PN-ABZ-387

WORKSHOP: FRUIT & VEGETABLE PROCESSING

GUATEMALA

December 4 - 8, 1995

SUSTAIN Volunteer

Pedro Sole, Ph.D.
Vice President, QA/QC
Chiquita Brands International

This publication was made possible through support provided by the Office of Health/Nutrition; Bureau for Global Programs, Field Support and Research, U.S. Agency for International Development, under Cooperative Agreement No. DAN-5120-A-00-1066-00. SUSTAIN is No. 936-5120 under Food Technology Enterprise Project, Office of Health/Nutrition.

NCBA/SUSTAIN Project 111.069/611.069

BEST AVAILABLE COPY

A

SUSTAIN enlists volunteers from U.S. corporations and scientific institutions to enhance the quality, safety, and availability of food in developing countries. In collaboration with the U.S. Agency for International Development, SUSTAIN helps businesses, community organizations, and other related groups apply appropriate technologies and strengthen skills. SUSTAIN addresses these concerns through problem solving, technical assistance, and training, and by organizing expert advisory panels and conducting scientific studies.

This publication was made possible through support provided by the Office of Health/Nutrition; Bureau for Global Programs, Field Support and Research; U.S. Agency for International Development, under cooperative agreement No. DAN-5120-A-000-1066-00. SUSTAIN is No. 936-5120 under Food Technology Enterprise Project, Office of Health/Nutrition.

stddisk\covrSTD2

B

TABLE OF CONTENTS

Report

I. Introduction
II. Report

Appendices

I. SUSTAIN description
II. Biography of SUSTAIN volunteer
III. Workshop materials
IV. Tabulation of evaluations
V. Letter from PROFRUTA & translation (12/95)
VI. Letter from PROFRUTA & translation (2/96)
VII. List of participants

c

I. INTRODUCTION

A. SUSTAIN

SUSTAIN *(Sharing U.S. Technology to Aid in the Improvement of Nutrition)* provides access to U.S. expertise in food processing to help improve the nutritional quality, safety, and availability of food in developing countries. Technical assistance, training, and needs assessments are conducted by executives and technical specialists from U.S. food companies, universities, and professional associations who donate their time and expertise.

SUSTAIN is supported through the generosity of its sponsors at the U.S. Agency for International Development (USAID) and cash and in-kind contributions from foundations, corporations, international partners, and individuals. The activity described in this report was supported by USAID's Food Technology & Enterprise project (No. 936-5120) through a cooperative agreement with USAID's Office of Health and Nutrition (No. DAN-5120-A-00-1066-00).

B. WORKSHOP ON THE PROCESSING OF FRUITS & VEGETABLES

PROFRUTA, an organization of the Ministry of Agriculture of Guatemala that assists small producers and processors of fruit products, heard about the workshop SUSTAIN volunteer Dr. Pedro Sole gave in Honduras in August 1995 and requested that he give a similar one in Guatemala. SUSTAIN arranged for him to give a three-day workshop on the processing of fruits and vegetables in December 1995 for 16 of PROFRUTA's employees. These employees then used this knowledge to train groups of small farmers and food processors, mostly from the rural areas of Guatemala.

The objectives of the workshop were to help improve fruit and vegetable processing techniques, reduce losses, facilitate the commercialization and availability of processed foods, and train people who can train others. The workshop covered processing principles, the export market for processed food products, and the regulations of the importing countries.

PEDRO SOLÉ, Ph.D.
9375 SW 154 PLACE
MIAMI, FLORIDA 33196
U.S.A.

TEL (305) 382-7257 **FAX (305) 382-7309**

MANAGEMENT CONSULTANT

REPORT ON WORKSHOP FRUITS AND VEGETABLE PROCESSING
PROFRUTA SUSTAIN AMATITLÁN GUATEMALA DEC 5-7 1995
P. SOLÉ 1-5-96

SUBMITTED TO MS ELIZABETH TURNER, EXECUTIVE DIRECTOR, SUSTAIN

SUMMARY

We conducted a Fruits and Vegetable Processing Workshop at the facilities of the Training and Capacitation Center of the PRO-FRUTA program of the Guatemalan Ministry of Agriculture. This workshop was meant to "train the trainers". The participants are PROFRUTA employees and are working full time in training different groups of small farmers and food processors, mostly from the rural areas of Guatemala. Several of the participants operate the dehydration pilot plant at Zunil, Quetzaltenago. We covered processing principles, export markets considerations and regulations of the importing countries. As an innovation over the prior workshops, we had one afternoon of a drying experiment and half of one morning covering drying preservation of foods. We asked that the number of participants be kept to 16, which PROFRUTA did.

Based on the evaluation by the participants (14 questionnaires were recovered) and my own opinion, the workshop was a success. The negatives registered in the questionnaires, had to do with the condition of the equipment and some handouts being in English. On the positive side, the participants brought up several good points for discussion and participated enthusiastically both during the conferences and in the experimental sessions in spite of the fact that the workshop was given practically during their vacation time at the end of their regular working year schedule.

All of the 14 respondents to the evaluation questionnaire indicated that the short course had been worthwhile.

1-5-96 PS

1. PURPOSE

The objective of the workshop was, in a free translation from the Spanish, "To help improve the fruit and vegetable processing techniques, reducing losses and facilitating the commercialization and availability of processed foods. Another objective of the workshop is to **"train the trainers"** so as to obtain a multiplier effect of the benefits as similar workshops are given to different groups according to the program of CEDAG (PROFRUTA)" in Guatemala.

2. WORKSHOP ITINERARY/AGENDA

The Spanish version of the short course agenda is attached. Summarizing what was covered/done we have:

First Day Morning
World markets for processed fruits and vegetables
Importing countries regulations.
Processing by dehydration of fruits and vegetables. Good Manufacturing Practices. Part 110 of FDA Regulations. Different methods of drying foods. Drying in tunnel and chest dryers. Drying curve. Air drying of carrots, cabbage, pineapple, zapote and nispero.

First Day Afternoon
Air drying of diced carrots in cabinet dryer.

Second Day Morning
Diced carrots dehydration. Presentations by the team leaders. Discussion.

Processing of fruit juices. Part 114 of FDA regulations for acidified foods. Canning and preservation of fruits. Pineapple (crushed, slices, chunks and tidbits). Green papaya in syrup. Mango.

Second Day Afternoon
Canning of pineapple tidbits in pineapple juice. (Hydration curve for available black beans)

Third Day Morning
Pineapple tidbits in juice. Presentations by the team leaders. Discussion.

Canning and preservation of vegetables. Part 113 of FDA regulations for low acid foods. Peas, carrots, sweet corn and green beans. Beans in brine. Other. Video on Good Manufacturing Practices Part 110 of the FDA regulations.

1-5-96

Third Day Afternoon
Distribution of Certificates to the participants. (Copy attached)
Canning of Black Beans in brine using an autoclave process.
Black Beans in brine canning. Presentations by the team leaders. Discussion.

Short course evaluation questionnaires filled out by participants.

Adjournment.

Copies of the other materials distributed are also attached, as well as the original questionnaires recovered from the participants.

3. MATERIALS

The morning conferences were presented by means of around 53 text overheads and 20 addendum overheads. The hand outs included all of the above. Approximately 20 sets of copies of FDA forms 2541, 2541a and 2541c for establishment registration and process filings were distributed. Also copies of 20 sets of Instruction Booklets to fill the above forms. These had been obtained and sent by E. Quinn from SUSTAIN to PROFRUTA at my request. One Video tape was used. I brought it back to the U.S. with me and I will be mailing it to SUSTAIN. These latter is titled "On The Line", it is dubbed in Spanish and covers Good Manufacturing Practices. There is strong interest in obtaining a copy of this Video, and PROFRUTA may contact you to obtain it for them at NFPA in your same building in Washington DC. Issues of SUSTAIN Notes were also distributed.

The experimental equipment used included:

1. Canning pilot plant now permanently installed in Amatitlán. This is the same plant used in the INCAP workshop. Enough 303 x 406 cans were supplied by PROFRUTA for the course. Unfortunately, no plain cans were available for the packing of the pineapple tidbits. Enamelled cans had to be used instead.
2. Pilot plant cabinet air dryer with about 6 square meters of tray area and bottled gas heating. This is one of several similar units built by PROFRUTA and used in their training programs. It is rather primitive and suggestions were made on how to improve the design to avoid burning of the product in some hot spots in the dryer.
3. The frame of an old Ginacca was available to demonstrate the working principle. However for the experiment we had to peel the pineapple by hand.
4. pH paper indicator, refractometers, thermometers, drying oven for determining residual moisture and other furnished by PROFRUTA.

1-5-96 ejc

5. Plastic buckets, knives, gloves and other materials bought/ furnished by PROFRUTA.

6. Carrots (variety unknown but proved adequate for drying). Pineapple and black beans bought/supplied by PROFRUTA.

4. BENEFITS

A. Short Term

The participants who train small groups and farmer's coops, including women self betterment clubs have gotten new ideas on how to incorporate experimental work in their training to lead to a more complete learning experience. Some of the participants are in close contact with small entrepreneurs who can market at the local level. We were shown the packaging material of a product which when provided with the nutritional labelling information and other labelling requirements could conceivably tackle the US market even if in a small market area.

B. Long Term

Hopefully we have motivated all the participants into learning more about what is required to pack processed foods technically and efficiently; where to find the needed information on export market requirements and regulations, and also on the need for good maintenance and adequate spare parts inventories for the equipment in order to obtain reliable packs consistently, for both the local and the export markets. My personal feeling is that the greatest impact will be in the improvement of products for the local market. Perhaps even more, on regional markets within Guatemala.

5. ADDITIONAL NEEDS

To help the trainers of PROFRUTA continue and improve the training, the following specific needs come to mind:

a. Sending of a SUSTAIN volunteer with good mechanical and instrument knowledge of canning equipment to evaluate the PROFRUTA canning pilot plant and to make a list of the spare parts needed for a good overhaul. Once PROFRUTA obtained the spare parts, the same or another SUSTAIN volunteer could work one or two weeks to carry out the overhaul, with the cooperation of the Guatemalan Association of Food Technologists (AGTA) and industry willing to lend their workshops, such as KERN.

b. Working together with AGTA perhaps convince ICAITI to donate or sell at the depreciated value (must be near zero) of a

1-5-96
PS

pilot plant tray air dryer not being used at ICAITI's pilot plant. Although this is heated by steam, I am sure PROFRUTA would be able to adapt it for natural gas heating. Alternatively the dryer could be used with steam from the canning pilot plant steam generator available at PROFRUTA.

3. A SUSTAIN volunteer could spend a week giving a workshop on basic sanitation and an introduction to the principles of HACCP.

As far as other needs of the course participants, similarly as for my prior workshops, they are very wide ranging. Management, Production, Quality Assurance and Statistical Quality Control, Industrial Engineering, Food Microbiology, Costs and Financial Analysis, etc. all are areas where the participants would profit from additional training. However, in all fields, the importance of experienced and practical instructors/lecturers is paramount. Also at the level of the PROFRUTA Workshop participants, Spanish is more important since practically none of them spoke English. Note they had problems with the handouts in English, Comment #6 in Workshop Evaluation Tabulation. This in spite of the fact that the lecture copies were in Spanish. Only the FDA materials and some other hand outs were in English.

6. LIST OF PARTICIPANTS

The attached hand made list (1 page), includes the 14 participants present the second day. A few participants may have had valid reasons for not being present. A typewritten list with 17 names provided by PROFRUTA was left behind in Guatemala by mistake.

7. PUBLICITY

On Friday 12-8-95 I was interviewed by Ing. Luis Eduardo Reyes, the new Vice-President of AGTA. The interview will be published in AGTA's fledgling quarterly publication. Lic. Luis Alfredo García has been replaced by Ing. Ortega, who works for the Guatemalan subsidiary of a New Zealand Dairy Products Coop. I do not know her personally but understand she is capable and progressive also.

I was informed by Ing. Escobar from PROFRUTA that they did not advertise the workshop because they had already filled the 16 places available with their own personnel. Recall that I requested that the number of participants be limited to 16.

8. FOLLOW-UP

Several course participants indicated that they would be faxing me requests for additional information. I also offered assistance in obtaining a copy of the Video "On the Line" in Spanish if they can obtain the funds.

1-5-96

9. WORKSHOP EVALUATION

A new questionnaire was used this time. A copy is attached, as well as a copy of the Amatitlán 12-95 Workshop Evaluation Tabulation with a summary of the comments by the participants. The original questionnaires recovered are also attached.

We recovered 14 questionnaires or 82% based on 17 participants. Of those, 11 or 79% contained suggestions and comments on how to improve the workshop. See tabulation.

All 14 respondents judged the workshop "worthwhile".

"Usefulness for your work" and "facilitator knowledge" received a perfect score (10 in a scale from 1 to 10 commonly used in Guatemala). The "Subject matter", "Explanations of the facilitator" and "Hand outs" received also high scores (9+), "Team working system" and "Other materials used" were next (8+) and "Condition of equipment" was last with 7+.

1-5-96
Eduardo Solé

SUSTAIN

SHARING UNITED STATES TECHNOLOGY TO AID IN THE IMPROVEMENT OF NUTRITION

SUSTAIN is a unique resource in mobilizing volunteers from the U.S. food industry to address international humanitarian and business needs. Founded in the late 1970's by the U.S. food industry and the U.S. Agency for International Development, SUSTAIN works to improve the quality, safety, and availability of food in developing countries. SUSTAIN combats the interrelated problems of hunger, diseases related to malnutrition and micronutrient deficiencies, poverty, and environmental degradation.

Many developing countries produce sufficient food, but it goes to waste due to a lack of food preservation technology and knowledge. Wasted food unnecessarily burdens the land, water, animal and human resources deployed for its production and introduces biological and chemical contaminants to the environment. Poor preservation techniques and unsanitary manufacturing conditions hamper the progress of many small food processing businesses. Through SUSTAIN, people in developing countries who are working to solve their own problems reach out to request assistance and expertise. SUSTAIN links these needs with skilled volunteers and staff, drawing upon many specialties and scientific disciplines.

More than 200 highly-skilled business executives and technical specialists are active as SUSTAIN volunteers. They have knowledge in such fields as food processing, preservation, packaging, fortification, microbiology, laboratory technologies, nutrition, pollution prevention, waste utilization, quality assurance, and marketing. SUSTAIN works with a variety of businesses, associations, scientific institutions, non-profit groups, and governmental agencies in developing countries. By addressing problems together, SUSTAIN volunteers and their developing country counterparts foster on-going business and professional relationships.

CAPACITY BUILDING CRITICAL TO SUSTAINABLE DEVELOPMENT

SUSTAIN's work is founded on the belief that improving nutritional well-being in developing countries is critical to achieving sustainable development. Building the capacities of local businesses and organizations contributes toward that goal. Through education, the application of appropriate technologies, and one-on-one problem solving, SUSTAIN volunteers help make food in developing countries safer, diets more diverse, and businesses and economies more viable. As a result, SUSTAIN's assistance contributes significantly to achieving these countries' nutrition, public health, economic growth, and environmental goals.

SUSTAIN's record of success increasingly is recognized nationally and throughout the world. Through the generosity of its sponsors at USAID's Office of Health and Nutrition, foundations, corporations, volunteers, and international participants, SUSTAIN continues to grow in size and significance. In conjunction with its partners in developing countries, SUSTAIN is creating a series of educational programs for ongoing delivery to their food industries. And in 1995, SUSTAIN began working with USAID to assess micronutrients used to fortify U.S. donated food for peace commodities and to suggest ways to reduce potential losses of nutrients in these foods.

