

PC-FEB-89

SUSTAIN PROGRAM

**SHORT COURSE ON QUALITY CONTROL/QUALITY ASSURANCE
"Evaluation of Trainers" & Site Visit**

Guatemala

October 11 - 15, 1993

by

SUSTAIN Volunteers:

Dr. James V. Chambers, Professor, Purdue University

Dr. Jay Marks, Associate Professor, Purdue University

Dr. Patricia Rayas-Duarte, Assistant Professor, North Dakota State University

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NCBA/SUSTAIN Project 111.029

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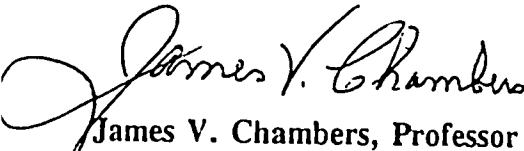
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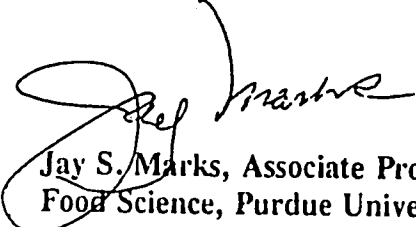
**PROMOTING TECHNICAL TRAINING AND OUTREACH PROGRAMS
FOR CENTRAL AMERICAN FOOD AND ALLIED INDUSTRIES BY
THE INSTITUTE OF NUTRITION FOR CENTRAL AMERICA AND
PANAMA AS A MEANS TO GENERATE FUNDING SUPPORT**


A Status Report

October 11-14, 1993 Site Visit
and Program Delivery on
Good Manufacturing Practices in the
Food and Allied Industries

by

 10/15/93
James V. Chambers, Professor
Food Science, Purdue University


Jay S. Marks, Associate Professor
Food Science, Purdue University


Patricia Rayas-Duarte, Assistant Professor
Cereal Chemistry and Food Technology
North Dakota State University

Introduction

The demand for quality products in commercial markets is becoming a major driving force for business to remain competitive. At every step in the commercial chain there is a constant need to understand the requirements of the clients/customers being served so that quality products can be produced. This is of particular importance in the food delivery system.

When the food delivery system represents a major economic base of a region, such as Central America, competitiveness of this system becomes essential if the involved industries are to survive and to be profitable. Profitability of these industries translates into jobs and financial capital, contributes to the social infrastructure, and provides a reliable food supply.

Unfortunately, the food products processed in Central America do not always meet commercial quality standards. Their marketability is usually limited to local markets. Often contributing to less-than-desired quality products are inefficient material handling systems, processing equipment in need of maintenance, repair or replacement, absence of an effective quality control program, lack of implementing Good Manufacturing Practices, poorly trained operating personnel, and failure to provide customer satisfaction.

Recognizing the above stated deficiencies, the Institute of Nutrition for Central America and Panama (INCAP) has allocated some of its resources and program thrusts to provide training, technical assistance and analytical services to the food industries. The ultimate goals are to achieve commercial food standards of the highest quality and provide a safe, wholesome food supply to the Central American region. Another result of these high quality standards would be competitiveness in the global/export markets.

Building Successful Outreach Programs

Along with allocation of these resources and programs, it will be essential that INCAP establish a very close working relationship with selected industries and food professional organizations in order to promote its outreach programs. Historically, INCAP has a reputation as a research institute in nutrition. Now it must develop a similar reputation in food science and technology if its new programs are to be successful. This will take time. INCAP staff must be trained and develop "hands-on" experience with the food industries by spending time in the actual production environment of different food and allied industries. Expertise of INCAP personnel must be extended to meet the needs of these industries. Other constructive efforts that will gain acceptance by the food industries are for INCAP to deliver successful training programs, and make important contributions to these industries through cooperative problem solving activities.

