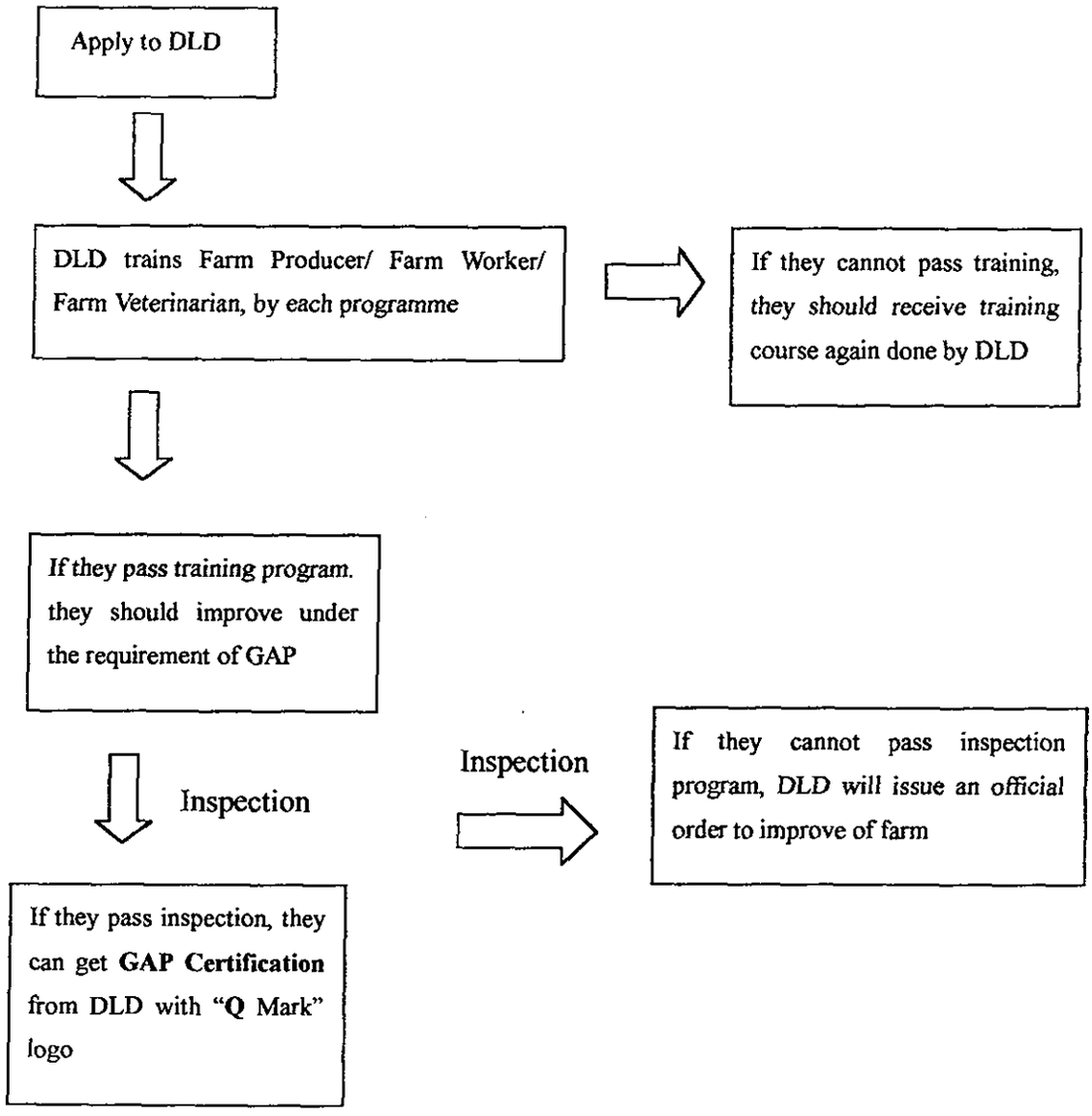
4 long -term experts in GAP Technology management and Laboratory
3 short- term experts in production training manager, production quality control and safety.
Group training in Japan.

12. Expected Benefits

Directly poultry farmers and indirectly supply chain.

Appendix B-3-1

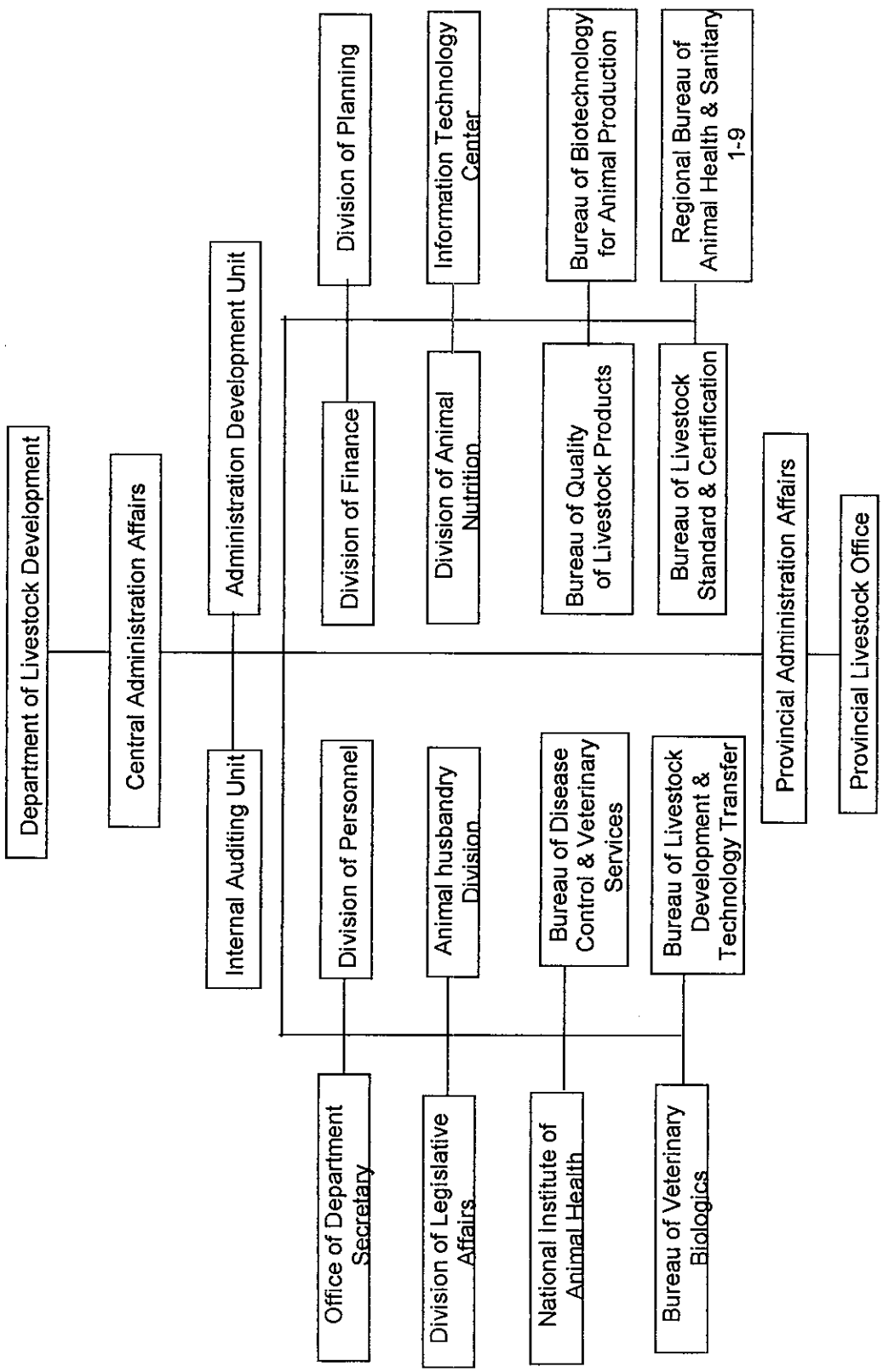
Flow Chart: Diagram of GAP Certification



Remarks

i. GAP Certification can be use within 2 years period from the date of issue
ii. In case of mistake under responsibility of farm producer, farms cannot request of inspection within 3 years.

Appendix B-3-2



Summary of Candidate Project (Project Code: B-4)

1. Name of Candidate Project

Quality Assurance in Pesticide Use and impact Management in Thailand

2. Implementing Agency

Pesticide Research Division, Office of Agricultural Production Science Research Development
Department of Agriculture (DOA),
Ministry of Agriculture and Cooperatives (MOAC)

3. Type of Scheme

Technical Cooperation Project

4. Project Area

Bangkok

5. Project Period

3 Years

6. Rationale

In principle, the agricultural development of the country is essential aimed at increasing productivity. That is, responding to domestic consumption, supplying agricultural products as few materials to the agro-industry and the export of food products. Such an ambitious development scheme has lead to the adoption of modern technology and materials used in agriculture such as pesticides. This has resulted in hazardous impacts on human beings, animals, plants and the environment. It has been recognized that the increasing extent of the problems are proportionate to the trend of increased pesticides use. All pesticide is imported in Thailand, and the amount is increasing recently, especially in herbicides as Fig. B-4-1.

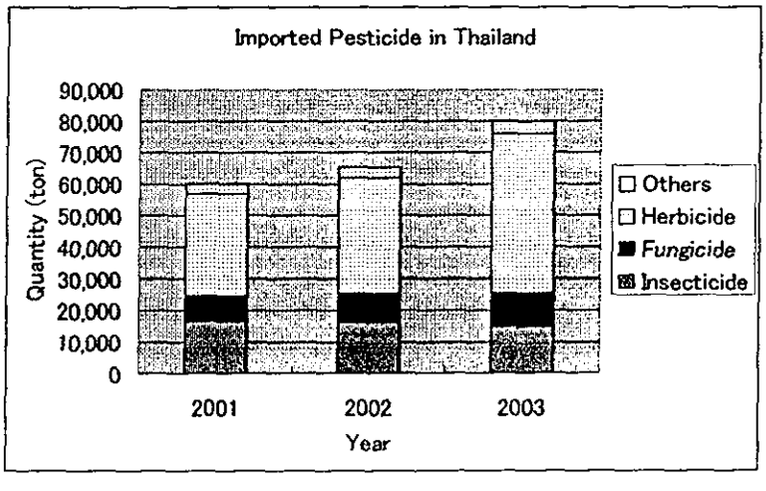


Fig. B-4-1 Amount of imported pesticide

In recent years, consumers, both in Thailand and in countries that import Thai products, have pressured government to reduce chemical residues in food. Further, Department of Agriculture continues to advocate reduced use of pesticides by farmers. In the meantime, cases of pesticide poisoning in Thai farmers still occur every year.

Farmer's awareness of the dangers of agrochemical was inadequate and alternative environmentally safe pest management practices were not sufficiently promoted. Until there is a clearly formulated plan and appropriate measure taken to tackle the problems, the impact from pesticide poisoning may reach and alarming level in the very near future.

In order to solve these problems, it is necessary to reduce the use of chemical pesticides. The alternative ways and means such as promotion the use of botanical pesticides and the analysis conducted on quality of pesticides will be beneficial for farmers.

Table B-4-1 List of Botanical Pesticide

Group	Common name	Scientific name	Purpose of use
harbal extract	1. neem (Sa-Dao)	*Azadirachta indica*	Insecticide
	2. galunga(Kha)	*Alpinia galanga*	Insecticide
	3. (Kan-Plu)	*Eugenia caryophyllus*	Fungicide, bacteriocide
	4. Sweet flag (Wan-Nam)	*Acorus calamus Linn.*	Insecticide, Fungicide
	5. Eupatora (Sab-Sue)	*Eupatorium odoratum L.*	Fungicide, bacteriocide
	6. Stemona (Non-Tai-Yak)	*Stemona curtisii*	Insecticide
	7. Rotenone (Hang-Lai)	*Derris sp.*	Insecticide
	8. Citronella (Ta-krai-hom)	*Cymbopogon citratus*	Insecticide
	9. Cassumunar (Phlai)	*Zingiber cassumunar*	Fungicide
enemy of plant pest	1. Eocantetona	*Eocanthecona furcellata*	Insecticide (predator)
	2. Trichogamma	*Trichogamma spp.*	Insecticide(parasite)
	3. NPV	*Nuclear Polyhedral Virus*	Insecticide(parasite)
	4. BT	*Bacillus thuringiensis*	Insecticide
	5. BS	*Bacillus subtilis*	Fungicide
	6. Tricoderma	*Trichoderma spp.*	Fungicide
	7. Stenonerma	*Stenonerma sp.*	Insecticide (parasite)
	8. Apanteles	*Apanteles sp.*	Insecticide (parasite)
	9. Beetle	*Stethorus pauperculus*	Insecticide (predator)
	10. Lady beetle	*Micraspis discolor*	Insecticide (predator)
	11. Green lacewings	*Chrysoperla spp.*	Insecticide (predator)
non-biological material	1. Petrolium oil		Insecticide
	2. Chitosan		Resistance Induced material

Note: Biopesticide means any biological materials or living organism; in the original form or derivative form, which show efficacy, effect to control, repell, inhibit, retardant to the enemy of target plants.
This name list consists of the general biopesticide which is generally used in Thailand.

