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SUSTAIN

GUATEMALA

MARCH 9 - 12, 1993

FOOD INDUSTRY SURVEY

S haring
U nited
S tates
T echnology to
A id in the
I mprovement of
N utrition

A U.S. Private Food Industry initiative
in collaboration with the U.S. Agency for International Development
through a Cooperative Agreement with the National Cooperative Business Association

Upgrading the Food Processing Industries in Developing Countries.

Why SUSTAIN?

SUSTAIN represents a successful collaborative effort between the U.S. food industry and the Agency for International Development (A.I.D.) to upgrade food processing in developing countries. It provides an excellent model for similar private-public sector joint ventures in health, agriculture and other areas of concern to developing countries.

Food processing is a major contributor to development. It serves multiple roles. Food processing can increase the available food supply by extending the life of perishable food products. It can improve the nutritional quality of the diet by making nutritious foods available the year round. It can lead to the growth of related enterprises in transportation, storage, distribution and marketing. And, it can produce much needed foreign exchange by creating value added products both for export and for internal substitution of imported processed foods.

The U.S. food industry has embraced the concept that freely sharing its expertise and knowledge is of mutual benefit to recipient and donor - to the recipient by improving current operations - to the donor by contributing to a healthier global future.

How SUSTAIN Works

A.I.D. missions and trade associations in developing countries publicize SUSTAIN's goals and activities. Executives of U.S. food companies with technical expertise and overall knowledge of the food industry serve as the SUSTAIN Steering Committee, providing guidance and overseeing activities.

Food related companies in developing countries submit their requests to SUSTAIN through the A.I.D. mission or a designated organization in their country. SUSTAIN screens all incoming requests and if necessary asks for additional information. Appropriate U.S. companies are then invited to respond.

Some problems can be readily resolved by providing information. Others require that consultants be sent. When a consultant is sent, the usual assignment is for one to three weeks. Upon completion of the assignment, the consultant prepares a report describing findings and making recommendations. Depending on need, some consultants may return for follow-up visits to ensure that recommendations have been appropriately implemented.

SUSTAIN Helps

Requests are diverse. Help may be needed to solve processing problems, to identify equipment needs and sources of new and used equipment, to train personnel in the use of new equipment and new technologies, to find new uses for indigenous commodities, to establish or improve quality assurance procedures, to control insects and rodents in food processing plants and to improve plant layouts and materials handling.

In the past, U.S. food companies, large and small, have provided technical assistance in the form of information, consultants and training to food processors in Africa, Asia, Latin American and the Caribbean.

SUSTAIN PROGRAM

FOOD INDUSTRY SURVEY

Guatemala

March 9 - 12, 1993

by

Ms. Brenda Bravatty, Consultant

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SUSTAIN MISSION TO GUATEMALA

March 9 - 12, 1993

INTRODUCTION

A. SUSTAIN

Sharing United States Technology to Aid in the Improvement of Nutrition (SUSTAIN), is a collaborative effort between the private U.S. food industry and the Agency for International Development (A.I.D.). The project is a technical assistance program, funded by A.I.D. Research and Development/Office of Nutrition. The purpose of the program is to provide access to U.S. technology in the area of food processing to help improve nutrition in the developing world. Technical assistance is provided to small-to-medium sized food processing companies in developing countries to help solve management problems and to upgrade food processing and marketing practices.

B. Purpose of the Consultancy

This consultancy was designed for two purposes: to (a) identify specific needs for technical assistance among food processors in Guatemala; (b) organize for future site visits by SUSTAIN volunteer Dr. James Chambers so he could better design the short course for trainers on Good Manufacturing Practices (GMP).

C. INCAP - Consultancy

SUSTAIN hired Brenda Bravatty as a short-term consultant to follow up on the 1992 Institute of Nutrition of Central America and Panama/Guatemalan Association of Food Technologists (INCAP/AGTA) survey of Guatemalan food manufacturers. She conducted a survey in conjunction with her volunteer assignment in Guatemala to teach a short course in sensory evaluation on March 9 - 12. She met individually with seven food manufacturers, during which time she conducted face to face interviews with the aim of identifying specific needs for one-on-one technical assistance and short course training.