An initial step that must be taken to establish important linkages with the food industries is to learn what are the needs of these industries. As an example, INCAP has an established working relationship with Compañía Panificadora, a bakery company using INCAP technology. This company manufactures the Incaparina cookie used in the Central American breakfast feeding

programs for school children. This company has experienced two major quality problems associated with the manufacture of these cookies. These quality problems are 1) severe cookie breakage frequency and 2) an improvement in flavor. A preliminary evaluation of the cookie breakage problem appears to be related to flour quality and a cookie slicer operation. Of these factors, inconsistency in flour quality seems to be the most significant. While flour quality is clearly the responsibility of Panificadora, this company needs the technical assistance of INCAP to understand the flour quality problem and to suggest actions to correct it. This is an opportunity to demonstrate technical competency and gain valuable credibility in the industry. Here, INCAP should determine the needs of Panificadora and offer to provide the required services, such as timely analyses (results reported within 5-7 days) which are critical to quality control. The second quality problem is the improvement of the flavor profile which seems to be related to oxidative rancidity and lipoxidase activities occurring in the defatted soybean flour. One possible solution would be to toast the flour prior to its use in the cookie dough formulation. The heat treatment from the toasting process should drive off some of the objectionable flavor compounds, inactivate the enzyme and develop an acceptable masking flavor. INCAP could offer technical assistance to Panificadora, for a fee, to define the optimum toasting process and analyze the flavor and nutritional changes. To respond to these two quality problem areas would be an excellent step toward reinforcing INCAP's reputation with the food industries.

An initiative already taken by INCAP has been to establish training programs to meet informational needs of the food industries. These programs can establish new linkages between INCAP and the food industry. This initiative has been encouraged and supported by SUSTAIN (Sharing U. S. Technology to Aid in the Improvement of Nutrition) which has provided technical expertise for INCAP. One important activity has involved the training of INCAP professional staff and food industry technical personnel. The training included the use of food science principles to handle, process, package and distribute safe, wholesome food products. Subsequently, these individuals are now serving as instructors in short courses for training in Good Manufacturing Practices in the food industry. The first of these short courses was delivered at INCAP, October 13-16, 1993. A summary of this program will be presented elsewhere in this report.

Recommended Strategy for Self Supporting INCAP Outreach Programs

The INCAP administration recognizes the economic value of the technical services component, as demonstrated by substantial annual revenues for use of the Incaparina cookie technology. Also recognized is the value of the analyses services available at INCAP. However, the technical and analytical services units do not receive any direct benefits from the revenues they generate. This philosophy of budget management does not lend itself to a productive or successful program. As revenue generating units within INCAP attract monies for services provided, it is this team's experience that those funds should be partially returned to those units for reinvestment into program improvement. These improvements include expanding the technical support base, staff training, remaining current with changing technologies and

exploring newer developing technologies with industrial applications.

All self-supporting outreach programs should depend on revenues generated from training courses and user fees. For INCAP, it seems reasonable to charge salary costs for the specific staff time allocated to a specific outreach program. Facility and laboratory use, as well as coordination and publicity cost should be incorporated into the fee structure. As programs are planned for delivery there **should be** a minimum number of registrants before the program is presented. Presentation of a program to a small number of participants can result in losses to the Institute. Thus, it is strongly recommended that sufficient registration fees be collected to cover the entire cost of the program, otherwise the program should not be held.

As outreach programs are developed, it is very important that INCAP receive council from representatives of the food and related industries. AGTA and invited food company executives could serve as an advisory panel to INCAP for identifying outreach programs and technical needs. This advisory panel could also help establish more linkages between INCAP and the food industry.

First GMP Short Course for Central American Food and Allied Industries

On October 13, 1993 the first of many planned outreach programs was offered to the food and allied industries operating in Central America. A short course covering Good Manufacturing Practices in the food industry was offered under the direct sponsorship of INCAP in cooperation with AGTA, SUSTAIN, Purdue University and North Dakota State University. Twenty two attendees representing seven different food and allied industries participated in this short course. All but three topics were taught by INCAP and food industry (AGTA) personnel. The three topics not taught by these individuals were taught by the members of this team (SUSTAIN). General assessment of the short course curriculum was very favorable and well received by the attendees. Participation of food industry resource people was a definite asset to the program. The INCAP staff who served as instructors in the short course have demonstrated an increased confidence during their presentations and an improved performance when compared to their participation in the August, 1993 Training the Trainers short course. It was readily recognized that the INCAP staff know their related sciences which were communicated well in their presentations. The INCAP personnel were somewhat limited in responding to questions on specific problems being experienced by attendees in their plants. As the INCAP personnel gain industrial experience, their ability to apply their scientific knowledge to plant problems in the food and allied industries should progressively improve.

