別添資料

1　ヴィエトナム食品原材料
2　ヴィエトナム FIRI 分析機器一覧
3　ヴィエトナム食品生産量
4　ヴィエトナム食品流通経路

参考資料：調査にあたり配布した質問票

1　研究所用（和文）
2　省庁用（和文）
3　工場・民間用（和文）
4　帰国研修員用（和文）
5　研究所用（英文）
6　省庁用（英文）
7　工場・民間用（英文）
8　帰国研修員用（英文）

ヴィエトナム食品原材料

		Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8	Item 9	Item 10	Item 11
a	Name	Vegetable (bean, soybean, rapeseed, ...)	Fruit (lichee, grave, apple, pineapple, plum, Apricot, guava, mango, longen...)	Meat (pig, beef, chicken...)	Rice	Cassava, maize, potatoes,...	Coffee powder	Jasmine flower	Castor oil	Gardenia & Bixa seed	Licorise root	Pandan leaf
b	Production volume (tons)							1200	50	20	40	1000
c	Seasonarity	All year	All year	All year	All year	All year	All year	April - November	All year	All year	All year	All year
d	Problems in quality	Not stable	Not stable	Not stable	Good quality	Not stable	-	-	Low ricinoleic acid amoumt	-	-	-
e	Example of price	6,000 VND/kg	2,000 - 20.000 VND/kg	20,000 VND/kg	2,500-3,000 VND/kg	2,000 - 3,000 VND/kg	500 USD/ton	500 USD/ton	1000 USD/ton	800 USD/ton	1500 USD/ton	200 USD/ton
f	Usage by ratio Fresh Cons. Processing loss	10% 87% 3-5%	80% 10% 10%	70% 30%	65% 32% 3%	20% 70% 10%	-	-	Maily used in rude material	Dried seed	Dried material	Fresh material
g	Ways of processing	Soy sauce Soyoligo saccharide Baby food	Caned juice, jam, wine, frozen fruit, fermented fruit...	Sausage Chicken - essence	Malto-dextrin Baby food, Adjun in beer production	Starch, glucose, fructose, Fructo-Oligosac-Charide (FOS), alcohol...	From it natural flavour is extracted	Flavour is extracted from it	Synthesizing odour compound from it	Food colourants are extracted from them	Natural oleoresin is extracted from it	Natural flavour is extracted from it
h	Source of supply	Vietnam market	Vietnam market	Vietnam market	Vietnam market	Vietnam market	Vietnam market	Vietnam market	Vietnam market	Vietnam market	Vietnam market	Vietnam market
i	Technical problems	Low level technology	Low level technology	No problem	Low level technology	Low level technology			Lack of instrument creating ozon with high yield	It is difficult to refin colour products		It is difficult to concentrate flavour extract

（質問票に対するVietnam Food Industries Research Instituteからの回答結果から抜粋）

別添資料 1

ヴィエトナムFIRI分析機器一覧

設備名	所属	由来
Analytical balance AA-200	Food analysis & control	FIRI
HPLC system		UNIDO
Spectrophotometer H-200		FIRI
Fluorescence spectrophto-Meter F200		FIRI
Furnace		FIRI
Shaker incubator CH4103	Biotechnology	UNIDO
Micro kjeldahl		UNIDO
Microscope		UNIDO
Centrifuge		FIRI
Microscope and photo,video system NIKON	Microbiology	FIRI
BOD,COD Analyser HACCH-DREL/2010		FIRI
Deep freezer –85℃,=35℃		UNIDO
Centrifuge		UNIDO
Laminar air flow		UNIDO
Rotary vacuum evaporator BUCCHI R144/A	Spices & aroma	FIRI
Centrifuge ALC 4217	Enzyme	FIRI
Incubator		UNIDO
Homogenizer	Oil & oilseed Tech.	FIRI
Freeze dryer BETA-216	Food technology	UNIDO
Fermenter Biostat E ×2		UNIDO
Microscope		UNIDO
Electrical steamer		FIRI
25L Fermentation system		KIRIN BREWERY CO.
Spectrophotometer Janway 6300	Biological preparation	FIRI
Spectrophotometer	Beverage Technology	FIRI
Microscope		FIRI
Spray dryer APV	Engineering	UNIDO
Canning machine		UNIDO
Butter separator		UNIDO
Freeze room		FIRI
Vertical autoclave		FIRI
Universal grinding Machine		FIRI
Wet grinding machine		UNIDO
Double water Distiller		UNIDO
Pilot plant (Beer)		
Pilot plant (Soft drink)		
Pilot plant (Enzyme)		
Pilot plant (Oil)		
Pilot plant (Baby food)		