The industries visited had a variety of product lines that included meats, dairy, beverages, cereals, processed vegetables and fruits. Company representatives interviewed were either the quality control manager or the product development manager. They were required to fill in questionnaires. Generally, the questionnaires requested the following information:

- Details on the type of training program currently being used
- What type of short-course would be most appropriate
- Details on the type of technical assistance that had been provided thus far
- External lab services that are/have been used and for what specific purposes.

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D. Conclusions of Survey

Topics of interest for short courses were marketing, packaging technology, quality control and sensory evaluation. Several industries also expressed the need to get assistance in establishing training programs for their technical staff. The consultant recommended visits to more food industries to have a better understanding of specific needs. Promoting courses well in advance would ensure good attendance.

SUMMARY
RESULTS FROM AGTA SURVEY (1992)

A survey was conducted during the Food Technology Seminar organized by AGTA (Guatemalan Association of Food Technologists) on 1992. A summary of the results is given below. The tables showing the results for the most important questions are shown in Appendix 2. The questionnaire used in the survey is shown in Appendix 3.

The results showed that 63% (N=102) of the people interviewed were professionals from the food industry in Mexico, Guatemala and other countries of Central America. The production lines of sixteen of those food industries were processed fruit and vegetables, 7 industries produced beverage and drinks, 7 processed grains and cereals and 6 produced snacks (Table 1 and 2).

According to the Guatemalan standards 19 industries were classified as small, 19 were medium size and 5 were large industries (Table 3). Participants were asked to rate from 1 to 10 their interest in different topics, for future seminars. They gave the highest score to marketing (distribution, exportation and business) followed by packaging technology and quality control in the food industry (Table 4).

Eighty two percent of the industries have used technical assistance in the past. Eleven percent of the industries which do not use technical assistance at the present, are planning on using it in the future (Table 5). When asked about the type of technical assistance they have had in the past, 15% indicated assistance in product development, 18% mentioned technical training courses and 14% equipment instalation and maintenance (Table 6). In the

question about the type of technical assistance they would like to have in the future, 20% mentioned product development, 18% equipment installation, 17% quality control and 15% how to establish a training program within the company (Table 7).

Among the institutions that provide technical assistance, they mentioned ICAITI, INCAP, GTZ/OEA OSMOSIS and others (Table 8).

When asked about the lab tests that are being carried out in the industries, they mentioned moisture content, sensory analysis, fats, proteins, microbiology, etc. (Table 9). Other industries mentioned that the types of analysis for which they require external service are: microbiology, food colorants and additives, fats, proteins, pesticides (Table 10). Among the institutions that provide lab analysis services they mentioned ICAITI, LUCAM, LABIND, INCAP and others (Table 11). The services provided by those institutions was rated according to dependability. Forty two percent said that ICAITI services were acceptable and 47% that they were good, 40% indicated that LUCAM services were acceptable and 53% that were good. LABIND services were rated acceptable for 67% and good for 32% (Table 12).

Conclusions

1. According to the survey, the most interesting topics for short-courses were: marketing, packaging technology and quality control.

2. Future technical assistance is needed in the areas of equipment installation, product development, quality control and training program establishment.

REPORT
VISITS TO FOOD INDUSTRIES

Seven food industries were visited by a SUSTAIN consultant. Face to face interviews were conducted with the aim to know the needs of the food industry in terms of training and technical assistance.

These industries were representative of a variety of production lines and were of small and medium size. The list of industries as well as main production line of each one is shown below.

NAME	TYPE OF PRODUCT
Toledo S.A.	Meat, poultry, sausages.
Olmecca	Oils and Fats
La Pradera	Dairy products
Ya Esta	Traditional Foods ready to eat or short cooking needed. Fruits, vegetables, drinks, tacos.
Foremost	Dairy products
Alimentos S.A.	Flours, cereals, snacks.
Productos Alimen- ticios C.A. (PACA)	Processed vegetable, fruits and dressings.