The application of using up to date methods of pesticide residue analysis should be of great concern so that only safe produce will be distributed for both domestic and international consumption.

The environmental monitoring and health risk assessment program is also as great important. Therefore the pesticide technology of these fields in Japan, which is more advance, will be of great advantages for our work in the future.

7. Overall Goal

To achieve recommendation and guidance to improve quality assurance and impact measurement on pesticide utilization for farmers and relevant persons

To Strengthen pesticide formulation analysis, botanical pesticide formulations, pesticide residues analysis on fruit and vegetables and impact of pesticide on health and environment.

8. Project Purpose

To share information of technology and experience both sides, Thai and Japanese.

To develop innovative and appropriate technology on pesticide residue and formulation analysis as well as impact on environment

9. Outputs

a. Government officers are effectively trained concerning pesticide formulation analysis, botanical pesticide formulation, pesticide residues and impact on health and the environment including scientific based technology and best environment practice.
b. Improvement of pesticide analysis method in Thailand
c. Improvement of botanical pesticide formulation
d. Improvement of pesticide residues analysis on fruit and vegetables
e. Improvement of pesticide impact on health and the environment
f. Improvement of technology on information exchange

10. Activities

To exchange information and technology on

a. Development of pesticide formulation analysis methods in Thailand
b. Development of botanical pesticide technology
c. Development of pesticide residues analysis techniques
d. Development of pesticide monitoring on health and the environment

11. Inputs

(1) Input from the Thai Government

Administrative team (3)
Research staff (24)
Supporting staff (4)
Existing laboratory and analytical equipment
Facilities and office for Japanese experts

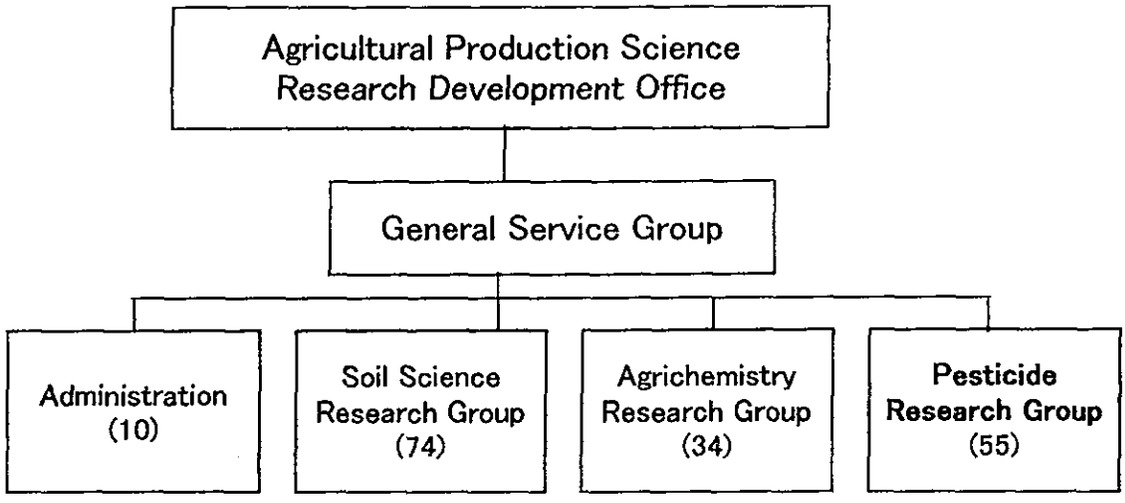
(2) Input from the Japanese Government

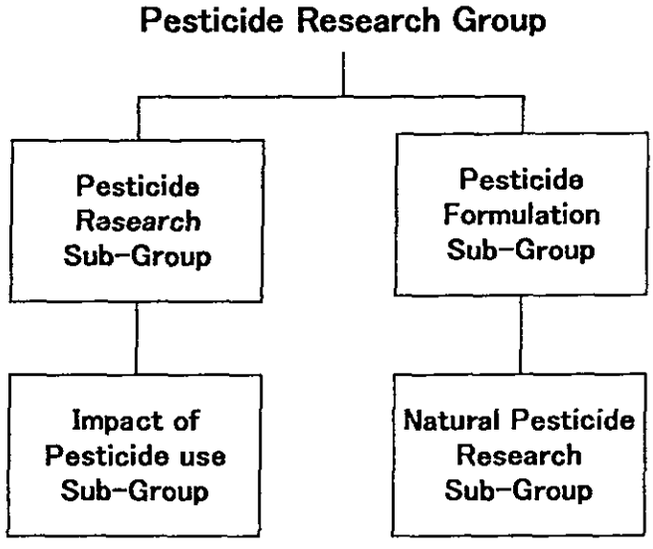
Long-term experts (2)
Special training on the above mentioned

12. Expected Benefits

One hundred of governmental staff will gained knowledge and experience
Thirty million farmers will get benefit from decreasing use of chemical pesticide
Japanese and Thai consumers will get safe agricultural products
Improved quality of products and products
To ensure food security and food safety
To cooperate on technology and experience
Awareness on quality assurance and impact management system

Appendix B-4-1





Appendix B-4-2

Main Imported pesticide top 10 in Year 2003

Import Insecticide for top ten in Year 2003		Quantity (ton)
1	Methamidophos	3,434
2	Parathion Methyl	1,361
3	Endosulfan	1,183
4	Chlorpyrifos	865
5	Cypermethrin	810
6	Carbaryl	522
7	Methomyl	694
8	Cartap hydrochioride	399
9	Dimethoate	550
10	Fenobucarb	176

Import Herticide for top ten in Year 2003		Quality (ton)
1	Glyphosate isopropylamine salt	17,662
2	Paraquat dichloride	6,420
3	2,4-D sodium salt	2,607
4	Alrazine	1,689
5	Ametryn	1,674
6	Propanil	801
7	Butacholor	720
8	Alachlor	676
9	2,4-D isobutyl ester	404
10	Diuron	468

Import Furgicide for top ten in Year 2003		Quality (ton)
1	Propiconazole+difenoconazole	1,552
2	Carbendazim	1,212
3	Propineb	963
4	Mancozeb	1,377
5	Azoxystrobin	761
6	Metalaxyl	430
7	Copper oxychioride	260
8	Difenoconazole	174
9	Captan	174
10	Suffur	367

Appendix B-4-3

Banned Pesticide in Thailand and other monitoring list

Insecticide (38)

1. Chlordimeform	2. Leptophos	3. BHC	4. Asrsenite
5. Endrin	6. *DDT*	7. *Toxaphene*	8. *TEPP*
9. Parathion ethyl	10. Dieldrin	11. Aldrin	12. Heptachlor
13. Mercury compounds	14. Aminocarb	15. Bromophos	16. Bromophos ethyl
17. Demeton	18. Chlordane	19. Chlordecone	20. Monocrotophos
21. *Azinphos ethyl*	22. *Mevinphos*	23. *Phosphamidon*	24. *Azinphos methyl*
25. Demephion	26. DNOC	27. Fonofos	28. Mephosfolan
29. Paris green	30. Phorate	31. Prothoate	32. Ethyl hexyleneglycol(ethyl hexane diol)
33. Lead arsenate	34. Lindane(99% gamma- HCH or gamma-BHC)		
35. *Mirex*	36. *Strobane (polychloroterpenes)*		
37. TDE or DDD [1,1-dichloro-2,2-bis (4-chlorophenyl) ethane]			38. methamidophos

Repellent (3)

1. Ethylene oxide (1,2-epoxyethane)	2. Hexachlorobenzene	3. MGK repellent-11

Herbicide (11)

1. 2,4,5-T	2. Sodium chlorate	3. Dinoseb	4. Nitrofen
5. *Chlorophenols*	6. 2,4,5-TP	7. *Phenothiol*	8. MCPB
9. Mecoprop	10. Dinoterb	11. Amitrole	

Fungicide (6)

1. Captafol	2. Pentachlorophenol	3. Pentachlorophenate sodium
4. Fentin	5. Cycloheximide	6. Cadmium and cadmium compounds

Rodenticide (4)

1. *Fluoroacetamide*	2. *Sodium fluoroacetate*
3. Pyrinuron (piriminel)	4. Thallium sulfate

Acaricide (4)

1. Cyhexatin	2. Binapacryl
3. Aramite	4. Chlorobenzilate

Plant Growth Regulater (1)

1. *Daminozide*

Fumigant (4)

1. EDB	2. Ethylene chloride
3. DBCP	4. Carbon tetrachloride

Nematocide (1)

1. Fensulfothion

Insecticide& Acaricide (5)

1. Chlorhiophos 2. Dimefox 3. Shardan
4. Sulfotep 5. Disulfoton

Insecticide&Fungicide (1)

1. Copper arsenate hydroxide

House hold pesticide (1)

1. Safrole

Insecticide&Herbicide (2)

1. Calcium arsenate 2. O-dichlorobenzene

Other (Industry) (13)

1. 4-aminodiphenyl 2. Asbestos-amosite 3. Benzidine
4. Bis (chloromethyl)ether 5. Naphthylamine 6. 4-nitrodiphenyl
7. Phosphorus 8. Polybrominated biphenyls (PBBs)
9. Polybrominated triphenyls (PCTs) 10. 2,4,5 TCP (2,4,5-trichlorophenol)
11. TDE or DDD [1,1-dichloro-2,2-bis (4-chlorophenyl) ethane]
12. Tri(2,3-dibromopropyl) phosphate 13. Vinyl chloride monomer (monochloroethene)

Other Agrochemicals in the monitoring list

1. Aldicarb 2. Blasticidin-s 3. Carbofuran 4. Dicrotophos
5. Endosulfan 6. EPN 7. Etoprophos 8. Formethanate
9. Methidathion 10. Methomyl 11. Oxamyl 12. Parathion methyl

Summary of Candidate Project (Project Code: B-5)

1. Name of Candidate Project

Improvement of Risk Assessment Program

2. Implementing Agency

National Bureau of Agriculture Commodity and Food Standards (ACFS)
Ministry of Agriculture and Cooperatives (MOAC)

3. Type of Scheme

Technical Cooperation Project

4. Project Area

Bangkok

5. Project Period

3 Years

6. Rationale

(1) Risk Assessment in Thailand

The Ministry of Agriculture and Cooperative (MOAC) is a main organization responsible for the promotion of agricultural commodity production, improvement and quality control. The process will be implemented through the food chain covering from the domestic and imported agricultural inputs, farming and manufacturing production until the final outputs to the markets.

Risk assessment is an essential procedure before distributing the agricultural commodity and food to the consumers, especially the foreign markets. Therefore, the risk assessment will certainly results to the increase of quantity and value added of Thailand's agricultural and food products as well as the beneficiary of producers, manufactures and farmers.

In the past, the risk assessment took a very long time to certify the exported products. This might be due to various obstacles both from the trading partners and MOAC itself, and thus limited the foreign market access of many potential agricultural and food products. To solve the problem, the MOAC **Integration of Improvement of Risk Assessment Program** is established as a systematic and technical risk assessment development, jointly implemented by the Department of Agriculture, Department of Livestock and Department of Fisheries. In so doing, it will enhance the risk assessment capacity of agricultural and food products before access to the markets.

(2) Risk Assessment Methodology

The scope and purpose of risk assessment should be clearly stated. It may employ qualitative or quantitative approaches, or a mix of both. Different scientific methodologies are used for risk assessment of different classes of hazards and different classes of foods. Constraints, uncertainties and assumptions should be considered at each step in the risk assessment, together with final description of uncertainty in the risk estimate.

Food safety risk assessment should incorporate following four steps.

1) Hazard identification: The identification of biological, chemical, and physical agents capable of causing adverse health effects,
2) Hazard characterization: The qualitative or quantitative evaluation of the nature of the adverse health effects, ideally including dose-response assessment,
3) Exposure assessment: The qualitative or quantitative evaluation of the likely intake of food-borne hazards to consumers, taking into account other hazard exposure pathway where relevant,
4) Risk characterization: The qualitative or quantitative estimation, including attendant uncertainties, of the probability of occurrence and severity of adverse health effects in a given population.

Outputs of risk assessments may be numerical or non-numerical risk estimates allow direct comparison of risks and different intervention strategies, whereas non-numerical risk estimates provide a less definitive base for decision-making. In the latter case, risk assessment provide an essential point for discussion and debate, preliminary risk ranking, and is methodology forcing in situation of high food safety priority.

(3) Chemical risk assessment

Many quantitative standards for chemical hazards in foods have been established for many years. They are usually established by use of a safety evaluation process. Following hazard identification, acceptable daily intakes (ADIs) for chemicals in foods are generally determined by extrapolation from a "no adverse effect level" animal model, and the ADI reflects the maximum amount of residues that can be absorbed daily by the consumer without risk to health i.e. a predetermined "notional zero risk". This effectively is hazard characterization, and is arrived at by imposition of arbitrary safety factors. Methods are now being developed for calculating reference dose for acute toxicity if this is a potential adverse health effect.

An ADI is a relatively crude estimate of the level of chronic dietary intake that is bearable without risk, and the impact of arbitrary safety factors that are embedded in the safety valuation process is not quantified. There rarely is any attempt to define the degree of uncertainty or describe the impact of this uncertainty on the standard-setting process. The "worse-case scenario" that constitutes the general approach taken for intake of chemical

hazards in foods is likely to be a gross overestimate of exposure in most cases.