As its resources are limited, SUSTAIN reviews assistance requests on a priority-needs basis. Guidance to SUSTAIN is provided by a steering committee representing a cross-section of the U.S. food processors and scientific institutions. When it responds to a request for assistance, SUSTAIN typically funds international travel costs, while USAID missions or host organizations provide in-country costs. SUSTAIN does not fund product or equipment purchases, nor does it provide financing for projects. For further information or to receive the food technology periodical, *SUSTAIN Notes*, please write:

SUSTAIN
1400 16TH STREET, N.W. · BOX 25 · WASHINGTON, D.C. 20036
202 328-5180 · FAX 202 328-5175

PEDRO SOLE, Ph.D. (Chemical Engineering, Polytechnic University of New York, 1965) is an international consultant in fruit processing (especially banana), technical services, quality control, and regulatory compliance. He retired from Chiquita Brands International, Inc. as Vice President of Quality Assurance and Control at the Processed Fruit Ingredients Division. He was responsible for quality control, technical services, and compliance with FDA and EPA regulations affecting the company's food products. Dr. Sole has extensive international experience in business management, fruit processing, equipment and plant design, quality control, and Good Manufacturing Practices. In 1991 he was involved in the design, equipping, and start-up of a new processed banana plant in Costa Rica. As Director of Technical Services for Chiquita, he coordinated technical aspects of purchases of international food ingredients in the Dominican Republic, Costa Rica, Mexico, Guatemala, and Thailand, and served as a liaison between Chiquita's Central American plants and clients in the U.S., Europe, Japan, and the Middle East. Prior to this he served with Chiquita subsidiary companies in Honduras and Costa Rica and with food companies in Puerto Rico, Spain, and Guatemala. Dr. Sole has four U.S. patents involving mechanical peeling, recovery of concentrated clarified banana juice, vegetable oil extraction, and coffee extraction. As a SUSTAIN volunteer, he participated in an assessment mission to Belize and taught workshops on fruit and vegetable processing in Guatemala and Honduras.

SUSTAIN NOTES
SHARING UNITED STATES TECHNOLOGY TO AID IN THE IMPROVEMENT OF NUTRITION
Volume 7, Number 1
February 1995

HACCP: A Design for Food Safety

by: Dr. Kurt Deibel

Introduction

Traditional approaches to food safety assurance in the United States and elsewhere have emphasized regular inspection of food industry processes and products. Despite the increased frequency and rigor of inspections, contaminated food products have sometimes reached consumers and occasionally have led to illness. Microbial hazards, as well as chemical and physical contaminants may enter the "food" chain at various points between farm and the consumer — for example, during harvesting, transporting and storage, manufacturing/processing or packaging.

Hazard Analysis Critical Control Point (HACCP) is a relatively new, science-based system designed to identify and control potential biological, physical and/or chemical hazards at critical points in the food production process. HACCP works by determining critical points for hazard control in different operations, and by identifying means to control or prevent each hazard. HACCP also mandates monitoring to assure that each critical control point is within acceptable guidelines.

The HACCP concept dates back to the 1960s and the collaborative efforts of the Pillsbury Company, the United States Army and the U.S. National Aeronautics and Space Administration to assure safe foods for the U.S. space program (Bauman, 1990). This group concluded that finished product testing could not provide such assurance unless 100 percent of the lot was inspected. The HACCP concept emerged from efforts to express a new pro-active philosophy. Unlike "reactive" quality management systems, designed to identify defective food and reject it, HACCP evaluates food quality and safety at points in production where problems are most likely to occur. The HACCP process has evolved over the years and has been adopted as a management tool by some of the leading U.S. food companies. In January 1994, the U.S. Food and Drug Administration issued a proposed rule on safety regulations based on HACCP for the seafood industry.

U.S. and European Union import requirements make HACCP of special importance to developing countries, says Dr. John Troller, a microbiologist-food industry consultant based in Cincinnati. Troller predicts that HACCP will eventually be a required feature of U.S. food manufacturing operations and foreign food exporters alike. Countries that institute HACCP as the basis for quality assurance will have clear advantages, Troller believes. Not only will their domestic populations enjoy better protection from food-borne disease, but their export industries will find HACCP a means to increase sales in the global marketplace.

Ideally, a HACCP plan would cover all aspects of food production: the growing, harvesting, transport and storage of raw materials; food processing, warehousing, distributing, retailing; and finally the handling, cooking and consumption of food by the consumer. In reality, HACCP is best suited, and most often applied to, the manufacturing process.

Dr. Hernan Delgado, Director of the Institute of Nutrition of Central America and Panama (INCAP), presented SUSTAIN with an award honoring SUSTAIN's contribution to the advancement of food technology and nutrition in Central America. Dr. Delgado is shown here with SUSTAIN staff (L to R) Vaishali Patel, Technical Manager, Elizabeth Turner, Executive Director and Ellen Quinn, Resources Manager.

Initiating HACCP

The first requirement for successful use of the HACCP system is management understanding of, and commitment to, its major principles. A justifiable business rationale for using HACCP is based on the following benefits:

- Improved utilization of resources;
- Concentrated efforts on food safety;
- Reduced product loss;
- Reduced finished product testing;
- Increased regulatory and consumer confidence.

Once management is committed to the HACCP concept, a HACCP team can be

continued on page 2

PUBLISHED BY **SUSTAIN** UNDER A COOPERATIVE AGREEMENT BETWEEN
THE U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT AND THE NATIONAL COOPERATIVE BUSINESS CENTER
1401 NEW YORK AVENUE, N.W. · SUITE 1100 · WASHINGTON, D.C. 20005-2160 · USA · TELEPHONE 202 638-6222

HACCP: A Design

continued from front page

selected. The team should be multi-disciplinary with quality, manufacturing, engineering and food safety expertise represented. This group should be trained in the principles of HACCP and be thoroughly familiar with the manufacturing operation.

The HACCP team begins by developing a process flow diagram as a working document to identify the critical control points in the food operation. The diagram should be generic and should protect confidential aspects of any process.

The seven principles that are now are recognized worldwide as the framework for the application of HACCP were developed out of initial work by the International Commission on Microbiological Specifications for Foods (ICMSF), World Health Organization and National Advisory Committee on Microbiological Criteria for Foods (NACMCF).

Principle No.1: Hazard Assessment

In a general sense, the NACMCF defined a hazard as "a biological, chemical, or physical property that may cause a food to be unsafe for consumption" (NACMCF, 1992). HACCP hazard analysis identifies steps in the manufacturing process where significant hazards may occur, based on knowledge of each ingredient and the microbiological hazards related to that ingredient and of handling, storage, processing and equipment parameters. Epidemiological information is incorporated if available. HACCP is strictly safety-oriented and is not designed to include quality or economic analysis. These issues can be addressed through other programs.

As a part of hazard assessment, the HACCP team identifies how the product will be used (ready-to-eat or requiring additional preparation by the consumer) and evaluates the potential for unusual health risk to susceptible populations (i.e. infants, elderly, immuno-compromised individuals, etc.).

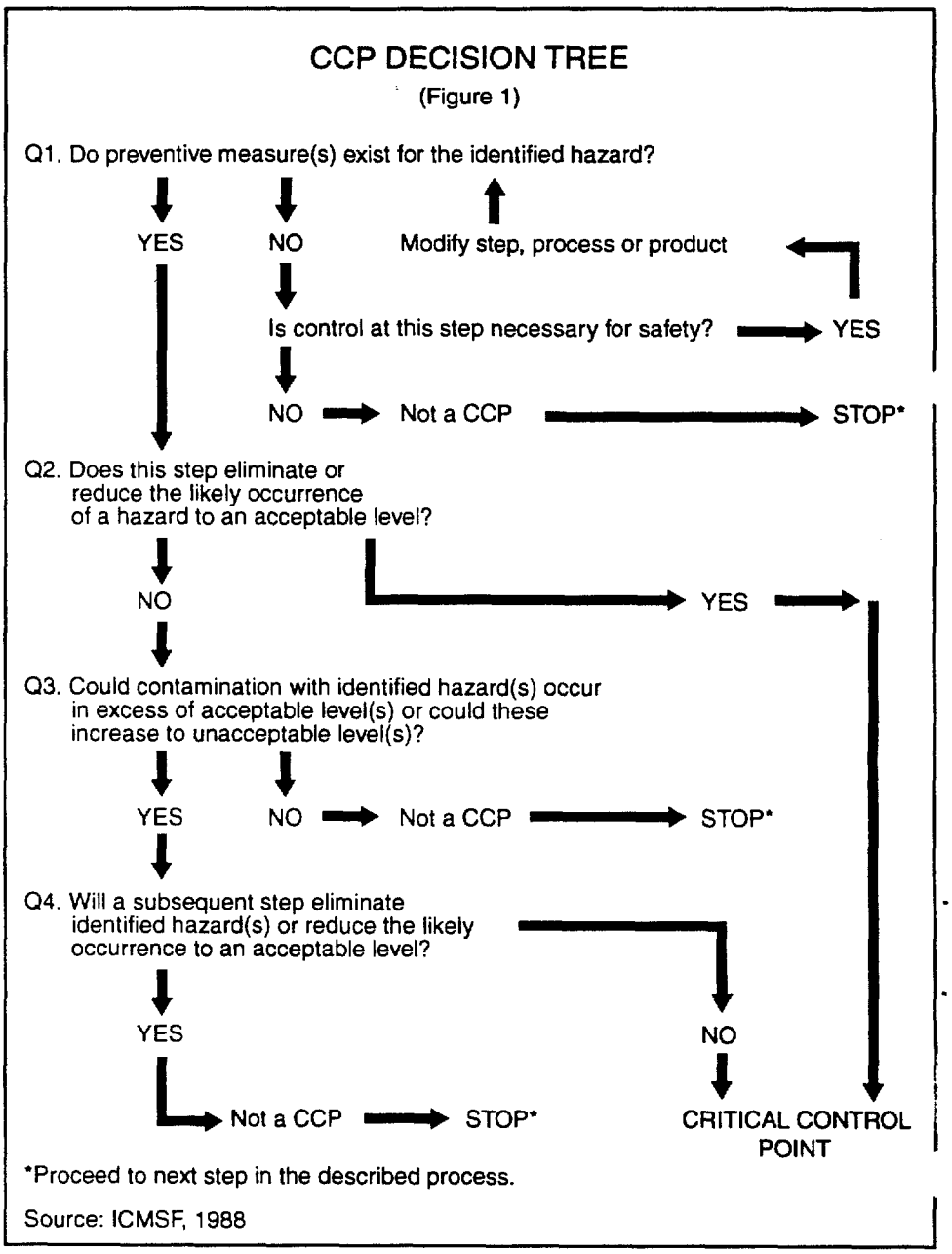
The risk and severity of hazards associated with specific processes are determined. Low risk/low frequency hazards generally are not included in the formalized HACCP plan. Once a list of hazards is identified, the team can ascertain how each hazard can be eliminated or minimized through process control. If a hazard cannot be controlled or removed with a process design change, a serious flaw exists in the overall process or product design.

Principle No. 2: Identify the Critical Control Points in the Process

A control point is defined as a point in the process at which a hazard can be controlled and loss of control does not lead to an unacceptable health risk. A critical control point (CCP) is defined as a point in the process where an identified hazard can be eliminated, minimized or prevented. There should be at least one CCP, subject to monitoring and control, for each hazard identified during the hazard assessment stage. A simple example of a CCP is the time/temperature measurements for a thermally processed food. If these parameters are not met, the product could be unsafe to eat.

A useful tool in determining the

continued on page 3



HACCP: A Design

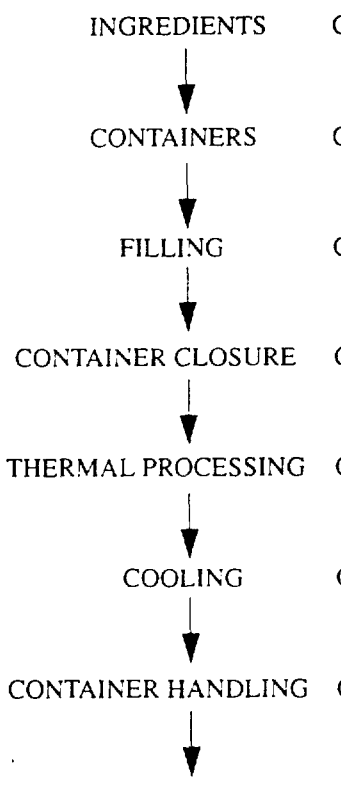
continued from page 2

CCPs for a product/process is the decision tree (Figure 1). This procedure will assist in minimizing the number of CCPs and focus efforts on a safety-based HACCP approach (NFPA, 1993a). Manufacturing processes by design have a number of control points. The distinction between control points and CCPs is that CCPs are critical to food safety.

Once identified, all CCPs should be entered onto the flow diagram. An example of a flow chart with the CCPs identified for low-acid canned vegetables is detailed in Figure 2. It is important to note that a specific HACCP plan is needed for each manufacturing operation, product, package and distribution system. The generic plans should only be used as a guide to develop more specific plans that represent the hazards of individual operations.

HACCP Flow Diagram For Low-acid Canned Vegetables With CCPs Identified

(Figure 2)



The CCPs are described as:

1. Ingredients

The use of unapproved pesticides or the application of excessive amounts of pesticides is an important hazard for raw produce and other ingredients. A system such as an Integrated Pest Management program would be useful to verify that pesticides are used properly.

2. Containers

Regardless of whether the container is metal or glass, it is important to verify that there is no foreign material in the container prior to the filling operation. Hazardous pieces of metal or glass should be removed from the container by washing or cleaning. This step should be as close to the filler as possible.

3. Filling

All product should pass a metal detector and magnet to assure that there is no metal in the finished product. Periodic checks should be made to verify that the metal detection system is operational and effective.

Additional critical points in the filling operation relate to the thermal processing of the product. Some of these points are the headspace, particle size and distribution and fill weight.

4. Container Closure

Containers must be sealed properly to assure adequate thermal processing. Defects in can seams and/or the presence of pinholes can result in the reintroduction of microbes during product cooling.

5. Thermal Processing

The CCPs for thermal processing are important to assure that the product is fully cooked and safe for consumption. The CCPs are dependent on the processing system but some common CCPs are: thermal process design verification; initial temperature of container; and time, temperature and pressure of the processing vessel during processing.

6. Cooling and Container Handling

Cooling and container handling can be a source of post-process contamination. Safety concerns can result if the environment supports the growth of pathogens such as *Clostridium botulinum.*

Principle No. 3: Establish Critical Limits for CCPs

A critical limit is defined as one or more prescribed tolerances that must be met to ensure that a CCP effectively controls a health hazard (NACMCF, 1989). If a critical limit is out of control, a potential hazard exists. The critical limit must be quantifiable with real time data so that prompt corrective action can be taken to prevent hazards. Some examples of measurements that could provide meaningful critical limits are pH, time and temperature measurements, moisture, water activity, particle distribution and head space. Many different types of critical limit information may be needed for safe control of a CCP. For example, the cooking of meat patties should be designed to eliminate the most heat-resistant pathogen that could reasonably be expected to be in the product. Critical limits must be specified for temperature, time and meat patty thickness. Technical development of these critical limits requires information on the probable maximum numbers of these microorganisms in the meat, use of additional ingredients and the potential for recontamination (NACMCF, 1989).

Principle No. 4: Establish CCP Monitoring Requirements

Once CCPs have been identified and critical limits established, a monitoring system is needed to track each CCP and assure that the process is in control. Corrective action can be taken if testing or observation of a CCP indicates that the process has exceeded any critical limit(s).

Some processing points require continuous monitoring, e.g., temperature in the case of thermal processing. Continuous monitoring is necessary because of the nature of the hazard and the state of the available technology. There are other equally important monitoring points that

continued on page 4

HACCP: A Design

continued from page 3

can be checked less frequently. For acidified foods that are formulated in a batching type operation, the pH can be controlled by measuring the pH on a batch by batch basis. For metal detection, all product should ideally pass through a metal detector, but verification that the detector is operational may only be necessary on a shift or daily basis.

Principle No. 5: Establish Corrective Action Plans

The most important step in the HACCP process is to review and react to the data collected. The critical limit is the action level above which the system is out of control. Utilizing statistical process control, the manufacturer should react to trends that approach the critical limit and correct the process before a hazard exists. The corrective action approach solves problems as they occur and prevents recurrence. A critical aspect of the corrective action process is to pinpoint the source of the problem and to document corrective/preventive measures taken.

The HACCP team should anticipate the types of problems that might occur during normal operations and should formally document a corrective action plan. It is impossible to anticipate all of the problems that could arise at a manufacturing facility, but the intent of the formalized corrective action plan is to at least address the most obvious problems.

Principle No. 6: Establish Effective Record Keeping

Record keeping is a means of documenting the various elements of the HACCP plan. Although the overall HACCP program is built on identification and prevention of hazards, it will not be effective unless a system is devised to record that the process is within the predetermined limits or, if it is out of control, what actions are taken to bring it back within the specification.

