SUSTAIN

UGANDA

MARCH 28 - APRIL 4, 1993

ASSESSMENT MISSION

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

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

Upgrading the Food Processing Industries in Developing Countries.

Why SUSTAIN?

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

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

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

How SUSTAIN Works

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

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

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

SUSTAIN Helps

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

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

SUSTAIN PROGRAM

MISSION TO UGANDA

March 28 - April 4, 1993

SUSTAIN Volunteer:

Dr. John H. Nelson
Vice President-Science & Technology, McCormick & Co.
Chairman, SUSTAIN Steering Committee

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NCBA/SUSTAIN Project 111.018

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MARCH 28 - APRIL 4, 1993

INTRODUCTION

A. SUSTAIN

Sharing United States Technology to Aid in the Improvement of Nutrition (SUSTAIN) is a collaborative effort between the private U.S. food industry and the Agency for International Development (A.I.D.). Its activities are funded by A.I.D., Bureau for Research and Development, Office of Nutrition (R&D/N) with expert consultants being volunteered by the U.S. food industry. The goal of this activity is to provide better nutrition in selected developing countries by ensuring the quality, safety, and access to processed foods by the general population at reasonable prices. The purpose of SUSTAIN is to provide access to the technical knowledge and practical experience in the U.S. food processing and marketing industries to small- to medium-sized food processing companies in developing countries; to assist those requesting help in solving technical and management problems; to upgrade food processing and marketing practices; and to provide information for continued improvement and progress in the food processing industry of developing countries.

B. Objective

The objective of the SUSTAIN mission to Uganda on March 28th to April 4th 1993 was to initiate technical assistance efforts for the food processing sector in Uganda. Based on assessments made on the current food processing activities and capabilities in Uganda, the SUSTAIN team identified problem areas, made recommendations, and suggested topics for proposed workshops. The team also assessed the capabilities of the Uganda Manufacturers Association Consultancy and Information Services (UMACIS) as a facilitating arm for SUSTAIN efforts in Uganda.

C. The Mission

The mission was a collaborative effort between Project SUSTAIN, AID/AFR/ONI, the UMA, and USAID/Kampala. The main participants included Dr. John Nelson (Vice President-Science and Technology, McCormick & Co.) for SUSTAIN, Dr. William Kalema (Director, UMACIS), and Mr. Jerry Brown (AID/AFR/ONI). UMA assumed the initial responsibility of conducting a survey of some of the food processing industries in the country, with the aim of providing background information on specific company operations (sales, capacity utilization, total workforce, etc.). During the actual visit, meetings and discussions were held with representatives from forty food processing companies, Makerere University faculty, and USAID and Ugandan agencies involved in the regulation and marketing of products. The purpose of these meetings was to create for the SUSTAIN team a sense of familiarity

with the problems facing the Ugandan food industry. Included in the trip were on-site visits to seven food processing companies, particularly with the purpose of providing one-on-one consultation (Appendix VI). Processing activities at these companies included spices, fruit, weaning foods, fish, baking, and grain milling.

* Mr. Brown's main objective was to seek opportunities for joint ventures between U.S. agribusiness firms and the Uganda agribusiness community through ONI's agribusiness unit.

D. Mission Assessment

Dr. John Nelson's assessment of the Uganda food industry emphasizes revitalization of existing processes, which will require intervention at three levels in Uganda: the manufacturing sector, the government, and the university. Both he and Mr. Brown recommended that SUSTAIN, in cooperation with the UMA, adopt a two-year program, beginning August 1993, that will incorporate training of UMACIS consultants and conducting seminars and food processing workshops targeted at food processors, government, and university personnel in the areas of marketing, quality assurance, and packaging.

* Mr. Brown recommended involving USAID/Kampala and the Ugandan trade and investment agencies in assisting and promoting the local business communities to develop trade and investment profiles; utilizing those resources that hold promise in the international market as export commodities; and holding seminars for senior managers of small and medium size food processors.

REPORT OF PROJECT SUSTAIN VISIT TO UGANDA

MARCH 28-APRIL 4, 1993

JOHN H. NELSON, PH.D.

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SUSTAIN VISIT TO UGANDA
MARCH 28-APRIL 4, 1993
JOHN H. NELSON, Ph.D.

OBJECTIVE

To initiate SUSTAIN technical assistance efforts in Uganda in collaboration with the Uganda Manufacturers' Association (UMA) and to outline plans for future interventions by SUSTAIN volunteers.

SCOPE OF WORK

In this initial visit by a SUSTAIN volunteer to Uganda to initiate SUSTAIN technical assistance efforts in collaboration with the Uganda Manufacturers' Association and to outline plans for future interventions, it was necessary to do the following:

- Meet with the mission director and his staff to explain SUSTAIN's capabilities and to understand how those capabilities fit with objectives of the USAID Mission-Uganda.

- Meet and work with the director and staff of UMA's Consultancy and Information Services Division to determine how SUSTAIN can utilize that organization as the facilitating arm of SUSTAIN efforts in Uganda.

- Create an awareness of SUSTAIN's technical assistance capabilities within the private sector food industry by participating in a forum arranged by the UMA.

- Meet individually with as many local food processors in as many sectors of the food industry as possible to assess the overall needs of the industry. To meet with representatives of the Ugandan government to determine how SUSTAIN might assist in developing standards and the regulatory network for the Ugandan food industry.

- To become acquainted with the staff and the facilities at Makerere University and determine how the University program in food science can share in the efforts of the SUSTAIN intervention program.

- To revisit the AID Mission to advise the director and his staff on the assessment carried out during the Week of March 28 and to agree upon next steps.

SUMMARY

In a broad sense, SUSTAIN is in a very specialized information business. We operate under the broad definition of improving nutrition; therefore, the information we provide impacts the food industry and the population of Uganda at all levels. Training is an important part of the information dissemination function of SUSTAIN. Working with the Uganda Manufacturers' Association, SUSTAIN volunteers can deliver very practical information and assistance needed by the Ugandan food industry. We can also assist

the mission, the government of Uganda, and Makerere University in building their infrastructure to assist the food processing industry.

Uganda is being reborn and redesigned, and there is a unique opportunity to set up the standards and regulatory network for Uganda in a very practical way. The private sector is in the early stages of rebuilding its capability. Much of the machinery we saw was beyond its normal lifetime and was kept operative by highly dedicated employees. There is a great need for assistance in acquiring capital for improving many of the processing facilities. The individuals with whom we met exhibited a great deal of positive energy and interest in improving their operations for the future. The Board of Directors of the Uganda Manufacturers' Association has an excellent grasp of the food industry and understands the dynamics necessary to improve that food industry. The Board members are very supportive of the UMA's Consultancy and Information Services Division, and the staff of that division has the capability to facilitate SUSTAIN's contact at all levels in the food processing industry and in the Uganda government structure.

SUSTAIN should proceed with interventions at three levels in Uganda; namely, with the manufacturing sector, with the government starting with the Bureau of Standards and with Makerere University. To create a greater awareness of the SUSTAIN capabilities and services, the next step should be a series of seminars to be presented for the food processing industry and government and university personnel. The need for a seminar on quality assurance and a seminar dealing with packaging in a broad sense would be a good starting point. SUSTAIN volunteers can work with the Bureau of Standards on a one-on-one basis to provide a "second opinion" and assist in reviewing standards and plans developed by the Bureau of Standards staff. I would suggest that we include a special supplement to our SUSTAIN newsletter for recipients in Uganda which will deal with our activities in Uganda. All of SUSTAIN's efforts should be coordinated through the mission with the assistance of UMA.

INTRODUCTION

I feel especially fortunate to have been accompanied by Mr. Jerry Brown whose assignment from the USDA was to work with AID in mini-African countries. Mr. Brown's extensive experience in Africa and his understanding of AID programs as well as all of the wealth of information available from the USDA was extremely supportive of my efforts in Uganda. Arrival on Sunday morning, March 28, allowed us time to become acquainted with Dr. William Kalema of the Uganda Manufacturers' Association. William picked us up at the airport in Entebbe and drove us to our hotel in Kampala. William briefed us on the activities for the week, and we did some forward planning for the presentations we were going to make on Monday, March 29, to the private sector food industry. William gave us an overview of his staff and the objectives of the Consultancy and Information Services Division of UMA. Attachment No. 1 includes a copy of the

itinerary we followed during our visit. We kept all the appointments and enjoyed a very good reception at all the companies visited. The people at the individual companies were well prepared for our visit and explained their objectives and how SUSTAIN might help them in a very complete manner. In a number of the visits, we got quite involved with the individuals and, therefore, our schedule was stretched out a bit. I might suggest as an example our Thursday, April 1, trip to Jinja resulted in our returning to Kampala just before 8 p.m. It was a particularly rewarding day because of our visit to the Kakiri facility. Our working session on Saturday, April 3, with Dr. Kalema and his staff was especially helpful, and I was pleased that we made very good use of that entire day because it allowed us to understand in depth the capabilities of the UMA group. It was also delightful to share in some social functions with several people in the mission and to be able to join in the mission's canteen party on Saturday night.

DETAILS OF VISITS

MR. SEKALALA

Jerry and I met with Mr. Aga Sekalala, who is the vanilla bean processor that markets all of his products to McCormick & Company. Mr. Sekalala is also the vice chairman of the Board of the Uganda Manufacturers' Association. Our conversations were mainly social, to get acquainted and to reaffirm that Mr. Sekalala supported our visit to Uganda. He apologized that he would not be able to attend the seminar on Monday nor would he be at the luncheon because he was leaving the country for the entire week. To visit with us on Sunday was a special show of support.

USAID Mission

Monday morning, March 29, bright and early, we had an appointment at the mission and visited with Mr. Keith W. Sherper, Director; Stephen C. Ryner, Deputy Director; Holly Wise, Chief, General Development Office; James F. Dunn, Agricultural Development Officer; and Mr. Bruno Komakech. I explained the objective and scope of work of the visit and explained in some detail how SUSTAIN is organized and the types of volunteer services we provide. I presented them with the SUSTAIN annual report and the yellow sheet explaining SUSTAIN's functions. It was good to meet all of the mission staff. The comments they shared were very helpful in orienting me and in assisting with the events to take place. Many of the staff had visited some of the facilities that we were to see during the week, and the input from the mission staff was very helpful in adjusting my thoughts in preparation for the seminar that was to take place a few hours later.

UMA

Before going to the seminar, we stopped at the offices of UMA Consultancy and met several of William Kalema's staff, including Frances Nsonzi and Michael Sseguya, who accompanied us on many of

our company visits. Dr. Kalema has seven consultants and eight staff members in the UMA Consultancy and Information Services. Of the consultants, there is an attorney, an economist, a statistician, and an industrial chemist/food technologist. The Consultancy started business in 1990.

SEMINAR

We traveled to the Uganda National Conference Center which adjoins the Nile Hotel. In a very large, well-organized meeting room, Jerry Brown and I addressed an audience of approximately 90 people (Attachment 2). Dr. Kalema introduced each of us and, in his introduction, referred to the survey that his group had taken of manufacturers, pointing out that the interests shown in the questionnaire were in the priority order of marketing, food safety, packaging, and food preservation and storage (Attachment 3). My task was to describe Project SUSTAIN and the type of assistance we might provide to the food processing sector in Uganda. I used the above list as somewhat of a check point, remarking that our emphasis was on processing technology and food technology, but that we could help them with marketing issues such as UPC codes, ingredient labeling, and the like. I pointed out that the United States had recently passed a Nutritional Labeling Education Act (NLEA) which really complicated label design for people not familiar with the law. There was some confusion over UPC codes because the Uganda Peoples Council is a political party in Uganda that is currently not in power, and there was some snickering because they thought that in order to get a label approved in the United States, you might need the approval of the Uganda Peoples Council. I discussed the types of things SUSTAIN might provide in the fields of food safety, packaging, and food preservation and storage. I pointed out that our consultancy was post-harvest; that we were not production agriculturists. Jerry Brown then explained the purpose of his trip to in Uganda. He described the type of information available from the libraries of the USDA relating to marketing and processing food products.

Dr. Kalema opened the floor for questions, and there were many good questions. They dealt with aflatoxins, fortification, bread, ovens, and water, as well as marketing. There was a great diversity of interest, and many segments of the food processing industry represented in the audience. The Dean of Agriculture, Professor J. S. Mugerwa, was also present. Dr. Kalema summed up the seminar after most of the questions had been answered. We then had lunch with a few members of the audience at the International Conference Center.

MULAGO HOSPITAL

My visit with Dr. Kakitahi, Director, Mwanamugimu Clinic at the Mulago Hospital, was very interesting. I mentioned to Dr. Kakitahi SUSTAIN's involvement with INCAP, and he was very well aware of INCAP and its work. He explained that in addition to running the Malnutrition Clinic, they trained extension workers. These

extension workers are employed in satellite centers in the outer reaches of Uganda. He pointed out that for two months before harvest time in each year, there is a lack of food in many places in Uganda. Apparently the northern areas are less productive than the central and southern areas. He said there was a 30 percent loss of the grain harvested, and he said that on some crops, up to 70 percent of the material harvested may be lost. Only 30 percent of the population use the health service although it is free. He mentioned to us that there was a new food and nutrition policy for Uganda, and he mentioned that it would be issued later that week. We should attempt to get a copy of that new food and nutrition policy.

Dr. Kakitahi also had an interest in food processing, and he mentioned to us that he looked at it in two different ways. One is regular food processing, and the second is improving the food processing done by women in the villages. We had the opportunity to visit the clinic which was in the building adjoining the office building. There were about five beds in the ward we visited. Dr. Kakitahi pointed out that part of the program was that the mother had to stay with the child so that she could receive instructions on good nutrition practices while the malnourished child was being nursed back to a healthy condition. In regard to the training of the mother, it is mainly in the fourth week of a four-week stay in the ward that the mother receives nutrition training. Dr. Kakitahi is obviously a very knowledgeable individual and talked about the effect of culture, diets, and food prescriptions on the health problems in Uganda. Dr. Kakitahi told us of a very interesting group of studies being carried out by his deputy. She is heading up five studies of specific regions to see how "for-profit agriculture," such as vanilla growing, has changed positive eating habits. His concern was that by striving for profit crops, the farmers would neglect subsistence crops and, therefore, the general health of the target population would decrease. He has a great concern that although Uganda has enough food, the profit motive pushes out good balance in the diet.