Exposure characterization describes the exposure pathway for the hazard and predictions of dietary intake. It is usually composed of simple deterministic values for hazard levels at each step in the food chain, however probabilistic models are emerging e.g. for intake of pesticide residues.

Risk characterization corresponds in part to establishment of MRLs, and ensuring compliance with the ADI. Maximum residue limits (MRLs) for chemical residues in foods are established so that the theoretical maximum daily intake of residues is lower than that allowable by the ADI. However, their establishment may be independent from the ADI-setting process (e.g. pesticide) and may involve a number of qualitative risk management factors. In some cases, risk characterization may include consideration of different type s of chemical hazards and pathways e.g. when a substance is used as both a veterinary drug and a pesticide on plants, both routes can be taken into account when setting ADIs for animal-derived foods.

For unavoidable environmental contaminants, standards for chemical hazards are often related to "permissible level" i.e. there is tacit acceptance that is not economically or technically feasible to apply the same "notional zero risk" model that is applied to other chemicals in the food supply.

(4) Microbiological risk assessment

In the past, evaluation of food-borne risk associated with biological hazards in the food supply has been largely empirical and qualitative. The overall goal has been to reduce biological hazards to a level that is "as-low-as-reasonably achievable" with commensurate minimization of risks. In more cased, the actual level of risk associated with particular food control program was unknown.

Microbiological risk assessment (MRA) involves combining the outputs of exposure assessment and hazard characterization (dose-response) to characterize risk. Risk estimates can be qualitative e.g. high, medium or low rankings, of presented in quantitative terms e.g. risk per serving(s). risk per year. Recently FAO and WHO have embarked on a series of Expert Consultation on MRA that present an extensive and on-going commitment as following programs. This work is heavily dependent on MRAs already commissioned by national governments.

- Risk assessment for Salmonella in eggs and broiler chickens
- Risk assessment for Listeria monocytogenes in Ready-to-eat food
- Risk assessment for Campylobacter in broiler chicken
- Risk assessment for Vibrio parahaemolyticus in seafood

Considerable challenges lie ahead in carrying out robust MRAs for pathogen/food commodity combinations that pose significant risks to human heath. Biological characteristics of the pathogen/ host relationship are often uncertain, and modeling the exposure pathway from production to consumption often suffers from substantial data gaps. Not least, it is difficult to establish a common set of categories for the widely varying adverse health effects that may follow infection with deferent pathogens Aggregation of effects to create health-related quality of life measures, such as disability-adjusted-life-years offer a way forward.

(5) Risk Assessment Program in Thailand

Thai Government has future main risk assessment program as following;

- Campylobacter in livestock products
- Listeria monocytogenes in cooked products
- Salmonella in eggs and chicken
- Vibrio parahaemolyticus in seafood
- Heavy metals in fishery products
- Antibiotics in fishery and livestock products
- Pesticide residues in fruit and vegetables
- Risk assessment in the HACCP system

7. Overall Goal

To strengthening risk assessment system of MOAC for production system in the agri-food supply chain in order to accelerate the process of risk assessment
To establish educational program for risk assessment

8. Project Purpose

Establishment of framework for practical risk assessment systems and its implementation in the agricultural and food production through food chain
Establishment of capacity building program for risk assessment including training program for all parties involved.

9. Outputs

a. Risk assessment system and technical guideline for Thailand, that can be incorporated into all existing food chain system for each sector, especially for primary production
b. The development and implementation of food safety system such as GAP in primary production are strengthening by using practical risk assessment techniques.

10. Activities

a. Study the existing information and plan the framework of implementation in Thailand
b. Survey of risk assessment system both Imported Risk Assessment and Microbiological Risk Assessment in the world both in the reference organizations such as Codex and in

main trade partners of Thailand such as EU, Japan, US and Australia

c. MOAC will set up the mechanism of risk assessment, which relevant authorities will be take part in this mechanism
d. Provision of consultation and supervisory on improvement of risk assessment system in Thailand and start implementation of recommendation to ensure its efficient and practical risk assessment system.
e. Prioritizes of the areas for capacity building on risk assessment and provide training program in Japan and in Thailand for the target groups
f. Set up networking of risk assessment system and expert between Thailand and Japan
g. Evaluation and set up the future framework guideline

11. Inputs

(1) Input from the Thai Government

Office for experts
In-country training cost except lecturer expense
Counterparts
Others will be further discussed

(2) Input from the Japanese Government

Tow long-term experts on risk assessment
Short term expert
Training cost in Japan
Other necessary cost

12. Expected Benefits

- Strengthening risk assessment system and capacity building to gain experiences, technology and skill for officials involved
- The process of risk assessment is accelerated and support market assess of safety agricultural and food products in the marketplaces

Appendix B-5-1

Four steps of Microbiological Risk Assessment

1. Hazard Identification

   For microbial agents, the purpose of hazard identification is to identify the microorganisms or the microbial toxins of concern with food. Hazard identification will predominately be a qualitative process. Hazards can be identified from relevant scientific information.

2. Exposure Assessment

   Exposure assessment includes an assessment of the extent of actual or anticipated human exposure. For microbiological agents, exposure assessment might be based on the potential extent of food contamination by a particular agent or its toxins, and on dietary information.

3. Hazard Characterization

   This step provides a qualitative or quantitative description of the severity and duration of adverse effects that may result from the ingestion of a microorganism or its toxin in food. A dose-response assessment should be performed if the data are obtainable.

4. Risk Characterization

   Risk characterization represents the integration of the hazard identification, hazard characterization, and exposure assessment determinations to obtain a risk estimate; providing a qualitative or quantitative estimate of the likelihood and severity of the adverse effects which could occur in a given population, including a description of the uncertainties by comparison with independent epidemiological data that relate hazards to disease prevalence.

Category-C

Projects for Improvement of Food Supply Chain

Summary of Candidate Project (Project Code: C-1)

1. Name of Candidate Project

Establishment of Information System on Food Safety, Regulations and Standards, Alert and Awareness

2. Implementing Agency

Information Technology Center (ITC)
National Bureau of Agricultural Commodity and Food Standards (ACFS),
Ministry of Agriculture and Cooperatives (MOAC)

3. Type of Scheme

Technical Cooperation Project

4. Project Area

Bangkok

5. Project Period

2 Years

6. Rationale

Present Situation

Food safety and food related issues are involved with many ministries such as Ministry of Agriculture and Cooperatives (MOAC), Ministry of Commerce (MOC), Ministry of Industry (MOI) and Ministry of Public Health (MOPH). Those information are produced and published in each organization separately.

Problems / Constraints

The information summarized in Table C-1-1 show that each organization has their own information related to food safety, regulation & standards, alert and awareness such as ACFS focus on agricultural commodity standard where as DOA, DLD, DOF provide information on plant, animal and fishery GAP, respectively. Base on website information, it implies that international standards and regulation of major exporting countries are insufficient available for agri-food industrial sector, exporters and consumers who have difficulty to know how and where to collect and access useful information, especially international food regulation and standards which newly revised.

Table C-1-1 Information Center for Food Safety, Regulation & Standards, Alert and Awareness

No	Organi -zation	Website	National Information			International Information		
			Food Standard	Regulation	Alert	Food Standard	Regulation	Alert
1	ACFS	www.acfs.go.th	Agricultural Commodity Standard	-	-	-	SPS / TBT Notification	-
2	DOA	www.doa.go.th	GAP of fruit and vegetable 27 Commodities	-	-	-	-	-
3	DOAE	www.doae.go.th	GAP of fruit and vegetable the rest of DOA	-	-	-	-	-
4	DLD	www.dld.go.th	- Farm Standard -Slaughter House standard	Notification				
5	DOF	www.fisheries.go.th	GAP of farm CoC Safety Level GMP of factory	-	-	-	-	-
6	OAE	www.oae.go.th	-	-	-	-	-	-
7	FDA	www.fda.moph.go.th	-	Food Act, Notification	e.g. - Bird Flu - Bupivacaine/ Anathesis	-	-	-
8	TISI	www.tisi.go.th	Thai Industrial standard	-	-	-	WTO / TBT / SPS notification	-

Table C-1-1 Information Center for Food Safety, Regulation & Standards, Alert and Awareness (continue)

No	Organizatio	Website	National Information			International Information		
			Food Standard	Regulation	Alert	Food Standard	Regulation	Alert
9	NFI	www.nfi.or.th	-	Food Law and Regulation	-	e.g. *1. Codex* *2. BRC* *3. China* - Method for Food Hygienic Anlysis - Heavy metal residue in food	Japanese Food Law	e.g. *Japan* - Import food monitoring -Labeling -Food additive prohibit *Australia* -Ethylene oxide ban The EU White Paper on Chemical Policy *USA* -Ceramic packaging for Food
10	OCPB		-	Law & Regulation related to consumer	Complain	-	-	-

Remarks : ACFS = National Bureau of Agricultural Commodity and Food Standards (ACFS)
SPS = Sanitary and Phytosanitary
TBT = Technical in Trade Barrier
DOA = Department of Agriculture
DOAE = Department of Agricultural Extension
DLD = Department of Livestock Development
DOF = Department of Fisheries
OAE = Office of Agricultural Economics
FDA = Food & Drug Administration
TISI = Thai Industrial Standards Institute
NFI = National Food Institute
BRC = British Retail Consortium
OCPB = The Office of The Consumer Protection Broad

As there is no mechanism for information management system, alert system and consumer awareness in Thailand.

Ministry of Agriculture and Cooperatives has many competent authorities for food safety separately in each department; Department of Agriculture (DOA) for plant and plant products, Department of Fishery (DOF) for fishery and their products, Department of Livestock Development (DLD) for meat and meat products. Sanitary and Phytosanitary measures (SPS) and also cooperate with various international organization such as FAO, SPS/WTO, CODEX, OIE and IPPC. Since National Bureau of Agriculture Commodity and Food Standards (ACFS) was established in 2002 as National Focal Point of agriculture commodities and food standards, it has been assigned to be single agency responsible for setting standards for food and agriculture commodities and food standards information center.

Establishment of Information System

The development of ACFS Information Center is to ensure that all relevant information on related issues are collected and classified as agriculture commodities and food standards; economic and social context; rule and regulations and notifications of importing and competitive countries. Particularly the collection of Sanitary and Phytosanitary information at national and international levels are created and developed to be the National Information System on Agriculture Commodities and Food Standards (NIS-ACFS).

Not only the agriculture sector and exporters may benefit from this NIS-ACFS, but also the consumers can be informed the quality and standard of imported food and agricultural products. These would lead to the public awareness on food safety in the near future. Furthermore, the public awareness on food safety in Thailand will be encouraged effectively.

1. Overall Goal

Food supply chain stakeholders and Thai consumers will gain relevant information and knowledge from information center to support their exports and increase awareness on food safety.

2. Project Purpose

a. Disseminate important information related to food safety on internet
b. Provide mechanism of collecting and update information on food and food related issues to all supply chains

c. Increase consumer's awareness on food safety issue

3. Outputs

a. One Information Center to provide information on food and food related issues

b. Approximately 80% of agri-food supply chains are in food safety network

c. Approximately 200,000 consumers can access information through internet per year.

4. Activities

Two long-term experts from Japan and ACFS staffs implement the activities according to the following operations annually.

a-1. ACFS organizes team of 10 members from DOF, DOA, DLD, DOAE, OAE as the steering committee

a-2. The Steering committee formulates working group on
1. Regulations and standards
2. Food Safety information
3. Computer system

a-3. *6 members of above working group will be trained in Japan*

a-4. Each working group prepares important contents and details including project schedule.

a-5. Each working group collects available information & document and classifies them.

a-6. Working group on computer system analyses information and design system, according to the
comments and suggestions from other working groups.

a-7. Working group on computer system develops database and back-end applications from analyzed information and develop website: Food Safety Regulations and Standards Website.