（出所：JICA個別専門家横山洋氏の総合報告書）

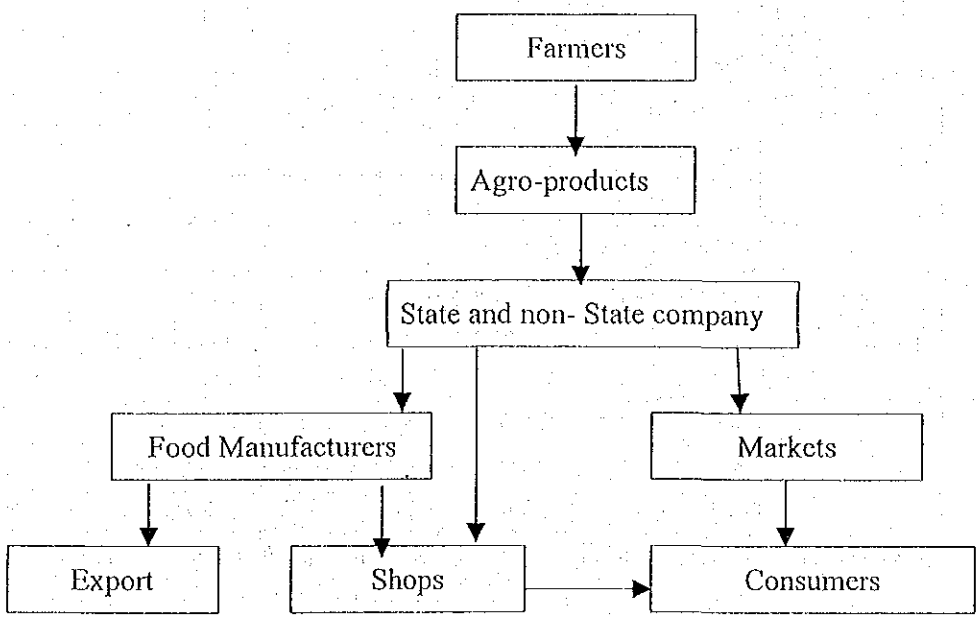
実験機器名	使用場所
Infrared moisture analyser , Model MB200	共同
Spectrophotometer	Analytical Dept.
Vacuum fractional distiller	Biotech. Dept.
Soxhlet system , Ser 148/3	Oil Dept.
Homogenizer	共同
Circular shaker	Microbiol. Dept.
Horizontal shaker	Microbiol. Dept.
Vacuum condenser Buchi, Model R114/A	Biotech. Dept.
Centrifuge, Universal 16A	共同
OD Spectrophotometer, P-022660 -10, Model 6300	Analytical. Dept.
Automatic Kjeldahl, KB8-SV ap30	共同
Automatic titrator E24900-05	Analytical. Dept.
PCR PE 9700	Microbiol. Dept.
Horizontal Electrophoresis GNA100	Analytical Dept.
Vertical electrophoresis Mini VE	Analytical. Dept.
Room incubator	共同

ヴィエトナム食品生産量

	1997	*1998*	*1999*	*2000*
Canned fruits (Ton)	21,422	20,026	13,868	13,903
Vegetable oil (Ton)	87,717	94,648	125,101	139,000
Tinned Milk (Mill. Tins)	188.4	185	207	223
Milling rice, maize (Thousand. tons)	18,839	19,242	21,807	22,205
Sugar, sugar syrup (Thousand. Tons)	649.1	736	947.3	1,165
Granulated sugar (Thousand. Tons)	122	143	208.4	225
Bean Curds (Non-State) (Thousand. Tons)	44.7	51	64.3	66
Tea (Ton)	44,974	52,668	63,697	65,500
Cigarettes (Mill. Packets)	2,123	2,195	2,147.1	2,600
Fish Sauce (Mill. Litters)	170	164	174,2	180
Liquor (Thousand litters)	93,600	96,093	112,719	113,580
Beer (Mill. Litters)	581	670	689.8	728

（出所：JICA個別専門家横山洋氏の総合報告書）

ヴィエトナム食品流通経路



（質問票に対するVietnam Food Industries Research Instituteからの回答結果から抜粋）

研究所用（和文）

活動項目		
1　食品加工・保全技術分野における実状と関連政府機関の動向調査		
（1）原材料等	1）加工・保全技術を検討したい原材料について記入下さい（複数可）	原材料名
		生産量
		季節性
		品質上の問題点
		価格例
		用途割合（生鮮消費：加工：廃棄等）
		加工例
		入手経路
		保管上の技術課題
	2）食品添加物はどこで製造しどんなものを使っていますか？	
	3）エネルギー供給、水資源等で問題がありますか？あれば具体的に記述下さい。	
（2）製造技術	1）加工技術	検討したい加工技術は何ですか？
		その加工技術について現在の課題・問題点は何ですか？
	2）保全技術	検討したい保全技術(殺菌、冷蔵、乾燥、添加物　等)は何ですか？
		その保全技術について現在の課題・問題点は何ですか？
		食品の包装にはどのような種類の技術が使われていますか？
	3）分析技術	使われている分析機器の種類と分析手法を記入下さい。
		どこが食品の監理（検査）をしていますか？
		どのような品質管理体制がとられていますか？
	4）技術開発・支援	技術開発（研究）が行われていれば、いくつかテーマを挙げてください。
		技術の普及支援のために、技術指導や研修事業が行われていますか？行われていれば、具体的計画を教えて下さい。
	5）食品衛生関連の法規制に対する課題はありますか？あれば具体的に挙げて下さい。	
	6）加工機械に対する課題はありますか？あれば具体的に挙げて下さい。	
	7）外国企業からの技術導入はありますか？あれば具体的に挙げて下さい。	
	8）食品製造廃棄物はどのように扱われていますか？	