The Microbiology and Food Safety Committee of the National Food Processors Association has identified the specific items that should be documented for a HACCP plan (NFPA, 1993b):

- HACCP team members;
- Product description and intended use;
- Flow diagram of process with CCPs identified;
- Hazards and preventive measures for each CCP;
- Critical limits for each CCP;
- Monitoring system;
- Corrective action plan;
- Record keeping system;
- Verification procedures.

Principle No. 7: Establish Procedures For Verification that the HACCP System is Working Correctly

The final step of HACCP is to verify that the overall plan design is being followed and can effectively yield products that are safe for consumption. This process is especially useful when assessing the effectiveness of a new plan. All aspects of the HACCP plan, from team member credentials to record keeping, are subject to verification. In addition, limited finished product testing can be done. However, a good HACCP plan should drastically reduce the need for final product inspection.

Conclusion

Sometimes food hazards are not detected until someone becomes ill. Contaminants can be introduced into a food at any point from the growing/harvesting stage all the way to consumption. Everyone involved in handling, processing and storage of food is responsible to assure that the food is safe for consumption. It is important that all these individuals understand the potential hazards that may arise with a specific product and what measures need to be taken to prevent and control the hazards. Even the consumer shoulders some responsibility for proper preparation and storage, once foods are purchased. However, foods must be pure at the point of purchase. A HACCP plan, structured after the seven principles, can help ensure that the consumer starts out with a safe, hazard-free product.

References

1. Bauman, H. 1990. HACCP: Concept, development and application. Food Technol. 42. 156-158.
2. National Advisory Committee on Microbiological Criteria for Foods. 1992. Hazard analysis and critical control point system. *Int'l. J. Food Microbiol.* 16: 1-23.
3. National Food Processors Association. 1993a. Implementation of HACCP in a food processing plant. *J. Food Prot.* 56: 548-554.
4. International Commission on Microbiological Specifications for Foods. 1988. "Microorganisms in food 4: Applications of the hazard analysis critical control point (HACCP) system to ensure microbiological safety and quality." Blackwell Scientific Publications.
5. National Food Processors Association. 1993b. HACCP implementation: A generic model for chilled foods. *J. Food Prot.* 56: 1077-1084.
6. National Advisory Committee on Microbiological Criteria for Foods. Adopted November 1989. *Hazard analysis and critical control point system.*

About the author:

Dr. Kurt Deibel is Corporate Microbiologist at General Mills, Inc. He is in charge of the HACCP program and general food safety. He previously worked with Gerber Products Company on Total Quality Management and food safety programs. Dr. Deibel serves on various committees related to Total Quality Management, microbiology and food safety issues for several food industry associations.

SUSTAIN Activities

Since the last issue of *SUSTAIN Notes*, the following activities have been completed or are planned:

Location/ Dates	Mission/Workshop Topic	SUSTAIN Volunteer(s)
Guatemala August '94	***Marketing*** Fundamentals of marketing on a small budget, including consumer trend analysis, why new products fail, packaging, pricing, advertising and promotion.	Anthony Adams Paul Mulcahy
Zambia September '94	***Essential Oils, Flavors, Spices, & Natural Ingredients*** Preservation, packaging, marketing strategies, international quality specifications, small business development and value-added products.	Donald Lindemann John Nelson Bruce Gaylord
El Salvador September '94	***Organic Coffee Processing & Packaging II*** Roasting, grinding, packaging, equipment installation, quality control, distribution for organic coffee.	George Lutz
Guatemala November '94	***HACCP*** The importance, principles and implementation of Hazard Analysis Critical Control Point as a means of ensuring food safety.	Damien Gabis Russell Flowers
El Salvador January '95	***Seafood Production and Processing*** Assess condition and value of fishing fleet and processing equipment.	Robin Rackowe Irving Stern
Nepal Jan./Feb. '95	***Dairy Processing*** Dairy processing, packaging, quality control.	Raymond Binkley
Russia February '95	***Dairy Product Development*** Dairy product development, diversification and quality control.	James De Tolla II
Guatemala March '95	***Bakery Technologies & Quality Control II*** Baking techniques, ingredient functionality, equipment and plant maintenance, quality control.	Theresa Volpe
Honduras May '95	***Fruits & Vegetables Processing*** Preservation techniques, quality control, canning regulations.	Pedro Sole
Russia May '95	***Marketing*** Fundamentals of marketing on a small budget, including consumer research, new product viability, understanding and responding to market demand.	Anthony Adams Paul Mulcahy

The IFT Annual Meeting and Food Expo

The 1995 Annual Meeting of the Institute of Food Technologists (IFT) will be held in Anaheim, California from June 3 - 7, 1995. IFT is a non-profit professional scientific society devoted to promoting the application of food science and technology to improve the production, distribution, evaluation and utilization of food. For more information on the annual meeting contact IFT at fax# 312-782-8348.

Each year during the IFT meeting, SUSTAIN holds a reception for its volunteers, friends and overseas participants and collaborators. It is an excellent opportunity to meet and discuss in person SUSTAIN's services, projects and needs in developing countries. If you are planning to attend the IFT meeting, please write to SUSTAIN and we will send you an invitation to the reception.

Proposed U.S. Regulations Incorporating Hazard Analysis Critical Control Points

Proposed USDA Regulations

January 31, 1995 — The U.S. Department of Agriculture (USDA) unveiled a new food safety proposal for meat and poultry called the USDA HACCP/Pathogen Reduction rule. The proposal "...would directly target and reduce harmful bacteria and build prevention of food-borne illness into meat and poultry inspection," said Michael R. Taylor, the acting under secretary for Food Safety and administrator of USDA's Food Safety and Inspection Service (FSIS).

After public comment on the proposal, a final rule will be published. Within three years of publication of the final rule, meat and poultry slaughter and processing plants will be required to adopt HACCP systems. These would identify potential food safety hazards arising in slaughter and processing plants and build in science-based preventive controls. Under the HACCP proposal, industry would verify the effectiveness of their operations by continuous monitoring of the controls, end product testing and careful record keeping. To ensure meat and poultry products imported into the U.S. are safe, wholesome and accurately labeled, the proposed regulations would also apply to foreign countries that export meat and poultry products to the U.S.

Within 90 days of publication of the final rule, basic food safety procedures including written sanitation plans, antimicrobial treatments and strict temperature controls for raw products will have to be followed. It would also require slaughter plants to test raw products daily for Salmonella.

Source: USDA

Proposed FDA Regulations

January 21, 1994 — The U.S. Food and Drug Administration (FDA) announced a major new food safety initiative proposal requiring the seafood industry to establish safety controls subject to regulatory review. The proposed rules, which are based on HACCP, would apply equally to domestic and imported products.

"...Comprehensive mandatory controls...will be monitored under current FDA surveillance and inspection activities directed at seafood production....All seafood processors, packers and warehouses...will be required to adopt a HACCP plan appropriate for their business, monitor it and keep records that will be inspected regularly by FDA....For example, firms will have to document that seafood has not been made unsafe by pollution or natural toxins in the water. Companies will have to verify that ready-to-eat seafood has been cooked to a safe temperature, that safeguards have been taken against cross-contamination between cooked and raw seafood and that finished products are held at proper temperature."

FDA is currently reviewing public comments and is expecting to issue a final rule in 1995.

Source: FDA

HACCP Workshop in Central America

Two SUSTAIN volunteers who are experts on food safety and HACCP from Silliker Laboratories Group, Dr. Damien Gabis, CEO, and Dr. Russell Flowers, president, taught a HACCP workshop in Guatemala on November 30 and December 1, 1994. Thirty Central American food industry professionals participated. The workshop covered the importance, principles and implementation of HACCP. Participants developed HACCP plans for various food products related to their companies' products. Dr. Gabis also provided one-on-one technical assistance on sanitation, food safety and HACCP to food companies in Guatemala City.

Dr. Damien Gabis (middle row, sixth from left) and Dr. Russell Flowers (back row, second from right) and Dr. Luiz Elias (front row, center) with workshop participants.

SUSTAIN provides access to U.S. expertise in food preservation and processing to help improve the nutritional quality, safety and availability of food in developing and newly democratic countries. Technical assistance and training is provided by executives and technical specialists who serve as volunteers from U.S. food companies, universities and professional organizations. Volunteers serving on the Steering Committee are executives active and retired from: Ben & Jerry's Homemade, Inc.; Campbell Soup Co.; General Mills, Inc.; Gerber Products Co.; H.J. Heinz Co.; Hershey Foods Corp.; Hunt-Wesson, Inc.; Land O'Lakes, Inc.; McCormick & Co., Inc.; Nabisco Biscuit Co.; Purdue University, Silliker Laboratories Group, Inc.; Technical Assessment Systems, Inc.; and Wakefern Food Corp.

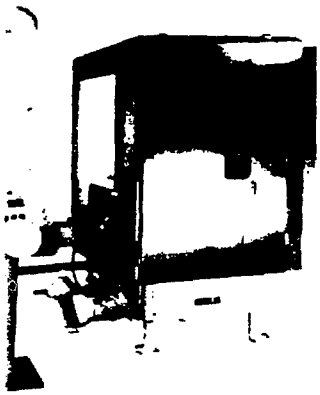
The views expressed in *SUSTAIN Notes* are not necessarily those of SUSTAIN or the U.S. Agency for International Development (USAID).

This publication is made possible through support provided by the Office of Health/Nutrition; Bureau for Global Programs, Field Support and Research; USAID.

Managing Editor: Elizabeth Turner
Technical Editor: Vaishali Patel
Contributing Editor and Writer:
Susan Wunder

14

P 6A



_S 121L, 101L and 81L

: to meet the high speed production
ents of liquid and semi-solid products, the
s of automatic seamers operates at rapid
peeds. The 12-spindle Model 121L is the
he series, seaming cans at 1600 + per
cans from 200 (50 8 mm) to 303 (81 mm)
er up to 800 (203.2 mm) high. The Model
ns cans from 200 (50 8 mm) to 401
) in diameter, up to 800 (203.2 mm) high
of 1200 + cans per minute. An 8-spindle
the 121L, the 81L, seams cans 200
to 404 (107 9 mm) in diameter and up
3 2 mm) high at speeds up to 800 cans
e

MODEL 41L

This intermediate speed seamer, 400 cans per minute, incorporates all of today's most desired features. This high quality machine will provide years of production efficiency and trouble free service. The 4-spindle 41L closes cans from 200 (50 8 mm) to 404 (107 9 mm) in diameter and up to 800 (203 2 mm) high

s has been building the highest seaming and can manufacturing s. Over the years we have kept of changing technology and as s were recognized we incorpo- em into the design, engineering ufacturing process. Please call or complete information and speci- and find out why—Angelus is the of choice!

Member

• TX 0674288 • FAX (213) 587 5607
69 20 • TX 35331 • FAX (32) 3 325 56 33
x 335434 • FAX (905) 771882

THE ALMANAC

OF THE CANNING, FREEZING, PRESERVING INDUSTRIES

1995

78th Compilation of Basic References for the Canning, Freezing, Preserving and Allied Industries

■

$65 in USA
$75 Canada & Mexico
$89 Other Countries

Copyright© 1995 by Edward E. Judge & Sons, Inc.

Updated to May 1, 1995

EDWARD E. JUDGE & SONS, INC.
P.O. Box 866
Westminster, MD 21158
U.S.A.

Phone 410-876-2052
Fax 410-848-2034

15

p 7b

AGUA

Nutrition Facts

Serving Size 8 oz. (240ml)
Servings Per Container about 16

Amount Per Serving	
Calories	0
	%Daily Value*
Total 0g	0%
Sodium 0mg	0%
Total Carbohydrate 0g	0%
Protein 0g	0%

Not a significant source of cholesterol, dietary fiber, sugars, vitamin A, vitamin C and iron.

*Percent Daily Values are based on a 2,000 calorie diet.

2% MILKFAT LOWFAT MILK

VITAMINS A & D ADDED • GRADE A
PASTEURIZED • HOMOGENIZED

Nutrition Facts

Serving Size 8 fl oz (240mL)
Servings Per Container 4

Amount Per Serving	
Calories 120	Calories from Fat 45
	% Daily Value*
Total Fat 5g	8%
Saturated Fat 3.0g	15%
Cholesterol 20mg	7%
Sodium 120mg	5%
Total Carbohydrate 12g	4%
Dietary Fiber 0g	0%
Sugars 11g	
Protein 8g	

Vitamin A 10% • Vitamin C 4%
Calcium 30% • Iron 0%
Vitamin D 25%

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

	Calories:	2,000	2,500
Total Fat	Less than	65g	80g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

INGREDIENTS: MILK, SKIM MILK, VITAMIN A PALMITATE, AND VITAMIN D3.

DISTRIBUTED BY THE KROGER CO., CINCINNATI, OHIO 45202
PROCESSED AT LOCATION STAMPED ON TOP OF CARTON

QUART – 946mL

Nutrition Facts

Serving Size ¼ Cup (62g)
Servings Per Container 7

Amount Per Serving	
Calories 20	Fat Cal. 0
	% Daily Value*
Total Fat 0g	0%
Sodium 14mg	1%
Total Carb. 5g	2%
Fiber 1g	4%
Sugars 3g	
Protein 1g	

Vitamin A 15% • Vitamin C 20%
Iron 4%

Not a significant source of cholesterol, saturated fat or calcium.
*Percent Daily Values are based on a 2,000 calorie diet

16

The New Nutrition Label

Here is an example of what the new FDA-required label will look like.

Nutrition Facts

Serving Size 1/2 cup (114g)
Servings Per Container 4

Amount Per Serving

Calories 260 Calories from Fat 120

	%Daily Value*
Total Fat 13g	**20%**
Saturated Fat 5g	**25%**
Cholesterol 30mg	**10%**
Sodium 660mg	**28%**
Total Carbohydrate 31g	**11%**
Dietary Fiber 0g	**0%**
Sugars 5g	
Protein 5g	

Vitamin A 4% • Vitamin C 2%

Calcium 15% • Iron 4%

* Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

	Calories:	2,000	2,500
Total Fat	Less than	65g	80g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

Calories per gram:
Fat 9 • Carbohydrate 4 • Protein 4

For more information on how Hazleton can help you prepare *your* label, call us at 608-242-2615.

STOP OPEN OTHER END STOP OPEN OTHER END STOP OPEN OTHER END STOP

12 COUNT

NET WT. 8 OZ (227 g)

RESEALABLE SEAL FRESH PACKAGE

Corn Tortillas

TEAR HERE

MISSION Corn Tortillas

These Extra Thin Corn Tortillas are made with the natural goodness of grains for exceptional flavor with all your favorite foods. They're deliciously authentic for traditional crispy tacos, taquitos and tostadas. And they're so versatile, you'll want to enjoy them instead of bread, warmed with your favorite filling or layered in casseroles!

Nutrition Facts

Serving Size 2 Tortillas (40g)
Servings Per Package 6

Amount Per Serving	
Calories 90	Calories from Fat 10
	% Daily Value*
Total Fat 1g	2%
Saturated Fat Less than 0.5g	1%
Cholesterol 0mg	0%
Sodium 60mg	2%
Total Carbohydrate 18g	6%
Dietary Fiber 1g	5%
Sugars 0g	
Protein 2g	

Vitamin A 0% • Vitamin C 0%
Calcium 2% • Iron 2%

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

		Calories:	2,000	2,500
Total Fat	Less than		65g	80g
Sat Fat	Less than		20g	25g
Cholesterol	Less than		300mg	300mg
Sodium	Less than		2,400mg	2,400mg
Total Carbohydrate			300g	375g
Dietary Fiber			25g	30g

Calories per gram
Fat 9 • Carbohydrate 4 • Protein 4

Mission Extra Thin Corn Tortillas not only taste good, they're good for you! Corn Tortillas are naturally low in fat and provide a nutritious alternative to bread. Each tortilla contains a portion of wholesome grains to supplement your daily diet. That's important because, as the U.S.D.A.'s Food Guide Pyramid indicates, a well balanced diet includes 6-11 servings each day from the Tortilla, Rice, Cereal, Bread & Pasta group - and there's no tastier way to meet this requirement than with Mission Extra Thin Corn Tortillas. Isn't it time you made them part of your wholesome diet?