a-8. Setting information management system

a-9. Training for ACFS IT staffs for maintenance database and website

a-10. Seminar to public

5. Inputs

(1) Input from Thai Government

10 members from MOAC and Academic Institutes and private sector

Operation cost of program committee and working group

30 members of 3 working groups

5 permanent staffs from ACFS

(2) Input from the Japanese Government

Two long term expert on

- Food Safety Regulation Standard
- Information technology system

Special training program in Japan

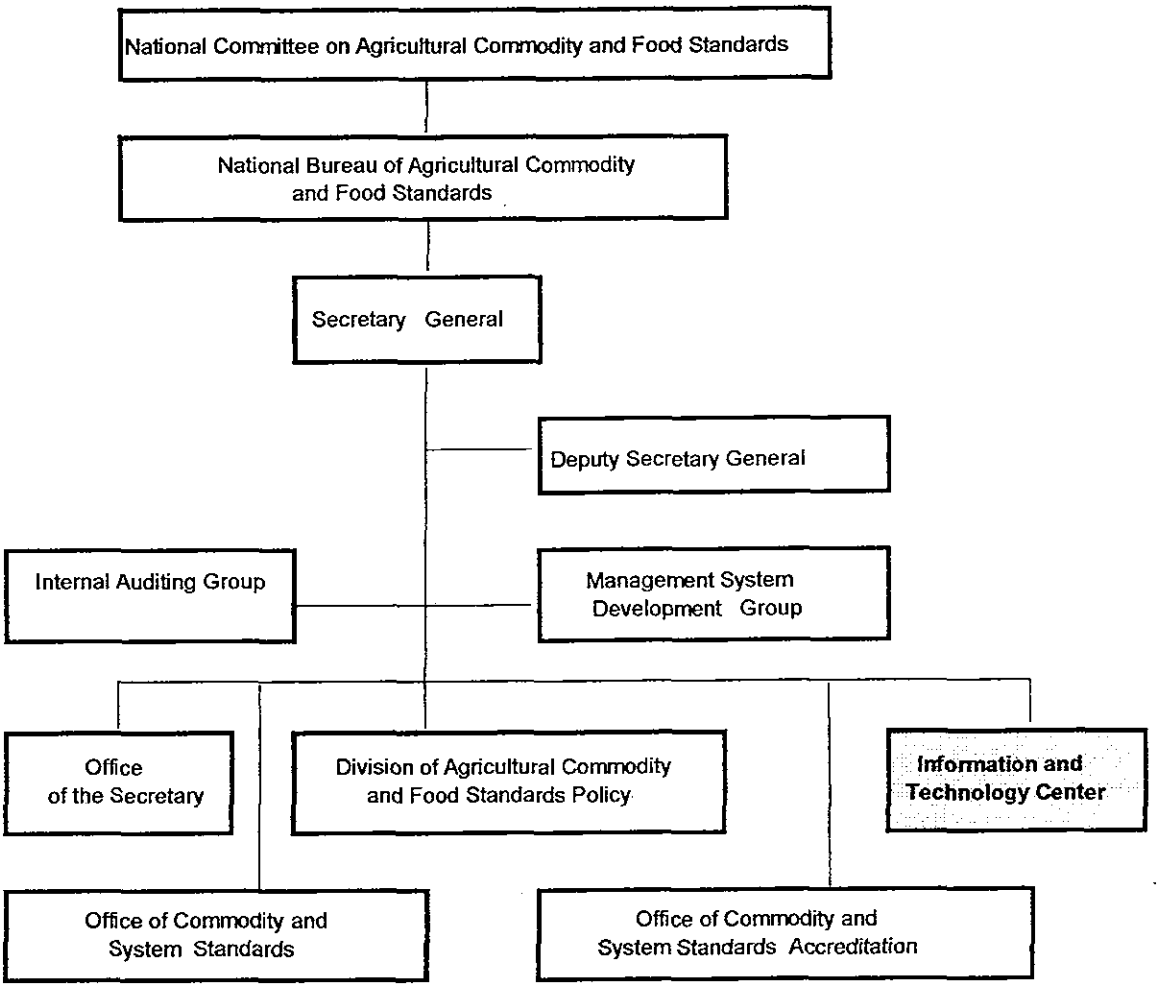
Seminar in Thailand

6. Expected Benefits

1) Approximately 80% of agri-food supply chains are in food safety network
2) Approximately 200,000 consumers can access information through internet per year.

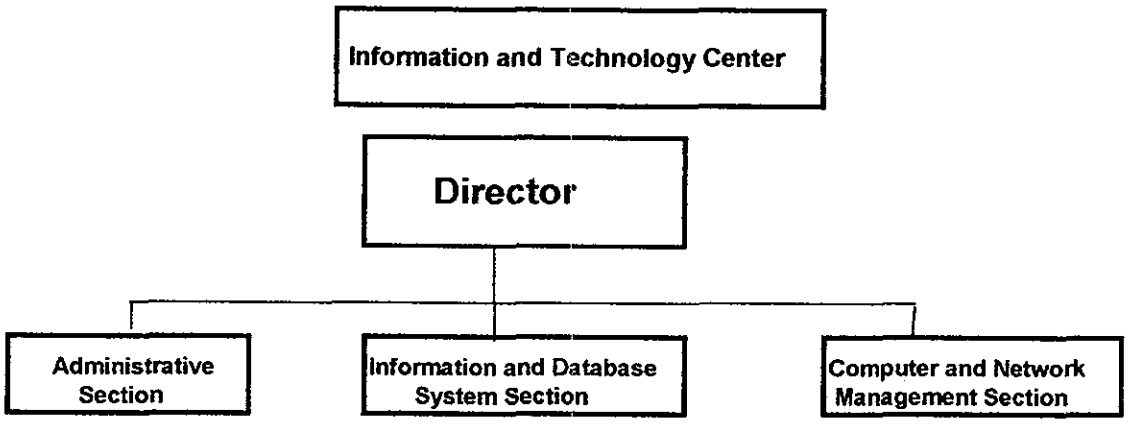
Appendix C-1-1

Organization Structure
National Bureau of Agricultural Commodity and Food Standards



Appendix C-1-2

Organization Structure of Information Center in ACFS

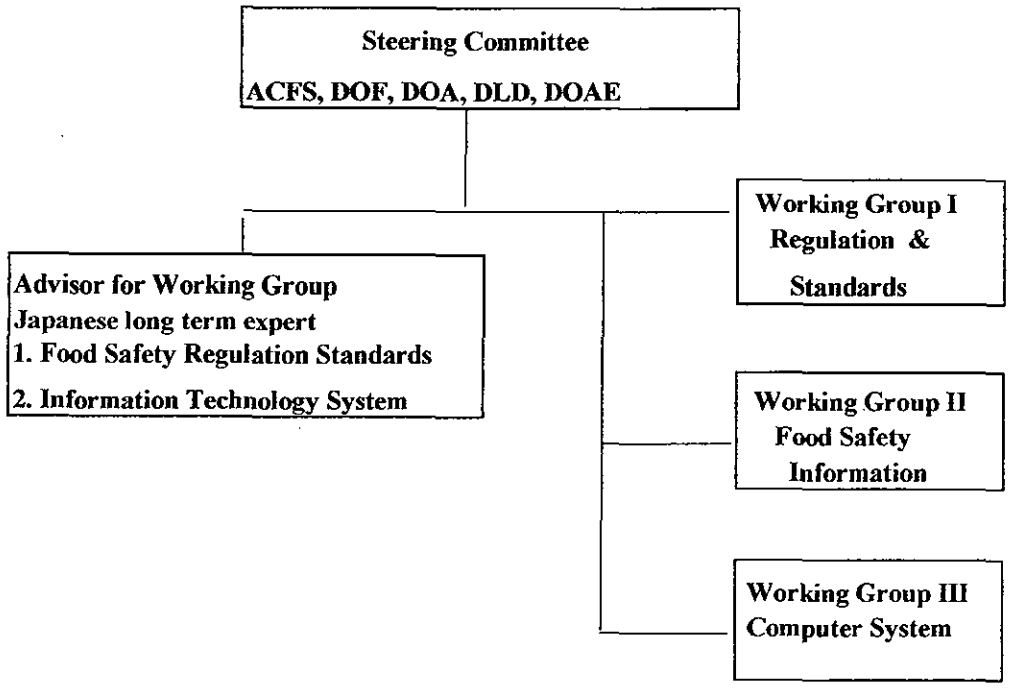


Number of Staffs in IT Information Center

Title	Number (person)
Director	1
Computer Programmer	1
Computer System Analist	1
Administrative Staffs	3
Data Collector	5
Technical Staffs	3
Total	14 persons

Appendix C-1-3

Concept of Project Organization



Summary of Candidate Project (Project Code: C-2)

1. Name of Candidate Project

The Improvement of Traceability System for fresh fruit and vegetable

2. Implementing Agency

Post Harvest and Processing Research Development Office (PPRDO)
Department of Agriculture (DOA)
Ministry of Agriculture and Cooperatives (MOAC)

3. Type of Scheme

Technical Cooperation Project

4. Project Area

Bangkok and Regional DOA Offices (Specific project area is to be determined before or at the beginning of the Project)

5. Project Period

5 years

6. Rationale

(1) Food Safety/Quality Assurance System

The rapid evolution of quality assurance systems in agri-food supply chain demands for food suppliers to have a quality assurance system. Research in the agri-food industry indicated the importance of a quality assurance. More and more international retailers are demanding their suppliers to implement food quality/safety system. Without effective quality management system food companies are at risk of producing defected and contaminated goods, litigation and claims. This will provide a basic structure for food exporters to trace back their products and materials. Thailand agri-food industry, most of medium and large food producers are implementing food safety system standard e.g. EUREPGAP, GMP, HACCP, ISO 9000 or BRC. According to the standards requirements, the companies must have in place product identification and traceability system where by products can be traced back to the source of production.

(2) Present Situation of Traceability System

In Thailand, most of leading fruits and vegetable exporters generally are certified to

international quality system standard and having their own traceability in order to satisfy the requirement of the standard. They usually have operate the production of fresh produce through their own contract farm system where by the production and traceability system can be managed (Identification No. of farms, collectors/ suppliers, batch no., product code). Also these processors being audited by independent certification body and buyers, it has made traceability system improved and strengthened. However, there are only a small number of leading fresh vegetable processors/exporters implementing quality assurance with a well implemented in-house full traceability program (from primary production through to finished products or packing-house facilities), while those suppliers for local market – "The majority" is not in position to have their own traceability program due to insufficient resources such as capital budget, human resources (ability and capacity) and lack of incentive.

For local markets e.g. local fresh markets, supermarkets, supply of fruits and vegetables are usually done through collectors or middle-men. As the production structure for fruits and vegetables in Thailand mainly based on a small plot land grown and there are collectors involved in between along the supply chain in order to complete the chain. Management of traceability systems from primary production to processing facilities is almost impossible or at least very difficult, and purchasing (specification/ grade) of products by supermarkets and fresh markets are generally based on product characteristics and grade. This could lead to destruction of product identification and traceability, and eventually could lead to overall ineffective food safety management program.

(3) Problems and Constraints

The key problems and constraints for traceability system for fruits & vegetables production in Thailand can be summarized as follow;

1) The typical supply chain per se; small plot-land production, low educated and poor growers, growing areas spread over across geographical coverage, a number of collectors involved in the chain.
2) Collectors currently are trading based on price and commercial oriented, collectors usually supply fresh fruits & vegetables based on product characteristics/ physical appearance/grading, it is likely that traceability and identification of materials is eventually destroyed.
3) Too many of links in between (grower groups, collectors, collecting and transshipment stations), leading to traceability problems.
4) No guidelines regarding traceability system for fruits & vegetables

established and made available for industry.

5) No incentive in implementing traceability system, this must be integrated well with commercial driving forces.

A concrete traceability program will provide an ability of maintaining necessary information for each link along the agri-food supply chain. The government policy has issued a national policy, announcing implementation of GAP with the target of 325,000 farms/ orchards (covering 27 kind of plant) within the year 2005. To achieve this target and to support GAP implementation program, a concrete plan for development of traceability system is in urgent need and is critical to the success of national food safety objectives. The Department of Agriculture (DOA) is responsible body to promote the system. However, the current status of the DOA's human resource (skills and numbers) is insufficient in order to effectively develop and implement traceability system based on a defined model that best suited to Thailand's supply chain structure. This is eventually facilitated fresh produce export and the national food safety objective is fulfilled.

7. Overall Goal

Effective and concrete implementation of traceability system for of fresh vegetable in the agri-food supply chain.

8. Project Purpose

a. To effectively implement and maintain traceability system for fresh vegetables that best suited in the agri-food supply chain for Thailand, from primary production through to finished products.
b. To provide training program on traceability system for all parties involved under the specified target groups (as per the details attached).
c. To provide a proven system and model for Thailand that can be readily rolled out for other groups/ cross-sectors.

9. Outputs

- Growers, collectors and exporters will be followed traceability system resulted to the safety food.
- The accreditation and certification of food safety system (Organic production, GAP, GMP and HACCP) for fresh vegetables is strengthened.

10. Activities

a. Five (5) key staffs from the DOA to attend overseas training on traceability system model in Japan (1 month).
b. Conduct baseline study on the target group in Thailand (1 month)
c. Develop the draft structure the traceability system in fresh vegetable based on a Thailand situation and business environment. Training how to run simply traceability model in each baby corn and okra community composed with 1 exporter, 10 collectors, 100 farmers in Kanchanaburi, Ratchaburi region etc. by inspectors 5 times a year.
d. Identify target group for the pilot project and start trial run the program.
e. Evaluate the program and formulate a proven system (methodology) and develop standard procedures and management system into a presentable and transferable format.
f. Role out the proven program to other regional DOA and DOAE stations nationwide, and apply to other crops.
g. Evaluated the system in 1 community a year for 5 years

11. Inputs

(1) Input from the Thai Government

Program manager
Sixteen (16) researchers
Fifteen (15) supporting staffs
Ten (10) analysts
Expenses for traveling in Thailand

(2) Input from the Japanese Government

One (1) long-term experts specialist on modeling
Special training in constructing model in Japan (1 month)
Training program for inspectors and community group
Other necessary cost

12. Expected Benefits

When the traceability system is used, food safety is recognized and adopted in markets. The growers, collectors and exporters about 500 persons in the project understand the traceability system . And expand the food safety system including traceability to other communities.