1　食品加工・保全技術分野における実状と関連政府機関の動向調査	
（3）製品	1）どんな製品がありますか？例えば，缶・瓶詰食品、酸性食品、発酵食品、乾燥食品、糖漬等（統計資料があれば添付して下さい。）
	2）それら製品はそれぞれ誰が製造していますか？（例えば自家製か、工業規格品か？）
	3）特に輸出用加工食品（日本などへ）に関する問題点はありますか？あれば具体的に挙げて下さい。
	4）新製品はどのように開発されていますか？また、新製品の保管条件・保管期間はどのように設定されていますか？
（4）マーケット	1）あなたの所属先が生産している加工食品の生産量をそれぞれ記述下さい。
	2）それら加工食品はどこで消費されていますか？
	3）それら加工食品の流通経路を記述下さい。
	4）それら加工食品の賞味期間はどの程度必要とされていますか？
	5）それら加工食品はどのような包装方法が使われていますか？
	6）それら加工食品に低温流通システムがありますか？
（5）政策	1）開発計画における同分野の位置づけを記述下さい。
	2）同分野の行政体制を記述下さい。
	3）行政体制下の各機関の役割を挙げて下さい。
	4）食品技術者への技術教育方法を具体的に挙げて下さい。
	5）技術教育の実施体制を記述下さい。
	6）同分野についての食料生産計画、貿易計画等はありますか？あれば具体的に挙げて下さい。
	7）ＷＴＯ，ＧＡＴＴ，ＷＨＯ等に関して御意見はありますか？あれば具体的に挙げて下さい。

2．再立ち上げコースの研修項目（案）のニーズ調査	
（1）各研修項目（案）に関する質問	
1）農産加工用乳酸菌の検索と応用	a. 乳酸菌の使用状況（使用の有無／使用する対象／乳酸菌の種類　等）を記述下さい。
	b. 加工用乳酸菌利用技術についての課題を挙げて下さい。
2）醸造用酵母の分離・育種	a. 醸造用酵母の使用状況（使用の有無／使用する対象／酵母の種類　等）を挙げて下さい。
	b. 酵母を主発酵とする発酵食品はありますか？あれば具体的に挙げて下さい。
	c. 酵母は人為的に添加していますか？それとも自然発酵ですか？
	d. 酵母が自然発酵の場合、安全に製造されていますか？
	e. これまでに実施されている醸造用酵母の分離・育種法は何ですか？
	f. 分離・育種技術に関する課題があれば挙げてください。
	g. 今後取り組みたい分離・育種法を挙げて下さい。
	h. 現在、醸造用酵母は自家醸造されていますか？あるいは工業生産ですか？
	i. 今後工業生産に移行すると考えているものはありますか？
	j. その他の醸造用微生物に対する課題を挙げて下さい。
	k. その他の発酵用微生物の種類を挙げて下さい。
	l. その他醸造・発酵産業の実態で記述するべきことがあればご記入下さい。
3）米・小麦・大豆などの農産物を利用した加工食品の開発	a. 加工用農産物にはどのような種類がありますか？
	b. 加工食品の開発技術についての課題があれば挙げて下さい。
	c. 食料生産と自給に対する課題があれば挙げて下さい。
4）食品原料に存在する微生物の新しい殺菌技術の開発	a. 殺菌対象となる原材料又は製品がありますか？あれば挙げて下さい。
	b. 現在殺菌についてはどのような方法が取られていますか？
	c. 耐熱性細菌による変敗を防ぐ策を講じてますか？講じていればどのようにされているか具体的に挙げて下さい。
	d. 殺菌技術についての課題があれば挙げて下さい。
	e. 低温流通は普及していますか？
5）タンパク質酵素分解技術を活用した機能性食品素材の開発	a. 魚醤の生産における課題があれば挙げて下さい。
	b. 機能性食品に対する関心はありますか？あるのなら具体的に挙げて下さい。
	c. 機能性食品素材の開発技術についての課題があれば具体的に挙げて下さい。
	d. 魚醤に使われる原料（水産物、畜肉等）があれば記入してください。
	e. 酵素の供給体制がありますか？
6）食品の香りの分析と評価法	a. 食品香料の使用状況（使用の有無、使用する対象／香料の種類　等）を挙げて下さい。
	b. 食品の香りの分析技術についての課題があれば挙げて下さい。
	c. 食品の品質評価の現状（どの程度品質評価されているか／品質評価する対象）を記述下さい。
	d. 食品の品質評価の技術についての課題があれば挙げて下さい。
	e. あなたの所属先の分析器械の整備状況を記述下さい。
（2）6項目の内、どの項目に関する技術・知識が必要ですか？	