One additional comment is warranted relative to the Food Technology and Nutrition technical building when compared to the March 29, 1993 visit. There is a marked improvement in the cleanliness and maintenance of this facility. The SUSTAIN/University team wish to commend the staff and technicians for this great improvement.

Attached to this report are the short course curriculum, list of attendees and the companies the participants represented. Also included are the proposed outreach programs, dates and locations scheduled for delivery in 1994. Two additional topics offered by the SUSTAIN/university team are: 1) pasta manufacturing practices (Dr. Rayas-Duarte); and 2) sanitation practices in the food industry (e.g.: chemistry of cleaning; achieving an sanitary environment- Dr. Chambers). Dr. Marks offered to assist in establishing pilot plant procedures and demonstrations when the new processing equipment is received.

Process Authority Proposal

The SUSTAIN/University team remains supportive in establishment of a process authority that would be assessable to the Central American food and allied industries. A proposal outlining a program was submitted to INCAP in an August 5, 1993 report.

Restructing Program Thrusts in Food Safety and Food Technology

Present INCAP administrative thinking is to structure a food safety unit that will have parallel functions to a food technology unit. The projected activities for the food safety unit appears to be shared between public health functions and a food technology involvement. The SUSTAIN/University team perceives this approach as rather ambitious and lacking the necessary commitment of resources needed to assure a successful effort. We recommend that the food safety and food technology efforts be more integrated in mutual projects. Management of these mutual projects could be facilitated by an administrator who possess the decision making authority and provides guidance for the project activities. It is our view that to adopt this approach will result in a better focus on fewer specific projects and a greater probability of succeeding in doing those projects well.

Site Visit to OLMECA Production Facility

On October 11th, the SUSTAIN/University team visited the OLMECA production facility where vegetable oil is processed, and shortening, cooking oil and margarine are manufactured and packaged. The primary reasons for the visit were: to discuss the economic losses related to the inefficiencies of energy use in production; and, to explore the possibility of doing an on-site training program for the OLMECA employees. It was suggested that INCAP might be of assistance but the OLMECA production management did not perceive INCAP as a resource for these production needs. Their perception of INCAP was as a research institution in nutrition. Thus, there is an apparent opportunity for INCAP to begin developing technical credibility in an allied food industry. Drs. Marks and Chambers may be involved with OLMECA in the future and will attempt to facilitate some relationship with INCAP staff as a training opportunity. There are excellent opportunities for improving a professional relationship with management personnel at this production plant.

Appendix I. SUSTAIN Description

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. To the extent possible, SUSTAIN coordinates its overseas activities through a local organization. This not only enhances opportunities for technology transfer, but also facilitates coordination of activities and contributes to long-term sustainable development.

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 2500 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

Appendix II. Biographies of SUSTAIN Volunteers

JAMES CHAMBERS (Ph.D., Food Science & Nutrition, The Ohio State University, 1972) is Professor and Extension Food Scientist at Purdue University's Food Science Department. His extension activities focus on the transfer of technical information on food quality and safety, materials handling, food microbiology, and on energy use and conservation in the food industry. He has expertise in the application of analytical methods for the assessment of food quality factors, with an emphasis on food safety, nutrition, and shelf life performance. He is nationally recognized for his work in wastewater management and sanitation practices in the food industry. Before joining the Purdue faculty in 1973, Dr. Chambers was Corporate Microbiologist at Ross Laboratories, Columbus, Ohio (1961-1969) and Director of the Food, Dairies, and Drug Laboratories for the Ohio Department of Agriculture (1969-1972). In recent years, Dr. Chambers has been active in assisting developing countries with food quality control through assessment and training support. This work has taken him to Taiwan, Indonesia, and Guatemala.

JAY MARKS (Ph.D., Chemical Engineering, University of Kansas, 1965) is Associate Professor of Food Engineering at Purdue University, where he has taught since 1978. His research and publications in process design and development focus on food sterilization, in-line fat analysis, and food product spray dryer design. In addition to teaching and extension work, he consults in process design and plant energy conservation for several companies. Prior to joining the Purdue faculty, Dr. Marks was Manager of Marketing Services in the Polymer Division of Ralston Purina Company (1977-1978) and Plant Manager of Ralston's Ralson Foods based in Memphis (1973-1977). He also served as Manager of Market Research for the Medicinal Chemicals Division of Mallinckrodt, Inc., St. Louis (1970-1973) and as Manufacturing Superintendent at Mallinckrodt, Inc., St. Louis (1970-1973). Dr. Marks holds patents for sterilization and dehydration processes and for a whey-based animal feed block. In 1991, as a visiting scholar to Indonesia, he helped to present an industry workshop and conference on quality control in food processing; he also visited Russia and Ukraine in that year to develop linkages between Purdue and research institutes, universities, and individual scientists in those countries.