NTINDA SPICES LTD.

The owner of the company was not able to be with us, but the manager, who was very knowledgeable, showed us the production areas and explained a bit about the business to us. The company processes spices for beverages, soups, and food. Examples are curry powder, ginger powder, and pilau masala, which is a spice for rice dishes. Apparently they have 35 employees, and they are located in the suburbs of Kampala. We saw the drying chambers where they were drying turmeric and the grinding facility which was a very old hammer mill where they grind all the spices together to make their curry powder. The women were packaging the curry powder while we were there. It was very interesting to see them hand fill a flexible plastic tube and then heat seal packets using a kerosene flame. It seemed apparent that many of the employees of the company were involved in packaging, and a few were involved in the processing. Their problems included shortage of working capital,

high tax rates, and high energy costs. This was the beginning of many stories from the industrial companies that working capital, taxes, and energy costs were most of their problems. Although the equipment was very old, it seemed adequate for the task at hand, since this was not a high-volume operation by our standards. The turmeric dryer was heated by electricity, and it was basically a convection dryer. The manager pointed out that the ginger and coriander are local products. The cumin seed comes from Tanzania as do the cloves, and he pointed out that cinnamon and hot chilies, turmeric, and bay leaves were all locally grown.

MASAKA FOOD PROCESSORS LTD.

Masaka is about a 1-1/2 hours' drive southwest of Kampala (Attachment 4). The Food Processors Ltd. was begun in 1974. It was established by a farmers' coop representing pineapple growers. In 1984, they finished the building they now occupy, but they did not install the equipment until 1988 because of some civil strife. They started to run the plant in 1989, and it was rated at 1,500 cases per day, but they are barely getting 600 cases per day. It became apparent from their story that they had purchased some used equipment from India. In fact, the entire line was designed and fabricated in India, and the machinery does not run very well. They have rebuilt many of the pieces of machinery, but it was apparent to us from the operation as we saw it running that it was a very inadequate processing line. Many of the people at the AID mission have seen the operation, and I think the consensus is that it is best to start over if you were to try to improve the plant. The raw material we saw was very high quality, but the yields going through the line were very poor. The final product is a very good product although they are somewhat concerned with the cloudiness due to particles in the pineapple juice. I indicated that I would try to send them some general information, but what I would like to do, if possible, is to find a used four-headed bottle capper that might be sent to Uganda to replace the old one they have. They had to feed the caps into the capper manually which required two people at the capper station when, in reality, the capper should not require any people to operate it. The storage of juice (surge capacity) was in an unrefrigerated room, and if allowed to stay there too long, I am sure fermentation would begin. The heat processing step occurs after the product is bottled. They utilize used bottles because of the expense of bottles, and the bottle washer, [illegible] flow could be greatly improved to minimize labor usage.

AFRICA BASIC FOODS (U) LTD.

Our second stop on Tuesday was at Africa Basic Foods (Attachment 5) which is owned by Dr. Harrison, a U.S. citizen living in the Washington, D.C., area. Dr. Harrison was not there, but we were hosted by Mr. Daniel Kakunta and Mr. Joseph Butterworth, an accountant, who was consulting with Africa Basic Foods. This company was started in the middle 1960's. It has had a steady

market and has started sending products outside of Kampala for the last eight months. They sell at retail as well as to institutions such as hospitals, secondary schools, primary schools, and colleges. They consider as a future market factory feeding and relief organizations. They market a soy product in a 500-gram size for 1,000 Uganda shillings, and the two-kilo size is 2,800 Uganda shillings.

The final thing we saw at Africa Basic Foods was an interesting bakery operation where they were making soy-fortified bread and rolls. The product was very good tasting and very appealing in its exterior appearance. It is a very small hand operation but a great product.

NATURAL FOODS

We had agreed at the seminar to meet three women who were interested in starting a jam and jelly operation called Natural Foods. They came to the hotel, and we spent over an hour and a half discussing their experience with products. They brought some samples with them to the hotel, and the products were indeed very, very good. Most of their "consumer research" was done with people friendly to them, and we cautioned them that they might want to get some objective panels to see if the flavors were indeed acceptable to their target population. They clearly wanted to market their products through specialty stores at prices that only the top 10 percent of the market could tolerate. They had very high standards and had a lot of good ideas. We agreed to send them some extension bulletins, information on pectin, and a few other things, and those will be sent shortly. The address we will send the information to is Ms. Faith Mirembe, P. O. Box 6709, Kampala, Uganda. We agreed to send the information in the pouch to Bruno and send them a letter so that they know it has been put in the pouch. My final caution to the women was that as they scale up, they should be very concerned about safety because their total operation so far has been in a home kitchen. If they go to larger utensils, hot sugar syrup can cause severe burns.

NILE BANK

Early Wednesday, March 31, we met with Mr. David Munro at the Nile Bank. He is with Technoserv and working as an advisor to the Nile Bank. He spoke to us about Dr. Tamali, who has a small venture growing very hot chili peppers for export. He also talked about a castor oil operation, to which they were providing assistance. Mr. Munro's interest was strictly in enterprise development. He felt that enterprise development had a chance of benefiting a large number of people, and he explained a bit about the philosophy of Technoserv. The Nile Bank is privately owned and seems to be a very important institution in Uganda.

UGANDAN INVESTMENT AUTHORITY

We stopped, after meeting Mr. Munro, at the UIA offices in Crest

House and met with Mr. George Rubagumya, the Executive Director. George is an extremely energetic gentleman, who practiced law in Texas prior to returning to his home country, Uganda. Mr. Arnold Lessard, Deputy Executive Director of the UIA, also joined us for the meeting. This was an opportunity to briefly get acquainted, and we agreed that we would revisit with George in a day or so. George quickly mentioned his need for some market information about juice concentrates. He was thinking of pineapple, passion fruit, mangos, and oranges, and wondered what form of concentrate is preferred. He also wanted to understand what variety of oranges might do best under the climatic conditions in Uganda. A second venture he mentioned is papain production. He questioned us as to the need for papain. Apparently there is a venture in Uganda where they isolate the papain from the sap of the tree.

MAGANJO GRAIN MILLERS LTD.

Attachment 6 gives a general sketch of Maganjo Grain Millers Ltd. We met with the Maganjo folks and were taken on a very complete tour of the facilities. In addition to making corn meal, they have an extensive animal feed business. They produce feed for cattle as well as chickens and seem to have a good mix of native ingredients to balance the nutritional profile of these feeds. You can see from the pictures I have taken that much of the equipment is very primitive, but they do a good job with what they have. They would appreciate receiving brochures on cleaning equipment and grinders. They mentioned that diesel fuel is too expensive, so they actually use a wood fire for a heat source. They also burn coffee hulls, corn husks, and everything that has a decent amount of heat value in it. The flow in their plant is basically drying, cleaning, grinding, separation, mixing, and packaging. They have extensive storage in a number of buildings for raw and finished products, and they sell their small millet package for 500 Ugandan shillings. If they fortify it with soy, they sell it for 800 Ugandan shillings. They pointed out that this price differential limited the amount of the soy-fortified millet which they sold.

BUREAU OF STANDARDS

The Bureau of Standards for Uganda is part of the Ministry of Commerce, and it is four years old. The Director of the Bureau of Standards is a food scientist--Dr. E. Kasirye-Alemu. The Bureau has done quite a bit of work on standards for food, and it has 40 standards completed. The Bureau has managed to install two laboratories, and you can see from the pictures the general set-up of those laboratories. This group sets standards, does inspections, conducts seminar, and runs a documentation center. We discussed the possibility of assisting the Bureau of Standards. Dr. Kasirye-Alemu was very positive, and she suggested the starting point would be to present seminars for the general food industry. She felt that plastic packaging for food would be a subject of interest to a great number of the food industry, and her second choice would be a seminar on quality control. Dr. Kasirye-Alemu did her educational work in Saskatoon, Saskatchewan, in food science, and she

has applied to FAO for planning assistance. It is feasible that Project SUSTAIN volunteers might help in developing a master plan for Uganda. A list of completed food standards and an example standard are in Attachment 7.

MAKERERE UNIVERSITY

We met with Professor John Mugerwa, Dean, Faculty of Agriculture and Forestry. I believe the Dean indicated that the University was founded in 1922, and it has 15 different faculties. The Faculty of Agriculture has eight departments, Crop Science, Animal Science, Agricultural Engineering, Agricultural Extension, Agricultural Education, Agricultural Economics, Food Science and Technology, Forestry and Soil Science. He indicated that was a great requirement in the country for food scientists. He was quite concerned about the wastage in the local produce. Depending on the produce, Professor Mugerwa thought there was 5 to 60 percent loss after harvest. He definitely would be interested in having some journals sent to his Faculty of Agriculture Library.

We then visited with Dr. Mohammed L. Sserunjogi, Acting Head of the Food Science Department. He was the gentleman who accompanied us on our trip to Masaka. Dr. Sserunjogi told us about the Food Science Faculty of nine, three of whom are currently working for Ph.D.'s. They have some part-time employees, and he pointed out that they have some cooperative projects in a nutrition program with FAO and post-harvest work with bananas. They are also interested in aflatoxins and bitter cassava detoxification. The subjects of coffee, tea, and sugar are taught by the industry in the surrounding area, and he pointed out that students can work on problems for their third year of the curriculum. We saw some of the laboratory facilities, and they seemed to be reasonably well equipped. Both the Dean and Dr. Sserunjogi were very emphatic that food science and technology is one of their No. 1 priorities, and they really felt seminars in packaging and quality control would be a great way to start. Dr. Sserunjogi reported that aid from Norway may provide a pilot plant for the Food Science Department. Comments of Dr. Sserunjogi are in Attachment 8.

UGANDA GRAIN MILLING COMPANY, LTD.

Early Thursday, April 1, we left for Jinja, which is east of Kampala, and we drove for about an hour and a half to the Uganda Grain Milling Company. This is a complex of factories, including two flour mills, a bakery, and a feed mill. The main mill was built in 1961 and 1962 and was shut down in 1973, and I believe the big mill has not been run since that time. The smaller mill was built to supply a bakery operation. That mill is in operation today. It is a Simon mill imported from England. Since Simon equipment is not made any more, much of the equipment is just about at the end of its useful life. There are very few spare parts available to keep the machinery running. As we visited their laboratory, they indicated they were interested in near infrared and possibly a Farinograph for their laboratory. They mentioned

they were participating in a wheat and barley development program. Actually, they were managing the project in partnership with breweries and sponsored by CIMMYT. They are interested in a catalog on bread wrapping machines and slicers. They also have an interest in plastic bread bags because they are currently packaging their Tip Top brand of bread in waxed paper. They are packaging at about 60 loaves per minutes. This was a very well-organized tour. We started in the feed mill, which is well automated and well run, a nice clean operation, followed by the small flour mill and the bakery. The bakery manager was very knowledgeable, and we were pleased that everything was operating during our visit.

KAKIRA SUGAR WORKS

Although we arrived late, we were very positively received by the Madhvani Family. After an orientation in the office, we were taken on a walking tour of the plant. It was amazing to see such a complete complex. In 1972, the plant had been operating at about 3,000 tons per day. Then the plant was shut down and pretty well gutted. They started rebuilding in 1985 and began running in 1989. In 1993, they were up to 1,200 tons per day with an objective of going to 4,500 tons per day. We saw where they are building a totally new boiler which was huge and will provide a tremendous amount of heat for producing syrup. They are interested in agriculture of all sorts, and they also wanted to discuss chilies. I promised to send them some information on where they can get seeds for hot chilies.

During the course of our tour, we learned that there were over 7,000 employees on this plantation. There is a company store for supplies, there is a market established on Saturdays when the local farmers bring produce in for purchasing, and they have their own primary school system, having 14 primary schools. They are negotiating with the government to take over the high school so that they can improve not only the facility, but the actual curriculum in the high school. The plant is truly self-sufficient with a complete foundry and extensive machine capability. They seem to have a ready market for the finished products from the sugar refinery. The Madhvani Family also owns the Nile Brewery and is slowly retrieving other confiscated properties. They were also in the electric light bulb business, the textile business and, I believe, the printing business. We enjoyed a very educational time at the Kakira Sugar Works.

UGANDA FISHERIES ENTERPRISES LTD.

The final stop in the Jinja area was at the Uganda Fisheries Enterprises, and we were received by Dr. Ssali, who is Managing Director of UFEL. The profile on UFEL indicates that it was established in 1989. The entire project was designed and built by representatives of the Italian government. The original plan was to have three collection centers for the harvested fish and three distribution centers, each of which would be equipped with ice makers in the chill room. All of those facilities were not built.

Presently, the main plant, which was designed to produce 10.5 tons of smoked fish per week, has been switched to produce frozen fish. They also produce a limited amount of chilled fish which is shipped by air to Holland. They have a blast freezer, and the fish is blast frozen for 10 hours. They have a rough capacity of three tons chilled and 55 tons per month of frozen. Ninety (90) percent of their fish is Nile perch and 10 percent is tulapia. In talking to Dr. Ssali, he indicated he would be interested in receiving some catalogs on spiral freezers and possibly impingement freezers. He had not really been acquainted with impingement coolers or freezers. He also felt we could critique some plans if he were able to get some new machinery, so that we could help him with a good process flow. He was also not conversant with the European market for fish and would be interested in some market data. We arrived back in Kampala very late Thursday night.

U.S. AMBASSADOR

We had the pleasure of starting Friday morning by meeting His Excellency, the U. S. Ambassador to Uganda, John Carson. We had a very enjoyable meeting with His Excellency and learned a bit more about Uganda and how optimistic the Ambassador is about things that could be done in the food sector in Uganda.

DAIRY CORPORATION LTD.