In each industry, the quality control manager or the product development manager were interviewed. An example of the questionnaire is presented in Appendix 3. Individual information from each industry is presented below. (Appendix 4)

1. Industry: Alimentos S.A.
Address: Km. 15 carretera a San Jose Pinula
Guatemala, Central America.
Person interviewed: Ing. Sandra Figueroa

Position : Manager, New Product Development
Production line: cereals, flours, processed grains and
snacks.

Short-course Training:

The company does not have a training program for the staff. They are usually trained on the job. The interest on short-courses depends on how practical those are and if they get the information in advance so they can plan on attending.

Different short-course topics were rated from 1 to 5 according to interest (1=no interest and 5=very much interest).

This industry was highly interested in the following topics: packaging technology, quality control, good manufacturing practices, followed by HACCP, use of food additives, sensory evaluation and plant sanitation.

Technical Assistance:

They have had technical assistance given by the suppliers. When they have specific problems, they try to solve them using their own technical staff. They would like future technical assistance in the problem of treatment of waste materials.

Lab Services:

They have used external lab analysis services for the following tests: vitamins, minerals, aminoacids and digestibility.

2. Industry: La Pradera S.A.
Address: 18 calle 24-25 zona 10
Guatemala City, Central America
Person Interviewed: Lic. Myrna de Zamora
Position: Quality Control Manager

Person to contact for Technical Assistance:

Dr. Danilo Zamora Salas
General Manager
Pasteurizadora La Pradera
18 calle 24-25 zona 10
Guatemala City, Central America

Short-course Training:

This company does not have any type of training program for the staff, neither know the current techniques used in the dairy industry. The short-course topics they were more interested in are: quality control, HACCP, statistics in quality control, good manufacturing practices and sensory evaluation.

Technical Assistance:

They have had technical assistance coming from suppliers of equipment and materials. The current need for technical assistance is in the areas of dairy technology and production of cheese and yogurt. They are having 2 specific problems for which they would like some help. These problems are detailed as follows:

- Do not know how to define the standards (final product) of artificial fruit drinks. They work based on standards for carbonated beverages but this is a complete different product.

- The milk is getting spoiled about a week before the expiration date. The problem seems to occur in the final steps of the process. They are still working towards solving that problem.

Lab Services:

They do not usually request services from outside labs.

The INCAP-SUSTAIN team visited this industry.

3. Industry: Empacadora Toledo S.A.

Address: Calzada Aguilar Batres 50-52 zona 11
Guatemala City, Central America

Staff Interviewed: Ing. Hector Rivera
General Manager
Lic. Maria Mercedes de Asturias
Plant Production Manager

Production Line: Meat, poultry, sausages.

Short-course Training:

The company is planning on starting a training program for the technical staff. Sometimes they have had training given by the suppliers. They are interested in specific, practical and easy to apply shortcourses, especially those related to the meat industry.

When rating different shortcourse topics according to interest, they gave the highest score (5) to HACCP, marketing, plant sanitation and sensory evaluation. Other topics of their interest were statistics for QC and good manufacturing practices. No interest was shown for a general quality control course. For future short-courses, they would like to receive the information in advance so they can plan on attending.

Technical Assistance:

This company has had technical assistance in the past. Volunteers from IESC have helped them in solving some problems. They will require future assistance in the designing and planning of new plant facilities.

Lab Services:

External lab analysis services are used for the following tests: proteins, minerals, food additives, colorants and hormones.

The INCAP-SUSTAIN team visited this industry.

4. Industry: Foremost

Address: Calzada Aguilar Batres 32-13 zona 12
Guatemala City, Central America

Person Interviewed: Lic Leticia Almengor

Position: Quality Control Manager

Production Line: Dairy Products and Fruit Juices

Short-course Training:

The QC Manager and the Plant Manager are starting a training program on principles of dairy technology. This program is oriented to technicians and plant staff.

The short-course topics they were more interested in are: packaging technology, statistics for quality control, production of low cost high nutritious food and sensory evaluation. They were also interested in topics directly related to the dairy industry and also in getting more information on how to establish a training program within the industry. They will attend future courses in the area if the price is affordable.