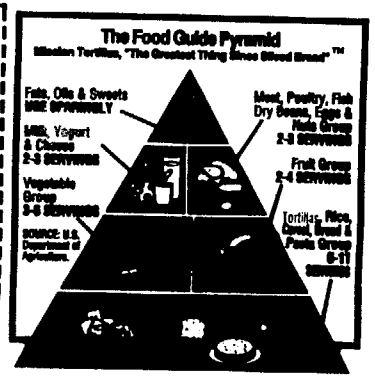
FOR BEST RESULTS WARM TORTILLAS BEFORE EATING.

Conventional Preparation: To warm and soften for table use or recipes, place directly over low gas flame or on medium-hot ungreased skillet. Turn frequently until soft and piping hot.
Microwave Preparation: To warm in microwave, place a stack of 5 tortillas between 2 slightly dampened microwave paper towels. Microwave on high for 45 seconds or until warm. Keep wrapped until ready to serve.

CAUTION: Microwaving the tortillas in the bag may cause the packaging ink to stain any surface the bag contacts while hot.

Proof of Purchase
0 73731 00340 4
MISSION 8 OZ. YELLOW CORN TORTILLAS

If you have any questions or comments about this product, please enclose the entire bag and write to:
Consumer Affairs
P.O.Box 6711
Los Angeles CA 90022



REFRIGERATE AFTER PURCHASE

INGREDIENTS: GROUND CORN TREATED WITH LIME, WATER, CELLULOSE GUM, MONOCALCIUM PHOSPHATE, SODIUM PROPIONATE AND POTASSIUM SORBATE (TO PRESERVE FRESHNESS), FUMARIC ACID.

MISSION FOODS HEADQUARTERS, LOS ANGELES, CA 90022

Wait, Hitch! This Mission's new temperature resistant package allows you to open the bag again and again while preserving the moisture and flexibility of the tortillas.

1. Tear at dotted line

2. Separate to open

3. Press to close

Wait, Hitch! Do Not Purchase If Perforation is Torn

Lipton

KETTLE CREATIONS™

HOMEMADE STYLE

SOUP MIX

SELECT HERBS AND SPICES WITH HEARTY SOUP STOCK FOR

BEAN MEDLEY

WITH PASTA

COOKS IN 30 MINUTES

Lipton®

KETTLE CREATIONS

SOUP MIX

THE FINEST QUALITY INGREDIENTS AND SELECT HERBS FOR A FRESH WAY TO MAKE SOUP

MAKES 32 FL. OZ.

COOKS IN 30 MINUTES

KETTLE CREATIONS SOUP MIX

Thank you for trying our new Kettle Creations Homemade Style Soup Mix.

No soup tastes better than real homemade. But these days, it's hard to find the time to make soup yourself from scratch. We've created these convenient mixes of wholesome beans, grains and pastas, with carefully selected herbs and spices, so that you can have the delicious taste of homemade soup in only 30 minutes!

Please try all four delicious varieties: Chicken Flavor with Pasta and Beans, Bean Medley with Pasta, Minestrone, Chicken Flavor 'N Onion with Long Grain and Wild Rice.

We hope you enjoy these soups as much as we do. In fact, we'd love to hear your comments or answer any questions you might have.

Please call us toll-free at **1-800-697-7887** *or write to the address on this package.*

5-29021-02

A FRESH WAY TO M

GOOD SOURCE OF FIBER

Nutrition Facts

Serving Size 1/4 cup (35g)
(makes 1 cup prepared)
Servings Per Container 4

Amount Per Serving	
Calories 130	Calories from Fat 15
	% Daily Value*
Total Fat 1.5g	**3%**
Saturated Fat 0g	**0%**
Cholesterol 0mg	**0%**
Sodium 690mg	**29%**
Total Carbohydrate 23g	**8%**
Dietary Fiber 4g	**17 %**
Sugars 4g	
Protein 6g	

Vitamin A 0%	Vitamin C 0%
Calcium 4%	Iron 6%

* Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.

	Calories	2,000	2,500
Total Fat	Less than	65g	80g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

INGREDIENTS: ENRICHED MACARONI PRODUCT [WHEAT FLOUR, NIACIN, IRON, THIAMINE MONONITRATE (VITAMIN B_1), RIBOFLAVIN (VITAMIN B_2)], PRECOOKED BEANS (BLACK BEANS, PINTO BEANS, AND RED BEANS), SUGAR, SALT, YEAST EXTRACT, MALTODEXTRIN, POTATO STARCH, RED BELL PEPPERS*, ONIONS*, CHICKEN*, CHICKEN FAT, ONION POWDER, GARLIC POWDER, NATURAL FLAVORS, PARTIALLY HYDROGENATED SOYBEAN OIL, PARSLEY*, WHEY*, NONFAT MILK*, EGG YOLK*.
*DEHYDRATED

DISTRIBUTED BY THOMAS J. LIPTON, INC.
ENGLEWOOD CLIFFS, NJ 07632

KETTLE CREATIONS

With Kettle Creations™ Soup Mix, you can have a kettleful of delicious tasting homemade style soup in about thirty minutes. We've chosen the finest quality ingredients for you to cook up in a rich and hearty stock, seasoned with select herbs and spices.

PREPARATION DIRECTIONS Makes 4 (1-cup) servings

Like traditional homemade soup, Kettle Creations should be cooked on a stove for best results.

Top-of-Stove

1. In medium saucepan, bring 5 cups water and contents of packages to a boil.
2. Reduce heat and simmer uncovered, stirring occasionally, 30 minutes or until beans are tender.

Microwave

In 3-quart casserole, combine 5 cups water and contents of packages. Microwave covered, stirring twice, at HIGH 35 minutes or until beans are tender.

COOK'S CORNER

For a special touch, simply add any of the following ingredients along with the water:

- 8 oz. cut-up cooked ham
- 2 carrots, diced

Or, during the last 5 minutes of cooking, add:

- 1 cup packed fresh spinach or escarole leaves, torn into bite-size pieces

0 41000 02902 8

The **Lipton** Kitchens Taste Tested Recipes

LIPTON 800 LINE Questions or comments? Please keep this package and call **1-800-697-7887**, or write to the address on this package.

PATENT PENDING (PACKAGING)

20

Cursillo taller
Procesamiento de frutas y vegetales
PROFRUTA - SUSTAIN
AMATITLÁN GUATEMALA 5-7 DIC 95.

DESCRIPCIÓN DE PRÁCTICAS

A. PRIMER EXPERIMENTO. SECADO DE ZANAHORIAS EN CUBITOS.

1. Preparación y cortado

Zanahorias grandes pero ni tiernas ni muy sazonas.
Que variedades usa CINDAL? (Exportando sopas a EEUU)
"Corazón rojo Chantenay" ("Red Core Chantenay"), o
"Emperador" ("Imperator").
Bolsita de "Cenoura Chantenay" para experimentar con ella.

Cortaremos las hojas de las zanahorias con cuchillos y las **escogeremos** a mano.
Pelaremos con vapor en el autoclave de la plantita piloto. Trataremos de lograr 70 libras/pulg^2(4.9 kg/cm^2) empezando con 40 segundos de tiempo de residencia y aumentando o reduciendo el tiempo según salgan. Si el autoclave no alcanza la presión, probaremos a otras presiones, según la presión que pueda alcanzarse con seguridad:

Presión kg/cm^2	Tiempo seg	Presión kg/cm^2	Tiempo seg
7.0	25-30	4.9	40-120
2.0	75-235	1.0	80-275

¿Se logró hacer algunas pruebas con antelación al cursillo?
Lavaremos con chorro de agua a presión para remover las corteza suavizadas por el vapor.
Cubicaremos usando una máquina cubicadora si está disponible o a mano con cuchillos si no lo está. Cubitos de 4 a 8mm cada lado.

2. Escaldado, carga de las bandejas y sulfitado

Usaremos también el autoclave de la planta italiana para **escaldar**, vapor a 190 °F (88 °C) por 6-8 minutos. Usaremos canastas perforadas de acero inoxidable con agujeros de 2-3mm de diámetro. Al terminar el escaldado se cargarán las bandejas del a 1.25 lbs/pie^2 (6.1 kg/m^2). Sobre las mismas bandejas se rociarán las zanahorias con solución de sulfito de sodio en agua al 0.6% para **sulfitar.**

3. Carga del secador y desecado

Poner inmediatamente las bandejas en el secador para secarlas a 160 °F (71 °C). Durante el **secado** examinar las bandejas cada hora e intercambiar de posición para que el secado sea lo mas parejo posible. Siete horas después de empezado el secado, se bajará la temperatura a 120 °F (49 °C) y se amontonara el producto de cada tres o cuatro bandejas en una sola, para continuar el secado durante la noche hasta la mañana del día siguiente. Durante el secado se sacará muestras y se **determinará humedad** cada hora en las primeras siete horas y cada 3-4 horas después, hasta el final del secado.

4. Equipo, utensilios y materiales necesarios

1 Agua clorinada (10-20 ppm Cloro) y agua potable.
8 Cuchillos de acero inoxidable para mondar
1 Transportador de banda o mesa de escogido para 8 personas
1 Autoclave de planta piloto Italiana.
2 Canastas perforadas para pelar las zanahorias en el autoclave Las mismas canastas se usarán para el escaldado. Si los agujeros no son suficientemente pequeños (no mas de 3mm de diámetro) obtener malla de acero inoxidable o de un plástico que aguante una temperatura de 100 °C, para forrar las canastas por dentro.
2 Recipientes de unos 20 gal c/u para acumular temporalmente los cubitos de zanahorias cortadas antes de cargarlos a las canastas para el blanqueado. Estos pueden ser substituidos por unas 10 cubetas plásticas blancas de 4-5 gal, de preferencia con sus tapas.
20 Bandejas de secado de las existentes para el secador de gabinete de Amatitlán. De preferencia de acero inoxidable, esmaltadas o de aluminio. Si no las hay, obtener papel de aluminio grueso para forrar las bandejas por dentro.
5 Litros de solución de sulfito de sodio al 0.6% en peso. La solución debe ser hecha fresca el día anterior.
1 Secador piloto de gabinete de bandejas con la capacidad que haya disponible. El tamaño del secador y el area total de bandejas disponible fijará la cantidad de zanahorias a obtener.
1 Cálculo de cantidad de zanahorias a procesar.
Capacidad total de _ _ _ bandejas de _ _ _cm x _ _ _cm, dan un area total de bandejas de _ _ _ _ metros cuadrados. Para esto necesitamos_ _ _ _ m^2 x 6.1 = _ _ _ _kg de cubitos de zanahoria. Suponiendo que las pérdidas son 50% para ser conservadores, necesitaremos _ _ _ _kg de zanahoria cruda. Debemos usar únicamente suficientes bandejas para darnos un máximo de 5 m^2 de area.
1 Medidor de humedad de lampara infraroja o equivalente.
18 Portamuestras para medición de humedad.
1 Lote de instrumentos de laboratorio, cucharas, termómetros, vasos de muestra, etc.

B. SEGUNDO EXPERIMENTO. ENLATADO DE PEDACITOS DE PIÑA EN SU JUGO.

1. Preparación y cortado

Lavaremos las piñas con agua con cloro y las **escogeremos**, eliminando las partes podridas y las sobremaduras.
Luego las **pelaremos** usando machetes pequeños o cuchillos grandes. Si se puede obtener una peladora manual de piña, con el mismo principio de operación de una "Ginacca", la usaremos. Las tajadas de piña serán de 8 a 13mm de grueso. Para remover el corazón usaremos sacabocados de acero inoxidable de 1 pulgada (25mm) de diámetro o algún aditamento similar. Luego las tajadas serán cortadas en pedacitos con cuchillos de modo que los arcos tengan entre 8 y 13mm también. Parte de la piña será usada para extraer jugo de piña para usar como líquido de empaque. Se usará el pulpero de la plantita italiana con tamíz de 0.033 pulg. (0.8mm) de diámetro.

2. Enlatado, adición de jugo y sellado de las latas

Se usarán latas de _ _ _ x _ _ _ para empacar la piña.
Llenar lata hasta el borde con los trocitos de piña, y luego añadir el jugo de piña a la temperatura mas alta posible, en la llenadora de jarabe.
Sellar las latas inmediatamente y poner en una canasta del autoclave.

3. Proceso térmico y enfriamiento

Procesar 20 minutos en agua hirviendo a 95 °C (203 °F) en el autoclave.
Sacar la canasta del autoclave y enfriar con agua potable hasta no mas de 43 °C (110 °F) temperatura del centro de la lata.

4. Equipo, utensilios y materiales necesarios

6 Machetes pequeños o cuchillos grandes para cortar y mondar las piñas.
4 Sacabocados de acero inoxidable de 1 pulgada (25.4 mm) de diámetro para cortar el corazón de las tajadas.
8 Cuchillos, los mismos 8 usados para la zanahoria el día anterior.
1 Transportador de banda o mesa de escogido para 8 personas. La misma de las zanahorias de ayer.
1 Prensa manual para extraer jugo de piña si es que no hay tamiz adecuado para el pulpero de la plantita italiana.
XX Latas vacías _ _ _ x _ _ _ de _ _ _ onzas de hojalata 0.75/0.25 sin esmalte plástico interno. El mismo número de tapas, también sin esmalte interno.
2 Canastas para cargar las latas llenas en el autoclave.
1 Lote de piña madura pero no pasada. _ _ _ _ latas de _ _ _ _ Oz requieren _ _ _ _ libras. Suponiendo un rendimiento de 50% necesitariamos _ _ _ _ libras de piña, pesada sin las coronas.

La **curva de remojo** para frijoles. Dos personas designadas.
5 muestras de 100g cada una de frijoles, añadir suficiente agua.
Pesar cada 30 minutos una muestra de los frijoles drenados.

Descartar cada muestra que se va pesando.
Gráficar el peso drenado en el eje vertical contra tiempo en minutos en el eje horizontal.
Interpolar o extrapolar en la gráfica el tiempo necesario para duplicar el peso.

C. TERCER EXPERIMENTO. ENLATADO DE FRIJOLES NEGROS EN SALMUERA.

1. Preparación y curva de remojo

Antes del almuerzo, el día del experimento, los frijoles serán puestos a **remojar** según la curva de remojo que será preparada con anterioridad. Ver arriba; los frijoles deben duplicar su peso durante el remojo.
El día del experimento, después del almuerzo, los frijoles serán drenados y **escogidos** en una banda continua para eliminar piedras y basuras.

2. Enlatado, adición de salmuera y sellado de las latas

Poner 3 oz. (85g) de frijoles remojados en cada lata 202x306.
Llenarán solo 48 latas con frijoles.
Añadir la salmuera caliente a 90-95 °C.
Sellar la lata y ponerla en el canasto del autoclave. Este proceso debe proceder eficientemente, sin perder tiempo, para que no se baje la temperatura inicial.

3. Proceso de autoclave

El proceso será de 40 min a 240 °F(115 °C). Al terminar el proceso, enfriar con bastante agua hasta que la temperatura haya bajado a no mas de 110 °F(43 °C).
Una vez evaluadas, abrir y descartar todas las latas restantes, para evitar riesgos de salud si se desarrollara botulismo en las latas por malos sellos o mal proceso.

4. Equipo, utensilios y materiales necesarios

1 Banda de escogido para 8 personas. La misma que se usó antes.
2 Recipientes plásticos de 20 gal. o varias cubetas de 4-5 gal. las mismas que se usó antes, para remojar los frijoles.
1 Balanza de cocina o laboratorio para poder pesar de 0-1,000 g.
15 Vasos de plástico de alrededor de 250 ml. Pueden ser vasos deshechables, para hacer la curva de humedad.
96 latas 202x306 para frijoles con esmalte interno y con sus tapas.
1 kilogramo (2.2 libras) de sal comestible, suficiente para hacer 50 litros de salmuera al 2%. (Favor comprobar en el equipo de la planta piloto si los 50 litros de salmuera son suficientes para llenar las tuberías y tener los 9 litros requeridos para las latas propiamente dichas.
20 gramos de cloruro de calcio para 50 litros de salmuera (0.4%) Este producto dá firmeza a los frijoles y puede omitirse si se desean frijoles mas blandos.