This is a Ugandan government enterprise, which was in a state of great disrepair at the time of our visit. The Danish government is currently installing some new equipment, and the plant flow is short circuited to make due during the construction period. The only operation being performed at the time of our visit was a packaging of fluid milk which was actually reconstituted milk from powder and butter fat that was run through a pasteurizer and packaged in plastic pouches on a form, fill and seal machine of some variety. The receiving areas for bulk milk in the plant were not in which you would call top notch sanitary conditions. The plant obviously lacked good quality-minded management. We were advised that the current manager had been dismissed in recent months, and that was one of the reasons we found things in a state of poor repair. The empty cans from butter fat were just laying outside the building on the grass, and there was a tremendous amount of trash around. I would assume this plant has rodent as well as insect problems. The gentleman appointed to conduct the tour indicated they have 50 collecting stations out in the country, and they do not pay for quality. They accept milk or reject it, but do not really evaluate for quality. My notes indicate they produce 430 million liters of milk per year. The average butter fat content is about 3.8. They have a serious problem with sour milk, and the manager asked our guide to find out what you do with sour milk. Again, my notes indicate that, at the collection point, they run some general tests such as resazurin and organoleptic. He indicated they get about 250,000 liters per week of sound milk. The dairy actually has three plants--one in Mbali, which is producing reconstituted milk; a plant in Entebbe, which I know

produces ice cream; and the plant we saw in Kampala, which I would not consider acceptable. The reconstituted milk is made from powder and oil as I had indicated, which are donated by the World Food Program.

EPADU

The Export Policy Analysis and Development Unit is part of the Ministry of Finance and Economic Planning and is headed by Professor Erisa Ochieng. Dr. Ochieng came to this post in 1989 and is working on bringing more dollars into the economy and changing policies. He has completed a number of baseline studies which are carried out annually, and he has done considerable work on what external markets want. He spoke of studies on flowers, fresh vegetables, spices, oil seeds, cereals, and fruits. He was very helpful in giving us an example of one of the executive summaries from this market study. I was pleasantly surprised at the extent of the information available at EPADU.

CONCLUSIONS

Uganda has the fertile land and rainfall to allow for two crops to be produced on most of the land in the country each year. Historically, most of Uganda's export earnings have come from coffee. With the collapse of coffee price supports, there is great interest in other agricultural crops for export. There appears to be an excellent opportunity in the food processing sector for the processing of specialty crops and fisheries.

Uganda's economic infrastructure is being rebuilt with the help of the international community. The government acknowledges the importance of the private sector and is rebuilding its food regulatory structure. As a member of the Preferential Trade Area (PTA), Uganda has the opportunity to export to this growing eastern and southern African area. Uganda also enjoys favored access to the European market through the Lome Convention. Makerere University has the capability and knowledge in agriculture and food processing. There are many good farmers throughout the country, and there are some farmer cooperatives such as the pineapple growers in Masaka.

The food processing industry at the present time is dominated by grain millers with some sophisticated operations in sugar refining, brewing, bottling, and bakery. The food manufacturing sector includes many very small to small processors. With the help of the international community, the cooperation of the government, and the productivity of the land and the farmers, it would seem that the food processing industry has a good future in Uganda. Project SUSTAIN can make a contribution to the revitalization of the food processing industry in Uganda.

Project SUSTAIN's efforts will benefit by cooperation with the Consultancy and Information Service of the Uganda Manufacturers' Association. A two-year program following Project SUSTAIN's

volunteer efforts should be established. If approved by the USAID Mission in Kampala, the program should begin in the summer or early fall of 1993.

May 21, 1993

RECOMMENDED PROGRAM

Following are the recommendations for future SUSTAIN activity in Uganda. They are based on findings from the March 1993 SUSTAIN mission to Uganda by SUSTAIN volunteer Dr. John Nelson (Vice President - Science & Technology, McCormick & Co.) and on subsequent discussions and meetings with him, Dr. William Kalema (Director of Consultancy and Information Services, Uganda Manufacturers Association), Jerry Brown (AID/ONI/PSD/Agribusiness Unit), and Elizabeth Turner (Director, SUSTAIN Program).

SUSTAIN is funded under a cooperative agreement with AID/R&D/N (DAN-5120-A-00-1066-00). Needs identified during the SUSTAIN mission exceed the current budget capacity of SUSTAIN. Therefore, the recommendations are divided between:

- I) those activities that can be done under existing funding resources and
- II) those activities that have been identified as priority needs, but will require additional funding resources.

I) WITH EXISTING RESOURCES

YEAR ONE (3/93 - 7/94)

1) ASSESSMENT MISSION

Date: March 26 - April 4, 1993

Purpose: To initiate SUSTAIN technical assistance efforts in collaboration with the Uganda Manufacturers Association (UMA) and identify needs for future technical assistance and training.

Number of volunteers: 1

2) TRAINING OF UMACIS CONSULTANT IN U.S.

Date: July 10-14, 1993

(SUSTAIN and AID/ONI/PSD/Agribusiness Unit are working collaboratively on organizing this portion of the program. Travel and Per Diem funds will be furnished by AID/ONI.)

Technical short course (packaging, quality control, or database systems)
Institute of Food Technologists (IFT) Annual Technical Conference (950 technical papers delivered, Chicago, IL)
U.S. industry tour (McCormick & Co.)
Purdue University tour and introduction to food science laboratory, pilot plant, etc.
USDA agricultural market news service training (OICD)

3) FOOD PROCESSORS WORKSHOP/ON-SITE TECHNICAL ASSISTANCE

Date: August, 1993

Subjects: Packaging (basic)

Format:
One-half (1/2) day executive session
Two (2) days
Breakout groups for Packaging sessions
Site visits to selected industries for individual technical assistance

Number of volunteers: 1

II) WITH ADDITIONAL RESOURCES

YEAR ONE (8/93 - 7/94)

1) FOOD PROCESSORS WORKSHOP/ON-SITE TECHNICAL ASSISTANCE

Date: September, 1993

Subjects: Quality Control (basic)

Format:
One-half (1/2) day executive session
Two (2) days
Breakout groups for Q.C. sessions
Site visits to selected industries for individual technical assistance

Number of volunteers: 2

2) FOOD PROCESSORS WORKSHOP/ON-SITE TECHNICAL ASSISTANCE

Date: January/February, 1994

Subjects: Quality Control (intermediate), Packaging (intermediate), or Market Research & Development (basic)

Format:
One-half (1/2) day executive session
Two (2) days
Breakout groups for Packaging and Q.C. sessions/Market Research & Development
Site visits to selected industries for individual technical assistance

Number of volunteers: 3

3) FOOD PROCESSORS WORKSHOP/ON-SITE TECHNICAL ASSISTANCE

Date: April/May, 1994

Subjects: Market Research & Development or Quality Control and Packaging

Format:
One-half (1/2) day executive session
Two (2) days
Breakout groups for Market Research & Development/Packaging, and Q.C. sessions
Site visits to selected industries for individual technical assistance

Number of volunteers: 3

4) SPECIAL WORKING SESSION WITH UGANDA BUREAU OF STANDARDS

Date: June/July, 1994

Purpose: To assist the food processing sector to comply with the Bureau's standards by educating it through technical assistance and training. To possibly assist the Bureau to develop a master plan for the country's food standards.

Format: Five (5) days to discuss laboratory procedures, setting of standards, regulatory and enforcement issues

Number of volunteers: 3

5) TRAINING OF INDIVIDUAL FROM UMACIS OR MAKERERE UNIVERSITY IN U.S.

Date: June 25 - 29, 1994

Institute of Food Technologists (IFT) Annual Technical Conference (Atlanta, GA) and technical short course preceding or following IFT Conference

YEAR TWO (8/94 - 7/95)

1) TWO FOOD PROCESSORS WORKSHOPS/ON-SITE TECHNICAL ASSISTANCE

Subjects: To be identified (2)

Number of volunteers: 5

2) LABORATORY SERVICES JOINT WITH MAKERERE UNIVERSITY

Purpose: To evaluate laboratory facilities and identify needs for training among laboratory technicians and supervisors.

Number of volunteers: 3

3) PILOT PLANT OPERATIONS JOINT WITH MAKERERE UNIVERSITY

Purpose: Evaluate pilot plant facilities and explore the potential for local food processors to work with Makerere University's Department of Food Science to improve and expand their production.

Number of volunteers: 3

4) TRAINING OF INDIVIDUAL FROM UMACIS OR MAKERERE UNIVERSITY IN U.S.

Date: June 3 - 7, 1995

Institute of Food Technologists (IFT) Annual Technical Conference (Anaheim, CA) and technical short course preceding or following IFT Conference

VISIT TO UGANDA BY DR. JOHN NELSON & MR. JERRY BROWN

MARCH 28 - APRIL 4, 1993

BY

DR. WILLIAM KALEMA
DIRECTOR
UGANDA MANUFACTURERS ASSOCIATION
CONSULTING & INFORMATION SERVICES

UGANDA MANUFACTURERS' ASSOCIATION CONSULTANCY AND INFORMATION SERVICES (UMACIS)

SHARING UNITED STATES TECHNOLOGY IN THE IMPROVEMENT OF NUTRITION (SUSTAIN) PROGRAM IN UGANDA

Visit to Uganda by Dr. John Nelson and Mr. Jerry Brown
March 28 - April 4, 1993

INTRODUCTION

The U.S. based Project SUSTAIN, in co-ordination with U.S. Agency for International Development (USAID), has been working with the Uganda Manufacturers' Association (UMA) for the development of the Food Industry and the improvement of nutrition in Uganda. As part of this continuing effort, Dr. John Nelson from SUSTAIN and Mr. Jerry Brown from the U.S. Department of Agriculture (USDA) and the Agency for International Development (USAID), made a one-week visit to Uganda from March 28 to April 4, 1993. The USAID played a very important role in introducing the SUSTAIN program to Uganda; we look forward to working closely with them in implementing the recommendations made in this report.

SPECIFIC OBJECTIVES OF THE VISIT

- To initiate SUSTAIN technical assistance efforts to the food processing sector in Uganda in collaboration with the Uganda Manufacturers Association;
- To outline ways in which the SUSTAIN programme can work with the UMA to help strengthen local food processing business;
- To identify topics for a proposed workshop (1 to 2 days) and/or one-on-one consultations with individual food processors to be conducted by a team from SUSTAIN working with UMA, possibly in May-June 1993; and
- To assess capabilities of staff in UMA's Consultancy and Information Services Division (UMACIS) and identify ways for SUSTAIN to help build capacity of UMACIS to provide effective, on-going assistance to local food processing industries.

THE VISIT

A food processors meeting was held on Monday, March 29 1993 at the Uganda International Conference Centre. Participants included representatives from forty food processing companies, the USAID, the Food Science and Technology Department - Makerere University, the Faculty of Agriculture - Makerere University, the Export Policy Analysis and Development Unit (EPADU), and the Uganda Export Promotion Council (UEPC). The meeting was addressed by Dr. John Nelson of Project SUSTAIN, Mr. Jerry Brown of USDA/USAID and was chaired by Dr. William Kalema of UMACIS. Dr. Nelson

outlined the aims of Project SUSTAIN and the areas in which SUSTAIN can help the food processing sector in Uganda, mainly through:

- supplying market and product information for the benefit of food processors in the developing world;
- providing access to United States food processing and marketing expertise;
- giving a second opinion in determining feasibility of projects on food processing.

Dr. Nelson and Mr. Brown visited seven companies involved in processing of: Spices, Fruit, Weaning Foods, Fish, and those in the Baking and Grain Milling Industry, during which time they held one-on-one consultations with their hosts. Meetings and discussions were also held with the USAID Mission Staff, Dr. Kakitahi - Director, Mwanamugimu Clinic which deals with child health care and nutrition, Dr. Evelyn Kasirye-Alemu - Director, Uganda National Bureau of Standards, Mr. George Rubagumya - Executive Director, Uganda Investment Authority (UIA), and with Prof. Erisa Ochieng - Director, Export Policy Development and Analysis Unit (EPADU). Dr. Nelson and Mr. Brown also held discussions with Prof. John. S. Mugerwa - Dean, Faculty of Agriculture and Mr. Mohammed L. Sserunjogi - Acting Head, Food Science and Technology Department Makerere University.

PROBLEMS FACED BY FOOD PROCESSORS

During the visit, several problems facing Ugandan food processors were identified.

Many Ugandan food processors face problems in marketing their products. There are complaints of highly priced fortified foods which are out of reach of the low income earners and yet these are, frequently, the intended market. A case in point was cited, of Maganjo Grain Millers who process fortified millet to be supplied to low income earners. The processing costs of the company dictate a rather highly priced millet brand which, although rich in nutritional content, has low market demand. The problem therefore, and faced by other food processors too, is how to increase consumers' awareness of the value of these products.

Many of the industries are equipped with old machinery some dating as far back as the 1950's and the 1960's. Recent and continuing technological changes and innovations have rendered most of this machinery obsolete. Spare parts sourcing and acquisition is therefore extremely difficult and sometimes impossible, for some of the food processing machinery in use today in Uganda; for instance, the bakery subsidiary of Uganda Grain Milling Company, a major producer of cereal flour and bread in the country, uses machinery manufactured by HENRY SIMON - an English company that closed down some years back.

Some food processors are unable to carry out research for the development of both new and existing food products due primarily to inadequate funds but also due to lack of the necessary expertise. It was recommended that the Food Science and Technology Department of Makerere University be more involved in the field of research and development. The capacity to carry out proper product quality control is lacking in many of the companies; more active involvement of the Uganda National Bureau of Standards in this area would greatly facilitate the carrying out of proper quality control.

Food processors in Uganda need access to information on: potential markets and prices for their products, sources of raw materials, machinery and equipment, and on developments in the food processing industry especially in food processing technology. For the effective development of the food processing industry in Uganda, the existing information gap needs to be bridged.

The high cost of packaging materials usually leads to use of inappropriate materials in packaging. This frequently affects the quality and safety of products and, as a result, reduces the shelf life of these products.

A majority of the food processors are faced with the problem of inadequate working capital which contributes to low capacity utilisation. This, in the long run, renders their products uncompetitive.

OTHER MEETINGS

During a meeting held with Dr. Evelyn Kasirye-Alemu, Director, Uganda National Bureau of Standards, issues that need to be addressed for the benefit of local food processors were pointed out. These are: food microbiology, quality assurance, and product packaging and labelling. These issues are especially important for those products intended for the export market.