Technical Assistance:

This company has had technical assistance in the areas of production, HACCP and new product development. One of the experts was a volunteer from CASO program of Canada. Future technical assistance will be needed in the areas of staff training and equipment maintenance. Advice is needed

in the ways of how to convince management about the importance of technology investment in terms of new techniques and training.

5. Industry: Ya_Esta
 Address: 40 Avenida 1-25 zona 11
 Guatemala City, Central America
 Person Interviewed: Rene Menendez
 Owner
 Production Line: Traditional Foods (processed fruits, vegetables, cereals and drinks).

Short-course Training:

This company indicated need of training in mechanical aspects and equipment maintenance. The short-course topics they were more interested in are: food dehydration, quality control and plant sanitation.

Technical Assistance:

This company has not had technical assistance in the past. If it were available they would like assistance in the area of food dehydration.

Lab Services

They use external services for some tests such as moisture content, proteins, fat and microbiology.

6. Industry: PACA (Productos Alimenticios Centroamericanos).
 Address: 28 calle 0-31 zona 3
 Guatemala City, Central America
 Person Interviewed: Ing. Rodolfo Bustamante.
 General Manager

Production Line: Processed fruits and vegetables, salad dressings. They are exporting to USA.

Short-course Training:

This company does not have an established training program for the staff. When asked about interest in short-courses, they gave the highest scores to the following topics: quality control, HACCP, good manufacturing practices and sensory evaluation. They want to start training their technicians and plant staff.

Technical Assistance:

This company has not had any technical assistance. In the future they would like to get help in how to plan a training program for their technical staff. Future assistance in production management and quality control is also needed.

Lab Services:

This company uses external lab services for analysis of protein, fat and fiber.

7. Industry: Olmecca S.A.

Address: Km. 16.5 Carretera al Salvador
Guatemala, Central America

Person Interviewed: Ing. Jorge Chiu
Manager

Production Line: Oils, fats, soybean derivatives.

Short-course Training:

The company does not have a continuous training program

for the staff. When asked about short-course topics, they were more interested in the following: packaging technology, quality control, marketing, plant sanitation and development of low cost highly nutritious foods. They were also interested in specific training on fat technology and the use of soybean derivatives.

Technical Assistance:

This company has had technical assistance mainly coming from equipment suppliers. They would like to get assistance on production techniques, quality control, ingredients and equipment maintenance.

Need for Lab Services:

Most of the routine tests are done within the company, the only test done outside is the measurement of proteins in flour and any other test specially required by a customer.

CONCLUSIONS

1. The short-course topics with the highest scores were: marketing, packaging technology, quality control, good manufacturing practices, sensory evaluation and HACCP.
2. Industries are interested in attending short-courses that include practical, specific and easy to apply concepts.
3. Promotion of the courses should be done in advance, so the industries have enough time to plan attendance.
4. The industries visited have very specific needs for technical assistance, mainly according to their production line. Visits to more food industries is recommended in order to know their specific needs.

5. Several industries would like to get assistance on how to plan and establish a training program for the technical staff within the company.

OTHER ACTIVITIES

The SUSTAIN consultant try to contac Dr. Noel Solomons of the CESSIAM sweet potato project. He was not in Guatemala at that time and his assistants could not give any specific information about the project. The consultant spoke with Mr. Mazariegos and left a message for Dr. Solomons.

SUSTAIN PROGRAM

The program **Sharing U.S. Technology to Aid in the Improvement of Nutrition (SUSTAIN)** provides access to U.S. expertise in food processing to help improve nutrition in the developing world. Technical assistance is provided by volunteer professionals from U.S. food companies, universities, and other organizations who donate their time and expertise.

SUSTAIN was granted a five-year renewal from the U.S. Agency for International Development (USAID) on September 30, 1991. The program is managed under a cooperative agreement with the National Cooperative Business Association (NCBA) and receives advice from a Steering Committee made up of private sector representatives.

NCBA was founded in 1916 and is a membership association representing America's 45,000 cooperative businesses. Known overseas as CLUSA, NCBA works overseas with its own member co-ops, USAID, World Bank, UNDP, and other donor agencies to promote development and joint ventures in the third world.