省庁用（和文）

活動項目		
1　食品加工・保全技術分野における実状と関連政府機関の動向調査		
（1）原材料等	1）加工・保全技術を検討したい原材料について記入下さい（複数可）	原材料名
		生産量
		季節性
		品質上の問題点
		価格例
		用途割合（生鮮消費：加工：廃棄等）
		加工例
		入手経路
		保管上の技術課題
	2）食品添加物はどこで製造しどんなものを使っていますか？	
	3）エネルギー供給、水資源等で問題がありますか？あれば具体的に記述下さい。	
（2）製造技術	1）加工技術	検討したい加工技術は何ですか？
		その加工技術について現在の課題・問題点は何ですか？
	2）保全技術	検討したい保全技術(殺菌、冷蔵、乾燥、添加物　等)は何ですか？
		その保全技術について現在の課題・問題点は何ですか？
		食品の包装にはどのような種類の技術が使われていますか？
	3）分析技術	どこが食品の監理（検査）をしていますか？
		どのような品質管理体制がとられていますか？
	4）技術開発・支援	技術開発（研究）が行われていれば、いくつかテーマを挙げてください。
		技術の普及支援のために、技術指導や研修事業が行われていますか？行われていれば、具体的計画を教えて下さい。
	5）食品衛生関連の法規制に対する課題はありますか？あれば具体的に挙げて下さい。	
	6）外国企業からの技術導入はありますか？あれば具体的に挙げて下さい。	
	7）食品製造廃棄物はどのように扱われていますか？	
（3）製品	1）どんな製品がありますか？例えば，缶・瓶詰食品、酸性食品、発酵食品、乾燥食品、糖漬等（統計資料があれば添付して下さい。）	
	2）それら製品はそれぞれ誰が製造していますか？（例えば自家製か、工業規格品か？）	
	3）特に輸出用加工食品（日本などへ）に関する問題点はありますか？あれば具体的に挙げて下さい。	
	4）新製品はどのように開発されていますか？また、新製品の保管条件・保管期間はどのように設定されていますか？	
（4）政策	1）開発計画における同分野の位置づけを記述下さい。	
	2）同分野の行政体制を記述下さい。	
	3）行政体制下の各機関の役割を挙げて下さい。	
	4）食品技術者への技術教育方法を具体的に挙げて下さい。	
	5）同分野についての食料生産計画、貿易計画等はありますか？あれば具体的に挙げて下さい。	
	6）WTO，GATT，WHO等に関して御意見はありますか？あれば具体的に挙げて下さい。	

2．再立ち上げコースの研修項目（案）のニーズ調査
（1）6項目の内、どの項目に関する技術・知識が必要ですか？
1）農産加工用乳酸菌の検索と応用
2）醸造用酵母の分離・育種
3）米・小麦・大豆などの農産物を利用した加工食品の開発
4）食品原料に存在する微生物の新しい殺菌技術の開発
5）タンパク質酵素分解技術を活用した機能性食品素材の開発
6）食品の香りの分析と評価法

工場・民間用（和文）

活動項目		
1　食品加工・保全技術分野における実状と関連政府機関の動向調査		
（1）原材料等	1）加工・保全技術を検討したい原材料について記入下さい（複数可）	原材料名
		生産量
		季節性
		品質上の問題点
		価格例
		用途割合（生鮮消費：加工：廃棄等）
		加工例
		入手経路
		保管上の技術課題
	2）食品添加物はどこで製造しどんなものを使っていますか？	
	3）エネルギー供給、水資源等で問題がありますか？あれば具体的に記述下さい。	
（2）製造技術	1）加工技術	a. 検討したい加工技術は何ですか？
		b. その加工技術について現在の課題・問題点は何ですか？
	2）保全技術	a. 検討したい保全技術(殺菌、冷蔵、乾燥、添加物　等)は何ですか？
		b. その保全技術について現在の課題・問題点は何ですか？
		c. 食品の包装にはどのような種類の技術が使われていますか？
	3）分析技術	a. 使われている分析機器の種類と分析手法を記入下さい。
	4）技術開発・支援	a. 技術開発（研究）が行われていれば、いくつかテーマを挙げてください。
	5）食品衛生関連の法規制に対する課題はありますか？あれば具体的に挙げて下さい。	
	6）加工機械に対する課題はありますか？あれば具体的に挙げて下さい。	
	7）外国企業からの技術導入はありますか？あれば具体的に挙げて下さい。	
	8）食品製造廃棄物はどのように扱われていますか？	
（3）製品	1）どんな製品がありますか？例えば，缶・瓶詰食品、酸性食品、発酵食品、乾燥食品、糖漬等（統計資料があれば添付して下さい。）	
	2）特に輸出用加工食品（日本などへ）に関する問題点はありますか？あれば具体的に挙げて下さい。	
	3）新製品はどのように開発されていますか？また、新製品の保管条件・保管期間はどのように設定されていますか？	
（4）マーケット	1）あなたの所属先が生産している加工食品の生産量をそれぞれ記述下さい。	
	2）それら加工食品はどこで消費されていますか？	
	3）それら加工食品の流通経路を記述下さい。	
	4）それら加工食品の賞味期間はどの程度必要とされていますか？	
	5）それら加工食品はどのような包装方法が使われていますか？	
	6）それら加工食品に低温流通システムがありますか？	