Summary of Candidate Project (Project Code: C-3)

1. Name of Candidate Project

Strengthening of Traceability System for CoC Shrimp Production

2. Implementing Agency

Fishery Foreign Affairs Division
Costal Fisheries Research and Development Bureau
Freshwater Research and Development Bureau
Fishery Technological Development Division
Fishery Inspection and Quality Division
The Department of Fisheries (DOF)
Ministry of Agriculture and Cooperatives (MOAC)

3. Type of Scheme

Technical Cooperation Project

4. Project Area

Bangkok and Rayong

5. Project Period

3 years

6. Rationale

(1) The view of the actual situation

Marine shrimp production has been an important agricultural export product of Thailand with approximate 250,000 metric tons worth 70 billion baht per year and increased to 100 billion baht in 2000. Thailand used to be the number one country of the world largest black tiger shrimp exporter for more than a decade with 30% of global market share. This shrimp industry is not only to bring in revenues to the country but also provide career opportunities for the whole supply chain for more than one million people in Thailand.

In terms of production process, Thailand Department of Fisheries has developed two main quality shrimp programs for Thai Shrimp Industry as Good Aquaculture Practice (GAP) and Code of Conduct (CoC) programs. GAP is the program or guideline to

produce good quality and safe marine shrimp for consumers; shrimp farms must be standardized, clean, sanitary and generate no environmental impacts. Furthermore, shrimp health management must avoid use of therapeutic agents and chemical that leads to residues in shrimp. And for CoC program, it is a systematic approach to manage shrimp production to achieve international quality standards and to manage the environment for the whole production line from farm to processing plant to maintain a sustainable marine shrimp culture industry and to produce high quality and safe shrimp for consumer.

The whole supply chain for CoC approach includes feed operators, hatchery operators, farm operators, shrimp collectors/distributors, processors, and buyers (e.g. local consumers and exporters), Production Process of Entire Marine Shrimp Industry is shown Fig. C-3-1

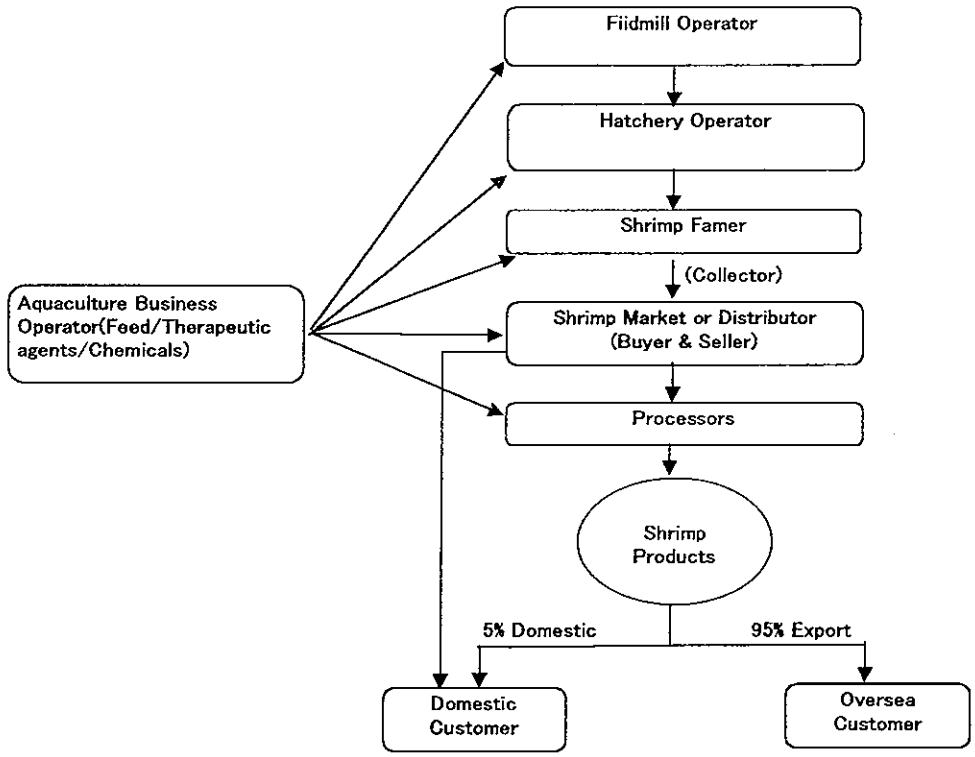


Fig. C-3-1 Production Process of Entire Marine Shrimp Industry

For traceability system development, DOF has put an effort to develop the concept as well as the documentation for shrimp and fish production. As for the shrimp production, in particular marine shrimp, the concept of traceability has been developed with the assistance of French Government by French experts under Thai-French Cooperation program since year 2003, as a continuing program of certification program for CoC

shrimp and labeling started earlier since 2000. The Thai-French cooperation program now has just been completed by mid-2004 leaving traceability concept to be continued for further work. The mentioned concept developed includes the whole production line from farm to processing level including feed utilization, hatchery and farm operations, shrimp collectors/distributors, and processors.

However, with both efforts of the Thai-French Cooperation program and DOF traceability program has not been complete for the whole supply chain and not well functioned. There are some shortcomings that require more improvement because the elements of raw materials to feed production and feed distribution to hatchery or farm have not been included. The Flow of Food Supply Chain and Movement Document for Cultivation Shrimp is shown in Fig. C-3-2.

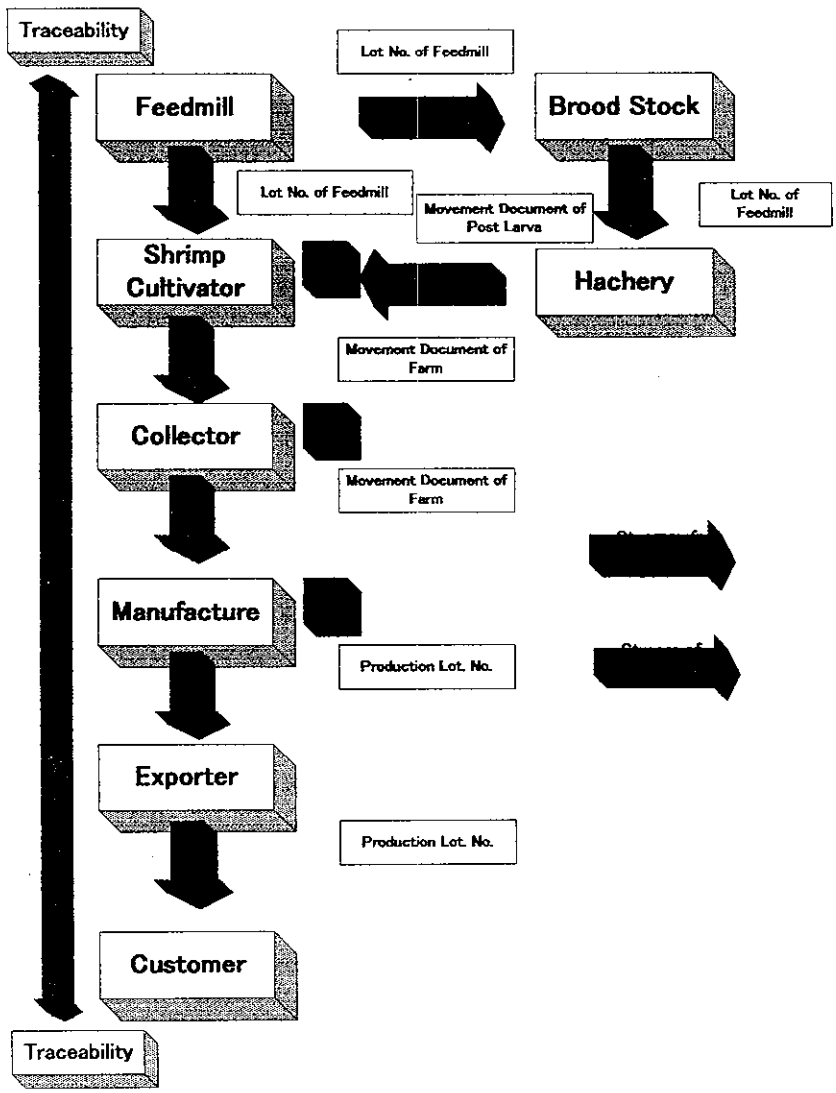


Fig. C-3-2 Flow of Food Supply Chain and Movement Document for Cultivation Shrimp

Moreover, at the Departmental level, to some extent, traceability system using documentation known as "Movement document" or MD has been used among the four steps, from hatchery to farm via shrimp distributors to processing levels.

By filling in the information related in each stage of food chain, movement document is used as a means for doing trace back at the time of the occurrence of accidents or complains.

The Aquatic Animal Movement Document Form is shown Fig. C-3-3.

Fig. C-3-3 Aquatic Animal Movement Document Form

(DEPARTMENT OF FISHERIES)

Ref no.	Item	Book no.	Issue by	Date of issue

Part 1 : Data Information of Producer : Name of Producer..... Farm Reg. No. .....

Farm location ..... I.D. no.....

Aguatic Fry Document ..... Standard of Farm ☐ CoC ☐ GAP ☐ Safety level ☐ Other

Name of Aquatic Animal ..... Estimate quantity ..... kg./ evaluate size ..... pcs / kg. size of pond ..... date of catching .....

Name of Producer ..... Name of Officer .....

( ) ( )

Part 2 : Buyer from Part 1 : Name of Buyer .....

Registered No. of Business .....Date of Buyer : .....

Address .....

Size / kg.				
Quantity / kg.				

Total quantity .....kg. ☐ Selecting before sale ☐ Not to select

Name of Seller ..... Name of Buyer .....

( ) ( )

Part 3 : Buyer from Part 2 :	Item 1	Item 2	Item 3	Item 4
Registered No. of Business				
Location				
.....				
Size (pcs/ kg.)				
Quantity / kg.				
Balance of quantity (kg.)				
Date of Buyer				

Name of Seller ..... Name of Buyer ..... Item no. .....

( ) ( )

Fig. C-3-3 The Aquatic Animal Movement Document Form

With the need of global market for the quality and safety products, the better and more efficient traceability system is in an urgent need for Thailand whom known as one of the top shrimp exporter of the world. A model of Computerized Traceability System (CTS) seems to be very well accepted and efficient in the global market. In this regard, it is very

well recognized that Japan is one of the top countries in leading the application of the computerized traceability system for some seafood products, such as oyster. It is hoped that in learning Japanese experience on traceability system combining with the existing strength of Thai food safety and quality program in producing quality shrimp, this will enable us to establish an innovative traceability system for quality shrimp products for Thailand.

7.Overall Goal

- Computerized traceability system (CTS) for marine shrimp production will be improved and developed.
- Demonstration CTS project will be established for the whole shrimp supply chain.

8. Project Purpose

To develop the demonstration CTS project for whole shrimp supply chain in Rayong Province. The traceability system is expected to be improved up to 90% of completion from an existing 20% amount of work.

9. Outputs

- A total of 10 DOF staffs and 5 stakeholders to visit
- A total of 10 DOF staffs 5 stakeholders to be trained in Japan
- 80 DOF staffs will be trained in Thailand to be able to establish and operate traceability system for quality shrimp
- 100 stakeholder in traceability program for quality shrimp will be trained in Thailand and capable to operate the traceability system in their operations efficiently
- 3 Shrimp Feed companies will be able to perform traceability system
- 3 Shrimp Hatcheries will be able to perform traceability system
- 30 Shrimp Farms will be able to perform traceability system
- 5 Shrimp Processors will be able to perform traceability system
- 10 Shrimp Processors will be able to perform traceability system
- DOF Traceability Center will be able established
- Traceability operational manual will be developed
- A demonstration traceability system for shrimp supply chain will be established

10. Activities

- Organize a study visit of DOF delegation including major stakeholders to Japan in visiting the Japanese Oyster's and others' Traceability System and institutes related

- Explore facts finding by experts and DOF coordinator to understand problem situation
- Select stakeholders for the project which includes shrimp feed operators, shrimp hatchery operators, shrimp farm operators, shrimp collectors of distributors, and shrimp processors
- Conduct consultative meetings among stakeholders and DOF officers
- Establish working group consisting of Japanese expert, 7 DOF officers and 5 stakeholders
- Explore appropriate technology selection i.e. Barcode system
- Establish DOF traceability center
- Develop traceability manual
- Organize seminar to public
- Train DOF officers and stakeholders on the operation of traceability system for quality shrimp production in Japan
- Train DOF officers and stakeholders on the operation of traceability system for quality shrimp production in Thailand

  Conduct project evaluation

11. Inputs

(1) Input from the Thai Government

1) Allocation of staff for working group and counterparts
2) Operation cost (in Thailand) for the working group and counterparts
3) Provision of office space
4) Necessary transportation for field survey

(2) Input from the Japanese Government

1) Long-term expert

   Traceability system expert

   Traceability database expert
2) Short-term experts for in-country training and training in Japan
3) Provision of equipment such as Data entry and reading scan system with necessary parts
4) Visit to Japan of the Thai delegation
5) Training in Japan i.e. arrangement, traveling costs including accommodation in Japan
6) Training in Thailand i.e. training costs and experts of trainers' provision
7) Develop database system for traceability of Thai quality shrimp

12. Expected Benefits

(1) Direct Beneficiaries

1) DOF Staffs, Stakeholders, and Demonstrators

90 DOF staffs
100 Shrimp industry stakeholders
3 Shrimp Feed Companies
3 Shrimp Hatcheries
30 Shrimp Farmers
5 Shrimp Collectors/Distributors
10 Shrimp Processors

2) Indirect Beneficiaries

500 DOF Traceability staffs
100 Feed Companies
2,000 Feed Distributors
40,000 Aquaculture Farmers (Coastal and Freshwater)
1,000 Shrimp Collectors/ Distributors
300 Seafood Processors
Millions Domestic and Foreign Consumers

Appendix C-3-1

The concept of Traceability System

1) What is Traceability?