1 Termómetro bi-metálico con escala de 70 hasta 270 °F (21-132 °C) para medir la temperatura del centro de la lata y otras.
1 Abrelatas, de preferencia de los usados por control de calidad en las enlatadoras. Se usará también para la piña.
1 Tenazas para abrir sellos de latas. Se usará también para la piña.
1 Micrómetro para sellos de latas. Se usará también para la piña.
1 Medidor de pH potenciométrico/electrónico. Se usará también para la piña.
1 Refractómetro para medir °Brix. Se usará también para la piña.
1 Lote de 10 libras de frijoles negros de la última cosecha. Los frijoles viejos, tardan mucho en hidratarse.

HOW TO OBTAIN FDA REGULATIONS . . .

The Food and Drug Administration's (FDA) regulations are printed in *Title 21, Code of Federal Regulations*. In addition, FDA and all other Government agencies publish new regulations and proposals in the *Federal Register*.

FDA Regulations

Title 21, Code of Federal Regulations (21 CFR) is updated April 1 of each year. The 1993 edition contains eight volumes and is printed in paperback books. Instructions for ordering single volumes or the complete set appear in the box at the bottom of this page.

21 CFR 1-99. Price $15.00 ($18.75 for foreign mailing). General regulations for enforcement of the Federal Food, Drug, and Cosmetic Act and the Fair Packaging and Labeling Act. Color additives. Order #869-019-00066-6

21 CFR 100-169. Price $21.00 ($26.25 for foreign mailing). General regulations for food labeling (contains the new regulations for nutrition labeling that become effective on May 8, 1994). Infant formula quality control procedures and labeling. Food standards, and quality standards for bottled drinking water. Current good manufacturing practice regulations for food, bottled drinking water, low-acid canned foods, and acidified foods. Order #869-019-00067-4

21 CFR 170-199. Price $20.00 ($25.00 for foreign mailing). Food additives. Order #869-019-00068-2

21 CFR 200-299. Price $6.00 ($7.50 for foreign mailing). General regulations for drugs. Order #869-019-00069-1

21 CFR 300-499. Price $34.00 ($42.50 for foreign mailing). Drugs for human use. Order #869-019-00070-4

21 CFR 500-599. Price $21.00 ($26.25 for foreign mailing). Animal drugs, feeds and related products. Order #869-019-00071-2

21 CFR 600-799. Price $8.00 ($10.00 for foreign mailing). Biologics and cosmetics. Order #869-019-00072-1

21 CFR 800-1299. Price $22.00 ($27.50 for foreign mailing). Medical devices, radiological health, interstate conveyance sanitation, and control of communicable diseases. Regulations for the Federal Import Milk Act, Federal Tea Importation Act, and Federal Caustic Poison Act. Order #869-019-00073-9

Federal Register

The *Federal Register* is published Monday through Friday by the Government Printing Office. It is mailed, postage paid, to subscribers at a cost of $4.50 per issue or each group of pages as actually bound ($5.63 for foreign mailing), $375.00 per year ($468.75 for foreign mailing). Six-month subscriptions are available at one-half the annual rate, and individual copies and annual subscriptions are available in microfiche at reduced rates.

How To Order

You may subscribe to the *Federal Register* or order single copies of Title 21, *Code of Federal Regulations* or back issues of the *Federal Register* (if available) by making checks or money orders to "SUPERINTENDENT OF DOCUMENTS" and mailing to U.S. GOVERNMENT PRINTING OFFICE, WASHINGTON, DC20402. You may also order by telephoning the U.S. Government Printing Office at 202-783-3238 to charge on VISA or MASTERCARD.

Public reporting [illegible]den for this collection of information is estimated to average .17 hours per resp[illegible], including the time for reviewing instructions, searching existing data sou[illegible] gathering and maintaining the data needed, and completing reviewing the co[illegible]on of information. Send comments regarding this burden estimate or any [illegible] aspect of this collection of information, including suggestions for reducing thi[illegible]den to:
Reports Clearar[illegible] [illegible]fficer, PHS and to Office of Manag[illegible]t and Budget
Hubert H. Humphrey Building, Room 721-B Paperwork Reduction Project (0910-0037)
200 Independence Avenue, S.W., Washington, DC 20201 Attn: PRA Washington, DC 20503

Please DO NOT RETURN this report to either of the two addresses to the left.

[illegible]RM APPROVED: O[illegible]. 0910-0037
EXPIRATION DATE: N[illegible] [illegible]ber 30, 1995

TYPE OF SUBMISSION

- ☐ Initial Registration
- ☐ Relocation *(new registration required)*
- ☐ Change of Registration Information

Specify Type of Change _____ Enter Current FCE: *(If applicable)* _____

DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Food and Drug Administration

FOOD CANNING ESTABLISHMENT REGISTRATION

FOR FDA USE ONLY	
FCE No.	Date Received by FDA
OOB Code / Date	District
Reference	

FOOD PROCESSING PLANT LOCATION

Establishment Name _____

Number and Street _____

City and State or Province (or other Subdivision) _____

Zip (or other Postal Code) _____ Country (If other than U.S.) _____

Telephone No. (___) _____ Telefax No. (___) _____

PREFERRED MAILING ADDRESS

☐ Same as Plant Location

Establishment Name _____

Number and Street _____

City and State or Province (or other Subdivision) _____

Zip (or other Postal Code) _____ Country (If other than U.S.) _____

Telephone No. (___) _____ Telefax No. (___) _____

LOW ACID AND/OR ACIDIFIED FOODS PROCESSED AT THIS LOCATION

Food Product Name, Form or Style, and Packing Medium

(Do not list meat and poultry foods under the jurisdiction of the Food Safety and Inspection Service of the U.S. Department of Agriculture.)

	(Check One) Low-Acid	Acidified

PLEASE SEND THE FOLLOWING:

Number of Copies

_____ Process filing forms used for low-acid aseptic processes

_____ Process filing forms used for all processing methods except low-acid aseptic.
NOTE: A separate form is required for each product-process combination.

_____ Registration and Process Filing Instructions

_____ LACF & Acidified Regulations (21 CFR 108, 113, 114)

See "Instructions for Establishment Registration and Process Filing for Acidified and Low-Acid Canned Foods" for guidance in completing this form. Forward all copies of completed form to:

LACF Registration Coordinator (HFS-618)
Center for Food Safety & Applied Nutrition (FDA)
200 C Street, SW
Washington, DC 20204

AUTHORIZED COMPANY REPRESENTATIVE

Name, Address and Title of Authorized Representative: _____

Phone Num[illegible] (___) _____ ☐ [illegible] ☐ [illegible]

(Use FDA booklet titled "Instructions for Establishment Registration and Process Filing [illegible] Acidified and Low-Acid Canned Foods" for completing Form FDA 2541a.)

FOR[illegible] EXI[illegible] APPROVED: OMB No. [illegible] 37 ION DATE: November [illegible] /95

FCE _ _ _ _ _ SID _ _ _ _ _ _ / _ _ _ (Y Y M M D D S S S)

A. PRODUC

Name, Form or Style, and Packing Medium: _____

Raw pH: |||.||

Governing Regulation:
- __ low-acid (21 CFR 108.35/113)
- __ acidified (21 CFR 108.25/114)

Type of Submission
- __ new
- __ replaces __ __ — __ __ — __ __ / __ __ __
- __ cancels __ __ — __ __ — __ __ / __ __ __

Process Use
- __ scheduled
- __ alternate for __ __ — __ __ — __ __ / __ __ __
- __ emergency for __ __ — __ __ — __ __ / __ __ __

B. PROCESSING METHOD

NAME OF STERILIZER (MFR. & TYPE) _____

HEATING MEDIUM (e.g., Steam, water immersion or spray, steam-air) _____

1. __ **Still**
   - a __ Horizontal b __ Vertical
   - Divider Plates (complete for a. or b.)
     - __ None
     - __ Solid __ Perforated
   - c __ Crateless
   - Bottom Surface (complete for c.)
     - __ Solid __ Perforated

2. __ **Agitating**
   - a. __ End over End
     - __ Axial
   - b. __ Continuous
     - __ Batch

3. __ **Hydrostatic**
   - __ Inner Chain only
   - __ Outer Chain only
   - __ Both Inner and Outer Chain
   - __ Single Chain
   - __ Multiple Chains

4. __ **Flame**

5. __ **Other** *(explain)* _____

6. __ **Acidified**
   - Maximum Equilibrium pH: □.□
   - Method of Acidification: _____
   - Concentration: □□.□
   - Acidifying Agent: _____
   - Pasteurization Method: _____
   - Preservative Used: _____
   - Concentration: □.□, □.□, □.□

CONTAINER TYPE:

1. __ Tinplate/Steel Can __ 2-piece __ Welded
2. __ Aluminum Can __ 3-piece __ Soldered
   __ Cemented

3. __ Glass or Ceramic
4. __ Flexible Pouch *(specify material)*: _____
5. __ Semirigid *(specify material)*: Lid _____ Body _____
   Seal Method _____
6. __ Other *(specify)*: _____

PROCESS ESTABLISHMENT SOURCE *(Limit entry to 30 characters)* _____

DATE LAST ESTABLISHED 19 __ __ __ __ (Y Y M M)

PROCESS RECOMMENDATIONS ATTACHED? __ YES __ NO

C. CRITICAL FACTORS: AS DELINEATED BY PROCESS AUTHORITY TO ASSURE COMMERCIAL STERILITY *(Check or Describe)*

None of the Following	NO __	
Maximum Water Activity (a_w)	MW __	(.__ __)
Consistency / Viscosity	CV	
Value		(__ __ __ __ __.__ __ __)
Units		_____
Method Name		_____
Temperature		(__ __ __.)
Container Position in Retort	CP __	_____
Nesting of Containers	NC __	
Fill Method *(check applicable method)*	FM	
Hand	__	
Machine	__	
Other (specify)	__	_____
% Solids	SO __	(__ __.__)
Solid to Liquid Ratio (wt. to wt.)	SL __	(__ __.__)
Drained wt./Net wt. Ratio	DW __	(__.__ __)
Arrangements of Pieces in Container	AP __	_____
Formulation Changes	FC __	
Preparation Method	PM __	
Product Quality	PQ __	
Matting Tendency	MT __	
Layer Pack	LP __	
Max. Flexible Pouch/Semirigid Container Thickness in Retort	MP __	(__.__ __)
Max. Residual Air (Flexible Pouch/Semirigid Container)	MR __	(__ __.__) c.c.
Particle Size	PS __	_____
Syrup Strength	SS __	(__ __.__)
Starch Added	SA __	
Max. %		(__ __.__)
Type		_____
Other Binder	OB __	_____
Min. % Moisture of Dry Ingredients	MM __	(__ __.__)
Other (specify)	OT __	_____ _____

SCHEDULED PROCESS (Do *not* write in shaded areas—Enter numerical values in boxes.)

FCE: _____ BID: ___-___-___ / ___

CONTAINER DIMENSIONS			CAPACITY UNITS	SCHEDULED PROCESS (Check Only One in Each Column)					OTHER CRITICAL FACTORS TO ASSURE COMMERCIAL STERILITY PER SOURCE AUTHORITY									OTHER (Specify)
Diameter or Length	Height or Width	Height or Maximum Pouch or Semirigid Container Thickness		Step No	Temp (°F)	Process Time (Minutes)	Sterilization Temp (°F)	Lowest Sterilizing Value of the Scheduled Process	Thruput	Headspace	Speed: Reel Speed	Speed: Reel Diameter	Speed: Steps Per Turn of Reel	Speed: Chain / Conveyor Speed	Maximum Weight	Minimum Net Weight	Minimum Free Liq. at Closing	Minimum Container Closing Machine Gauge Vacuum
			___ Oz ___ Gal ___ ML ___ Other _____	LACF				___ F_0 ___ Other F Value Death Rate (z) ___ Ref. Temp. (T) ___ ___ IS Value ___ Other _____										
				___ Min. IT ___ Fill ___ Center ___ N/A		Process Time Hold Time Other ___ N/A	Process Temp ___ N/A		___ N/A	___ Net ___ Gross ___ N/A	___ N/A				___ Drained ___ Fill ___ N/A	___ N/A	___ N/A	___ N/A Temp. (± 3° F)
				Acidified or a_w Controlled														
				___ Min. IT		Process Time	Process Temp											
Inches & Sixteenths	Inches & Sixteenths	Inches & Sixteenths			°F	Minutes	°F		Containers per Minute	Inches	RPM	Inches	Number	Number	Ounces	Ounces	Ounces	In. Hg.

MENTS:

FOR FDA USE ONLY

NAME / ADDRESS

P2

DEPARTM[illegible] OF HEALTH AND HUMAN SERVICES ■ Public Health Service ■ Food and Drug A[illegible]inistration

FOO[illegible] [illegible]ESS FILING F[illegible] LOW-ACID ASEPTIC SY[illegible]MS

(USE FDA BOOKLET TITLED "AS[illegible]TIC PACKAGING SYSTEM SUPPLEMENT")

(TYPE OR PRINT ALL INFORMATION REQUESTED. IF AN ITEM DOES NOT APPLY ENTER "NA". FILE ACIDIFIED ASEPTIC (pH 4.6 or BELOW) ON FORM 2541d)

1. FCE: _____

NOTE: No commercial processor shall e[illegible] in the process[illegible]ing of low-acid foods unless complete[illegible] FDA 2541 and FDA 2541c have been filed with the Fo[illegible] and Drug Administra[illegible]tion, 21 CFR 108.35 (c)(1) and (2)

FORM APPROVED OMB No. 0910-0037 EXPIRATION DATE 11/30/95

FDA USE ONLY

DATE RECEIVED BY FDA

2. ESTABLISHMENT NAME

ADDRESS (No. and Street)

CITY | STATE | ZIP CODE | COUNTRY

3. SID: ___ ___ ___ / ___

4. __ NEW __ REPLACES __ CANCELS ___ ___ ___ / ___

5. ____ SCHEDULED ____ ALTERNATE FOR ___ ___ ___ / ___

6. SUP SID: ___ ___ - ___ ___ - ___ ___ / ___ ___ ___

FDA USE ONLY

7. PRODUCT NAME, FORM OR STYLE, AND PACKING MEDIUM

8. NAMES OF STERILIZING SYSTEMS

1. Product[1] _____

2. Packaging: _____

9. PROCESS ORIGIN

SOURCE	YEAR AND MONTH
1. _____	1. _____
2. _____	2. _____

10. CONTAINER TYPE (Check one)

1. ☐ TINPLATE OR STEEL CAN
2. ☐ ALUMINUM CAN
3. ☐ GLASS
4. ☐ OTHER (specify in 22)

11. MAXIMUM WATER ACTIVITY[2]	12. pH		13. MAXIMUM CONSISTENCY OR VISCOSITY IN CENTIPOISES OR APPROPRIATE UNITS[4]						14. SPECIFIC GRAVITY AT 77 ± 2°F	15. INSIDE DIAMETER OF HOLDING TUBE (Inches)	16. HOLDING TUBE LENGTH (Inches)
	Normal	Maximum[3]	Value at 77 ± 2°F	Value at Other Temp	Other Temp (°F)	Units	Method Name	Viscosity Characteristic			
0.	.	.	.					N ____ P ____ D ____	.	.	.

17. OTHER CRITICAL CONTROL FACTORS (Check all that apply)

- 61 ☐ PERCENT SOLIDS
- 62 ☐ RATIO OF SOLIDS TO LIQUIDS
- 63 ☐ SYRUP STRENGTH
- 69 ☐ METHOD OF PREPARATION
- 70 ☐ FORMULATION
- 71 ☐ REHYDRATION (specify method in 22)
- 72 ☐ PARTICULATES (specify maximum size in 22)
- 73 ☐ OTHER (specify in 22)

	18. CONTAINER DIMENSIONS (Inches and Sixteenths)			19. SCHEDULED PROCESS					20. MAXIMUM FOOD FLOW RATE (gal / min)	21. THRUPUT (Containers / min)			
	DIAMETER OR LENGTH	HEIGHT OR WIDTH	HEIGHT	MINIMUM INITIAL[4] TEMP (°F)	TIME (sec)	TEMP (°F)	LEAST STERILIZING VALUE (F_0) OF THE SCHEDULED PROCESS[5]	FLOW CORRECTION FACTOR					
01					.		.						
02					.		.						
03					.		.						
04					.		.						
05					.		.						
06					.		.						