The Export Policy Analysis and Development Unit (EPADU) has plenty of market information and the expertise to disseminate this information to the food processors, ideally during the planned workshop for food processors. EPADU can, with active participation, make a positive contribution to a workshop held for food processors.

Dr. Nelson and Mr. Jerry Brown met with UMACIS staff to assess their capabilities and to identify ways in which SUSTAIN could help build capacity of UMACIS to provide effective, on-going assistance to Ugandan food processors and to help strengthen local food processing business.

RECOMMENDATIONS

The UMA will assist local industries in the filling in of forms requesting SUSTAIN assistance and in making these requests as specific as possible.

The Food Processors' Workshop

It was recommended that a food processors' workshop be held every three months for a period of one year, i.e. four workshops. This would be a continuous programme with the first being an introductory workshop and the remaining three building on the first. The programme would include site visits and specific courses as needed, and would involve the participation of the UMA, Uganda National Bureau of Standards, Makerere University and EPADU.

It was recommended that the UMA contributes to the SUSTAIN quarterly newsletter, 'SUSTAIN NOTES', and distributes it to its food processors. The UMA can review the food processors' workshops held, and also write profiles on some of the companies which will be actively involved in the SUSTAIN program.

Proposed topics for the workshop are the three priority areas; Marketing, Quality Control, and Packaging

It was proposed that a half-day session for executives be held to involve them in the SUSTAIN Programme and to enable them better appreciate the need for the collaboration between Project SUSTAIN and their food processing companies.

A hands-on demonstrations approach would be adopted in the first workshop and it will therefore be held at Makerere University, Food Science and Technology Department. The Department is available in the period July to October during the end-of-year student holidays. The proposed time for the first workshop is therefore between July and October 1993.

Duration of the workshop

The proposed workshop should have a half-day session for all food processing company executives, then a one and a half day session on marketing. Sessions on quality control and packaging shall have a duration of two days each.

Day 1:	
Morning:	Executive session
Afternoon:	Marketing
Day 2:	Marketing

Days 3 and 4: Quality control

Days 5 and 6: Packaging

Training of Trainers

A need for training of UMACIS staff to facilitate them to actively and effectively implement the objectives of Project SUSTAIN in developing the food industry in the country, was identified.

CONCLUSION

The problems faced by the food industry in Uganda are similar to those faced elsewhere in the developing world. These are: lack of good market information, high cost of inputs, under-capitalisation, unavailability and high cost of suitable packaging, and lack of expertise in quality control. In addition, individual processors need to be further educated on the usefulness of collective action in solving common problems.

TRIP REPORT

UGANDA

MARCH 28 - APRIL 4, 1993

BY

MR. JERRY BROWN
AGENCY FOR INTERNATIONAL DEVELOPMENT
OFFICE OF OPERATIONS & NEW INITIATIVES
AGRIBUSINESS UNIT

TRIP REPORT
U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT/KAMPALA
OFFICE OF OPERATIONS AND NEW INITIATIVES
AGRIBUSINESS UNIT
JERRY BROWN
MARCH 30 - APRIL 9, 1993

PURPOSE OF VISIT

In addition to accompanying Dr. John Nelson, Chief, Research and New Project Development, Mc Cormack Spice Company and Chair, PROJECT SUSTAIN's steering committee, Brown sought three trade and investment projects for joint venturing with U.S. agribusiness firms and to share ONI's agribusiness unit resources USAID/Kampala and the Ugandan agribusiness community.

The agribusiness unit's resources includes: (1) access to technical, marketing and research capacities of the U.S. Department of Agriculture and its cooperators and Land Grant colleges and universities; (2) USAID/W information resources (See attachment); training opportunities among U.S. trade and professional associations; and, experience in organizing trade and investment activities.

Recommendations

1. USAID/Kampala's agriculture development office and private sector office are encouraged support to small and medium size agribusiness firms. This support should strengthen Uganda's embryonic food processing industry, foster external and regional agricultural trade promotion activities and expose Uganda's agribusiness community to its competition and counterparts in other countries.

2. USAID/Kampala should encourage regional and international trade activities over investment promotion in the short and medium term. Foreign investors will only become interested once Uganda has established credibility in the international market place.

3. Ugandan trade and investment promotion agencies should assist the local business community to develop realistic trade and investment profiles and business plans. From over 20 UIA investment profiles, I filtered out only two or three profiles valued at less than $5 million. Few foreign investors are willing to place significant resources in a country with an unknown or spotted past.

4. Uganda's natural resource base is impressive. However, Uganda can not compete with major exporters of produce and other horticultural products in the short term. I would like to

recommend for USAID Kampala's consideration of the following trade and investment initiatives:

* **hibiscus (bisop) production and export** from local farmers and, perhaps EPADU (Cartwright) technical support to the **Herb Foundation of Denver**, Colorado and Celestial Seasoning. I have seen growing one hibiscus variety in abundance around **Jinja** and **Masaka**. The Herb Foundation and Celestial Seasoning are searching for sources of the product. Bisop is used as an additive (ingredient) in **tropical fruit drinks and fruit liqueurs**. Celestial Seasoning will purchase hibiscus of a specific variety that is properly dried. The Foundation would assist farmers in the growing practices, handling and drying.

* **proposed papain and spice (chilli peppers)** farm (UIA list) by Bukwiri Farmers and Processors Ltd. I will investigate interest among ingredients importers in the U.S. and Puerto Rico. **Puerto Rico imports over $8 billion per annually in ingredients for the pharmaceutical and cosmetic industries.** Papain has received attention lately in the press, as its uses are increasing. Should I find an interested U.S firm, I will get back to UIA and USAID/Kampala. The Budwiri profile will require refining. It is very ambitious and goes far beyond the operational (technological, managerial and funding) capacity of small and medium size Ugandan food and agriculture processors.

* **dried** chilli peppers **for export**. Once I can identify a **mechanized** chilli harvester, trials of dried "birdseye" chilli should be sent to Mc Cormack and other bulk importers of chilli. Mc Cormack has agreed to analyze the product for its Scovill (heat) level and report the results to USAID/Kampala.

5. The mission should consider providing a **seminar for senior managers** of small and medium size food processors and a consultant for on site company assistance to improve physical plant hygiene and product safety and wholesomeness. The seminar is to stress the importance of the topic, thus bringing the senior managers on board with the idea. The consultant would provide a checklist at the work site about how to maintain a clean, safe food processing operations.

6. I recommend that the mission funds two or three Ugandan food technologists to attend the Institute for Food Technologist annual meeting and exposition, July 10-14, in Chicago, Illinois. You will find attached short courses and seminars scheduled from IFT's annual meeting educational component. Other seminar components include food technology data base access, ingredient technology, protein functionality in food systems, food packaging and career management. (See IFT attachment for more details)

One food technologist, or perhaps USAID staff person, should be assigned the task of scout-- a person with a sound knowledge of Ugandan agriculture investigating new product entries and market

trends. PROJECT SUSTAIN in collaboration with IFT will organize an international reception for our guest from Africa and other countries. One or two USDA/OICD and the Africa bureau RSSA staff will attend the IFT meeting to facilitate networking and logistics.

The following is a complete list of companies and individuals visited over the past two weeks. In addition, please find requests for market and technical information. As the responses are assembled, they will be forwarded to the Ugandan Manufacturers Association (UMA) for dessimination.

Dr. Eve Kasirye-Alemu
Executive Director
Uganda National Bureau of Standards
Plot 3/5 First Street
Industrial Area
P.O. Box 6239
Kampala, Uganda
Tel. 236606
236788

Dr. Kasirye-Alemu requests market information regarding passion fruit and pineapple on the U.S. and European markets. Also will send her information regarding dried hibiscus and the Herb Foundation. Herb Foundation interested in sourcing hibiscus for the U.S. beverage industry. Foundation will provided technical assistance while Celestial Seasons will purchase all of the dried hibiscus.

Rev. Canon P.R. Butukaine
C.O.U. East Aukole Diocese
P.O. Box 14
Mbarara, Uganda

Requests catalogue and price information to purchase a water pump.

Allen Ndibirwa
Crafi Bazaar (U) Ltd.
P.O. Box 4251
Kampala, Uganda

Request post harvest quality and production information regarding cassava, greenbeans --grades and standards for green beans.

G.G. Krishna Reddy
Engineer
Four Ways Group of Companies
Nge-Ge Ltd. Fish project
Tel. 220413
220761
Contact: Mr. Paddy Blick
Mohamud Thobani

Request information regarding standards for individual quick frozen fresh fish for the U.S. market. Would like trade data concerning the U.S. seafood, specifically the fish market.

Kate Campana
East African Regional Director
Volunteers in Overseas Cooperative Assistance
Colline House
Kampala, Uganda
Tel. 256-41-236826
FAX 256-41-236827

Provided 10 data bases on post harvest quality and food processing technologies. Would like additional information regarding market information for processed and non traditional commodities on the U.S. and European markets. She is primarily interested in data bases. Finally, she would like Uganda's list of USDA/APHIS admissible products list.

Mohammed L. Sserunjogi
Ag. Head of Department
Department of Food Sciences and Technology
Makerere University
P.O. Box 7062
Kampala,Uganda
Tel. 530204
FAX 531641

Request food science/technology data bases in U.S. Department of Agriculture and IFT. A partial list has been provided (See attachment). Would like to receive information regarding Institute for Food Technologist annual meeting and expo registration.

J. B. S. Muganga
Managing Director
Falcon Industries Ltd.
Plot 4/6 Cross Road
Nalukolongo Industrial Area
P.O. Box 3760
Kampala, Uganda
Tel. 270900
272543
FAX 25641271043

Falcon produces briquettes from dry processed coffee husks through a very energy efficient, energy regenerating process. A clear gas and a black, tarlike oil are the by products of the charred coffee shells. The gas is captured and used to generate the briquette operations. The tarlike, oil is stored, but

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requires analysis to determine how it can be used. Molasses is the binding agent for the briquettes. Muganga requests a technical search on coffee by products. The coffee husk briquettes emit more heat than wooden ones.

P.T. Rwabwogo
RECO UGANDA LTD.
Nic Building --Annex
P.O. Box 257
Kampala, Uganda

RECO produces papain and will start producing ketchup and fruit jams as soon as glass jars are available. Mr. Rwabwogo benefits from VOCA assistance and is pleased with the food security and hygiene guidelines provided by the VOCA consultant. I believe the food technologist from his company would be a good candidate to attend the IFT annual meeting.

Professor J.S. Mugerwa
Dean
Faculty of Agriculture and Forestry
Makerere University
P.O. Box 7062
Kampala, Uganda
Tel. 542277
531152
541358
FAX 256-41-531-641

Request documentation from IFT and other food technology institutions in the U.S. Will look into university documentation services that provide old periodicals and books free of charge.

Stanley J.K. Tumwesigye
Mill Manager
John B. Dailsiri
Personnel and Administration Manager
Uganda Grain Milling Company Ltd.
P.O. Box 895
Jinja, Uganda
Tel. 20171
21949
20054
FAX 043-20060

Dr. W.M. Ssali
Managing Director

Uganda Fisheries Enterprises Ltd.
Masese- Walukuba Rd.
P.O. Box 1981
Jinja, Uganda
Tel. 043-20538
FAX 043-20150
Res. 043.22199

Request nile perch and talapia import data on the U.S. market. Would like the names of U.S. companies currently importing this fish. Would like U.S. Department of Commerce, National Marine Fisheries 1990, 1991, 1992 annual fisheries trade report.

David Munro
Advisor (TECNOSERV)
Ephraim R. Kamuntu
Chairman/Managing Director
Nile Bank Ltd. P.O. Box 2834
Plot 22 Jinja Road
Kampala, Uganda

Request U.S. market information regarding chili peppers. Will follow up with Mc Cormack Spice Company buyer, Hank Kaestner for Tomale Pepper project.

Mayur M Madhvani
K.P. Eswar Company Secretary
Kamlesh M Madhvani
Peter H. Du Boulay
General Manager
Kakira Sugar Works
Madhvani Group
P.O. Box 121
Jinja, Uganda

Seeks financing for two projects: molassess/ethanol project and glass bottling project. Have received the feasibility study for the glass bottling project. Mayur will forward the ethanol project feasibility study upon his arrival in U.S. Will need mission guidance before proceeding with this activity.

George Rubagumya
Executive Director
Arnold Lessard
Deputy Executive Director
Uganda Investment Authority
Crest House
P.O. Box 7418
Kampala, Uganda

Tel. 234105
FAX 242903

Request market and price information on long staple cotton in U.S. and Japanese markets. Will develop contacts in U.S. and European long staple cotton market. Will initiate market reconnaissance and market specifications and business contacts for passion fruit concentrate on the U.S. and European markets.

H.G.K. Nyakoojo
Agriculture Executive Secretary
Uganda Export Promotion Secretary
Uganda Export Promotion Council
Plot 17/19 Jinja Road
P.O. Box 5045
Kampala, Uganda
Tel. 2597779
FAX 254077
259779

Request for an overview of the U.S. natural products (ingredients) and essential oils markets. Also, the agribusiness unit will initiate a market information search on the market for long staple cotton. This too may interest the Council. Mr. Nyakoojo promised to put together for me an general commerce and external trade paper to shared with U.S. agribusinesses curious about doing business in Uganda.

Aga Sakalala
UGACHICK
Eagen House
Plot 14 Kampala Rd.
P.O. Box 12337
Kampala, Uganda
Tel. 250341
FAX 243682

Discussed with him a proposal by the Herb Foundation of Denver, Colorado and Celestial Seasoning. Herb Foundation wishes to identify hibiscus (bisop) sources. Mr. Sakalala appeared interested. Hibiscus is an ingredient in tropical fruit punch, fruit purees and fruit liqueurs. I will contact the Foundation with USAID/Uganda's permission. According to the Foundation's proposal, Celestial Seasoning will purchase the product directly from the farmers.

Other requests include technical information on orchid production, handling and marketing in the U.S. as well as market demand and import regulations for tropical (aquatic) fish. A tropical fish company exports to Miami, Florida from Burundi.