Many benefits can accrue to the developing world through improvements in food processing. From the standpoint of alleviating hunger and improving nutrition, food processing has much to offer. It helps meet food and nutritional requirements and reduce post-harvest food losses. From the economic standpoint, food processing provides a means for increasing foreign exchange earnings through exporting value-added processed foods rather than commodities. It helps generate employment and stimulates technological development and the growth of allied industries.

SUSTAIN helps improve food quality, expand production, and lower operating costs of locally grown and processed foods by providing technical assistance in post-harvest food systems, including: (a) food safety, quality, and sanitation (b) food preservation and storage (c) food processing (d) food fortification (e) packaging (f) marketing (g) weaning foods and (h) environmental technologies.

How the Program Works

SUSTAIN receives requests for assistance from individual food companies, research institutions, and USAID. Short-term technical assistance is provided by experienced U.S. professionals who donate their time and expertise to the project. Missions are typically one to three weeks in duration. SUSTAIN covers international travel costs. Companies or host organizations requesting SUSTAIN assistance are asked to contribute towards in-country expenses. Due to budget constraints, priority is given to requests that can demonstrate an ability to improve the nutritional quality, safety, and availability of food in the local community.

SUSTAIN is able to solve many problems by providing information that exists either in technical literature or in the "memory" of a company. If the problem cannot be solved through correspondence, then SUSTAIN volunteers may be sent to provide short-term technical assistance. Workshops and seminars can also be organized to help address food technology issues. The program does not fund product or equipment acquisitions.

The program publishes a quarterly newsletter (*SUSTAIN Notes*) on food technology issues. It is provided gratis to approximately 2300 recipients in more than 50 countries.

For more information, please write to:

SUSTAIN Program
National Cooperative Business Association
1401 New York Avenue, NW, Suite 1100
Washington, DC 20005-2160
Phone: (202) 638-6222
Fax: (202) 628-6726

TABLE 1

TIPO DE ORGANIZACION	
Tipo	%
Industria	63
Proveedores	8
Universidades	5
Investigación	3
Organismo Gubernamental	3
Consultoría	3
Otros	17

TABLE 2

TIPO DE INDUSTRIA	
Tipo	Número
Alimento para animales	4
Derivados de Azúcar	4
Bebidas	7
Frutas y Verduras	16
Lacteos	4
Cereales	7
Pastas	4
Snacks	6
Otros	9

TABLE 3

Tamaño de la Industria	Frecuencia
Pequeña (menos de 100 empleados)	19
Mediana (de 100 a 500 empleados)	19
Grande (más de 500 empleados)	5

TABLE 4

Interés en Temas de Seminarios	
Tema	Punteo promedio
Tecnología de empaques y envases	7
Deshidratación de frutas y verduras	6
Tecnología y procesamiento de enlatados	6
Control total de calidad en industria de alimentos	7
Aplicación de análisis de riesgos y puntos críticos de control (H.A.C.C.P.) en la industria	5
Estadística para el control de calidad	5
Buenas prácticas de manufactura	6
Desarrollo de alimentos de alto valor nutricional	6
Empleo de aditivos	5.5
Distribución/exportación/comercialización de alimentos	8

TABLE 5

**Instituciones que han planificado
utilizar asistencia técnica**

Planificado	11%
No planificado	29%

TABLE 6

Tipo de Asistencia Técnica	
TIPO	%
Financiero	5
Auditorias Contabables	2
Mercadeo	9
Administrativas	7
Estudio de Prefactibilidad	2
Desarrollo de productos o procesos	15
Capacitación (cursos técnicos)	18
Instalación de maquinaria o equipo	14
Mejoramiento de procesos	9
Auditoría de calidad	8
Planificación y organización	5
Otros	6

TABLE 7

Tipo de Asistencia Técnica Planificada por las Empresas

Tipo de Asistencia	%
Desarrollo de producto	20
Capacitación	15
Procesos	15
Instalación de Maquinaria	18
Control de Calidad	17
Administración	5
Mercadeo	10

TABLE 8

Instituciones que Proveen Asistencia Técnica/Consultoría	
Institución	Frecuencia %
IESC	4
SUSTAIN	2
ICAITI	21
INCAP	8
GTZ/OEA	6
LUCAM	5
USAC	3
INTECAP	4
OSMOSIS	6