22. COMMENTS:

AUTHORIZED COMPANY REPRESENTATIVE

NAME (Type or Print)	TITLE	SIGNATURE	PHONE NUMBER	DATE
			( )	

[1] For steam injection, enter volume increase and thermal expansion factors in 22.
[2] If reduced water activity is used as an adjunct to the process, specify the maximum water activity.
[3] Where acidification is followed for normally low-acid fruits, vegetables or vegetable products for the purpose of thermal processing, specify the maximum finished product equilibrium pH.
[4] If a critical factor in the process.
[5] Or equivalent scientific basis of process adequacy.

FDA 2541c (8/93) PREVIOUS EDITION IS OBSOLETE.

30

P 52

U.S. GRADES PINEAPPLE JUICE—Continued

Factors	Points
Color	20
Defects	40
Flavor	40
Total Score	100

(d) The essential variations within each factor are so described that the value may be determined for each factor and expressed numerically. The numerical range for the rating of each factor is inclusive (for example, 17 to 20 points means 17, 18, 19, or 20 points) and the score points shall be prorated relative to the degree of excellence for each factor.

§52.1767 FILL OF CONTAINER

The standard of fill of container is a fill of not less than 90 percent of the total capacity of the container except when the food is frozen. Juice or juice from concentrate that does not meet this requirement is "Below Standard in Fill".

§52.1768 REQUIREMENTS FOR GRADES

TABLE I.—PINEAPPLE JUICE

Factors	Grade A	Grade B
Quality:		
Color	Very good	Good.
Score points	17 to 20	14 to 16.
Defects	Practically free	Reasonably free.
Score points	34 to 40	28 to 33.
Flavor	Very good	Good.
Score points	34 to 40	28 to 33.
Total score (minimum)	85 points	70 points.

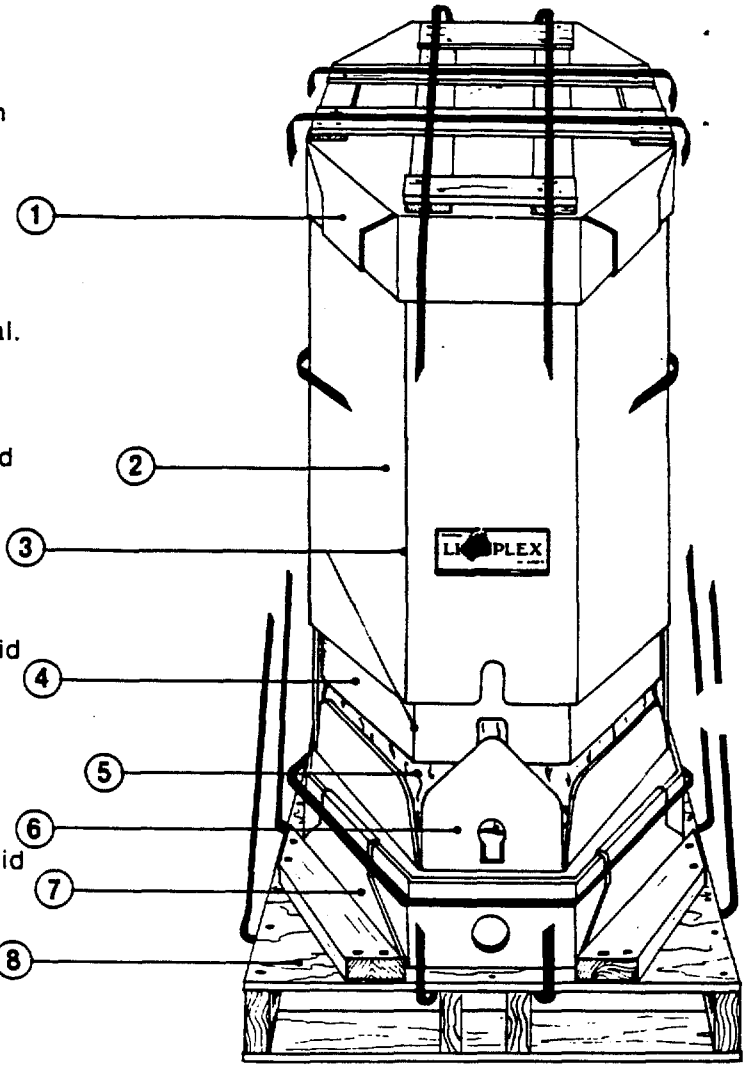
Factors	Grade A		Grade B	
	Unsweetened	Sweetened	Unsweetened	Sweetened
Analytical:				
Acid (maximum)	1.10g/100ml	1.10g/100ml	1.35g/100ml	1.35g/100ml.
Brix (minimum)	12.0°	12.5°	10.5°	11.0°
Soluble pineapple juice solids (percent by weight of finished product prior to addition of sweetener) (minimum).		12.0		10.5.
Brix/acid ratio (minimum)	12.0:1	12.0:1	12.0:1	12.0:1.
Finely divided insoluble solids (percent by volume). Range.	5 to 26%	5 to 26%	5 to 30%	5 to 30%.

TABLE II.—PINEAPPLE JUICE FROM CONCENTRATE

Factors	Grade A	Grade B
Quality:		
Color	Very good	Good.
Score points	17 to 20	14 to 16.
Defects	Practically free	Reasonably free.
Score points	34 to 40	28 to 33.
Flavor	Very good	Good.
Score points	34 to 40	28 to 33.
Total score (minimum)	85 points	70 points

Factors	Grade A		Grade B	
	Unsweetened	Sweetened	Unsweetened	Sweetened
Analytical:				
Acid (maximum)	1.10g/100ml	1.10g/100ml	1.35g/100ml	1.35g/100ml
Brix (minimum)	12.8°	13.0°	12.8°	13.0°
Soluble pineapple juice solids (percent by weight of finished product prior to addition of sweetener): (mini-		12.8		12.8

TYPICAL LIQUIPLEX CONSTRUCTION



① **TOP CAP** — Heavy weight fibreboard, self locking for easy setup. The top and bottom caps are identical for simplified inventory and bin assembly.

② **OUTER TUBE** — Heavy weight multi-wall corrugated fibreboard. The strong octagonal shape can be reinforced with buried bands of strapping material.

③ **FOLDING SCORES** — The score locations are printed on the outside of the tubes as an aid to set up.

④ **INNER TUBE** — Construction similar to outer tube. Score locations are of a different color to aid assembly, visually differentiating between inner and outer tubes.

⑤ **PLASTIC BAG LINER** — A variety of styles, sizes and materials are available to suit your liquid product.

⑥ **BOTTOM INSERT** — High strength solid fibre is a major contributor to the outstanding performance of the LIQUIPLEX BIN. It provides shape stability and puncture resistance. On bins with drain fitment, the solid fibre insert locks the fitment in place during filling, shipping and probing at destination.

⑦ **BOTTOM CAP** — The same as the top cap.

⑧ **PALLET WITH DIAGONAL CLEATS AND STEEL STRAPPING** — These complete the LIQUIPLEX BIN. All the parts go together quickly and easily to make an excellent disposable shipper for b liquids.

100% DAILY VALUE OF VITAMIN C

SEE SIDE FOR NUTRITION INFORMATION

Hi-C

ORANGE DRINK

CONTAINS 10% ORANGE JUICE

2-Z639

Dole Pineapple Slices

IN HEAVY SYRUP

NUTRITION INFORMATION
PER SERVING SIZE. 2 SLICES WITH SYRUP;
CONTAINS 4 SLICES (2 SERVINGS)

CALORIES	90	FAT	0g
PROTEIN	0g	SODIUM	10mg
CARBOHYDRATES	23g		

PERCENTAGE OF U.S. RECOMMENDED DAILY ALLOWANCES (U.S. RDA)

PROTEIN	*	RIBOFLAVIN	*
VITAMIN A	*	NIACIN	*
VITAMIN C	6%	CALCIUM	*
THIAMIN	6%	IRON	*

*CONTAINS LESS THAN 2% OF THE U.S. RDA OF THIS NUTRIENT

CONTAINS PINEAPPLE SLICES, WATER AND SUGAR

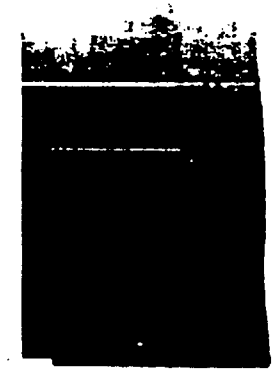
MANUFACTURED FOR
© 1990 DOLE PACKAGED FOODS CORPORATION
SAN FRANCISCO, CA 94111

QUESTIONS, COMMENTS, RECIPES? CALL DOLE FREE: 1-800-232-8800. IN CALIFORNIA 1-800-232-8888.

‡WEIGHT OF PINEAPPLE MEANS WEIGHT BEFORE ADDITION OF LIQUID NECESSARY FOR CANNING.

PRODUCT OF THE PHILIPPINES

0 38900 00109



Elegant Fruit Compote •

1 can (15-1/4 oz.) DEL MONTE® Pineapple Tidbits In Its Own Juice
1 DEL MONTE Banana, sliced
1 cup quartered strawberries
1 kiwifruit, sliced or seedless grapes
1 cup jicama pieces or apples
Orange-flavored liqueur

Drain pineapple reserving juice. Moisten banana with juice to prevent browning; drain. Arrange fruits in dish; drizzle with liqueur. Garnish with sprigs of fresh mint, if desired.

4 to 6 servings

Del Monte Quality

No Sugar Added

TIDBIT PINEAPPLE

·In Its Own Juice·

34

Dole Pineapple Chunks

IN HEAVY SYRUP

NUTRITION INFORMATION
PER SERVING SIZE ½ CUP WITH SYRUP.
CONTAINS APPROX 2 SERVINGS

CALORIES	90	FAT	0g
PROTEIN	0g	SODIUM	10mg
CARBOHYDRATES	23g		

PERCENTAGE OF U S RECOMMENDED
DAILY ALLOWANCES (U.S. RDA)
PROTEIN

CONTAINS PINEAPPLE CHUNKS WATER AND SUGAR

MANUFACTURED FOR
© 1990 DOLE PACKAGED FOODS CORPORATION
SAN FRANCISCO, CA 94111

QUESTIONS, COMMENTS?
CALL 1-800-232-6868

PRODUCT OF

0 38900

Dole Crushed Pineapple

IN HEAVY SYRUP

NUTRITION INFORMATION
PER SERVING SIZE ½ CUP WITH SYRUP.
CONTAINS APPROX. 2 SERVINGS

CALORIES	90	FAT	0g
PROTEIN	0g	SODIUM	10mg
CARBOHYDRATES	23g		

PERCENTAGE OF U S RECOMMENDED
DAILY ALLOWANCES (U.S. RDA)
PROTEIN

CONTAINS CRUSHED PINEAPPLE SUGAR WATER AND CITRIC ACID

MANUFACTURED FOR
© 1990 DOLE PACKAGED FOODS CORPORATION
SAN FRANCISCO, CA 94111

PRODUCT OF THAILAND

0 38900 00600

P 96 b

35

[redacted] FOODS, INC.

CODE : ESCO841
COST-CENTER : 31-01
ACCT CLAS : 35

PRODUCT : PAPAYA 24/303
YIELD : 96.00

STANDARD

RAW MAT CODE	DESCRIPTION	QUANTITY	STD. UNIT COST	STD. COST FORMULA	STD. COST PER CASE
CTPL911	PLAIN 24/303	96.0000	.15990	15.3104	.1599
ECCN005	PLAIN 303 X 405 - 15 OZ	2304.0000	.07668	176.6707	1.8403
ECTA022	ENAMEL 303	2304.0000	.01404	32.3482	.3370
LACO841	PAPAYA 303	2304.0000	.00465	10.7136	.1116
MPCD802	CANELA	.1200	2.50000	.3000	.0031
MPCD810	AZUCAR	1454.5700	.22000	320.0054	3.3334
MPCD824	HIDROXIDO DE SODIO	.0600	.56000	.0336	.0004
MPCD825	BICARBONATO DE SODIO	4.5900	.10000	.4590	.0048
MPCD827	BENZOATO DE SODIO	.1000	.42000	.0420	.0004
MPVE113	PAPAYA FRESCA (VERDE)	908.0000	.18750	170.2500	1.7734
COST-INGREDIENTS AND PACKING MATERIAL :				727.1329	7.5743
RAW MATERIAL WASTE FACTOR (%)				2.00%	.1515
DIRECT LABOR					.6500
FRINGE BENEFITS OF DIRECT LABOR				45.13%	.2999
MANUFACTURING OVERHEAD-VARIABLE			40.00% OF TOTAL		
			OVERHEAD OF	1.3000	.5200
TOTAL VARIABLE COST					9.1957
MANUFACTURING OVERHEAD-FIXED				60.00%	.7800
TOTAL MANUFACTURING COST					9.9757
SELLING PRICE					.0000
COST OF SALES					.00%
GROSS MARGIN					.00

BENEFITS OF DIRECT LABOR

36

P STA

Freshlike

• WHOLE KERNEL •

SWEET CORN

NUTRITION INFORMATION PER SERVING	
SERVING SIZE	½ CUP
SERVINGS PER CONTAINER	2
CALORIES	80
PROTEIN	2 g
CARBOHYDRATE	19 g
FAT	1 g
SODIUM	320 mg
POTASSIUM	150 mg

PERCENTAGE OF U.S. RECOMMENDED DAILY ALLOWANCES (U.S. RDA)	
PROTEIN	4
VITAMIN A	6
VITAMIN C	10
THIAMINE	2
RIBOFLAVIN	4
NIACIN	6
CALCIUM	0
IRON	2
PHOSPHORUS	6
MAGNESIUM	4

MICROWAVE DIRECTIONS: Pour Contents Into Glass or Ceramic Dish, Cover and Microwave On HIGH For 2 to 2½ Minutes. Season and Serve.

CONTAINS RECYCLED STEEL. PLEASE RECYCLE AGAIN.

*WEIGHT OF CORN (5.0 OZ.) BEFORE ADDITION OF LIQUID FOR PROCESSING.

INGREDIENTS: CORN, WATER, SUGAR AND SALT

PACKED BY © THE LARSEN COMPANY
P.O. BOX 19027 GREEN BAY, WISCONSIN 54307-9027

0 14500 04002 2

Freshlike

SWEET PEAS & CARROTS

NUTRITION INFORMATION PER SERVING	
SERVING SIZE	½ CUP
SERVINGS PER CONTAINER	2
CALORIES	50
PROTEIN	3 g
CARBOHYDRATE	12 g
FAT	0 g
SODIUM	340 mg
POTASSIUM	170 mg

PERCENTAGE OF U.S. RECOMMENDED DAILY ALLOWANCES (U.S. RDA)	
PROTEIN	4
VITAMIN A	100
VITAMIN C	8
THIAMINE	6
RIBOFLAVIN	4
NIACIN	4
CALCIUM	2
IRON	4
PHOSPHORUS	4
MAGNESIUM	4

MICROWAVE DIRECTIONS: Pour Contents Into Glass or Ceramic Dish, Cover and Microwave On HIGH For 2½ to 3 Minutes. Season and Serve.

CONTAINS RECYCLED STEEL. PLEASE RECYCLE AGAIN.

*WEIGHT OF VEGETABLES (5.5 OZ.) BEFORE ADDITION OF LIQUID FOR PROCESSING.

INGREDIENTS: WATER, SWEET PEAS, CARROTS, SUGAR AND SALT.

PACKED BY © THE LARSEN COMPANY
P.O. BOX 19027 GREEN BAY, WISCONSIN 54307-9027

0 14500 04152 4

P 42a

39

GOYA®
NET WT. 16 OZ. (1 LB.) 454 g
BLACK BEANS
0 41331 02466 2
GOYA®
PESO NETO 16 OZ. (1 LB.) 454 g
FRIJOLES NEGROS
GOYA FOODS INC.
SECAUCUS N J 07096 U S A
DISTRIBUTORS

38

P4322

BEANS, OR PEAS, DRIED OR MATURE, SOAKED, With or Without Snaps, In Brine, No Added Starch or Other Thickener

Can Size	Maximum Fill Weight (ounces)	Minimum Initial Temperature (°F)	Minutes at Retort Temperature 240°F	245°F	250°F
300 × 407	7.8	70	41	29	21
303 × 406	8.7	100	40	27	19
307 × 409	10.5	140	38	25	17
401 × 411	15.0	70	47	32	23
		100	44	30	21
		140	41	27	18
300 × 407	9.2	70	66	50	38
303 × 406	10.2	100	62	46	35
307 × 409	12.4	140	55	39	29
603 × 700	54.0	70	62	45	33
		100	59	42	30
		140	54	37	26
603 × 700	60.0	70	89	66	49
		100	82	59	43
		140	71	49	35

DATE : 01-01-78

[redacted] FOODS, INC.