Traceability System means a series of mechanisms of carrying out discernment, creation of data, accumulation and storage of data, and collation of data.

On a concrete target

- Organization and Systematization
- The procedure manual and process which were documented
- Management resources (personnel, source of revenue, machine, equipment, software, technology and know-how)
- Rule
- Education and training

2) The precondition of Traceability System introduction

- It is the mechanism in which the persons involved in each stage of a food supply chain participate.
- The producer organization of primary products takes the lead and is tackling.
- The relation of effect vs. expense is appropriate.

3) The purpose of Traceability

- Improvement of reliability to a display (the place of origin, quality, and date)
- The prompt action at the time of the occurrence of an accident, and effective useless products recovery
- Information service to a customer, information gathering
- Sharing of the information in each stage of a food supply chain

4) For example of flow for cultivation oyster

Producer → Fishery Cooperation → Processor → Wholesaler → Customer

It is the feature that traceability of an oyster is the system which search is possible on the internet as a data base, the relief to a customer's needs is secured, and prompt correspondence can be performed at the time of the occurrence of an accident.

Required information was input for each stage by computer through fishermen's cooperative association, processor, distributor, trade company and consumer from producer.

Traceability System of a Cultivation Oyster Flow of the Food Supply Chain in Japan was shown in Fig. 3-3-4

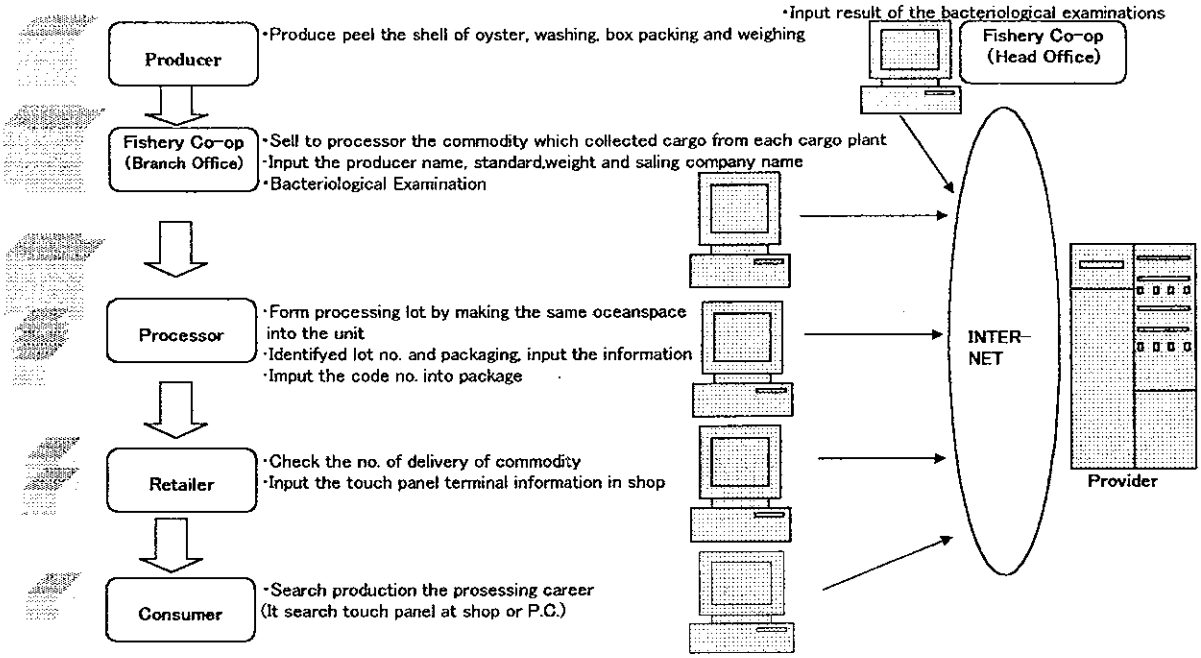


Fig. 3-3-4 Traceability System of Cultivation Oyster Flow of Food Supply Chain in Japan

Summary of Candidate Project (Project Code: C-4)

1. Name of Candidate Project

Strengthening of traceability System for Poultry products from raw materials to the end products

2. Implementing Agency

Bureau of Livestock Standard and Certification
The Department of Livestock Development (DLD)
Ministry of Agriculture and Cooperatives (MOAC)

Address:	Phaya thai Road , Bangkok 10500
Contact Person :	
Tel. No. :	02-653-4444 ext. Fax. No. 02-6534917

3. Type of Scheme

Technical Cooperation Project

4. Project Area

Bangkok/ Regional

5. Project Period

3 Years

6. Rationale

Thailand is a one of food self-sufficiency country in Asia and export of food to all around the world. In agriculture, Thailand is emphasizing in strengths as one of food-exporting countries and focus on developing of new kinds of value-added and nutritious foods, to accommodate the new tests and stringent standards and demands of more discerning and definitely more health-conscious generation.
In the field of world market poultry meat and poultry product of Thai food industry grows extensively. Consumer requests more information of food in many manners and dimensions, in particular, regarding safety and quality. This information management by means of traceability system, this system which, can track and trace of poultry food product and its information at each stage of the food chain e.g., production, processing,

and distribution.

The Department of Livestock Development (DLD) Ministry of Agriculture and Cooperatives is responsible for livestock products and animal food. In the field of world market, poultry meat and poultry product of Thai food industry grows extensively and the consumer requests more information of food in many manners and dimensions, in particular, regarding safety and quality.

Therefore, complexity of product information should be managed and utilized to serve the above-mentioned needs. In order to succeed in management of product information, the DLD will strengthen the information management by means of traceability system and training. The project regarding Strengthening of Traceability System for Food from Raw Materials to the End Products will modulate the model, of an organization system, documented procedures, a process, management resources (personnel, software technologies and techniques) and training. IT software system is to accommodate product information in traceability and productivity contribution.

Problems and Constraint

Food traceability has been defined as their information can be traced forward and backward at each stage of food chain. There are mechanisms to support system i.e.; identification, data preparation, data collection and storage and data verification. This system composed of a)organization b)documented procedures c)a process and management resources d) rules e)education and training. Traceability system can achieve many proposes i.e.; 1) increase reliability of information 2) be able to improve the food safety during the process and 3) contribute to increase business efficiency. According to food identification, the identification unit of the products and raw materials can be traced and managed by assigning ID number. The correlation of raw material and material and semi-finished and finished products should be established with record of information.

The poultry traceability regulation in DLD is used to control of poultry product in 3 stages as shown in the production flow chart.

Table C-4-1 Thailand Poultry Farm Traceability System

Procedure from Farm to Processing Plant

Farm	Slaughter House	Processing Plant
Poultry Inspection Report At Farm	**Poultry Inspection Report At Slaughter House**	**Poultry Meat Inspection Report At Processing Plant**
* Name of Farm / address/ House No. * Agent's Name (Collector Name) * Delivery to Slaughter House: Name * Inspection Date Age of bird * Catching date Bird breed * Start rising date Number / pcs. * Number of mortality on inspection day/pce. * Average wt. of each bird calculated from 30 birds sampling from front, mid and end part of the house * Feed consumption * duration * Feed brand No. * Feed consumption kg. * Vaccination Record * Medication record after birds are 30 days of age * period of medication, Medicine/ dosage/day * sickness record before inspection * Health condition on inspection day * Housing condition and management * Animal welfare on farm acceptability Not acceptability * pest problem/ solution * Veterinarian's opinion for the flock * suitable for export slaughtering * require further examination * Signature of farm veterinarian * farm owner certificate / catching date number/pec. * Transported by truck Reg. No. * Signature of Farm Owner **Remarks:** -This Report must to attach with the swap report of farm disease control before delivery to slaughter house - The report must to pass the examination of Local veterinarian and the Slaughter House veterinarian	• Ante-mortem Inspection • Post-mortem Inspection • Cutting • Processing • Packing • Chilling or Freezing • Name of Company • EST Code No. • Export by (name of company incase of export the fresh meat or other part) • Destination country ship by • Type of product • Name of product • Weight/kg. **Remarks** • this report is sign by slaughter House Veterinarian • every package are put of **Health Mark** • the expired date of the certification • date of production, lot no. Sub lot no. • used of what kinds of livestock meat (Company name/lot No., sub lot no.) • incase of exporting of raw meat or carcass should be attach with the permitted document and certificate with respect to meat, meat products and edible offal	*Ante-mortem Inspection * Post-mortem inspection * Cutting * processing * packaging * chilling or Freezing * Name of Producer EST code No. * Destination (Name of Company) EST Code No. * Kinds of product * Name of product * Weight/Kg. **Remarks** • Put the name of producer and stamp of company logo or accepted sticker (Health Mark) on the top of bag or box • Date to produce (Lot. No./ Sub lot No.) • Lot No. of analysis result • The detail of raw material (meat) used in processing product • The Poultry Inspection Report At Slaughter House No. • Weight /kg, balance/kg. veterinarian, • The Poultry Inspection Report At Slaughter House No. • Weight /kg, balance/kg. veterinarian, • When export should be attach with the result inspection of Microorganism in processing product

Table C-4-2 Thailand Animal Feed Quality Control System

Feeder

Feed	Labeling
• Name, kinds of feed • Quality of feed, kinds of animal/age and processing method • Name of raw material, additive of feed and ratio • Machine & equipment/ storage • Quality of packaging, the used of container package	• Commercial name • NTW. In metric system • Name of Raw Material • Quality of feed by calories especially protein which, are registered with DLD • Date/Myths./year of produce and expiry date • Using Method.

From basic study in phase 1 of traceability system of poultry product show of the traceability system is not fully implement only in exporting sector to control of poultry feed, farm, slaughter house and processing plant. The animal feed is separated and is too difficult to trace back of additives in food chain. All the 4 stages is only file in a record and it not easily get a completely data information of each sector in one time. Inside of the farm, slaughter house and processing plant the private sector will control by them depend on what a level and scale of food chain as the market request. As for the product items having many stakeholders in the process from production to sale, and those with the complex processing or distribution procedure before reaching the customer.

At the present time, Its important and rapidly for DLD to develop of the systematic as the target of the traceability system should be set according to the study of the present situation, basic idea, roles, expected effects and basic specification of the system and go through the possibility for extending the existing method and possibility for coordination of food operators.

7. Overall Goal

The modified traceability system will become the prototype to modulate the existing traceability system for more speedy, accuracy and liable including action as the capable mechanism too accelerate the upgrade process of the food safety information in Thailand so that food safety awareness, transparency on food distribution system and concerned information will be conveyed to consumer eventually

8. Project Purpose

Model of on – line database and network traceability system to provide product safety and consumer protection

And the targets are as follows:

1. Hardware and software knowledge in network to implement in traceability system for
2. Administrator and staff
3. Server hardware to carry out network and on – line database.