2．再立ち上げコースの研修項目（案）のニーズ調査
次の６項目の内、どの項目に関する技術・知識が必要ですか？
1）農産加工用乳酸菌の検索と応用
2）醸造用酵母の分離・育種
3）米・小麦・大豆などの農産物を利用した加工食品の開発
4）食品原料に存在する微生物の新しい殺菌技術の開発
5）タンパク質酵素分解技術を活用した機能性食品素材の開発
6）食品の香りの分析と評価法

帰国研修員用（和文）

1．　一般事項

（1）名前

（2）所属先／役職名

（3）連絡先（住所・電話・Fax）

（4）現在の業務内容

（5）帰国後から今までのキャリア

2．　研修の成果

（1）　研修で得た知識・技術の中で、役に立ったと思われるカリキュラム項目を挙げてください。また、その理由も述べてください。

（2）　研修内容で実際に帰国後自分の業務に活用できた知識・技術はありますか？もしあれば、挙げてください。

（3）　（2）で挙げた知識・技術について、どのように活用できたのか具体的に述べてください。

3．　今後のニーズ

（1）　現在食品加工・保全分野においてあなたの国が必要としているニーズは何だと思いますか？

以上

研究所用（英文）

Questions

1　Current situation and the trend of concerned governmental organizations in the field of food processing and preservation technology

(1) Raw Material

1)　Please list up raw materials, which your organization want to make use in processing and preservation technology, and show us the data of them.

(Please answer in attatched 1)

2)　Where are the food additives manufactured in your country?

3)　Do you have any problems about energy supply and water resources? If so, please describe it concretely.

(2) Manufacturing Technique

1)　Processing Technique

a. What is the most important and necessary processing technique in your institure/organization, and why?

b. What is the current problem about the processing technique in your institute/organization?

2)　Preservation Technique

a. What is the most important and necessary preservation technique in your institute/organization (for example, sterilization, cold storage, dehydration, additives etc.), and why?

b. What is the current problem about the preservation technique in your institute/organization?

c. What is the most commonly utilized packaging techniques in your institute/organization?

3) Analytical technique

a. Please describe the types of analytical equipments and the analytical methods that your organization use.

b. Which organization is in charge of monitoring and inspection of food?

c. What kind of quality control system is applied to your country in the field of food processing and preservation?

4) Technology Development and Extension

a. Please list some on-going research themes on food processing and preservation technology development, if any.

b. Is there any technical guidance or training activities for the extension of the developed technique? If so, please describe the plan concretely.

5) Is there any current issues related to laws and regulations of food sanitation, which need to be tackled? If any, please describe it concretely.

6) Is there any introduction of food processing and preservation technology from foreign enterprises? If so, please list them up concretely.

7) Is there any problems about processing machine? If so, please list them up concretely.

8) How do you manage waste from food manufacturing?

(3) Products

1) What kind of products do you research? (I.e.) canned, bottled, acid, fermented, dried, and syrupped food (please attach statistical data, if you have.)

2) Who are the main manufacturer of them? (Are they home made products, or standardized ones?)

3) Do you have any problems about the processed food, which is especially for export use (to Japan or where else)?

4) How do you develop a new product? How do you decide its storage condition and period?

(4) Market

1) Please list the volume of main processed food manufactured in your country.

2) Where are those processed food mainly sold?

3) Please describe the common and popular distribution channel.

4) How do the producers define their expiration date?

5) What kind of packaging methods are popular in your country?

6) Is there a low temperature distribution system (or a cold chain system) in your country?

2 Needs survey of the training subjects which are prepared for the new course.

(1) The listed items below are proposed for optional research activities within the training course. (Brief outline of each theme is explained in annex1) We would like to gain some information of your country's situation related to the six proposed theme. Kindly please fill in with frank opinion.