CODE : GRCA532
COST-CENTER : 20-08
ACCT CLAS : 20

PRODUCT : NEGRAS A/S 24/303
YIELD : 140.00

STANDARD

RAW MAT CODE	DESCRIPTION	QUANTITY	STD. UNIT COST	STD. COST FORMULA	STD. COST PER CASE
CTCA907	PLAIN 4L 24/303	140.0000	.15254	21.3556	.1525
ECCN006	PLAIN 303-X-406--16-OZ	3360.0000	.07583	254.7888	1.8199
ECTA022	ENAMEL 303	3360.0000	.01485	49.8960	.3564
LACA532	NEGRAS A/S 24/303	3640.0000	.00525	19.1100	.1365
MPCD864	SAL TABLETS	28.7200	.20495	8.1818	.0585
MPGR206	HABICUELAS NEGRAS	1000.0000	.30000	300.0000	2.1429
COST-INGREDIENTS AND PACKING MATERIAL				653.3342	4.6667
RAW MATERIAL WASTE FACTOR (%)				2.00%	.0933
DIRECT LABOR					.2313
FRINGE BENEFITS OF DIRECT LABOR				45.13%	.1057
MANUFACTURING OVERHEAD-VARIABLE			40.00% OF TOTAL OVERHEAD OF	.8000	.3200
TOTAL VARIABLE COST					5.4180
MANUFACTURING OVERHEAD-FIXED				60.00%	.4800
TOTAL MANUFACTURING COST					5.8980
SELLING PRICE					.0000
COST OF SALES					.00%
GROSS MARGIN					.00%

p46b

:ONTAINER DIMENSIONS, CAPACITIES AND CONVERSION FACTORS

(Source: National Food Processors Association and USDA FSQS)
NOTE: This table revised with 1981 Almanac for more exact conversion.

ame of ntainer 1	Diameter x Height [1] 2	Total Capac. Avoir ozs. Water at 68°F 3	Factors for converting stated size: No. 303 Can Equiv. 4	No. 2 Can Equiv. 5	No. 2½ Can Equiv. 6	No. 3 CyL Can Equiv. 7	No. 10 Can Equiv. 8
s							
ushroom	.202x204	3.60	.2136	.1756	.1210	.0696	.0329
	.202x214	4.80	.2849	.2341	.1613	.0928	.0439
	.202x308	6.00	.3561	.2927	.2017	.1161	.0548
imiento	.211x200	4.90	.2908	.2390	.1647	.0948	.0448
ushroom	.211x212	7.15	.4243	.3488	.2403	.1383	.0653
hort	.211x300	7.90	.4688	.3854	.2655	.1528	.0722
all	.211x304	8.65	.5134	.4220	.2908	.1673	.0790
P nic	.211x400	10.90	.6469	.5317	.3664	.2108	.0996
yl.	.211x414	13.55	.8042	.6610	.4555	.2621	.1238
Olive	.211x600	16.95	1.0059	.8268	.5697	.3279	.1549
imiento	.300x206	7.50	.4451	.3659	.2521	.1451	.0685
lushroom	.300x400	13.55	.8042	.6610	.4555	.2621	.1238
300	.300x407	15.20	.9021	.7415	.5109	.2940	.1389
300 Asparagus	.300x409	15.65	.9288	.7634	.5261	.3027	.1430
300 Cyl.	.300x509	19.40	1.1513	.9463	.6521	.3752	.1772
1 Tall	.301x411	16.60	.9852	.8098	.5580	.3211	.1517
303	.303x406	16.85	1.0000	.8220	.5664	.3259	.1540
303 Cyl.	.303x509	21.85	1.2967	1.0659	.7345	.4226	.1996
1 Flat	.307x203	8.89	.5276	.4337	.2988	.1720	.0812
2 Vac (12z Vac)	.307x306	14.70	.8724	.7171	.4941	.2843	.1343
	.307x309	15.60	.9258	.7610	.5243	.3017	.1425
2	.307x409	20.50	1.2166	1.0000	.6891	.3965	.1873
nbo	.307x510	25.70	1.5252	1.2537	.8639	.4971	.2348
2 Cyl.	.307x512	26.35	1.5638	1.2854	.8857	.5097	.2407
	.307x700	32.50	1.9288	1.5854	1.0924	.6286	.2969
art Olive	.307x704	33.70	2.0000	1.6439	1.1328	.6518	.3079
(Quart)	.307x710	35.50	2.1068	1.7317	1.1933	.6867	.3243
2½	.401x411	29.75	1.7656	1.4512	1.0000	.5754	.2718
2½ Tall	.401x602	39.63	2.3519	1.9332	1.3321	.7665	.3621
3 Vac	.404x307	23.85	1.4154	1.1634	.8017	.4613	.2179
3 Cyl. (46 oz.)	.404x700	51.70	3.0682	2.5220	1.7378	1.0000	.4724
5	.502x510	59.10	3.5074	2.8829	1.9866	1.1431	.5400
5 Squat	.603x408	68.15	4.0445	3.3244	2.2908	1.3182	.6227
10	.603x700	109.45	6.4955	5.3390	3.6790	2.1170	1.0000
Gal.)	.603x812	138.35	8.2107	6.7488	4.6504	2.6760	1.2640
ASS CONTAINERS[2]							
		4.88	.2896	.2380	.1640	.0944	.0446
		8.50	.5045	.4146	.2857	.1644	.0777
nt		17.18	1.0196	.8380	.5775	.3323	.1570
3		17.70	1.0504	.8634	.5950	.3424	.1617
Pint		25.52	1.5145	1.2449	.8578	.4936	.2332
		[illegible]	[illegible]	[illegible]	.9916	.5706	.2696

The
commc
from v
more e

Case o

48 6Z..
48 8Z S
24 8Z S
48 8Z T
24 8Z T
48 No.
48 No.
48 No.
24 No.
48/211
24/211
24 No.
24/300