Professor Joseph Mukiibi
Director General/Secretary for Research
National Agriculture Research Organization
Ministry of Agriculture
P.O. Box 295
Entebbe, Uganda
Tel. 20512/20321
FAX 21070

The National Agriculture Research Organization (NARO) coordinates all agriculture research in Uganda. A new Institute for Industrial Research comprises six research institutes: Kawanda, Namulonge, Serere, Livestock Research Institute (Tororo), Forestry Research Center (Kampala), and the Fisheries Research Institute The latter collaborates with Michigan State University.

Request information regarding the agricultural technology workshop to take place in Africa, Fall 1993. This seminar is organized by the U.S. Department of Commerce, African Development Bank, Special Program for African Agriculture Research and USAID/W. In addition, I will send him the Agriculture Research Institute annual meeting proceedings and investigate the process of linking NARO with one of the USDA food utilization laboratories.

U.S. Department of Agriculture and U.S. Agency for International Development

Agriculture and Food Sciences Data Bases

Post Harvest Institute for Perishables
Research results from primarily tropical crops.
129 W. Third Street
Moscow, Idaho 83843
Contact: Harvey Neese
Tel. 208-885-6791
FAX 208-885-6624

Agribusiness Information Center
USDA/Office of International Cooperation and Development
General agribusiness request. Referrals made to specified data bases.
14th and Independence Avenue SW
Room 3246
Washington, DC 20250-4300
Contact: Ellen Mc Closkey
Tel. 202-690-2981
FAX 202-690-3982

National Agriculture Library
Food science and agricultural trade and marketing information
Baltimore Blvd. Room 107
Building 005
Beltsville, Maryland
Contact: Ms Brownlee
Tel. 301-504-5479

USDA/Agriculture Research Service
International Agriculture Research Division
Results from international agriculture research
Contact: Dr. Richard Soper
Tel. 301-504-5605

USDA/Agriculture Cooperative Research
Information Branch
Research by U.S. agriculture cooperatives
P.O. Box 96576
Washington, DC 20090-6576
Contact: Franz Ingalsbe
Tel. 202-720-2556

USDA/Office of International Cooperation and Development
Technical Services Division
Conducts world-wide literature search on any technical area.
Contact: Pat Wetmore
Tel. 202-690-1826

FAX 202-690-4846

Center for Development Information and Evaluation
USAID/Washington
Houses USAID studies and project documentation
Contact: Cheryl Simmons
Tel: 202-647-8837
FAX 202-736-4133

Agricultural Marketing Service/Transportation Marketing Div./
International Transportation Branch
AMS/TMD/ITB
14th & Independence Ave. SW Room 1217
Washington, DC 20250
Provides technical assistance in the packaging, handling, and transport of food and agriculture products. Also designs sea, air and land transport terminals.
Contact: Brian Mc Gregor
Tel. 202-690-1319
FAX 202-690-1340

Agribusiness Unit's Trade and Investment Promotion Strategy

Talking Points with Ugandan Agribusiness Representatives

Four Point Program:

* Enhancing awareness between U.S. and sub-Saharan Africa agribusiness communities.

* Identification and facilitation of trade and investment opportunities between the U.S. and African private agriculture sectors

* Niche market and investment opportunity exchange.

* Monitoring business transactions and lessons learned.

The primary function of the agribusiness unit is to support field missions to carry out private agricultural development programming. In addition to responding to specific mission request (identifying consultants, participating on design teams, investigating U.S. food and agriculture import regulatory issues, among others), the agribusiness unit focus on the above four asterisked points. The following are activities that could serve the agribusiness programming focus USAID/Kampala and the Uganda agribusiness community. The agribusiness unit is poised to support USAID/Kampala to implement these and other activities indicated.

A. Enhancing awareness between U.S. and sub-Saharan Africa agribusiness communities. The following are components to enhance awareness:

1. Official visit of senior government leaders accompanied by host country private sector.

2. Development of media pieces, for example, brochures, videocassette, articles for circulation in U.S. professional and trade journals and meetings.

3. Participation and exhibition at international trade and professional association (Institute for Food Technologist -- July 10-14, Produce Marketing Association --October 23-27) annual meetings.

5. Participating in international donor sponsored regional trade and investment promotion activities (proposed AFDB, WB, USAID/W agriculture technology seminar in Africa; proposed USDA/USAID Market News Service, Plant Protection and Quarantine and Going Global seminars).

6. Private sector to private sector trade and investment promotion visits (for example, UIA mission visit to National Association of Investment Companies.

B. Identification and facilitation of trade and investment opportunities regionally as well as between U.S. and Africa.

1. Processed and semi process food and agriculture commodities offer the greatest potential to increase the profit margins to African producers/exporters.

2. Market driven non traditional exports such as natural products and additives, essential oils and oleoresins, tropical and ethnics crops, floral products, to name a few should be researched and analyzed for their market potential.

3. Matching Uganda small and medium size investment opportunities with potential U.S. counterparts is not easy. However, it is the most practical way to increase business between the U.S. and Africa.

C. Market Niche and investment opportunity exchange.

1. Upon request, the agribusiness unit will provide trade data for individual commodities.

2. In addition, the unit will provide market niche information published by professional and trade associations. Some of the information is provided by USDA. This information does not complete a market study.

3. From time to time, U.S. investors wish to establish a presence in a country. It is not often that such request target Africa. However, when these opportunities surface, we will forward them to UIA.

D. Monitoring business transactions and lessons learned.

1. Once the agribusiness unit initiates contact between two potential, tracking "hand holding" developments of the transaction. Tracking includes periodic calls to the U.S. business. Reporting business transaction to the AID mission. Working with AID and U.S. regulatory agencies to address relevant issues.

2. Write/record the process of the transaction.

SUSTAIN PROGRAM

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

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

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

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

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

How the Program Works

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

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

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

For more information, please write to:

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

SUSTAIN VISIT TO UGANDA

OBJECTIVE: to initiate SUSTAIN technical assistance efforts in Uganda in collaboration with the Uganda Manufacturers Association and outline plans for future interventions

PROPOSED DATES: Arrive March 28 - Depart April 4, 1993

SCOPE OF WORK:

SUSTAIN will send a senior executive from McCormick & Company, Inc. (Dr. John Nelson, Senior Vice-President, Science and Technology) to Uganda to:

- meet with USAID Mission Director (Keith Sherper), Chief, Agriculture & Rural Development (Jim Dunn), Holly Wise and other relevant USAID staff for briefing and discussion of UMA/SUSTAIN effort

- assess capabilities of staff in UMA's Consultancy and Information Services Division (UMACIS) and identify ways for SUSTAIN to help build capacity of UMACIS to provide effective, on-going assistance to local food processors. Also identify any pilot plant and food testing facilities that serve or have the potential to serve the private sector and which may benefit from a future SUSTAIN team assessment and technical assistance.

- outline ways that the SUSTAIN program can work with the Uganda Manufacturers Association (UMA) to help strengthen local food processing business

- speak at a luncheon attended by local food processors on principles of food processing (or other topics to be determined later) and outline the proposed UMA/SUSTAIN effort

- meet individually with 3 to 4 local food processors (spices, vanilla, cereals) to assess needs, identify problems/opportunities, and suggest options for addressing these

- meet individually with infant/weaning foods manufacturers (both existing manufacturers and those entrepreneurs that have the interest and potential for entering this line of manufacturing). Schedule should also include visit with Dr. D. Warren Harrison.

- identify topic(s) for proposed workshop (1 to 2 days) and/or one-on-one consultations with individual food processors to be conducted by a team from SUSTAIN working with UMA, possibly in May-June, 1993

LOGISTICS:

SUSTAIN, in conjunction with UMA, outlined terms for the scope of work for the initial visit of a SUSTAIN Volunteer. The following logistical arrangements are suggested:

SUSTAIN:

- SUSTAIN will make travel and visa arrangements for visit by Dr. John Nelson
- SUSTAIN will pay for international travel
- SUSTAIN will work with UMA to address needs identified during first mission and plan follow-up actions

Uganda Manufacturers Association:

- UMA will set-up the meetings and itinerary to complete the scope of work
- UMA will arrange local travel for SUSTAIN consultant, including pick-up & return to airport

USAID/Kampala assistance will be requested for:

- country clearance
- hotel reservations for Dr. Nelson @ USAID government rates (Dr. Kalema recommends Sheraton)
- meeting with Keith Sherper, Jim Dunn, Holly Wise (with Dr. John Nelson and Dr. Kalema)

ITINERARY
VISIT TO UGANDA BY DR. JOHN NELSON AND MR. JERRY BROWN
MARCH 28 - APRIL 4, 1993

Sunday: March 28th, 1993

10:40 am.	Arrival of Dr. John Nelson and Mr Jerry Brown
4:00 - 5:00 pm	Meeting with Mr Sekalala, Vanilla Processor, at the Sheraton Hotel

Monday: March 29th, 1993

8:00 - 10:00 am	Meeting with USAID Mission Director, Mr. Steve Ryner, Mr. James Dunn, Ms Holly Wise, Mr. Bruno Komakech and other key USAID staff
11:00 - 1:00 pm	Dr. Nelson and Mr. Jerry Brown to address local food processors at the Uganda International Conference Centre
2:30 - 3:30 pm	Meeting with Dr. Kakitahi, Director, Mwanamugimu Clinic, Mulago Hospital
4:00 - 5:00 pm	Visit to Ntinda Spices Ltd.

Tuesday: March 30th, 1993

7:30 am.	Leave for Masaka
9:30 - 11:00 am	Visit to Masaka Food Processors Ltd.
2:00 - 4:00 pm	Visit to Africa Basic Foods Ltd.- Gaba

WEDNESDAY, MARCH 31, 1993

8:30 - 9:30 am	Meet Mr David Munro at the Nile Bank
9:45 - 10:30 am	Meeting with Mr. George Rubagumya, Executive Director, Uganda Investment Authority UIA, at UIA offices, Crest House
11:00 - 12:00 pm	Visit to Maganjo Grain Millers, General Manager, Mr Wilson Bahemuka
2:30 - 3:30 pm	Meeting with Dr. Kasirye-Alemu, Director, Uganda National Bureau of Standards, Industrial Area
4:00 - 5:00 pm	Meeting with Prof. John Mugerwa, Dean Faculty of Agriculture and Mr. Sserunjogi, Acting Head, Dept. of Food Science and Technology, Makerere University

THURSDAY, APRIL 1, 1993

8:00 am	Leave for Jinja
9:00 - 10:30 am	Visit to Uganda Grain Milling Co. Ltd; Personnel and Administration Manager, Mr. John B. Kasiisiri
11:00 - 2:00 pm	Visit to Kakira Sugar Works, Managing Director, Mr. Mayur M. Madhvani
2:30 - 4:00 pm	Visit to Uganda Fisheries Enterprises Ltd., Masese Managing Director, Dr. William M. Ssali (Accompanied by Acting Head, Dept. of Food Science and Technology, Makerere University)

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FRIDAY, APRIL 2, 1993

9:30 - 9:45 am	Meeting with His Excellency, The Ambassador of the United States of America
10:00 - 11:45 am	Visit to Dairy Corporation
12:00 - 1:00 pm	Meeting with Prof. Erisa Ochieng, Director, Export Policy Analysis and Development Unit (EPADU) - under Ministry of Finance and Economic Planning.
2:00 - 3:00 pm	Meeting with Mr. George Rubagumya, Executive Director, Uganda Investment Authority (UIA)
3:30 - 4:30 pm	Debriefing with USAID/Kampala Mission staff.
5:00 - 5:30 pm	Meeting with Mr. James Mulwana, Chairman, Uganda Manufacturers' Association (UMA)

Saturday: April 3rd, 1993

9:00 - 11:00 am	Meeting with Dr. William S. Kalema, Director UMA Consultancy & Information Services (UMACIS), and his staff at UMACIS

Sunday: April 4th, 1993

10:40 am	Departure of Dr John Nelson

INTRODUCTION

The Food Processing Industry in Uganda is still in its very young stages. The Government of Uganda, through the Ministry of Agriculture, Animal Industries and Fisheries is striving to promote a viable and self-sustaining food base in the country, the urgency of which was further reinforced by the recent drought that hit Central and Southern Africa.

Uganda is a fertile country, with 84% of her land suitable for agriculture. There is therefore a great potential for the development of the food processing industry as well as for the improvement of nutrition in Uganda, since agriculture is the major source of raw materials for the food industry. The food processing industry in Uganda mainly centres around the following activities: fish processing, edible oil production and processing, milling of maize, millet, wheat and sorghum grain, bakery industry, fruit juice extraction and processing, milk and milk product processing, and vegetable processing.

The Uganda Manufacturers' Association, UMA, carried out a survey on some of the food processing industries in the country. This survey covered the products manufactured/processed by various companies, capacity utilisation, annual volumes/sales of the companies, year of establishment of the companies, total workforce, problems faced by the companies and the areas for Sustain's Technical Assistance programme that would benefit the company most. Out of fifty six industries, only seventeen were able to respond to our questionnaire in time. However, follow up interviews are being conducted for the non-respondents. Profiles on some of the companies surveyed, including the problems they face and the topics for the proposed workshop which the companies consider as priorities has been presented in a brief report (attached). A summary of the results of the survey carried out has been given herebelow:

Topic	Number of Industries
- marketing	14
- food safety, quality and sanitation	10
- packaging	9
- food preservation and storage	8
- food processing	5
- environmental technologies	4
- food fortification	2
- weaning foods	0

From the results of the survey, the top three priorities for short course topics for the proposed workshop are: product marketing, food safety, quality and sanitation, and product packaging.

The industries surveyed were found to have similar problems. These included:

- Irregular power supply which disrupts production.
- Irregular supply of raw materials forcing the food processors to shift to other sources of raw materials which are, in most cases, of different quality. In effect, this leads to inconsistency in the quality of the final product.
- Lack of working capital; this is a constraint to the smooth and efficient operation of the industries and also hinders increased production in these industries. Loans to help boost the financial standing of the industries are available, but are inaccessible due to the prohibitive bank interest rates.