1) Retrieval and Application of Lactic Acid Bacteria.

a. Please describe the current situation of Lactic acid bacteria usage. (used or not; object to be used; type of lactic acid bacteria etc.)

b. Please list the problems about application technology of lactic acid bacteria for processing, if there is any.

2) Separation and Cultivation of Brewing Yease

a. Please describe the situation of brewing yeast usage. (used or not; object to be used; type of yeast etc.)

b. Is there any fermented food mainly fermented by yeast? If so, please list them up concretely.

c. Do you add yeast artificially to them? Or is it a natural fermentation?

d. If it is natural, are the products manufactured sanitary?

e. What kind of separation and cultivation methods of brewing yeast have been used?

f. Please list the problems about separation and cultivation technique, if any.

g. Please list the separation and cultivation methods you want to apply in the future?

h. At present, is the brewing yeast produced at cottage level or is it produced industrially?

I. If the yeast is not yet produced industrially at this time, is there any plan to do so?

j. Please list the problems about other microbes for brewing, if any.

k. Please list the type of other microbes for fermentation.

l. Please list other actual condition of brewing and fermentation industry, if any.

3) Development of Processed Foods Using Farm Products, such as Rice, Wheat, and Soybeans

a. What kind of agricultural crops is commonly or popularly used for processing?

b. Please list the problems about development technology of food processing, if any.

c. Please list the problems about food production and self-sufficiency, if any.

4) Development of Technology for Sterilization of Microbes Existent in Food Materials.

a. Is there any raw material or products subject to sterilize? If so, please list them up.

b. What kind of sterilization methods are you using presently?

c. Do you take any measures to avoid deterioration by heat-resistant bacteria? If so please list them up.

d. Please list the problems about sterilization technique, if any.

e. Is the low temperature distribution system widely spread within your country?

5) Development of Functional Food Materials Utilizing the Technology for Proteolytic Enzyme

a. Please list the problems about the production of fish sauce, if any.

b. Are you interested in functional food? If so, please state your point of interest.

c. Please list the problems about the development technology for the material of functional food, if any.

d. Please list the material (marine products, stock farm products etc.) used for the production of fish sause.

e. Do you have a system to supply enzyme?

6) Acquisition of Analytical Technique and Evaluation Technique for the Food flavor

a. Please describe the current situation of food flavor usage. (used or not; object of usage; type of flavor)

b. Please list the problems about analytical technique of food flavor, if any.

c. Please describe the current situation of quality evaluation of food. (level of quality evaluation; object of quality evaluation)

d. Please list the problems about quality evaluation techniques of food, if any.

e. Please describe the situation of analytical equipments in your organization.

(2) Regarding the current situation of your country, which theme do you think would be useful? (Check as many items as you like, and if there is more than one item, please state the priority.)

1) Retrieval and Application of Lactic Acid Bacteria.

2) Separation and Cultivation of Brewing Yease

3) Development of Processed Foods Using Farm Products, such as Rice, Wheat, and Soybeans

4) Development of Technology for Sterilization of Microbes Existent in Food Materials.

5) Development of Functional Food Materials Utilizing the Technology for Proteolytic Enzyme

6) Acquisition of Analytical Technique and Evaluation Technique for the Food flavor

省庁用（英文）

Questions

1　Current situation and the trend of concerned governmental organizations in the field of food processing and preservation technology

(1) Raw Material

1) Please list up raw materials which are mostly necessary for processing and preservation in your country, and please explain the reason as well.

2) What kind of food additives does your country use, and why?

3) Is there any problems about energy supply and water resources? If so, please describe it concretely.

(2) Manufacturing Technique

1) Processing Technique

a. What is the most important and necessary processing technique in your country, and why?

b. What is the current problem about the processing technique in your country?

2) Preservation Technique

a. What is the most important and necessary preservation technique in your country (for example, sterilization, cold storage, dehydration, additives etc.), and why?

b. What is the current problem about the preservation technique in your country?

c. What is the most commonly utilized packaging techniques in your country?

3) Analytical technique

a. Which organization is in charge of monitoring and inspection of food?

b. What kind of quality control system is applied to your country in the field of food processing and preservation?

4) Technology Development and Extension

a. Please list some on-going research themes on food processing and preservation technology development, if any.

b. Is there any technical guidance or training activities for the extension of the developed technique? If so, please describe the plan concretely.

5) Is there any current issues related to laws and regulations of food sanitation, which need to be tackled? If any, please describe it concretely.

6) Is there any introduction of food processing and preservation technology from foreign enterprises? If so, please list them up concretely.

7) How do you manage waste from food manufacturing?

(3) Products

1) What is the most popular and mainly produced processed food? Please list them up.

2) Who manufacture the above mentioned products?

3) Is there any problems about the processed food, which is especially for export use (to Japan or where else)?