Case e
lowing

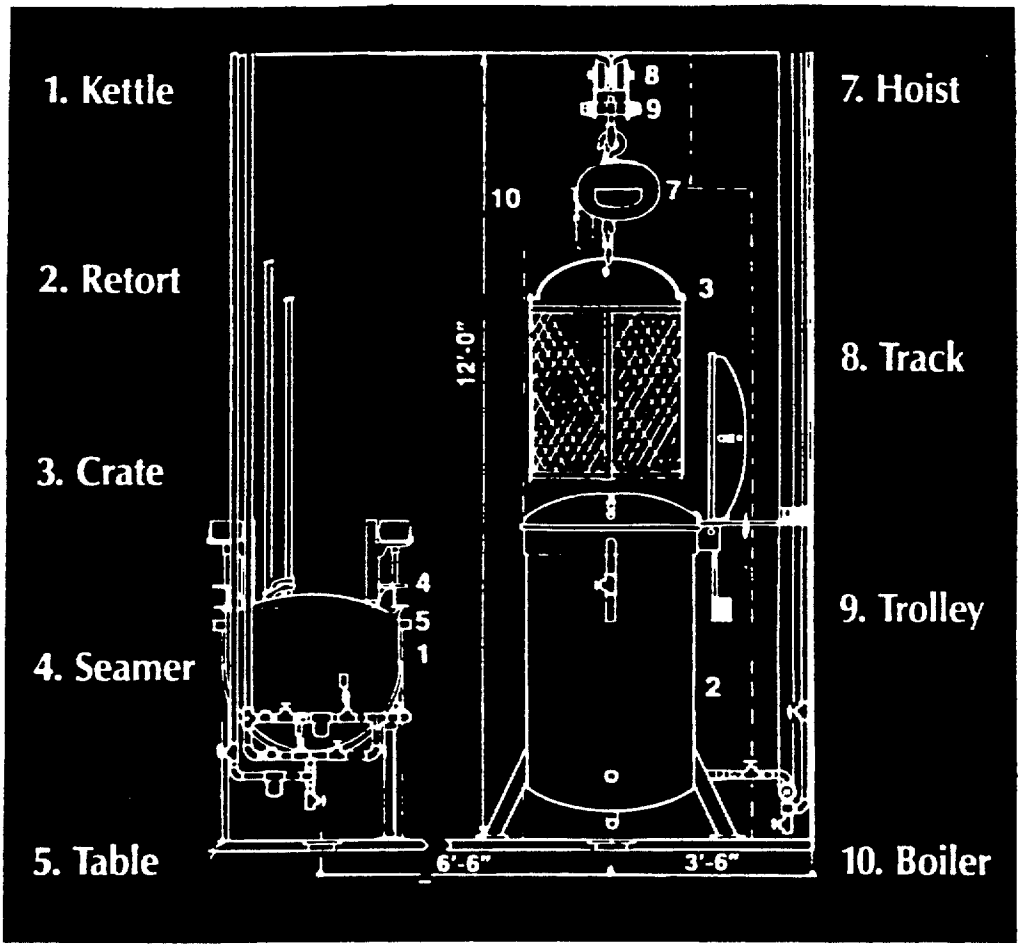
Pro

For

Multipl

41

DIXIE EQUIPMENT FOR R&D AND SPECIALTY CANNING

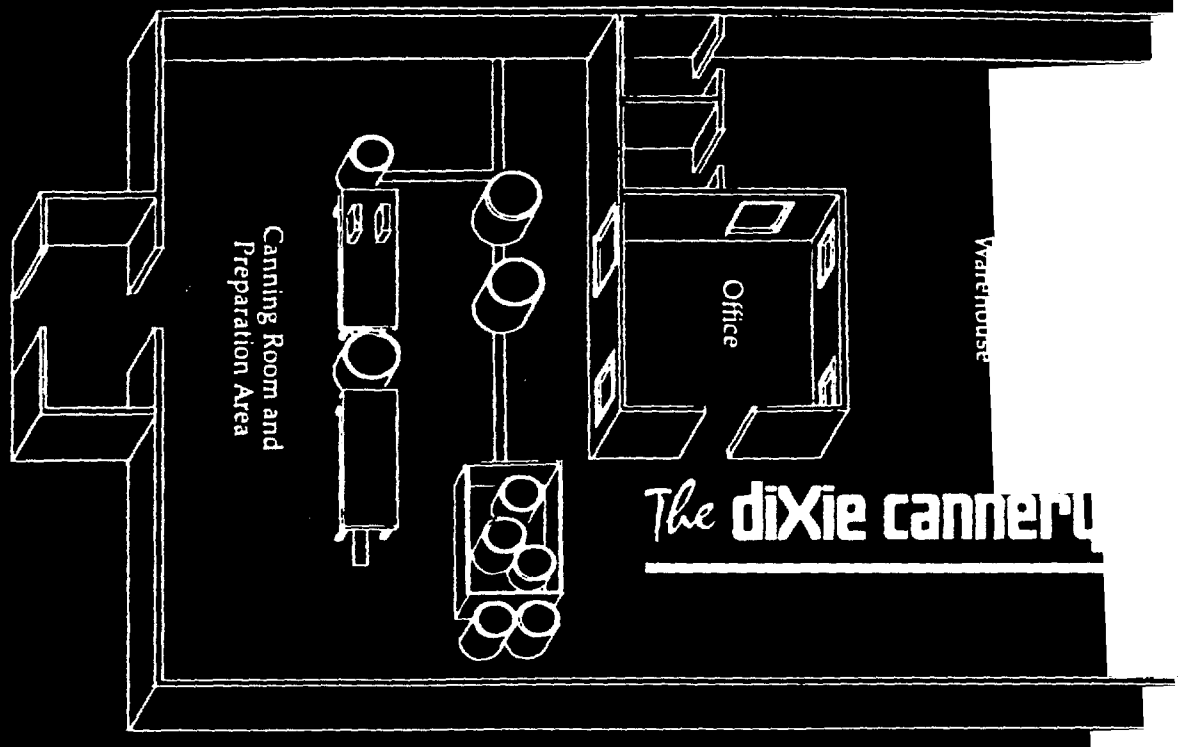


SINCE DIXIE 1914

dixie canner equipment company

BOX 1348 • 786 EAST BROAD STREET
ATHENS, GEORGIA 30603-1348 USA

PHONE: 706-549-1914 **FAX:** 706-549-0137

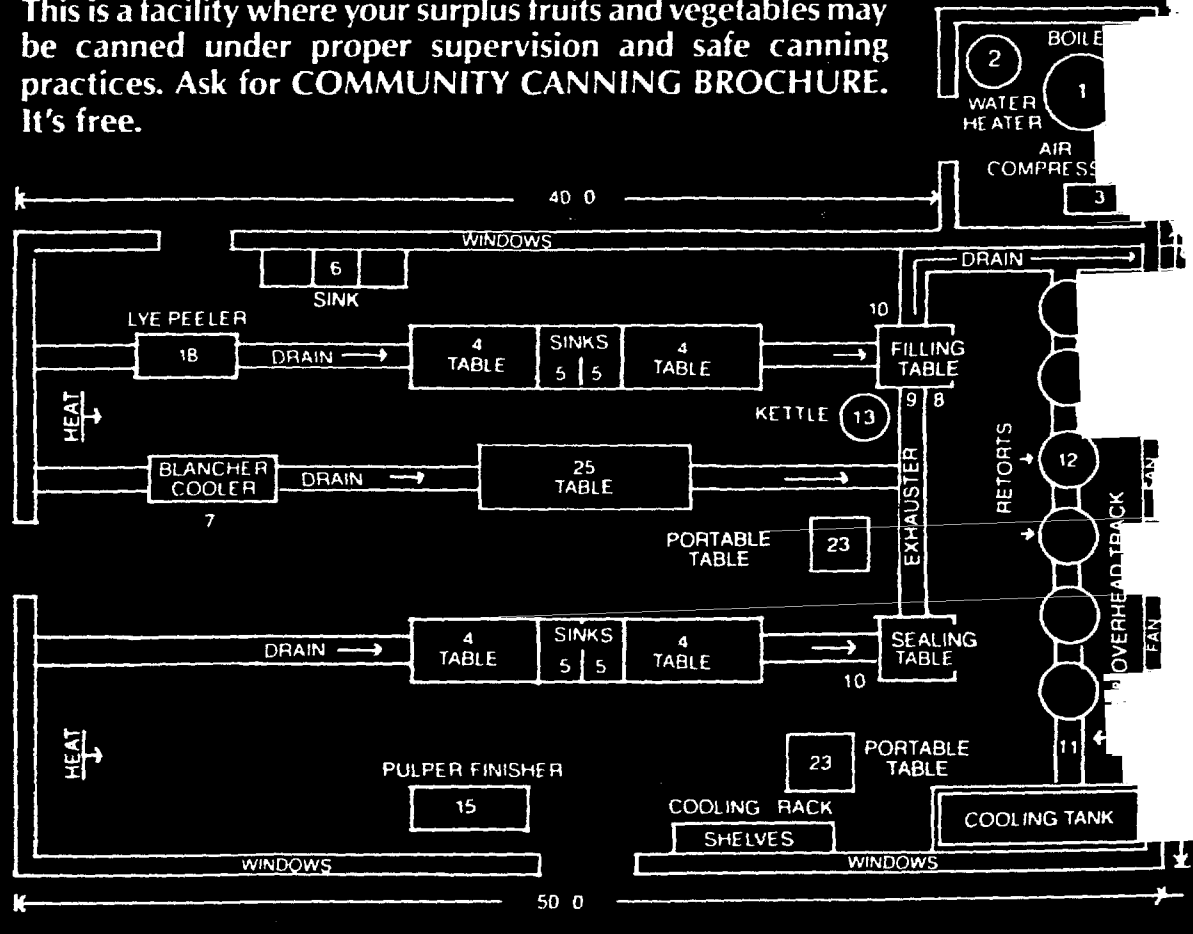


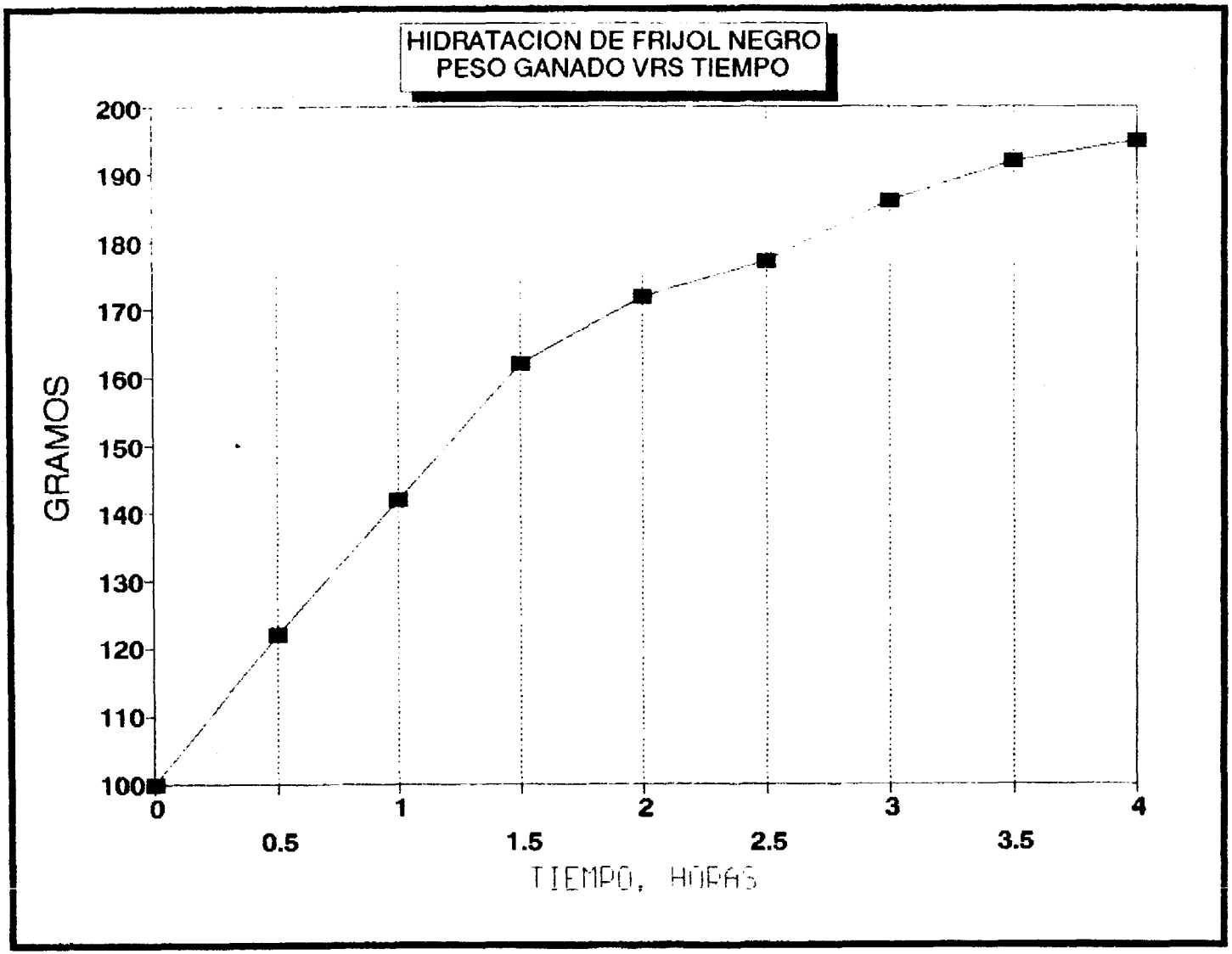
The diXie cannery

A facility for canning 50 gallon batches of soup, chili, bean and sau
recipes. Two or more batches may be canned daily. A 16 page booklet te
you how and what's needed. The booklet is free.

ELIMINATE WASTE AND ERADICATE HUNGER

This is a facility where your surplus fruits and vegetables may be canned under proper supervision and safe canning practices. Ask for COMMUNITY CANNING BROCHURE. It's free.




HIDRATACION DE FRIJOL NEGRO
PESO GANADO VRS TIEMPO
GRAMOS
200
190
180
170
160
150
140
130
120
110
100
0
0.5
1
1.5
2
2.5
3
3.5
4
TIEMPO, HORAS

44

AMATITLAN 12-95 WORKSHOP EVALUATION TABULATION

IN A SCALE OF 1 TO 10 WHERE 1 IS VERY POOR AND 10 IS EXCELLENT PLEASE RATE THE FOLLOWING:

QUESTION	SUBJECT	GRADE														
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	AVG
A	SUBJECT MATTER	10	9	9	10	10	8	10	10	10	10	10	10	10	10	9.71
B	HAND OUTS	9	10	9	8	10	10	10	10	8	9	9	9	10	10	9.36
C	OTHER MATERIALS USED	8	8	9	8	10	NA	9	8	8	9	7	9	10	10	8.69
D	CONDITION...EQUIPMENT	8	7	8	9	8	NA	5	10	8	8	3	9	10	9	7.85
E	EXPLANATIONS FACILITATOR	10	9	10	10	10	10	10	10	10	9	10	10	10	10	9.86
F	TEAM WORKING SYSTEM	9	8	8	10	6	9	8	9	10	8	10	9	10	8	8.71
G	FACILITATOR KNOWLEDGE...	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10.00
H	USEFULNESS FOR YOUR WORK	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10.00
I	WAS WORKSHOP WORTHWHILE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	
J	COMMENTS AND SUGGESTIONS															

1 THAT THE PARTICIPANTS BE ALWAYS PRESENT (1)
2 PROVIDE EQUIPMENT/MATERIALS REQUIREMENTS AND WORKING GUIDES AHEAD OF TIME (3)
3 PITY THAT SOME PARTICIPANTS DID NOT MAKE A GREATER EFFORT. IT HELPS OUR WORK. (1)
4 GIVE MORE GUIDANCE ABOUT THE EXPERIMENTS (1)
5 ORGANIZE BETTER (1)
6 PROBLEM WITH HAND OUTS IN ENGLISH (1)
7 KNOWLEDGE/PRACTICAL EXPERIENCE GAINED WILL BE VERY HELPFUL (2)
8 NONE (3)
9 ADJUST CONTENTS TO INFORMATION/NEEDS OF PARTICIPANTS (1)
10 CHECK/PREPARE/CALIBRATE EQUIPMENT AHEAD OF THE EXPERIMENT (3)
11 MAKE PROGRAM AND CONTENTS AVAILABLE AHEAD OF TIME (1)
12 MAKE THE WORKSHOP LONGER
13 ADD DRUM DRYING AND SPRAY DRYING

Appendix IV

Appendix V

PROFRUTA
CONVENIO MAGA - IICA

PROYECTO DESARROLLO DE LA FRUTICULTURA Y AGROINDUSTRIA
MINISTERIO DE AGRICULTURA, GANADERIA Y ALIMENTACION

REF: IICA-DE-665-95

Guatemala,
Diciembre 13 de 1995

Señora
Ellen Quinn
Programa SUSTAIN
Fax: (202) 628-6726

Estimada Sra. Quinn:

Por este medio agradecemos la valiosa colaboración brindada para la realización del taller sobre Procesamiento de Frutas y Verduras, impartido por el Dr. Pedro Solé, en las fechas del 5 al 8 de diciembre.

Dicho taller contó con la participación diecisiete técnicos dedicados a dar asistencia técnica a pequeñas y medianas empresas agroindustriales en el área rural, motivo por el cual ha sido valiosa la aportación del Dr. Solé, ya que los conocimientos adquiridos se aplicarán a través del Programa de Capacitación en Agroindustria en 1996.

Esperamos contar con futuras cooperaciones, en las medidas de las posibilidades de SUSTAIN, ya que las condiciones bajo las cuales se llevan a cabo han resultado favorables para PROFRUTA.

Deseándole una feliz navidad y próspero año 1996, me suscribo de usted.

Atentamente,

FRUTICULTURA AGROINDUSTRIA
DIRECCION EJECUTIVA
MAGA-IICA
Guatemala, C. A.

INC. JORGE ESCOBAR
DIRECTOR EJECUTIVO

cv

cc. File

9a. Calle 6-11, Zona 9, EDIFICIO SANCHEZ, OFICINA 607-613 TELS: 318219, 319267 TELFAX: 327306
GUATEMALA, C. A.

Jan. 10, 1996

Translation by Dr. Salvador Garcia of letter from Jorge Escobar

Thank you very much for the assistance you provided to carry on the workshop on fruit and vegetable processing given by Pedro Sole on December 5 - 8.

The workshop was attended by 17 technicians from small and medium-sized agro-industries in rural areas. For this reason, Dr. Sole's contribution is greatly appreciated. The knowledge acquired at the workshop will be applied in Agro-industrial Technical Program of 1996.

We hope to continue this collaboration as long as possible. The way the workshop was conducted provided good results for PROFRUTA.

We wish you a Merry Christmas and a prosperous 1996.

Appendix VI

PROFRUTA

PROYECTO DESARROLLO DE LA FRUTICULTURA Y AGROINDUSTRIA
MINISTERIO DE AGRICULTURA, GANADERIA Y ALIMENTACION

REF: IICA-DE-065-96

Guatemala,
Febrero 12 de 1996

Señora
Elizabeth Turner
Directora General
PROGRAMA SUSTAIN
Fax: (202) 328-5175

Estimada Sra. Turner:

De manera atenta me dirijo a usted, con el propósito de remitir adjunto la información requerida en fecha 29 de enero del año en curso, esperando que la misma sea de su satisfacción.

Aprovecho la oportunidad para expresarle nuestro agradecimiento por la colaboración brindada a PROFRUTA, a través de la asesoría del Dr. Pedro Solé.

Sin otro particular, me suscribo de usted.

Atentamente,

FRUTICULTURA AGROINDUSTRIA
DIRECCION EJECUTIVA
MAGA-IICA
Guatemala, C.A.

ING. JORGE ESCOBAR
DIRECTOR EJECUTIVO

cv

cc. File

Adj. Información

ACTIVIDADES CONTINUADORAS RESULTANTES DEL PROGRAMA SUSTAIN

- Persona que responde al formulario: Ing. Jorge Escobar, Director Ejecutivo PROFRUTA

- Programa de SUSTAIN: Taller sobre procesamiento de frutas y verduras.

- Lugar en que se realizó el programa: Amatitlán, Guatemala

- Fecha del programa: 05 al 08 de Diciembre de 1995

- Explique brevemente los principales logros de la(s) actividades de SUSTAIN:

  Capacitación a 15 técnicos de PROFRUTA en procesos agroindustriales de frutas y hortalizas a través del Dr. Pedro Solé, voluntario de SUSTAIN.

- ¿Qué actividades ha realizado usted o su organización o compañía en continuación o como resultado del programa de SUSTAIN en el que participó? (Porfavor indique si estas actividades fueron por mediación de SUSTAIN, directamente con voluntarios de SUSTAIN, o por vía de otras organizaciones locales).

  Las actividades que se realizan en seguimiento a la capacitación recibida, consiste en brindar cursos y asistencia técnica a grupos de personas como son mujeres y hombres campesinos, indígenas, interesados en hacer de la agroindustria una fuente de trabajo y diversificar sus ingresos económicos.

- Por favor anote los resultados específicos del programa de SUSTAIN o de actividades adicionales de continuación que puedan ser de interés para el equipo evaluador, o que puedan ser interesantes para futuros boletines de SUSTAIN (como logros concretos, historias de interés humano, o necesidades especiales que usted haya identificado).

  Lo más importante que se puede resaltar es la buena coordinación que se puede lograr a través de expertos o especialistas voluntarios, que transfieren sus conocimientos a otros técnicos que a su vez pueden transmitir a muchas personas aquí en Guatemala, conocimientos en el campo de la agroindustria. De esta manera el efecto es multiplicador y se logra la creación de nuevas empresas, se fomenta la producción y se mejora la dieta alimenticia de la población.

- ¿Qué otras necesidades tiene su organización o compañía que puedan ser satisfechas por SUSTAIN? ¿Qué recomendaciones haría para futuros talleres prácticos y/o asistencia de SUSTAIN?

OTRAS NECESIDADES:

Capacitación en otras clases de productos que se puedan elaborar a través de la agroindustria (desarrollo de productos nuevos).

Capacitación y asesoría en diferentes modelos o diseños y equipo sencillo para la aplicación en la pequeña y mediana empresa agroindustria.

Asesoría y contactos en búsqueda de mercados para los productos agroindustriales de pequeñas empresas. OBSERVACIÓN: El tipo de taller práctico impartido por el Dr. Pedro Solé es muy adecuado para nuestras necesidades.

TRANSLATION OF LETTER FROM PROFRUTA:

Dear Ms. Turner:

(Leaving out the formalities):
I attach the questionnaire you asked me to fill.

I would like to take this opportunity to thank you for the assistance provided to PROFRUTA through Dr. Pedro Sole.

.....: Ing. Jorge Escobar, Executive Director, PROFRUTA.

- .....: Workshop on fruit and vegetable processing

- .....: Amtitlan, Guatemala.

- .....: Training of 15 PROFRUTA technicians in fruit and vegetable processing, by the SUSTAIN volunteer Dr. Pedro Sole.

- .....: The follow-up activities which are now taking place as a result of ..... consist in technical assistance to groups of indigenous peasants (men and women), who are interested in performing agro-industrial activities as a means of diversifying their income sources.

- .....: The most important thing that must be emphasized is the good coordination that is possible through voluntary specialists or experts, who transfer their knowledge to other technicians. These can then extend this knowledge in the agro-industrial sector to many other people here in Guatemala. In this way, the effect is multiplicative: new businesses are created, production is increased, and the diet of the population is improved.

- .....:

OTHER NEEDS:

Provide expertise in other types of products that can be produced through the agro-industrial sector (new product development).

Provide expertise and assessment on various different models and designs of simple equipment which can be used by small and medium size agro-industrial enterprises.

Assessment and contacts in the search of a market for the production of small agro-industrial enterprises. OBSERVATION: The practical approach in the workshop conducted by Dr. Pedro Sole is very appropriate to our needs.

Appendix VII

PROFRUTA SUSTAIN WORKSHOP PARTICIPANTS

PARTICIPANTES CURSILLO PROC. FRUTAS Y VEGETALES
AMATITLÁN GUATEMALA DIC 5-7 1995
PROFRUTA SUSTAIN

NOMBRE DIRECCIÓN Y TELÉFONO

WALTER ARGUETA 4a. calle 42-94 Z. 7 Col. Lomas del Rodeo
Tel: 93-31-11

Manuel Enrique Yoc Avila 2da Calle 7-49 Zona 4 chimaltenango.

MARIO YACABALQUIEJ MAZARIEGOS. CANTÓN XECÁM, MUNICIPIO CANTEL, QUETZALTENANGO
Tel, COMUNITARIO XECÁM 0980311

Oscar Humberto Lara Escobar 4a calle 1-25 zona 11
tel. 92-4773

Noe Francisco Mencos de León 1a. calle "A" 4-34 Z. 11 Col. Progreso
Tel. 403112

Zulma M. Alvarado Morales. — 6ta. Avenida 2-90 Zona 1, Retalhuleu.-

Ericka del Rosario Morales R. — Ruta al Atlantico km. 9½ Lote 27
Zona 17. Guatemala C.A.

Mynor Orlando Castillo Flores 5 2a calle 3-37 Z 1 San
Francisco Zapotitlán Such., Guatemala
Tel. 0928473

FREDY HAROLDO CERMIJO ESTRADA. 4N 4-44 ZONA 1 SAN FRANCISCO
ZAPOTITLÁN SUCH.

DAVID SAMUEL FIORINI MORALES 5AV D 17-56 Zona 19.
Col. 1º de Julio, GUATEMALA.

Agripina Pedroza Estrada 47 Av. 'B' 7-49 Zona 3 Mixco
Villa Verde II tel: 732003

Angel de Jesús Arango 3a. calle 2-10 zona 5
Colonia Molina
Quetzaltenango

VICTOR MANUEL TOBAR D. 27 Calle "B" 12-47 ZONA 13
COLONIA STA. FE 33 33 52 (TEL)

Adolfo Donis Montufar 5ta Av. 4-28 Colonia Aceituno zona 2
Mazatenango such.