PATRICIA RAYAS-DUARTE (Ph.D., Food Science and Technology, University of Nebraska, 1988) is an Assistant Professor of Cereal Science and Food Technology at North Dakota State University. Her expertise in cereal-legume processing, extrusion, and laboratory technologies, and she is certified by Better Process Control School to supervise thermal and aseptic processing and acidified foods. Dr. Rayas-Duarte teaches starch chemistry and food processing, and conducts research on the utilization of alternative crops for food and non-food uses. Active research projects include studies on the physico-chemical properties of amaranth starch; extrusion of buckwheat flour incorporated into corn and wheat formulations; and screening of squalene (isoprenoid) from plant sources.

Appendix III. Short Course Curriculum

INSTITUTO DE NUTRICION DE CENTRO AMERICA Y PANAMA
INCAP/OPS

ASOCIACION GUATEMALTECA DE TECNOLOGOS EN ELIMENTOS
AGTA

SHARING UNITED STATES TECNOLOGY
TO AID IN THE IMPROVEMENT OF NUTRITION
SUSTAIN

UNIVERSIDAD DE PURDUE
USA

CURSO TALLER SOBRE:
BUENAS PRACTICAS DE MANUFACTURA
13-15 DE OCTUBRE DE 1993

PROGRAMA DEL CURSO



Universidad de Purdue



SUSTAIN
El Proyecto SUSTAIN



AGTA

La Asociación Guatemalteca de
Tecnólogos en Alimentos
AGTA

GUATEMALA, OCTUBRE DE 1993

INTRODUCCION

Las buenas prácticas de manufactura consisten en la aplicación correcta de las normas dadas para la industria de alimentos, en la selección y compra de las materias primas; el manipuleo, procesamiento, almacenamiento y la distribución de los alimentos. En todos estos puntos de la cadena se hace necesario observar las normas mínimas de proceso, a fin de garantizar la calidad de los productos.

El curso-taller sobre buenas prácticas de manufactura, es un esfuerzo conjunto entre el INCAP y AGTA, a través del proyecto SUSTAIN y con el apoyo de la Universidad de Purdue, en el afán de llevar a la industria de alimentos en los países miembros del INCAP, avances tecnológicos y metodológicos que permitan la obtención de alimentos de buena calidad, en beneficio del consumidor.

El curso está dirigido a Jefes y Supervisores de producción, Jefes y Supervisores de control de calidad y para profesionales involucrados dentro de actividades de tecnología de alimentos. Tendrá una duración de dos días, durante los cuales se desarrollarán, además de actividades teóricas, prácticas de laboratorio en las cuales se enfatizará la importancia de las buenas prácticas de manufactura.

OBJETIVOS

1. Formar recursos técnicos a nivel de la industria alimentaria, catedráticos de universidades y profesionales afines a las ciencias de alimentos, que una vez capacitados sea capaces de producir cambios positivos en la calidad de los alimentos, a través de la observación de las normas mínimas de proceso.
2. Mejorar las condiciones de producción de alimentos, con el propósito de aumentar la calidad y competitividad de los productos en el mercado.
3. Establecer un vínculo entre la industria de alimentos y el Instituto de Nutrición de Centro América y Panamá, de tal manera que dicha relación permita el desarrollo de transferencia de tecnologías y prestación de servicios, con la finalidad de aumentar la calidad de los alimentos y contribuir de esta manera a mejorar la seguridad de los alimentos en los países centro americanos.