- Lack of spare parts for the machinery which normally have to be imported. The importation procedure sometimes involves delays, which lead to temporary closure of the industries.
- Lack of skilled personnel to run the industries efficiently. The shortage of skilled personnel affects both the management and technical staff levels of the firms.
- Lack of adequate packaging materials for the products which affects their shelf-life, as well as their acceptability on the export market.
- Nearly all the industries surveyed operate at below installed capacity with the majority producing at less than 50% of installed capacity, which has led to high costs of production and high product prices. This has resulted into low turnovers for the industries. In the final analysis, many of the firms cannot generate enough revenue/profits to enable them to set aside funds for product research and product quality improvement.

This report presents the problems faced by Uganda's food processing industries. The food processing industry in Uganda has a great potential for growth. Over 80% of Uganda's population is involved in agriculture and will benefit from the development of this industry. By developing the food industry in the country, PROJECT SUSTAIN will help the people of Uganda to establish a viable and self-sustaining food base, which will contribute to a healthier future for Uganda's population, and will also give a boost to the country's economy.

The food processing industry in Uganda mainly centres around the following activities: fish processing, edible oil production and processing, milling of maize, millet, wheat and sorghum grain, bakery industry, fruit juice extraction and processing, milk and milk product processing, and vegetable processing. Below are profiles on eight of the companies surveyed, including the problems they face.

THE FISH PROCESSING INDUSTRY

Uganda Fisheries Enterprises Ltd (UFEL)

Established in 1989, UFEL started with the production of smoked fish at a capacity of two tons per month, but had to diversify into other areas of fish processing due to the low demand for smoked fish. The company is currently involved in processing frozen fish, chilled fish and smoked fish. Some of this fish is exported. The company employs 100 workers. Annual production volume is 1050 tons of fish.

The main problems faced by the company are:

- The company lacks fishing vessels and has to rely on local fishermen and middlemen to supply it with fresh fish. This makes supply of raw materials irregular and also leads to the existence of excess production capacity.
- The machinery installed in the plant is of poor quality resulting in frequent machinery breakdowns in spite of the regular preventive and routine maintenance procedures carried out.
- The employees of the firm lack modern skills in marketing, maintenance, financial and processing management.

The Managing Director of the plant who was interviewed believes that:
Financial assistance in acquisition of modern and quality machinery, in particular icemakers and plate freezers, and assistance in acquisition of a fishing vessel would enable the company have a constant supply of raw material. Training his staff in marketing, maintenance, financial management and processing management would go a long way in improving the overall performance of the company.

THE AGRO PROCESSING INDUSTRY

Masaka Food Processors Limited

Masaka Food Processors Limited, established in 1989, is the leading producer of fruit juices in Uganda. Products processed by the company are: pineapple beverage, pineapple squash, mango squash and passion fruit squash. Capacity utilisation as a percentage of total installed capacity is: 60-65% for the beverage and 20-25% for the squash. Annual sales of the company are an equivalent of US$280,000.

Problems faced by the firm are:

- The company is faced with a crippling debt which threatens to cause its collapse.
- The poor quality machinery installed in the company has resulted in a low production output.
- There is a lack of spare parts for the installed machinery.

The company is interested in information on: food processing methods; food safety, quality and sanitation; food preservation and storage and marketing techniques.

Food World Limited

This company was established in 1988, with only four employees. It has now expanded to a total workforce of thirty four. Products processed are: sausages, bacon, salamis, ham and smoked fish. Capacity utilisation of the plant is 30% of total installed capacity, with annual sales of US$100,000 (equivalent).

Problems faced by the company are:
- The company is paying a high rent for its premises; which reduces the company's working capital.
- The company has limited refrigeration facilities for storage of its raw materials and the processed products.
- The equipment used during processing is obsolete, but the company lacks capital for purchase of new equipment for the plant. Modern equipment could be purchased with loanable funds from banks but the interest rates are still too high.
- The company lacks capital for purchase of packaging materials.

The company is interested in information on: food safety, quality and sanitation, food processing and product packaging.

Mossewa Limited

This firm was established in 1987 and is involved in the processing of peanut and sesame seed oils, and in the production of peanut butter and peanut sauce mixes. Mossewa Ltd. is a small company with only seven employees and daily production of 1,000 kg of peanut and sesame products.

Problems faced by the firm are:

- The company employees lack technical skills, and the company does not have a food specialist which presents a problem when it comes to food safety, quality maintenance of food, and storage and preservation techniques for the product.
- The company is faced with serious financial problems .
- A large portion of the meagre funds available to the firm is spent on importing packaging materials for the products which are not locally available.

The company is interested in information on: food technology, product marketing, and food fortification.

Africa Basic Foods (U) Ltd.

Established in 1967, Africa Basic Foods (U) Ltd. is a leading producer of soy food products in Uganda. Products manufactured are: baby soy flour, soy flour, high protein maize flour, and soy nut butter. The company presently makes over US$180,000 (equivalent) in annual sales. The company has thirty six employees.

Problems faced by the firm are:

- Ugandans are not aware of the benefits of high protein foods especially soy products; the company now sponsors a radio programme on the importance of soy foods, which is aired every Saturday.
- Lack of access to new and improved technologies for the processing of soy products.
- Lack of funds for use in product improvement research.
- Packaging materials for the products are not locally available; 90% of all packaging materials used have to be imported.

The company is interested in information on: new technology in food preservation and storage, food fortification, food quality, safety and sanitation and product marketing.

Bakery Industry

Hot Loaf Bakery Limited

Hot Loaf Bakery Limited, established in 1987, is the leading bakery in Uganda. and its products are: bread,pies, pizzas, pastries and biscuits. The bakery employs a staff of one hundred and eighty. The main product sold is bread, with annual production at six million loaves of bread.

Problems faced by the bakery are:

- Poor storage facilities for the raw materials, mainly wheat, which in turn affects the quality of the final product.
- Lack of spare parts for the machinery used at the plant.
- Irregular supply of raw materials: this problem is alleviated by shifting from one raw material source to another, which affects the quality of the product.

The company is interested in information on: food preservation and storage, food safety, quality and sanitation and appropriate environmental technologies.

Oil Industry

M/S Ocudung Agencies Limited

This company is located in Jinja, the major industrial town of Uganda. It is a relatively young company which was established only in 1990. The main activities of the company are the processing of edible oil and protein cake from soy bean, and peanut milling. Capacity utilisation of the plant is 30% of total installed capacity, and operations are only for an eight hour day shift.

Problems faced by the industry are:

- Lack of trained manpower.
- Lack of sufficient working capital.
- Competition from cheaper oil products which have flooded the market.
- Problems in acquisition of packaging materials for the product.

The company is interested in information on: food preservation and storage, product marketing and packaging.

Maize milling Industry

Nagongera Millers and Farmers Limited

Nagongera Millers and Farmers Limited is a private company which was established in 1987. This company specialises in the processing of cereal maize, which is grown in most areas of Uganda, into flour. The company employs eighty four workers. Annual sales of the company are an equivalent of US$19,000 at a capacity utilisation of only 20%.

Problems faced by the firm are:

- Inadequate storage facilities for both raw materials and finished products, which sometimes results in losses.
- Irregular prices of raw materials which fluctuate according to crop yields.
- Poor quality materials are sometimes supplied to the company.
- Shortage of working capital.

The company is interested in information on: food preservation, packaging and storage, and marketing.

The companies presented above have been selected from the following industries: fish processing , fruit processing , grain milling, oil production and refining, meat processing, and peanut and soy production.

DEVELOPMENT OF THE FOOD INDUSTRY IN UGANDA

INTRODUCTION

1.0 PRESENT STATUS

Agriculture dominates Uganda's economy; accounting for over 60% of the GDP, 99 percent of export earnings, 80% of employmnent and 40% of government revenue. In addition agriculture is the economc base for the agro industrial processing of the traditional cash crops i.e, Coffee, Cocoa, Cotton, Tobacco, Tea and Sugar.

Staple food crops, however, dominate most of the agricultural activities. Crops like bananas, beans, Cassava, maize, sweet potatoes, groundnuts, Sorghum and millets account for 95% of the land in food crops. As a whole, crops account for 80% of the value of monetary and non-monitory agriculture. Cash crops of Coffee, Cotton, Cocoa, Tea, Tobacco and Sugar accounts for only 10% and the food crops for 90% of the 56,000 sq km under cultivation.

Despite the importance of agriculture, agro-industrial activities in Uganda supply very little processed and semi processed products on the market. As a consequence post-harvest losses are very high, conservatively estimated at 40% and higher for perishables. Development of a sizable agro-processing industry requires greater regularity in production of quality raw materials, improved processing technology, higher consumer incomes to raise purchasing power and to create a large scale market in the nation.

2.0 BASE-LINE STATUS RATIONALE

2.1 The majority (90%) of food and cash crop producers are small holder peasant farmers owning less than 10 hectare plots on which they continuously grow food crops for domestic security and sell the excess on open markets.

2.2 For balanced nutrition small holder producers typically produce more than one crop a year, hence only small surpluses remain of the various crops, which may range as 10% beans and 20% for millet. These cannot sustain the food processing industry on a large scale, but can form a basis for small scale industrialization which could serve as a springboard for the large scale industry.

2.3 A few crops have been adopted as both food and cash crops by most farmers. These include maize and soya-beans which reach surpluses beyond the farmers consumption needs of 70 and 90%, respectively. Food processing could hence focus on these crops plus wheat, sorghum and ground nuts where surpluses exceed 50%.

2.4 Perishable foods like meat, milk, bananas and an assorted range of fruits and vegetables need to be processed, to reduce post harvest losses, add value, and stimulate both agricultural and processing industries, thereby creating employment and raising consumer purchasing power an important component in the production- consumption cycle. Uganda has a lot of indigenous fruits both wildly growing and cultivated.

2.5 In order to expand the economic base, Uganda needs to develop the agro-processing industry in order to ensure quality and add value to potentially exportable crops. Crops like, groundnuts, maize, beans and simsim have been recognised in several hard currency markets as well as local and regional markets, especially the PTA.

2.6 Uganda has demonstrated her potential as an exporter of horticultural produce. However, current technology, yields, quality and marketing infrastructure constrain the ability of Uganda's food crop produce to compete in the world markets. Trained personnel is another important limiting factor.

2.7 The established food processing industries in Uganda, i.e, brewing, soft drink production, baking and grain milling, dairy processing and fish processing operate below 35% of their installed capacity.

2.8 Most of the existing food processing industries were mainly set up for import substitution using imported raw materials. Priority is now being given to food processing industries based on local raw materials.

3.0 FOOD TECHNOLOGY CONSTRAINTS, PROBLEMS CAUSES AND EVIDENCE.

3.1 - Heavy postharvest food losses especially of perishable produce translating into low income for the farmer.

3.1.1 Causes of the constraint

- Low level of basic skills and applied technology in the areas of food production, postharvest processing and preservation.

- Inadequate capital investment in storage and processing facilities.

- Underdeveloped distribution and marketing channels.

- Lack of established supportive industries such as packaging industries.

- Lack of established reference centre for quality assurance and control.

3.1.2 Evidence of Constraints.

- There are very few industries in Uganda processing agricultural perishable foods; and none of the present factories is operating optimally.

- Low prices and sometimes absolute wastage of fruits and vegetables during peak seasons. Milk suffers a similar fate during peak seasons.

3.2 Poor quality and presentation of processed products which fail to attact consumer acceptance and confidence.

3.2.1 Causes of constraint.

- Lack of indigenous expertise to set up and man food processing industries.

- Lack of training institutions to produce qualified personnel.

- Absence of supportive industries.

- Inaccessibility to credit facilties without own equity and collateral.

3.2.2 Evidence of constraints

- The high prevalence of imported food items in the market.
- Preference for imported processed food products oven locally produced ones.
- Short shelf-life and poor presentation of locally rocessed food products.
- Locally processed food items costing higher than imported food items.

4.0 CONSTRAINTS ON THE PRODUCTION OF SPECIFIC PRODUCTS.

4.1 Fruits and vegetables.

Whereas small scale processing is possible, the present agricultural system in Uganda do not favour large scale processing.

4.1.1 Causes:

- Most fruits and vegetables grow on small holder farms, hence raw material lack uniformity and the supply is unpredictable this makes it difficult to meet the specifications and schedules for commercial processing industries.
- Poor production technologies that depend on nature no irrigation facilities.
- Most tree fruits grow wildly; no commercial orchards occur.
- lack of supportive industries e.g producing food additives, preservatives, packaging, industrial machinery, sanitizers, etc.
- Lack of skilled manpower.

4.1.2 Evidence

- Lack of adequate and constant supply of quality raw material for the industry.
- No special varieties of fruits or vegetables are grown for commerical processing. What is commonly processed is the surplus of the consumer market or domestic requirements which is usually of low quality.
- There are less than three factories in the whole country processing fruit and/or vegetables operating at small to medium commerical levels.

4.1.3 Implication:

Small scale food processing most favoured.

- Small holder farm production are capable for supporting small scale industries (which require little capital input).

- Small scale industries can operate economically without high levels of mechanization and skilled labour. This allows use of a large range of raw material to produce a variety of products.

- Production can be planned to suit external conditions such as supply of raw material and demand for products, plus other considerations.

- Small scale industries create a ready market for agricultural produce, thereby stimulating high levels of production and hence act as a springboard for large scale industrialization

4.2 Cereals:

Some of the problems facing the cereal processing industry include the following.

- Baking, the major industry employing cereals depends on imported wheat.

- The quality of the wheat used in the Baking industry has variable qualtiy; quality being difficult to control mainly due to the demand that highly exceeds supply.

- Use of composite flours based on locally available raw material to partially substitute wheat flour, remain an academic solution. It has not benefitted commercial production.

- Simple and local technologies such as use of brick ovens have not been optimally exploited in the Baking industry.

- High capital input is required to set up industries to produce cereal based weaning food and maize products. Maize can be processed to produce, corn oil, animal feed, starch, glucose, liquid sugars, etc. Some of these are consumer products but most of them are used in the processing of other food products. Some of these products are also exportable especially to member PTA countries. Since Uganda is already exporting maize, it would be logical to produce high value products for export.