4) What kind of system does your country have for developing new products? How do you decide its storage condition and period?

(4) Policy

1) Is there any policy plan/action plan related to food processing and preservation technology? If so, please state them.

2) Please state the organization or bureaus, which involves in the implementation of above mentioned plan.

3) Please list the roles of each organization mentioned above.

4) How is the education of food processing and preservation technique conducted? Please describe it concretely.

5) Do you have any food production plans or trade plans specially for the mentioned field? If so, please list them up concretely.

6) Do you have any opinions on WTO, GATT and WHO? If so , please list them up concretely.

2 Needs survey of the training subjects which are going to be prepared for the new traiing course.

(1) The listed items below are proposed for optional research activities within the training course. (Brief outline of each theme is explained in annex1.) Regarding the current situation of your country, which theme do you think would be useful? (Check as many items as you think, and if there is more than one item, please state the priority.)

a. Retrieval and Application of Lactic Acid Bacteria.

b. Separation and Cultivation of Brewing Yease

c. Development of Processed Foods Using Farm Products, such as Rice, Wheat, and Soybeans

d. Development of Technology for Sterilization of Microbes Existent in Food Materials.

e. Development of Functional Food Materials Utilizing the Technology for Proteolytic Enzyme

f. Acquisition of Analytical Technique and Evaluation Technique for the Food flavor

工場・民間用（英文）

Questions

1　Current situation and the trend of concerned governmental organizations in the field of food processing and preservation technology

(1) Raw Material

1) Please list up raw materials, which your organization want to make use in processing and preservation technology, and show us the data of them.

(Please answer in attatched 1)

2) What kind of food additives does your factory/company use, and why?

3) Do you have any problems about energy supply and water resources? If so, please describe it concretely.

(2) Manufacturing Technique

1) Processing Technique

a. What is the current problem you have on processing and manufacturing, and what sort of improvement do you think is necessary to solve the problem?

b. Is there any other processing technique which you regard necessary for your factory/company?

2) Preservation Technique

a. What is the present problem you have on preserving technique, and what sort of improvement do you think is necessary to solve the problem?

b. Is there any other preserving technique which you regard necessary for your factory/company?

c. What kind of packaging techniques do you use?

3) Analytical technique

a. Please describe the types of analytical equipments and the analytical methods that your organization use, if any.

4) Technology Development and Extension

a. Please list some on-going research themes on food processing and preservation technology development, if any.

5) Is there any introduction of food processing and preservation technology from foreign enterprises? If so, please list them up concretely.

6) Is there any problems about processing machine? If so, please list them up concretely.

7) How do you manage waste from food manufacturing?

(3) Products

1) What kind of products do you manufacture? (I.e.) canned, bottled, acid, fermented, dried, and syrupped food (please attach statistical data, if you have.)

2) Do you have any problems about the processed food, which is especially for export use (to Japan or where else)?

3) How do you develop a new product? How do you decide its storage condition and period?

(4) Market

1) Please list the volume of main processed food manufactured in your factory/company.

2) Where are those processed food mainly sold?

3) Please describe the common and popular distribution channel.

4) How do the producers define their expiration date?

5) What kind of packaging methods do you use in your factory?

6) Do you have a low temperature distribution system (or a cold chain system) in your factory/company?

2 Needs survey of the training subjects which are prepared for the new course.

The listed items below are proposed for optional research activities within the training course. (Brief outline of each theme is explained in annex1) We would like to gain some information of your country's situation related to the six proposed theme.

Regarding the current situation of your country, which theme do you think would be useful? (Check as many items as you like, and if there is more than one item, please state the priority.)

1) Retrieval and Application of Lactic Acid Bacteria.

2) Separation and Cultivation of Brewing Yease

3) Development of Processed Foods Using Farm Products, such as Rice, Wheat, and Soybeans

4) Development of Technology for Sterilization of Microbes Existent in Food Materials.

5) Development of Functional Food Materials Utilizing the Technology for Proteolytic Enzyme

6) Acquisition of Analytical Technique and Evaluation Technique for the Food flavor

attached 1

Specific Data of Raw Materials

to be processed

		Item1	Item 2	Item 3	Item 4
a.	Name				
b.	Production Volume				
c.	Seasonarity				
d.	Problems in quality				
e.	Example of price				
f.	Usage by ratio (fresh consumption: processing: loss etc.)				
g.	ways of processing				
h.	Source of supply				
I.	Technical problems for processing/preservation				

1. Retrieval and Application of Lactic Acid Bacteria

In recent years, the development of biological functions of Lactic Acid Bacteria have made progress and utilized in the improvement of foodstuffs and the development of new products. For these purposes, lactic acid bacteria utilizable for polysaccharides as well as salt-resistant lactic acid bacteria should be newly retrieved to undergo further development in the respective application technologies.