CONTENIDO DEL CURSO TALLER

1. Porqué son importantes las buenas prácticas de manufactura en el comercio de alimentos
2. Revisión sobre microbiología de alimentos
 - a. Factores de crecimiento
 - b. Temperatura, pH
 - c. Métodos de preservación
 - d. Enfermedades
 - e. Fermentación y deterioro
 - f. Grupos indicadores
 - g. Resistencia térmica y a la desinfección
3. Principios sobre tecnología de alimentos
 - a. Tipos de procesamiento
 - b. Efectos del procesamiento y calidad
 - c. Importancia de las operaciones unitarias (tipos y características)
 - d. Empaque
4. Principios sobre química de alimentos
 - a. Reacciones químicas importantes que afectan la calidad
 - b. Temperatura, enzimas y reacciones de oxidación, RX
 - c. Composición de los alimentos
5. Aplicando las buenas prácticas de manufactura
 - a. Servicios
 - b. Higiene del personal
 - c. Registros en alimentos
 - d. Monitoreo y control (HACCP)
 - e. Sanitización
 - f. Operaciones de proceso
 - g. Transporte
 - h. Entradas-salidas-control de calidad
6. Resumen
 - a. Estudio de caso sobre el éxito en una empresa (Industria invitada)

PROGRAMA

FECHA	TEMA	RESPONSABLE
<u>MIÉRCOLES 13</u>		
17:00-18:00	Inscripción de participantes	Billy Estrada, INCAP Claudia Pereira, INCAP
18:00-18:15	BIENVENIDA	Dr. Hernán Delgado Director INCAP
18:15-19:00	Sesión inaugural	Dr. James Chambers Dr. Jay Marks, Purdue University Dra. Patricia Rayas North Dakota State University
19:00-21:00	Cocktail de bienvenida	AGTA
<u>JUEVES 14</u>		
08:00-09:30	Fundamentos sobre microbiología de alimentos	Lic. Floridalma Cano INCAP
09:30-10:15	Fundamentos sobre tecnología de alimentos: <i>1) Importancia de las operaciones unitarias y materiales de empaque</i>	Ing. Rolando Gálvez PASBINC/ROYAL/NABISCO
10:15-10:30	R E F R I G E R I O	
10:30-11:15	<i>2) Tipos de procesamiento y Efectos del procesamiento sobre la calidad</i>	Ing. Carlos Rafael Anzueto OSMOSIS
11:15-12:15	Principios de Química de los alimentos	Dr. Jorge Zúñiga INCAP
12:15-13:15	A L M U E R Z O	
13:15-13:30	Introducción a las Buenas Prácticas de Manufactura	Dr. James Chambers Purdue University
13:30-14:15	Procedimientos de operaciones standard	Ing. Pablo Suazo PASBINC/ROYAL/NABISCO
14:15-15:15	Edificios e Instalaciones	Ing. Pablo Suazo PASBINC/ROYAL/NABISCO
15:15-15:30	R E F R I G E R I O	
15:30-16:15	Higiene del personal	Licda. Mercedes de Asturias Empacadora Toledo

FECHA	TEMA	RESPONSABLE
16:15-17:00	Sanitización de plantas	Lieda. Mercedes de Asturias Empacadora Toledo
17:00-18:00	PRACTICA DE LABORATORIO	Lieda. Flory Cano/INCAP Lieda. Mercedes de Asturias Empacadora Toledo
<u>VIERNES 15</u>		
08:00-09:00	Análisis de Riesgos y Puntos Críticos de Control (HACCP)	Ing. Luis Eduardo Reyes GEXPRONT
09:00-09:45	Evaluación de materiales	Dra. Patricia Rayas North Dakota State University
09:45-10:30	Transporte y distribución	Ing. Carlos Rafael Anzueto OSMOSIS
10:30-10:45	R E F R I G E R I O	
10:45-11:30	Bodegas y almacenamiento	Ing. Billy Estrada INCAP
11:30-12:30	Controles y registros	Ing. Carlos Argueta INCAP
12:30-13:30	A L M U E R Z O	
13:30-14:30	PRACTICA DE LABORATORIO	Dr. Jay Marks Purdue University
14:30-15:15	Buenas prácticas de empaque y etiquetado	Ing. Leonardo de León INCAP
15:15-15:30	R E F R I G E R I O	
15:30-16:30	Estudio de caso	Lieda. Ana Imeri QUAKER
16:30-17:00	C L A U S U R A	Dr. Hernán Delgado INCAP