9. Outputs

a. Model of modified traceability network system will be established in food chain in Thailand

b. Database model system for traceability system will be established using Information Technology

10. Activities

a-1. 2 long term experts and DLD staff cooperate in design of survey data and data collection for 6 months.

a-2. Coordinating team analyzes the collected data within 3 months

a-3. Establish food supply map within 1 month by coordinating team

a-4. Team carries out the solution of on – line database, network design and server hardware for pilot project within 2 months

a-5. Team determines and establishes hardware, software and man power in pilot project as well as the fostering technical team.

a-6. Training course and workshop for administrators and staff in Japan and Thailand within 4 months

a-7. Administrator and staff implement the pilot project in Thailand under advisor supervision for 1 year

11. Inputs

(1) *Input from the Thai Government*

1. Administrative team	6
2. C/P from the DLD	10
3. Supporting staff clerk	2

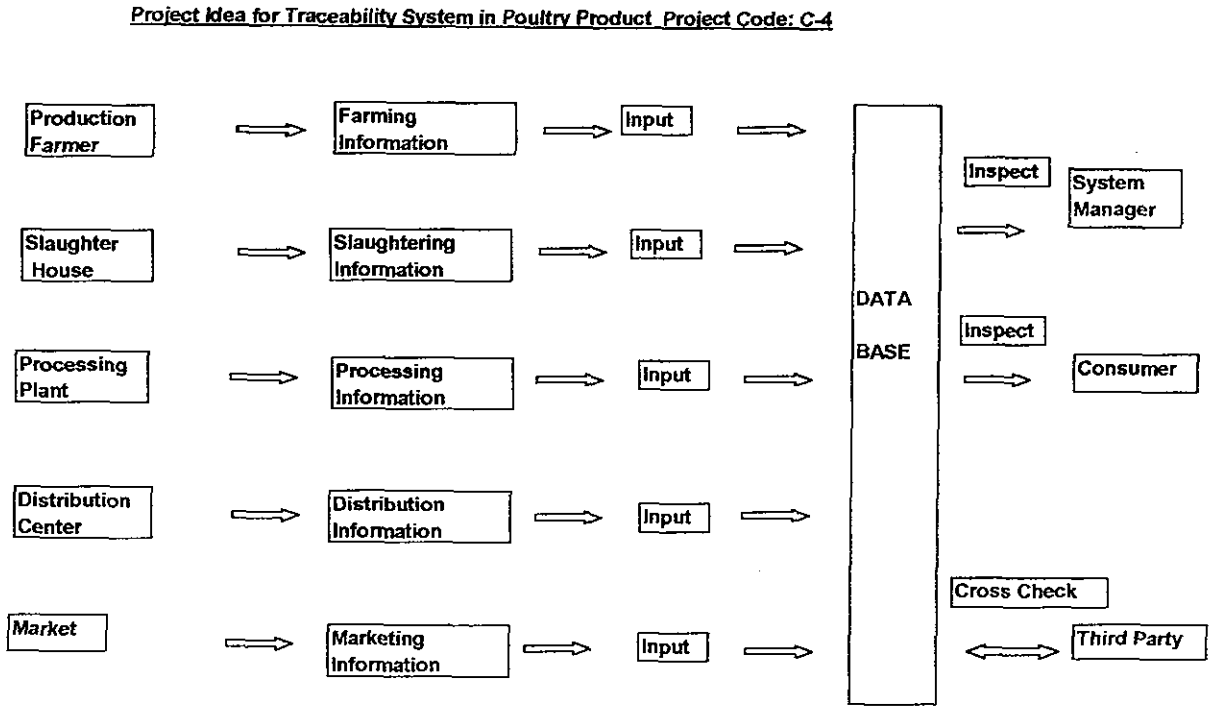
(2) *Input from the Japanese Government*

1. Two long term experts on computerized information network technology
2. Know-how on computerized data base system for on-line traceability system development
3. Participation in the training course and workshop on computerized traceability system with case study in Japan

12. Expected Benefits

1. Effective model of electronic database network for food safety
2. Stabilization of consumer protection system.

Appendix C-4-1



Summary of Candidate Project (Project Code: C-5)

1. Name of Candidate Project

Strengthening the Pre-certification System for Export Processed Fishery Products and HACCP implementation

2. Implementing Agency

Fish Inspection and Quality Control Division

Department of Fisheries (DOF)

Ministry of Agriculture and Cooperatives (MOAC)

3. Type of Scheme

Technical Cooperation Project

4. Project Area

Bangkok, Samutsakorn, Songkla

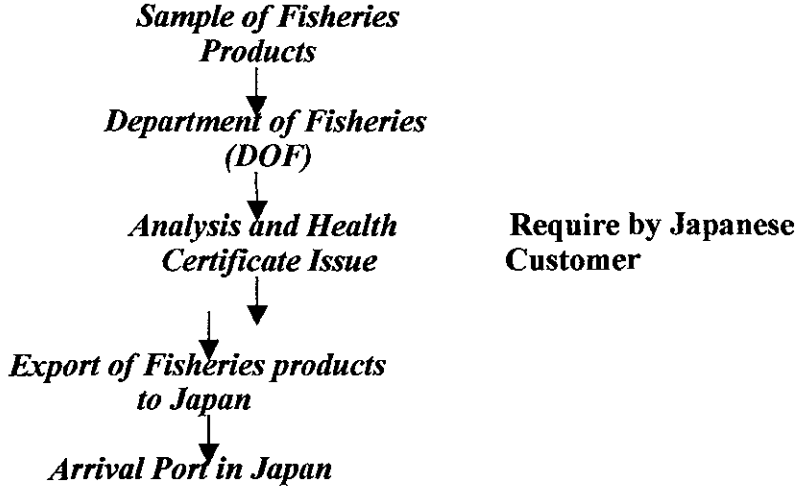
5. Project Period

3 Years

6. Rationale

Present situation

Fishery products play a vital role in Thai economy, especially for export. In 2003, the export quantity and value accounted for 1.6 million tons and US $ 3.6 billion respectively. Japan is one of the most important markets for Thai fishery products particularly frozen shrimp. The export of Thai shrimp of Japan totaled 0.3 million tons and US$ 1.1 last year (2003).



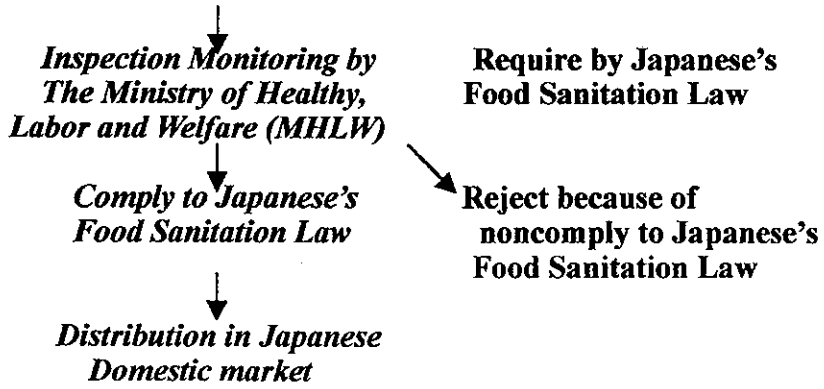


Figure C-5-1 General Procedure for exporting Fishery Products to Japan

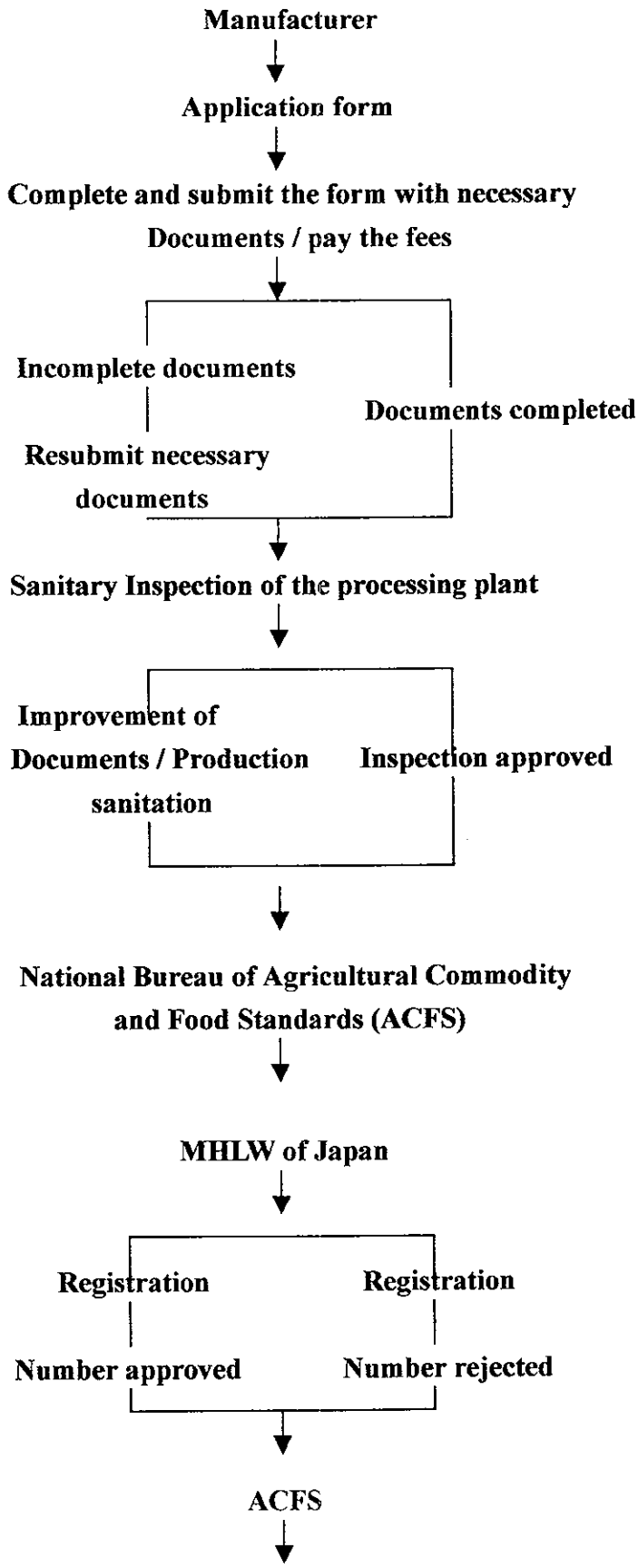
The export procedure for exporting fishery products to Japan is described in Figure C-5-1 which starting from the officer of Department of Fisheries (DOF) take product sample from manufacturer to Department of Fisheries (DOF) and analyze for the issue of Health Certificate that is not require by Thai or Japanese Government but need by Japanese customer. Later on, after the products arrive Japanese's port, the officer of The Ministry of Health, Labor and Welfare (MHLW) will take sample of product for analysis base on Japanese's Food Sanitation Law. After monitoring when the analysis results comply to Food Sanitation Law, all of products will be permitted to release and distribute in Japanese domestic market.

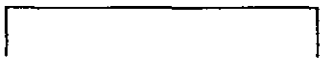
Problems / Constraints

As mentioned in Fig C-5-1, the process for issuing Health Certificate by DOF take time about 2 weeks. In Japan, the monitoring results by MHLW take about one week before releasing imported fisheries product from Thailand. Therefore, the importers in Japan have to bare cost of warehouse in port during waiting for monitoring results.

Pre-certification System

The Ministry of Health, Labor and Welfare of Japan has established the Pre-certification System for Imported Food to control the quality of imported processed food. The general principle of the system is to ensure that the imported food products meet the standards and specifications required by the Japanese's Food Sanitation Law. The primary purposes of the system are to simplify and expedite import procedures for registered products. The system emphasizes food safety control and prevents a violation to the Law (Figure C-5-2).


Manufacturer
Application form
Complete and submit the form with necessary Documents / pay the fees
Incomplete documents
Resubmit necessary documents
Documents completed
Sanitary Inspection of the processing plant
Improvement of Documents / Production sanitation
Inspection approved
National Bureau of Agricultural Commodity and Food Standards (ACFS)
MHLW of Japan
Registration
Number approved
Registration
Number rejected
ACFS



Manufacturer **Department of Fisheries (DOF)**

Figure C-5-2 Application Process for Pre-certification System

As mentioned above, this system will directly shorten monitoring frequency and time for custom clearance at arrival port for Japanese customer. Furthermore, the expense of warehouse at port will be decreased. The advantage for Thai side is to reduce the time of issuing Analysis and Health Certificate.

However, Thai fishery manufacturer that intend to participate in this system must follow the Japanese's Food Sanitation Law. It implies that Thai fishery manufacturers have to manage GMP (Good Manufacturing Practice) and HACCP System in their factories.

Previously, the Thai Department of Medical Sciences under the Ministry of Public Health, was the office responsible for overseeing the Pre-certification system for processed food products in Thailand. According to the Cabinet Decisions of March 14, 2003, Ministry of Agriculture and Cooperatives (MOAC) was assigned to be the sole Competent Authority for controlling of production and export of all agri-food products.

Therefore, the implementation of the Pre-certification system has been executed by MOAC since October 2003. Though there was a change in the responsible agency for food control, the overall implementation of the system in Thailand remains the same.
The Department of Fisheries (DOF), under the MOAC, is responsible for Pre-certification system for fishery products. Currently, there are 266 fish processing plants registered with the Department, consisting of 139 freezing plants, 44 canneries and 53 traditional fishery establishments. Among these, there are 112 plants processing processed food products. However, only 16 or 14.3 % are implementing and exporting under the Pre-certification system. There are more plants interested in joining the system but not well understanding of the procedures and incentives for adopting the system. Furthermore, some plants have limited knowledge on HACCP (Hazard Analysis and Critical Control Point) implementation.

Gaining access to information on Japanese Law and Regulations as well as food safety control programs, relating to the Pre-certification system, is of significant importance to promote the Pre-certification system in Thailand. The project on "Strengthening the Pre-certification System for Export Processed Fishery Products and HACCP implementation" is therefore proposed in order to improve the capacity of both DOF, which is the Competent Authority, and the fish industry in Thailand

7. Overall Goal

a. Decrease the frequency of inspection monitoring.
b. Improving the quality and safety of processed fishery products to comply with Japanese Food Sanitation Law.
c. Strengthening HACCP implementation in small and medium scale fish processing establishments.

8. Project Purpose

Promoting the registration and implementation of Pre-certification System in processed fishery product establishments in Thailand and ensuring that the products exported are in compliance with the Japanese's Food Sanitation Law.

9. Outputs

a. A total of 10 DOF staff are trained in Japan
b. A total 30 DOF staff are trained in Thailand and able to technically support and assist the Thai fish industry
c. A total 35 fish processing establishments apply for registration of Pre-certification system
d. A total 200 participants from the fish industry acquire knowledge on Pre-certification system
e. A total 200 personnel from the fish industry, emphasizing medium and small scales, are trained on HACCP concepts and implementation.