TABLE 9

Análisis que se realiza internamente en las empresas

Análisis	Número de empresas
Humedad	38
Proteína	11
Grasa	19
Fibra	8
Fibra Dietética	4
Vitaminas	7
Minerales	6
Aminoácidos	3
Microbiológico	22
Residuos Pesticidas	3
Aditivos, Colorantes	11
Digestibilidad	5
Análisis Sensorial	31
Metales Pesados	3
Hormonas	2
Otros	16

TABLE 10

Análisis que se realiza externamente en las empresas

Análisis	Número de empresas
Humedad	11
Proteína	12
Grasa	18
Fibra	9
Fibra Dietética	5
Vitaminas	12
Minerales	10
Aminoácidos	5
Microbiológico	30
Residuos Pesticidas	12
Aditivos, Colorantes	17
Digestibilidad	4
Análisis Sensorial	6
Metales Pesados	9
Hormonas	3
Otros	5

TABLE 11

Instituciones Identificadas que realizan Análisis de Alimentos	
INSTITUCION	FRECUENCIA
ICAITI	29
LUCAM	15
LABIND	7
INCAP	7
SAN CRISTOBAL	2
LASER	2
TEST	2

TABLE 12

Calificación de los Servicios por Confiabilidad			
INSTITUCION	%		
	Bajo	Aceptable	Bueno
ICAITI	11	42	47
LUCAM	7	40	53
LABIND	2	67	32
INCAP	13	58	27

AGTA 92

CUESTIONARIO AGTA - INCAP

El siguiente cuestionario se ha elaborado con el fin de evaluar necesidades de información, asistencia técnica y servicios de laboratorio por parte de la industria de alimentos.

Favor contestar las preguntas o llenar los espacios correspondientes.

SECCION 1. INFORMACION GENERAL

1.1. Nombre _____
1er. Apellido 2o. Apellido Nombre

1.2 Nacionalidad _____

1.3 a) Empresa _____ b) Cargo _____

1.4 Dirección: _____

1.5 Marque el tipo de organización en la que trabaja:

- a. Industria de alimentos/Procesados
- b. Centro de investigación
- c. Biblioteca
- d. Consultor
- e. Proveedor de equipo/ingredientes/envases
- f. Organismo Gubernamental
- g. Universidad o Centro Educativo
- h. Otros, especifique _____

1.6 Si marcó industria de alimentos (1.5a) indique el tipo de industria (marcar sólo uno):

- a. Alimentos para animales
- b. Industrias avícolas
- c. Azúcar, confitería y derivados
- d. Bebidas (alcohólicas y no alcohólicas)
- e. Productos cárnicos
- f. Frutas y verduras procesadas
- g. Grasas y aceites comestibles
- h. Lácteos
- i. Mariscos y pescado
- j. Molinería, cereales, granos
- k. Panificación y repostería
- l. Pastas
- m. Servicio de comida
- n. Restaurantes
- o. Snacks
- p. Otros (especifique) _____

1.7 Número total de personas que trabajan en la empresa:

SECCION 2. TEMAS DE SEMINARIOS

Marque según sus propias necesidades aquellos temas que son de interés personal o en su trabajo y a los cuales le gustaría asistir. Califique según su prioridad, siendo 10 el grado de mayor interés y 1 el menor.

	<u>Prioridad</u>
a. Tecnología de empaques y envases	_____
b. Deshidratación de frutas y verduras	_____
c. Tecnología y procesamiento de enlatados	_____
d. Control total de calidad en industria de alimentos	_____
e. Aplicación de análisis de riesgos y puntos críticos de control (H.A.C.C.P.) en la industria	_____
f. Estadística para el control de calidad	_____
g. Buenas prácticas de manufactura	_____
h. Desarrollo de alimentos de alto valor nutricional	_____
i. Empleo de aditivos	_____
j. Distribución/exportación/comercialización de alimentos	_____

2.1 Otros Temas: Sugiera temas que le interesen y que no estaban en el listado anterior:

- a. _____
- b. _____
- c. _____

SECCION 3: NECESIDADES DE ASISTENCIA TECNICA

3.1 ¿En alguna ocasión se ha utilizado asistencia técnica externa (asesorías, consultorías, estudios técnicos) en la empresa o institución en que usted trabaja?