(1) Retrieval of useful stocks of lactic acid bacteria
(2) Acquisition of analytical techniques for sugars and organic acids
(3) Acquisition of a series of techniques required for the culture of lactic acid bacteria

2. Separation and Cultivation of Brewing Yeast

The brewing yeast has been used from old times in the production of fermented foodstuffs, such as sake and other alcoholic beverages, miso (soybean paste), soy sauce, and so on, thus playing an important part in the formation of flavor and taste components. Consequently, the development of new variety of yeast is indispensable to meet the consumer tastes. For this reason, the yeast fungi with useful properties are to be discovered and retrieved from various environmental conditions to undergo the selective cultivation. The present objective of the selected yeast shall be "sake" or a typical example of the Japanese alcoholic beverage. This year, we will go through the preparatory brewing process utilizing the brewing yeast developed selectively so that trainees can familiarize themselves with the method of manufacturing "sake" known as the product of very unique brewing technology compared with other alcoholic beverages. Furthermore, we will study the separation and fixation of the yeast discovered and retrieved from various environmental conditions.

This program consists of the following contents:

(1) Separation of the yeast from the natural world.
(2) Fixation of the selected yeast.
(3) Test of preparatory brewing process using the brewing yeast undergone mutation process.

3. Development of Processed Foods Using Farm products, Such as Rice, Wheat, and Soybeans

Farm products, such as rice, wheat, and soybeans are nowadays produced in the

forms of diversified varieties which have been newly developed. In order to grasp the quality specifications of these farm products, nutritive ingredients, functional components, etc., are analyzed to discuss and examine the processability intended for the production of processed foods. At the same time, it is the theme of this study to develop new processed foods by making good use of these farm products.

(1) The nutritive ingredients of the conventional and newly developed rice, wheat, soybeans and other farm products as well as the functional ingredients such as isoflavones, dietary fiber and oligo sugars are analyzed to study the relationships between such ingredients and crop varieties.

(2) The taste, texture, color, and flavor of the confectionery, noodles, tofu (bean curd) and some other products manufactured from the newly developed rice, wheat, soybeans, etc., are analyzed to study their processablity.

(3) Development of innovative food materials and processed foods utilizing the yeast such as transglutaminase will also take place.

The above mentioned themes are put into practical operations in a three-year project. We will take up the contents stated in (1) above in this year's program.

4. Development of Technology for Sterilization of Microbes Existent in Food Materials

Although it is very important to sterilize food materials beforehand to enable manufacturing of non-perishable processed foods, the sterilizing method relying on heat-treatment can deteriorate the quality of the materials. Consequently, the sterilization of microbes with the quality of food materials maintained unchanged should be called for. An new method of sterilization or "pasteurization" technology to which simultaneous use of moderate heating and pressurization will be developed in this laboratory.

This project includes the programs as shown below.

(1) Spore fungi separating techniques
(2) Heat-resistant test of spores
(3) Examination of germinating conditions of spores
(4) Examination of pasteurizing conditions of spores

5. Development of Functional Food Materials Utilizing the Technology for Proteolytic Enzyme

The protein decomposites or decomposed substances resulted from the reaction

under protease are noted for their characteristics to yield a diversity of functional properties. In this laboratory, we aim to establish, through the decomposition process of proteinic materials under pressurization, the manufacturing technologies required for the formation of certain decomposites showing significant antihypertensive effects.

This project includes the programs as shown below.

(1) Technologies for the decomposition of protein by proteolytic enzyme
(2) Examination of the conditions for enzyme decomposition (temperature, time, kinds of enzyme and pressurization)
(3) Amino acid analysis of the decomposed substances
(4) Interruptive activation of decomposed substances on angiotensin I conversion enzyme

6. Acquisition of Analytic Technique for the Aroma of Foodstuffs

Distribution Hygienic Engineering Dept., Food Processing Engineering Dept.

The analytic technology applying GC, GC-MS, perfume/aroma identifier, etc., will be acquired to advance further into the evaluation of the quality of foodstuffs by means of the aromatic ingredients.

Questionnaire for ex-participants of the group training course "Food Processing and Preservation Technology"

1. General question about your current work
   (1) Name

   (2) Occupation / Position

   (3) Office address, Telephone number / Facsimile Number

   (4) Please describe your current job

   (5) Please describe your career record after the said training in Japan.

2. Effect of this training course

(1) Among the technical knowledge that you acquired during the training, please list the items which you think was very useful, and state the reason.

(2) Was there any items (or technology) which was actually utilized or applied to your work? If so, please state them. (For example; Food Production, Food Processing, Food Preservation, Laws and Regulations on Food, and Observation to factories, etc.)

(3) About the items listed above (2), if possible, please explain us in what way the learned specific knowledge was useful.

3. Needs for future

(1) What do you think, is currently in need for your country on the field of food processing and preservation technology?