4.3. Oils

- Most of the existing factories for oil milling are redundant due to shortage of raw material for processing.

- The consumer market for oil seeds fetches better prices than processing. Hence the two are in competition.

- Lack of capital to fund the purchase of industrial machinery.

- Lack of supportive industries.

- Imported oils especially the oil imported under the Structural Reform Programme has a negative effect on the development of the oil processing industry.

4.4 Milk

- There is no enough milk for processing.

- Most of the milk in the country is produced in rural areas and is processed in Kampala. The Entebbe and Mbale plants handle relatively small volumes of milk.

- The rural areas where the milk come form often have poor road network which make milk collection difficult during the rain seasons which coincide with peak production. Most of these areas are also not electrified therefore milk cooling can only be done expensively by use of fuel-run generators.

- Local technologies to process milk in rural areas where it is produced have ;not been researched. If developed such technologies could offer short term solutions for the conservation and/or preservation of milk. For example milk that has developed hign acidity and usually condemned to waste can be utilised to produced commercial products using improved village level technology.

4.5 Fish and Fish Products

- The national fish production is 200,000 MT/year, representing the most important source of animal protein in the Country. The major fish are Nile Perch and Tilapia.

- The first commerical fish processing project, was undertaken by the Uganda Fish Marketing Company Ltd (TUFMAC) in 1945 around Lake George but ceased operating in 1975.

- The fish processing industry mainly for frozen fillets is the fastest growing food industry in the Country.

The major Fish processing plants, producing fish fillets for export are :- Ngege Fishing Company (Kampala).
- UFEL (Jinja)

4.6 Meat and Meat Products.

- Beef is the most important Meat
- Over time the animal population was declining. In 1987 cattle, goats, sheep and pigs was 3.9, 2.5, 0.68# and 0.47 million respectively.
- Presently, no commerical meat processing activity is carried out. Uganda Meat Packers Ltd, a canning plant in Soroti, closed due to shortage of animals.
- However a small scale meat processing plant that produces sausages operates in Kampala.

5.0 HUMAN RESOURCE CONSTRAINTS.

- The Food Processing industry lacks trained personnel in technical, quality assurance and quality control, and management aspects.

- The Department of Food Science and Technology at Makerere, which is the only institution in the Country which trains Food Science and Technolgists is still in its infancy, only three years old. It is riddled with all sorts of problems, e.g, lack of staff, teaching and research facilties, accommodation and has no financiers.

- The National Bureau of standards which overseas standards and quality was set up in 1989. Due to the many problems it has faced, including lack of skilled personnel, it is still crawling and is yet to stand up and walk to meet its obligations.

- There is a small volume and narrow range of locally processed foods on the market. The quality of these products is generally low due to lack of technical skill.

- There is need for mid-level man-power training to produce technicians to man the technical side of food industrilization. No such training institution exisits in the Country.

6.0 MONETARIZATION OF THE FOOD INDUSTRY:

The development of the food industry in Uganda is basically hampered by lack of funding, at various levels.

- Agricultural production needs to be developed to meet the requirements and standards of commercial processing.
- Training programmes have to be developed to produce the right calibre of personnel in sufficient numbers to man the food production and processing industry.
- Research and Product Development (R & D) has to be enhanced to optimise processing technologies available and manimize quality of products.
- Development of supportive industries and infrastructures is required.
- A strong link between training Institutions of Food Scientists and Technologists and the Food Industry needs to be forged.

PROFILES ON THE INDUSTRIES TO BE VISITED

The Spices Industry

Ntinda Spices Ltd.

Located in Ntinda Trading centre in the suburbs of Kampala, Ntinda Spices Ltd. was established in 1969. The company processes spices for beverages, soups and food. Spices processed are: curry powder, ginger powder, pilau masala (a spice for rice dishes) and other spices. The company has 35 employees.

Major problems faced by the company are:

- Shortage of working capital
- High tax rates
- High energy costs

The Fruit Processing Industry

Masaka Food Processors Limited

Masaka Food Processors Limited, established in 1989, is the leading producer of fruit juices in Uganda. Products processed by the company are: pineapple beverage, pineapple squash, mango squash and passion fruit squash. Capacity utilisation as a percentage of total installed capacity is: 60-65% for the beverage and 20-25% for the squash. Annual sales of the company are US$280,000.

Problems faced by the firm are:
- The company is faced with a crippling debt which threatens to cause its collapse.
- The poor quality machinery installed in the company has resulted in a low production output.
- The is a lack of spare parts for the installed machinery.

The company is interested in information on: food processing methods, food safety, quality and sanitation, food preservation and storage and marketing techniques.

Weaning Foods

Africa Basic Foods (U) Ltd.

Established in 1967, Africa Basic Foods (U) Ltd. is the leading producer of soy food products in Uganda. Products processed are: baby soy flour, soy flour, high protein maize flour, and soy nut butter. The company presently makes over US$180,000 in annual sales. The company has thirty six employees.

Problems faced by the industry are:
- Ugandans are not aware of the benefits of high protein foods especially soy products; the company now sponsors a radio programme on the importance of soy foods, which is aired every Saturday.
- The company lacks access to new and improved technologies for the processing of soy products.
- The company lacks funds for use in product improvement research.
- Lack of packaging materials for the products; 90% of all packaging materials used have to be imported.

The company is interested in information on: new technology in food preservation and storage, food fortification, food quality, safety and sanitation and product marketing.

The Cereal Industry

Maganjo Grain Millers Ltd

Maganjo Grain Millers Ltd was established in 1983. Products processed are: maize flour, millet/soy flour, soy flour and animal feeds. The company has 60 employees, and its capacity utilisation is 60% of total installed capacity. The company presently makes over US$ 78,000 in annual sales.

Major problems faced by the company are:
- Poor quality machinery which leads to frequent breakdowns.
- Lack of skilled labour.
- Lack of storage facilities for raw materials and finished products.

The company is interested in information on: food processing, food preservation and storage.

Uganda Maize Industries Limited

Established in 1963, this company deals in maize meal processing. The total number of employees at the factory is 67 of which 30% are skilled. Capacity utilisation of the plant is 40% of total installed capacity.

Problems faced by the industry are:
- irregular power supply.
- stiff competition from other maize milling industries especially small scale industries which are exempted from sales tax and thus produce commodities at lower prices.

Areas of Sustain's Technical Assistance Programme which are of major interest to the Company are: food preservation, packaging, and storage, marketing and environmental technologies, food quality, safety and sanitation.

The Fishing Industry

Uganda Fisheries Enterprises Ltd (UFEL)

Established in 1989, UFEL started with the production of only smoked fish at a capacity of 2 tons per month. Due to the low demand for smoked fish, the firm diversified into other areas of fish processing. The firm is currently involved in processing frozen fish, chilled fish and smoked fish. The firm employs 100 workers. Annual production volume is 1050 tons of fish.

The main problems faced by the firm are:

- Irregular supply of raw material since the firm lacks fishing vessels and has to rely on local fishermen and middlemen to supply the fresh fish. This also makes their products expensive.

- The machinery installed in the plant is of poor quality; this has resulted in frequent machinery breakdowns in spite of the regular preventive and routine maintenance procedures carried out on them.
- The employees of the firm lack modern skills in marketing, maintenance, financial and processing management.

The Managing Director of the plant who was interviewed believes that:
Financial assistance in acquisition of modern and quality machinery, in particular ice makers and plate freezers, and assistance in acquisition of a fishing vessel would enable the company have a constant supply of raw material. Training his staff in marketing, maintenance, financial management and processing management would go along way in improving the overall performance of the firm.

The Dairy Industry

Dairy Corporation Ltd.

Dairy Corporation Ltd. is a Uganda Government enterprise which started with the processing of milk and later diversifying to production of the various milk products. The Corporation is the principle processor and distributor of milk and milk products in Uganda. Dairy Corporation employs a work force of 500 some of whom work in the enterprise's upcountry milk collection and storage plants.

The Corporation produces pasteurised milk, yoghurt, cheese, butter, ice cream and ghee which are all consumed locally.

Dairy Corporation faces the following main constraints:

- there is need to increase on the number of milk collecting and processing centres as the present number is inadequate for the country.
- there are frequent breakdowns of machinery which result in losses and reduce on the Corporation's capacity to handle fresh milk from farmers.
- spare parts for the installed machinery are not available on the local market which sometimes leads to interruptions in production when spares have to be imported.

MAGANJO GRAIN MILLERS LTD.

Maganjo Grain Millers is a Limited Company started in 1983. It has gone through several changes up to where it is now. The Company is divided in three department.

(a) Maize Mill

(b) Animal Feeds

(c) Soya Department

(a) Maize Mill

Mill Technology

This department mainly produces the Maganjo Maize Flour. It started with one mill until now when it uses four mills. The machines are fabricated in Uganda using our local technology. The output of the machines at the moment does not satisfy the present demand. The efficiency of the machines is low and therefore high production costs.

Storage Facilities & Fumigation

There is a need for storage facilities where fumigation can be done without interference. At the sametime the storage capacity is limited to handle the present volume of produce.

Pre-cleaner

There is a need to improve on the cleaning process. There is a lot of labour and losses involved in the cleaning. Most of the cleaning is done manually and it is time consuming and expensive.

(b) Animal Feeds

The installed capacity is below the present demand. The technology of the machine is labour-intensive and time consuming thus forcing the prices up. The quality of our products is liked on the market but our distribution network is still a problem.

(c) Soya Department

This is the department were fortification of our good product is done. These are several products that are produced.

- Soymil - Soya & Millet
- Soymaize - Soya & Maize
- Casmil - Cassava & Millet
- Soya Sauce - Soya
- Millet

- The nutritional content of the product and taste are OK. But by the time the product get on the market the target group finds it expensive.
- The roasting system is fuel consuming and the rate of roasting does not meet the demand.

The packing of the soya products does not withstand the export conditions.

Marketing

The general problem in all departments is marketing. There is still a lot of streamlining that is required in marketing. Our products move very fast at one time and almost come to a stand-still at the other.

AFRICA BASIC FOODS (UGANDA) LIMITED

PROPOSED TERMS OF REFERENCE FOR A MARKET AND INVESTMENT SURVEY

1. Background

1.1 There is a clear need for an improvement in the nutritional content of the normal East African diet. This is as true today as in 1968, when Dr.D.Warren Harrison founded Africa Basic Foods (ABF). At that time he was Director of Public Health for Buganda (and the present Vice-President of Uganda, Dr. Samson Kisekka, was Minister of Health). Staple foods consumed by the general population are deficient in protein and this is one cause of widespread malnutrition in Uganda, especially among children. There are also many more people dependent on food aid from the international relief organisations.

1.2 ABF was founded after a nutritional study assisted by UNICEF and for a few years it prospered, but it then suffered like all of Uganda from the years of turmoil and decline. With the return of stability and a measure of economic growth, ABF is anxious to expand its activities and to make its high-protein products more widely available - thus fulfilling the objective of its founder and present managing director.

2. ABF Now

2.1 The company produces a range of foods using the soya bean, a well-known source of high-quality protein which is not native to Uganda but grows well in local conditions. The main products are:

2.1.1 Baby Soya, a weaning food, 40% soya, 60% maize.
2.1.2 High Protein Maize Flour, used to make a popular local porridge; 10% soya, 90% maize.
2.1.3 Soya Flour, 100% soya, which can be used in bread and other baked products, and in posho, and can be mixed with beans and other vegetables.

2.2 Other products include a pet food, soya nuts and soya nut butter (low-cholesterol alternatives to roasted peanuts and peanut butter). High-protein bread using soya flour is produced under contract by local bakers.

2.3 A partial refurbishment of the ABF factory has made it possible to produce five tonnes of products a day from a single shift and ten tonnes from a double shift. Normal production is well below those levels.

2.4 One reason for the low production is that the machines are old (mostly dating from the late 1960s) and several processes are labour-intensive - this is not necessarily a bad thing in Uganda, with its abundance of manpower, but it ought to be possible to make better use of the labour available.

2.5 Unit costs are therefore high and this restricts sales in the commercial market. Vigorous efforts are being made to establish agents in towns other than Kampala and thus to make ABF foods more widely available, but at present prices the company can only expect to reach the more affluent end of the market. Its market share can be undermined by cheap imitations from producers who do not carry out all the processes necessary to maintain the proper nutritional content and to de-nature the harmful trypsin inhibitors present in raw soya. There is also evidence of tampering and adulteration of ABF products themselves.

2.6 High unit costs also make it difficult to compete in the large internationally-financed food market, eg for refugee and famine relief, although the company is working with Magric (U) Limited to produce a food equivalent to the soya corn used in several relief programmes.

2.7 The company has on its premises equipment which would make it possible to produce textured vegetable protein, soya milk and other products which could make an impact on the health food market in Europe and earn foreign currency for Uganda. Bringing this equipment into use and breaking into this new market requires capital finance which at present the company has not got.

3. ABF's Needs

3.1 In order to make its products more widely available to a population who could most certainly benefit from them, the company needs to:

3.1.1 Review the acceptability of its existing products, make improvements where necessary and perhaps place greater emphasis on some products, less on others.

3.1.2 Review its processes in order to maintain nutritional quality and earn a "seal of approval" from a body such as the Food Science Department of Makerere University.

3.1.3 Modify its packaging and promotion to secure both greater acceptability and protection from adulteration.

3.1.4 Look at the possible markets for new products and develop those which appear to offer the best return.

3.1.5 Review its machines and processes and make the changes necessary to increase productivity and reduce costs, while maintaining nutritional standards.

3.2 The company has discussed a possible review project with the Food Science Department at Makerere, designed to cover points 3.1.1 to 3.1.3 above. A project proposal has been produced (copy enclosed), but the company cannot finance it without assistance from one or more public bodies with an interest in nutrition. The possibility of finance for a survey covering this and other important areas is therefore very welcome.

4. Draft Terms of Reference for a Study of ABF Products and Production

4.1 Carry out a consumer survey of ABF's present products and make recommendations for improvements to content and packaging; also recommend discontinuance of any products for which there appear to be no prospects of a wider market.