Sí

No

3.2 Si su respuesta fue afirmativa, ¿Qué tipo de asistencia técnica se utilizó? (Marque todas las que apliquen).

- a. Financieras
- b. Auditorías contables
- c. Estudios de mercado
- e. Administrativas
- f. Estudios de prefactibilidad o factibilidad
- g. Desarrollo de productos o procesos
- h. Capacitación (cursos técnicos dentro de la empresa)
- i. Instalación de maquinaria o equipo
- j. Mejoramiento de procesos existentes
- k. Auditorías de calidad o desarrollo de sistemas de control de calidad
- l. Planificación y organización
- m. Otros (especifique) _____

3.3 ¿Se ha planificado en su empresa tener algún tipo de asistencia técnica en las áreas mencionadas anteriormente?

Sí

No

3.4 Si es así, en qué área(s):

- a. _____
- b. _____
- c. _____

3.5 ¿Qué instituciones o empresas conoce usted que hacen este tipo de estudios o asesorías/consultorías:

- a. _____
- b. _____
- c. _____
- d. _____
- e. _____
- f. _____

SECCION 4: SERVICIOS DE LABORATORIO

4.1 ¿Se han realizado en el pasado o se realizan actualmente en su empresa, análisis de alimentos en laboratorio?

Sí No

4.2 Si su respuesta es afirmativa, favor marcar en el cuadro el tipo de análisis e indique si el análisis se hace internamente en la empresa, o externamente marcando en la casilla correspondiente.

		<u>Internamente</u>	<u>Externamente</u>
a.	<input type="checkbox"/> Humedad	<input type="checkbox"/>	<input type="checkbox"/>
b.	<input type="checkbox"/> Proteína	<input type="checkbox"/>	<input type="checkbox"/>
c.	<input type="checkbox"/> Grasa	<input type="checkbox"/>	<input type="checkbox"/>
d.	<input type="checkbox"/> Fibra	<input type="checkbox"/>	<input type="checkbox"/>
e.	<input type="checkbox"/> Fibra dietética	<input type="checkbox"/>	<input type="checkbox"/>
f.	<input type="checkbox"/> Vitaminas	<input type="checkbox"/>	<input type="checkbox"/>
g.	<input type="checkbox"/> Minerales	<input type="checkbox"/>	<input type="checkbox"/>
h.	<input type="checkbox"/> Aminoácidos	<input type="checkbox"/>	<input type="checkbox"/>
i.	<input type="checkbox"/> Microbiológicos	<input type="checkbox"/>	<input type="checkbox"/>
j.	<input type="checkbox"/> Residuos pesticidas	<input type="checkbox"/>	<input type="checkbox"/>
k.	<input type="checkbox"/> Aditivos, colorantes, preservantes	<input type="checkbox"/>	<input type="checkbox"/>

		<u>Internamente</u>	<u>Externamente</u>
l.	<input type="checkbox"/> Digestibilidad	<input type="checkbox"/>	<input type="checkbox"/>
m	<input type="checkbox"/> Análisis sensorial	<input type="checkbox"/>	<input type="checkbox"/>
n.	<input type="checkbox"/> Metales pesados	<input type="checkbox"/>	<input type="checkbox"/>
o.	<input type="checkbox"/> Hormonas	<input type="checkbox"/>	<input type="checkbox"/>
	Otros (Especifique):		
p.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
q.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
r.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
s.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4.3 Si el análisis es externo, favor indicar las instituciones que lo realizan:

- a. _____
- b. _____
- c. _____
- d. _____
- e. _____

4.4 ¿Cómo clasificaría a estas instituciones con respecto a:

Rapidez:

	a	b	c	d	e
Poca	<input type="checkbox"/>				
Aceptable	<input type="checkbox"/>				
Buena	<input type="checkbox"/>				

Confiabilidad

	a	b	c	d	e
Poca	<input type="checkbox"/>				
Aceptable	<input type="checkbox"/>				
Buena	<input type="checkbox"/>				

Precio

	a	b	c	d	e
Bajo	<input type="checkbox"/>				
Adecuado	<input type="checkbox"/>				
Caro	<input type="checkbox"/>				

4.5 ¿Qué otras instituciones o empresas conoce que efectúan análisis de alimentos en laboratorio?