10. Activities

(1) The following are activities proposed to be conducted by a long-term Japanese expert and DOF personnel:

a-1. Organize a courtesy visit of DOF delegation to MHLW in Japan
a-2. Establish a working group consisting of the expert and 5 DOF officers
a-3 Organize training in Japan for 10 DOF officers
a-4. Train 30 DOF offices on Pre-certification system to be able to technically support and assist the Thai fish industry

a-5. Prepare and publish an operation manual of Pre-certification system

a-6. Conduct a seminar on implementation of Pre-certification system to advise the industry on benefits and incentives for registration under the system in Bangkok, Samutsakorn and Songkla area where many fisheries manufacturers are located

a-7. The working group encourage the participation of 35 personnel from the industry to the Pre-certification system

a-8. Organize seminars and workshops on HACCP concepts and implementation for 200 participants from the industry

a-9. Provide technical support and consultation to participating fish processors.

(2) Four short-term Japanese experts are requested for the following areas:

b-1 Inspection and pre-audit for fish processors registered under Pre-certification system

b-2. HACCP system

b-3 Chemical analyses

b-4 Microbiological analyses

11. Inputs

(1) Input from Thai Government

1) Allocation of staff for the working group and counterparts
2) Operation cost for the working group and counterparts
3) In-country training costs
4) Provision of resource person (s) for HACCP system
5) Office for project

(2) Input from the Japanese Government

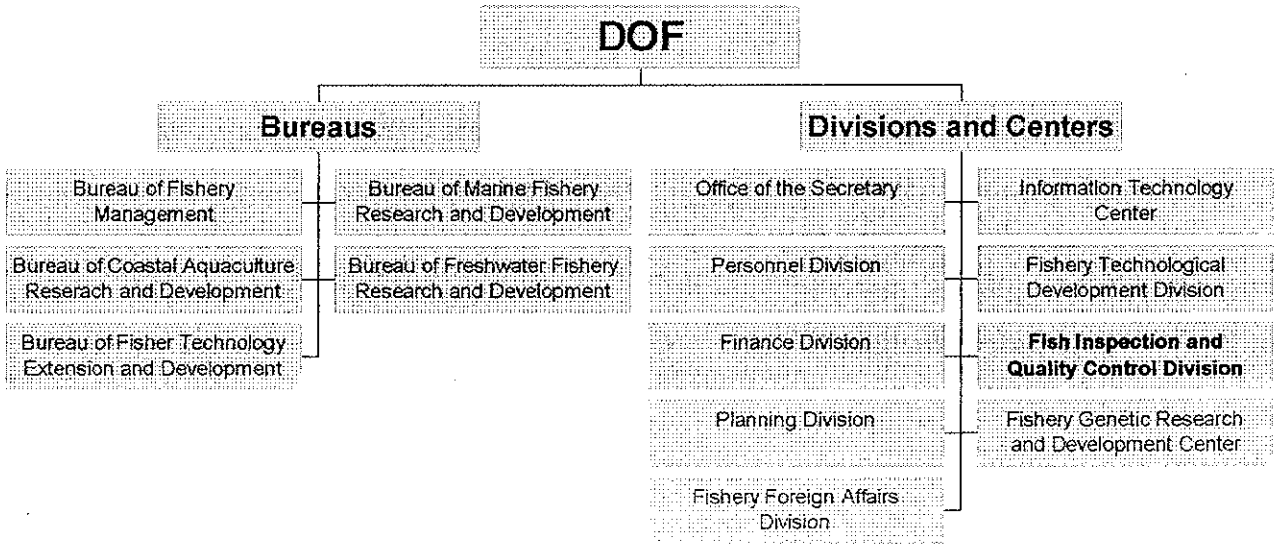
1) A long-term expert on Pre-certification system, import regulations and Japanese's Food Sanitation Law
2) Four short-term experts to conduct training programs in Thailand
   1) Inspection and Pre-audit system
   2) HACCP
   3) Laboratory analytical techniques (Chemical analysis)
   4) Laboratory analytical techniques (Microbiological analysis)
   5) Visit to Japan of the Thai delegation
   6) Training in Japan
   7) Other necessary costs

12. Expected Benefits

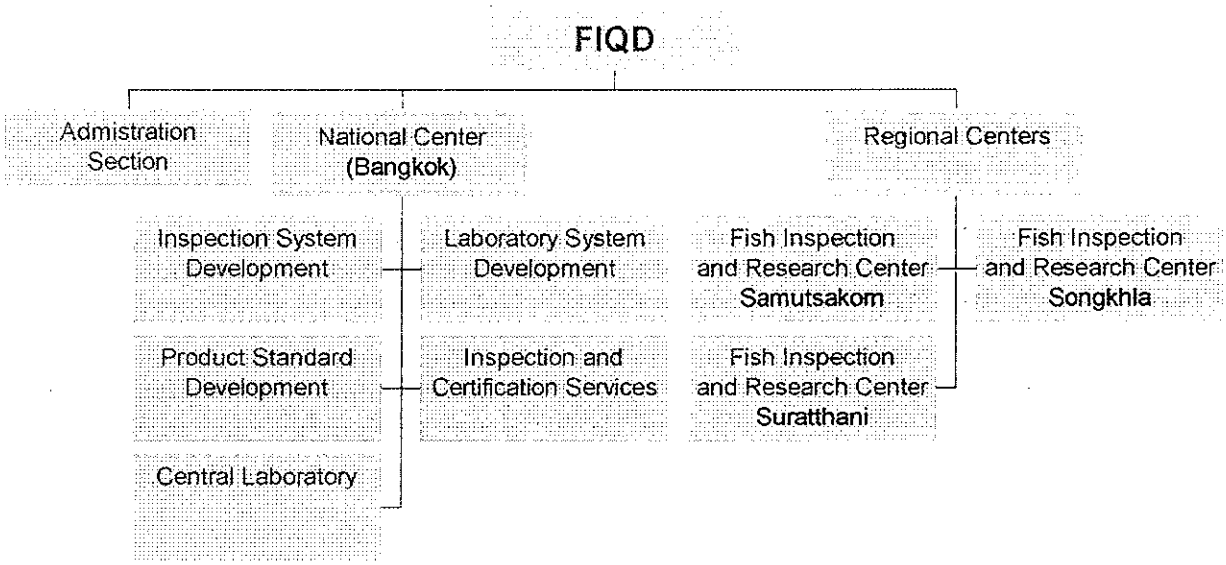
35 Thai fish industry, especially the medium and small scales and 200 participants from the fish industry.

Appendix C-5-1

DOF Organization Chart



FIQD Organization Chart



FIQD Staff

Title	Number (person)
Food Technologist	115
Technician	62
Administrator	23
Worker	53
Total	274

Appendix C-5-2

Pre-certification Registered List

No.	Registration No.	Name of Products
1	TH 960001	Frozen Breaded Shrimp
2	TH 960002	Frozen Fritter Shrimp
3	TH 960003	Frozen Tempura Shrimp
4	TH 960004	Frozen Breaded Fish
5	TH 960005	Frozen Breaded Skewered Set
6	TH 960006	Frozen Skewered Tempura Set
7	TH 970003	Frozen Fried Chicken
8	TH 970005	Frozen Chicken Nanban with sauce
9	TH 970007	Frozen Tempura Assorted
10	TH 970008	Frozen Boiled and Peeled (Sushi Ebi) Farm Black Tiger Shrimp
11	TH 970009	Frozen Breaded Shrimp
12	TH 980009	Frozen Fried Chicken
13	TH 980019	Frozen Cooked, Peeled, Belly Cut Shrimps
14	TH 990002	Frozen Boiled Squid Head
15	TH 990003	Frozen Blanched Cuttlefish Head
16	TH 990004	Frozen Bread Black Tiger Shrimp
17	TH 990005	Frozen Cooked Black Tiger Shrimp Head less Shell On
18	TH 990006	Frozen Boiled Cut Octopus
19	TH 000001	Frozen Cooked and Peeled butterfly tail-on Black Tiger Shrimp (Sushi Ebi)
20	TH 000002	Frozen Breaded Black Tiger Shrimp (Panko Ebi)
21	TH 000003	Frozen Raw Torpedo Blac
22	TH 000004	Frozen Cooked Butterfly Tail on Black Tiger Shrimp (Sushi Ebi)
23	TH 000005	Frozen Cooked Head-On Black Tiger Shrimp
24	TH 000006	Frozen Cooked Peeled Devined Tail-on Black Tiger Shrimp (Sushi Ebi)
25	TH 010001	Frozen Cooked Peeled Devined Shrimp
26	TH 010002	Frozen Cooked Peeled Tail-on Shrimp
27	TH 010003	Frozen Cooked Head-On Shrimp
28	TH 010004	Frozen Peeled and Boil Shrimp (Sushi Ebi)
29	TH 010005	Frozen Breaded Shrimp
30	TH 010006	Frozen Breaded Shrimp (PATTY)
31	TH 010007	Frozen Cooked Peeled Undeveined Shrimp
32	TH 010008	Frozen Steam Chicken
33	TH 010009	Frozen Pre-Fried Chicken
34	TH 020001	Frozen Fried Chicken with Seaweed
35	TH 020002	Frozen Fritter Shrimp and Vegetable
36	TH 020003	Frozen Pre-Fried Chicken
37	TH 020004	Frozen Sushi Ebi
38	TH 030001	Frozen Shrimp Spring Roll with Nori
39	TH 030002	Frozen Cooked Ha kau
40	TH 030003	Frozen Shrimp Spring Roll
41	TH 030004	Frozen Shrimp Vegetable Spring Roll
42	TH 030005	Frozen Scallop Spinach Spring Roll
43	TH 030006	Frozen Seafood Curry Spring Roll
44	TH 030007	Frozen Octopus Mabo Spring Roll
45	TH 030008	Frozen Cooked Three Flavor Dumpling
46	TH 030009	Frozen Chicken Nanban with sauce
47	TH 030010	Frozen Fried Chicken
48	TH 040001	Frozen Steam Chicken (A)
49	TH 040002	Frozen Pre-Fried Chicken (B)
50	TH 040003	Frozen Pre-Fried Chicken (C)
51	TH 040004	Frozen Assorted Fritter with Vegetable

Pre-certification Registered List (Continued)

No.	Registration No.	Name of Products
52	TH 040005	Frozen Tempura Assorted (A)
53	TH 040006	Frozen Breaded Skewered Set (A)
54	TH 040007	Frozen Breaded Skewered Set (B)
55	TH 040008	Frozen Breaded Shrimp (A)
56	TH 040009	Frozen Fritter Shrimp (A)
57	TH 040010	Frozen Fritter Shrimp (B)
58	TH 040011	Frozen Fritter Shrimp (C)
59	TH 040012	Frozen Fritter Shrimp (D)

Total Registered Products : 52 items

2/2

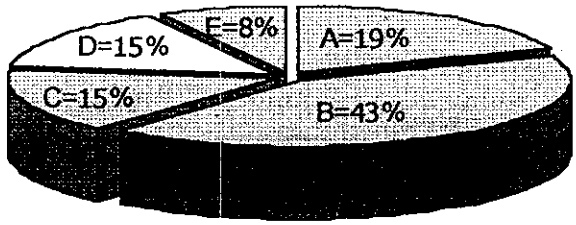
Appendix C-5-3

Pre-certification System Survey

Questionnaire Analysis

	Number of Company	Number of Questionnaire	Remarks
Registered Company	3	5	
Non-registered Company	2	1	
Total Questionnaire 11 Company			

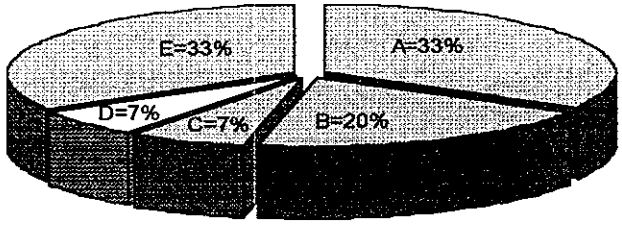
Remark: 15 companies were registered in Pre-certification System



N=26

A: Make good image for compapny
B: Shorten time for custom clearance
C: Reduce cost for storing the cargo at Port of entry
D: Reduce product monitoring frequency by MHLW at Port of entry
E: Others

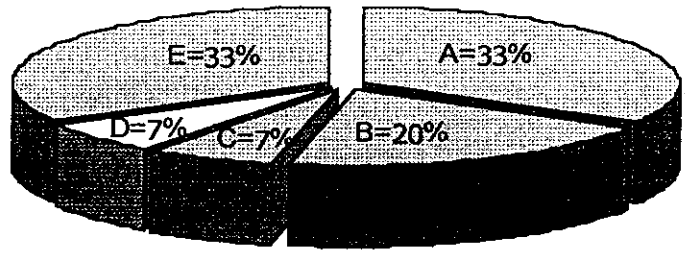
Fig. 1 Advantage of Pre-certification System



N=10

A: Application until registration take long time
B: Limitation of product, only processed food can be applied
C: Expense of sample analysis for system registration is quite high
D: Change of government authority e.g. MOPH → DOF for fishery product
E: Others

Fig. 2 Constrains/Problem of Pre-certification System



N=15

A: Need more information about Pre-certification ;
B: Need negotiation to expand scope of product
C: Need technical expert for factory consultation
D: Need up to date information of rule and regulation of Japan
E: Others

Fig. 3 Support need from government