LISTA DE PARTICIPANTES QUE PARTICIPARON EN EL CURSO BUENAS PRACTICAS DE MANUFACTURA

1.	Ing. Sergio Torres	Incasa	Guatemala
2.	Lic. Ana Ma. de Altalef	Incasa	Guatemala
3.	Victoria Juárez	La Palma	Guatemala
4.	Víctor Borrayo	La Palma	Guatemala
5.	Francisco Juárez	La Palma	Guatemala
6.	Amelia Guzman	Laprofa	Guatemala
7.	Nora Díaz	Laprofa	Guatemala
8.	Alkalá Sánchez	Inversiones de Guatemala	Guatemala
9.	Lwize Hirst	Dezertplos	Guatemala
10.	Ing. Orlando Buitirago	Lido - Pozuelo	Honduras
11.	Ing. Carlos Siercke	Lido - Pozuelo	Honduras
12.	Jorge Menéndez	McDonalds	Guatemala
13.	Leo Mérida	Malher	Guatemala
14.	Sergio Palacios	Malher	Guatemala
15.	Gloria de Morales	Malher	Guatemala
16.	Miguel Angel Valencia	Purina	Guatemala
17.	Rodolfo Rufz	Pollo Campero	El Salvador
18.	Ana Nuñez	Zamorano	Honduras

PROGRAMA DE CAPACITACION 1994

FECHAS	CURSO	PAIS	COSTO ¹
28-31 marzo	1. Análisis sensorial avanzado	Guatemala	\$ 250.00
21-24 junio 06-09 septiembre	2. Análisis sensorial y desarrollo de nuevos productos	Guatemala Honduras	\$ 250.00
09-12 agosto	3. Procesamiento de frutas y hortalizas	Guatemala	\$ 200.00
26-28 mayo 06-08 octubre 07-09 julio	4. Buenas prácticas de manufactura y sanitización de plantas	Guatemala Guatemala Honduras	\$ 125.00 \$ 125.00 \$ 150.00
14-18 febrero	5. Tecnología de panificación	Guatemala	\$ 200.00
21-25 febrero 25-29 abril 06-10 junio 22-26 agosto 24-28 octubre 14-18 noviembre	6. Administración de bodegas, manejo y almacenamiento de alimentos	Guatemala El Salvador Honduras Nicaragua Costa Rica Panamá	\$ 100.00 \$ 150.00 \$ 150.00 \$ 150.00 \$ 150.00 \$ 150.00

El costo es en Dólares de los Estados Unidos de América o su equivalente en moneda nacional, al cambio oficial.

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INSTITUTO DE NUTRICION DE CENTRO AMERICA Y PANAMA

OFICINA SANITARIA PANAMERICANA
Oficina Regional de la
ORGANIZACION MUNDIAL DE LA SALUD

IN-VM-VC-93-093

October 25, 1993

Dr. James V. Chambers
Food Science Department
Smith Hall 101D
West Lafayette, IN 47907

Dear Dr. Chambers:

I would like to take this opportunity to thank you for your scientific and technical support for the development, organization and implementation of the first short course on Good Manufacturing Practices to the Central American Food Industry, which was held at INCAP in October 11-15.

Your experience and willingness to help our new outreach program in becoming a reality has been the key factors for its future success.

Hoping that we will have your continuous support for this activity, and thanking you again for your assistance, I remain.

Sincerely yours,



Hernán L. Delgado
Director

c.c. Dr. Luiz G. Elías
c.c. Ms. Liz Turner

14

INSTITUTO DE NUTRICION DE CENTRO AMERICA Y PANAMA

OFICINA SANITARIA PANAMERICANA

Oficina Regional de la

ORGANIZACION MUNDIAL DE LA SALUD

IN-VM-VC-93-093

October 25, 1993

Dr. Jay Marks
Food Science Department
Smith Hall 101D
West Lafayette, IN 47907

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Hernán L. Delgado
Director

c.c. Dr. Luiz G. Elías
c.c. Ms. Liz Turner

INSTITUTO DE NUTRICION DE CENTRO AMERICA Y PANAMA

OFICINA SANITARIA PANAMERICANA
Oficina Regional de la
ORGANIZACION MUNDIAL DE LA SALUD

IN-VM-VC-93-093

October 25, 1993

Dra. Patricia Rayas-Duarte
North Dakota State University
Department of Cereal Chemistry and Technology
P.O. Box 5728
Fargo, North Dakota 58105-5728

Dear Dra. Rayas-Duarte:

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Hernán L. Delgado
Director

c.c. Dr. Luiz G. Elías
c.c. Ms. Liz Turner