- a. _____
- b. _____
- c. _____

APPENDIX IV

Diagnóstico Preliminar de Necesidades de Servicios de
la Industria Alimentaria en Guatemala

El siguiente cuestionario se ha elaborado con el fin de evaluar necesidades de capacitación, asistencia técnica y servicios de laboratorio por parte de la industria de alimentos.

SECCION 1. INFORMACION GENERAL DE LA INDUSTRIA

1.1. Nombre de la Industria: _____

1.2. Dirección: _____

1.3. Número total de personas que trabajan en la empresa: _____

1.4. Nombre de la persona entrevistada: _____

1.5. Cargo que ocupa: _____

1.6. Tipo de Industria:

- a. _____ Alimentos para animales
- b. _____ Industrias avícolas
- c. _____ Azúcar, confitería y derivados
- d. _____ Bebidas (alcohólicas / no alcohólicas)
- e. _____ Productos cárnicos
- f. _____ Frutas y verduras procesadas
- g. _____ Grasas / aceites comestibles
- h. _____ Lácteos
- i. _____ Mariscos y pescado
- j. _____ Molinería, cereales, granos
- k. _____ Panificación y repostería
- l. _____ Pastas
- m. _____ Servicio de Comida
- n. _____ Restaurantes
- o. _____ Snacks
- p. _____ Otros (especifique) _____

SECCION 2. NECESIDADES DE CAPACITACION

2.1. Mantiene la empresa un programa de entrenamiento para su personal, en el área de alimentos:

Si _____ No _____

Si afirmativo, qué tipo? _____

3.2. Cuáles son las áreas en las que su empresa requiere mayormente asistencia técnica? _____

3.3. Qué instituciones o empresas conoce usted que brindan asistencia técnica a la industria de alimentos?

- a. _____
- b. _____
- c. _____
- d. _____
- e. _____

SECCION 4. SERVICIOS DE ANALISIS DE LABORATORIO

4.1. Se han realizado en el pasado o se realizan actualmente análisis de sus productos en laboratorios externos?

Si _____ No _____

4.2. Qué tipo de análisis se realizan?

		<u>Internamente</u>	<u>Externamente</u>
a.	_____ Humedad	_____	_____
b.	_____ Proteína	_____	_____
c.	_____ Grasa	_____	_____
d.	_____ Fibra	_____	_____
e.	_____ Fibra Dietética	_____	_____
f.	_____ Vitaminas	_____	_____
g.	_____ Minerales	_____	_____
h.	_____ Aminoácidos	_____	_____
i.	_____ Microbiológicos	_____	_____
j.	_____ Residuos pesticidas	_____	_____
k.	_____ Aditivos, colorantes y preservantes	_____	_____
l.	_____ Digestibilidad	_____	_____
m.	_____ Metales pesados	_____	_____
n.	_____ Hormonas	_____	_____
	Otros (especifique):		
o.	_____	_____	_____
p.	_____	_____	_____
q.	_____	_____	_____
r.	_____	_____	_____
s.	_____	_____	_____

4.3. Si el análisis es externo, favor indicar las instituciones que lo realizan:

- a. _____
- b. _____
- c. _____
- d. _____
- e. _____

Respecto a los resultados indicar:

Confiabilidad

	A	B	C	D	E
Poca	_____	_____	_____	_____	_____
Aceptable	_____	_____	_____	_____	_____
Buena	_____	_____	_____	_____	_____

Precio

	A	B	C	D	E
Bajo	_____	_____	_____	_____	_____
Adecuado	_____	_____	_____	_____	_____
Caro	_____	_____	_____	_____	_____

4.4. ¿Qué otras instituciones o empresas conoce que efectúen análisis de alimentos en laboratorio?

- a. _____
- b. _____
- c. _____
- d. _____
- e. _____