4.2 Test the nutritional content and normal shelf life of the company's products, and the consistency with which normal standards are achieved, ie are there batches which fall short of the usual standards and why does this happen? Make recommendations on processing and quality control.

4.3 Review the market potential and likely costs of developing new products, including:

4.3.1 TVP, soya milk and other products for the international health food market.

4.3.2 A food for severely malnourished AIDS victims.

Make recommendations on products that should be developed.

4.4 Consider the condition and useful working life of the company's machines, in the light of the recommended product mix, and recommend a replacement and development programme.

4.5 Review working methods at the factory and make recommendations to improve productivity and reduce unit costs.

5. Development Plan

5.1 It is expected that the study would lead to the production of a development plan, designed to:

5.1.1 Improve the quality control and acceptability of the company's present products, while maintaining nutritional standards.

5.1.2 Extend production capacity and productivity

5.1.3 Make the company's products, old and new, available to a much wider market, at a competitive price.

QUALITY ASSURANCE OF PRODUCTS FROM AFRICA BASIC FOODS (U) LIMITED

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QUALITY ASSURANCE OF PRODUCTS FROM

AFRICA BASIC FOODS (U) LIMITED

1. INTRODUCTION

1.1 Background

The results of the most recent nutritional survey 1988/89, like earlier surveys, revealed rampant malnutrition. This on a background of overall food self sufficiency of the country as can be proved by data from elaborate food balance sheets. Particularly affected are children in the fastest growing age group (under fives). The report of the 1988/89 survey stated that, "The problem of malnutrition in the under fives is very high, chronic and hidden". Stunting (low height for age) was identified as the most prevalent form of malnutrition. Causes of malnutrition have been blamed on episodes of sub-optimal growth due to recurrent multifactorial deprivation (social, economic, water, sanitation, health, food security, education etc.).

To reverse this sad trend many practical interventions have been used and new ones have been proposed, but perhaps the manufacturing efforts of Africa Basic Foods (ABF) may yet be among the most successful.

1.2 The Company

Africa Basic Foods (U) Ltd. which is situated at Bunga 5 km from Kampala on Gaba Road, was founded in 1968 by Dr. D. Warren Harrison, M.D. formerly Director of Public Health for Buganda. Its birth was motivated by a desire to enrich the protein content of the average Uganda diet through incorporation of Soya bean - a highly nutritious legume which though foreign grows well in the country. The establishment of the Company followed a careful feasibility study and market testing by UNICEF and the Uganda Government. The Company therefore made good progress in its early years but was almost brought to a halt through the effects of the twenty years of political turmoil in Uganda. The Company however is now moving from strength to strength. It can to date produce up to 5 tonnes a day with the present single shift. A second shift could double this capacity.

1.3 Scope of Products

ABF produces quite a range of products. On the market currently are Baby-Soya, High Protein Maize flour, Soya flour and Soyabread on a limited scale.

1.3.1 Baby Soya

Baby Soya is targeted at infants and pre-school children as the main consumers. it consists of 60% maize, 40% soya and is perhaps the most readily available supplement or key weaning food on the local market. It is based on a special formula which is suitable for babies from 4 months and above. it is smooth, soft and easy to digest. It is prepared by extrusion cooking followed by milling of the extrudates. Protein content is 21%.

1.3.2 High Protein Maize

This is suitable for older children and adults i.e. it is a family porridge pack. It is a competitive substitute to corn soya. It is eaten as a porridge but not suitable for making the stiff dough. It is prepared by milling maize and soybeans which have been roasted at 200 degrees Centigrade.

1.3.3 Soya Flour

This product is made from 100% extruded soya, its approximate protein content is 40%. It is intended for incorporation into the local diets so as to improve the protein intake of the consumer.

1.4 Why Soy

Soy belongs to the family leguminosae, subfamily papilionoiceae and genus glyoine. It is therefore a typical legume seed differing in colour, size and shape depending on variety. The proximate chemical composition of soybean also varies depending on the variety and the growing conditions, but reasonable average figures are 40% protein, 20% lipids, 35% carbohydrate, and 5% ash, on dry weight basis; of particular significance, however, is the excellence of soy protein. Soybean proteins contain a high content of essential amino acids particularly lysine, isoleucine and leucine, although admittedly they are low in S-amino acids, cystine and methionine. Soy protein has a chemical score of 69% i.e. almost 70% as good as whole egg protein in meeting human protein requirements. The added nutritional benefit of soy protein keeping cholesterol level low, and thus preventing arteriosclerosis and eventual heart disease is also well known. Lipids constitute the second, most valuable component of soy bean. The typical composition of crude soybean oil is 96% triglycerides, 2% phospholipids 0.5% free fatty acids and 1.6 unsaponifiables. Particular noteworthy is the fact that the essential fatty acids, linoleic and linolenic constitute 60% of the fatty acids. Thus from the soy lipids the body obtains increased immunity, calories as well as fat soluble vitamins. The soybean husks reportedly contain 87% dietary fibre, a very positive attribute of food which currently counts for a big percentage of food acceptability in nutritionally conscious circles.

The key setbacks to soy utilization are the trypsin inhibitors and the beany flavour. These problems are, however, common to other legumes like beans and peas but they are fortunately not insurmountable through proper processing.

2. THE PROBLEM

2.1 Nutritional Labelling

Nutritional labelling according to international standards is a pre-requisite of any processed packaged food. According

to the Food Act (UK) it is a criminal offence to label/ advertise food misleadingly as to nature, substance or quality. The key regulated nutritional claims include dietetic baby/infant suitability, diabetic, slimming and medical properties; protein; vitamin; mineral, polyunsaturates, cholesterol and energy. There are three choice categories of nutritional labelling:

i) Specifies simply the proximate composition.

ii) Specifies as (i) above and the % of saturated fatty acids.

iii) Specifies in addition the free sugar content and % of saturates, salt content and fibre. The more valuable the target consumer population the more stringent the labelling. ABF labelling is currently under category (i) but since the products are specifically targeted at infants and children category (iii) labelling is imperative i.e. % of free sugars and saturated or unsaturated fatty acids should be included.

Beyond determination of proximate composition ABF have not been able to evaluate the nutritional availability of their products and thereby assess the integrity of their processing techniques. In particular the protein integrity would be very important as most of the products are targeted at children in the fastest growing stage; especially bearing in mind that an extruder and a roaster are incorporated in the processing line. Any inconsistency in the protein efficiency ratio, contrary to results of the proximate analysis could be critical especially in formulations targeted at infants requiring a catch up growth.

2.2 Shelf life

The Company is slowly but surely expanding its production capacity to supply not only all parts of Uganda but also other parts of Africa. This means extensive storage time not only between processor and retailer but extensive transit time during transportation from one country to another under different weather conditions. The integrity of the product at the recipient end is quite critical since often the product is also used in relief operations. Hitherto there has been no expiry date on the various products because of the small market and generally quick sales. It is, however, now expedient that the shelf life of the different products be determined to ensure maximum safety of this high quality food and compliance with food legislations of different consumer countries.

2.3 Packaging

Time and again mothers have been discouraged in their use of soy ABF products due to having encountered adulterated packages (personal communication).

It is therefore suspected that some unscrupulous businessmen tamper with this noble food and dilute it with foods of lesser quality. The consequences this practice can have on the consumer on the one hand and the producer on the other are fairly obvious and need no emphasis. It is therefore important that a unique but cheap packaging technique be developed to ensure security against resealing of ABF products.

2.4 Acceptability

Many nutritionally needy people have not benefited from ABF products due to failure to accept soy products on the market. It is therefore imperative to carry out a market survey to assess the percentage of people who do not find a use for soy products and their reasons. Further it is important to assess the acceptability rating for the different ABF products in order to acquire a basis for further formulation of new soy products e.g. if the bakery products emerge as most popular, it could guide ABF to decide on establishment of a bakery in their enterprise.

3. SIGNIFICANCE OF RESEARCH

Without correct nutritional labelling and shelf life certainty products of any industry would compete poorly on the external market. But generally even on the local market correct labelling gives the consumer independence of the often suspect integrity of the retail food handler. Hence acquisition of correct labelling will uplift the quality of ABF products in the eyes of many consumers.

ABF has been a pioneering Company and has many emulators. The right decision in establishing standards would force many forthcoming food processors to follow this example.

Proper packaging will defeat the fraudulent food handlers who have been tampering with the integrity of ABF products. Knowing the biases that prevail against ABF will help the management in laying down a strategy for new product development and will also basically enhance consumer - manufacturer dialogue.

4. RESEARCH OBJECTIVES

- To compare the PER of the soy protein of roasted soy products to that of extruded products.
- To determine shelf life of all ABF (U) LTD products.
- To test effect of pre mix on shelf life of ABF products.
- To identify inherent biases within the consumer population against ABF products and propose ways of correcting these biases.
- To bring packaging and labelling of ABF soy products to international standards.

- To ensure a high quality baby feed production for children in the country and other importing countries.

- To ascertain that trypsin inhibitors are sufficiently denatured.

- To determine the microbiological quality of ABF products.

5 METHODOLOGY

5.1 PER

This will be carried out with the normal rat feed product acting as the control.

- Products trial will be carried out on extruded Baby soya and Roasted soya bean, under conditions used at ABF (i.e. 2 trials).

- Trial will be carried out on prehydrated soy-bean prior to using 3 ranges of temperatures 100 degrees centigrade, 150 degrees centigrade and 200 degrees centigrade i.e. 3 trials.

Each trial will be carried out on 10 rats in triplicate - These animals will be fed for 4 weeks. The weight of the individual animals will be taken at the beginning and at the end. Daily measure of feed intake and gain in weight will also be done.

5.2 Shelf life

30 x 2 samples of 250 gm packs of each product of ABF will be kept on the shelf at room temperature; the first set of samples would be used to monitor shelf life and the second set would be used to monitor any changes in proximate composition.

- The proximate analysis will be carried out on day 1 and repeated every 2 weeks until the date when first traces of deterioration are detected.

The rest of the samples will be used to prepare mixes which will be tried out on testing panel. The control will always be preparation from freshly prepared batches.

5.3 Packaging

Several modes of packaging will be developed from manufacturers and the least susceptible to resealing will be adopted.

(i) Emblem labelled polythene bag.

(ii) Emblem labelled thin paper bag to encase present polythene with a special seal.

(iii) Special seal for the present boxes which if broken will render the product unsealable.

- Seal integrity and cost will be the key criteria in determining the ideal pack.

5.4 Acceptability

Self administered questionnaires will be carried out on random samples of 100 customers at 4 strategic retailer centres for ABF. The questionnaire will consist of 5 sections:

A) An awareness of nutrient status of soya.
B) Frequency of exposure to soya product.
C) Why ABF products are liked.
D) Why ABF products are disliked.
E) Suggestion as to how ABF products could be improved.

5.5 Microbiological Quality

Total microscopic count will be carried out on samples of every product from ABF to ascertain their microbiological quality.

DEFINITION OF TERMINOLOGIES

1. **QUALITY CONTROL:**
   Defined as the maintenance of specified finished product characteristics every time it is manufactured. Quality control is doing things right the first time and every time.

2. **SHELF LIFE**
   This is the length of time the product remains usable. This length is indicated by the date of manufacture and expiry.

3. **ACCEPTABILITY**
   This is the willingness/unwillingness of the buyer/consumer to consume a given product. Acceptability largely depends on a set of expectations that serve as a consumer's basis for selecting a product.

4. **PACKAGING**
   Defined as the protection of material by means of containers which are designed to isolate the contents to some known degree from the outside.

   Package foodstuffs are protected from

   - mechanical hazards
   - physical hazards
   - chemical hazards
   - microbiological hazards.

5. **LABELLING:**
   Labelling is a mandatory act according to food law and regulation whereby a label is attached /printed on a packaged food. A label should indicate the following:

   - Name of food
   - List of ingredients
   - Net contents
   - Name and addresses of the manufacturer, packer or distributor
   - Lot identification (usually by codes)
   - Manufacture & expiry date.

6. **PER - (Protein Efficiency Ratio)**
   This is a ratio of protein intake to the gain in weight.

7. **ESSENTIAL AMINO ACIDS**
   These are amino acids which can't be synthesized by the body but are required by the body. These need to be supplied in the diet.

8. **SENSORY QUALITY**
   Sensory quality is the degree of excellence or fitness for eating in those contributory attributes which are perceived via the senses of sight, smell, taste, touch, hearing.

9. **MICROBIOLOGICAL QUALITY**
   Microbiological quality in this context refers to an assessment of the public health hazard of a food in terms of presence of pathogens, toxins or toxigenic organisms.

BUDGET

ITEM	QUANTITY	ESTIMATED COST USHS.	US$
PER ANALYSIS			
RATS	120	1,828,000	1,523
RAT CAGES	20	200,000	167
ANIMAL SCALE	1	1,740,000	1,450
RAT FEED		705,600	588
SHELF LIFE			
Proximate analysis)			
- Nitrogen, fat, moisture)		2,808,000	2,340
- Ash, crude fibre)			
- Kjeldhal Assembly	1	2,040,000	1,700
- Soxhlet extraction	1	840,000	700
- Oven	1	320,000	267
- Microbiological Analysis		1,200,000	1,000
PACKAGING			
- Emblem labelled polythene + packet bag		26,000	22
- Emblem labelled paper bags to cover above polythene		15,000	13
- Present polythene with special seal		30,000	25
ACCEPTABILITY			
- Sensory Evaluation panel	10	25,000	21
- Formulation of questionnaire		1,200,000	1,000
PERSONNEL			
Team leader	1	1,800,000	1,500
Assistant Team Leader	1	900,000	750
Lab-Technicians	2	720,000	600
ANALYSIS COST			
Data analyst	1	1,200,000	1,000
REPORT WRITE UP		600,000	500
TRANSPORT		1,944,000	1,620
SECRETARIAL SERVICES		600,000	500
Office expenditure		1,200,000	1,000
Miscellaneous		600,000	500
TOTAL		22,541,600	18,786
(University Tax) 15%		3,381,240	2,817.90
GRAND TOTAL	Ushs.	25,922,840	US$ 21,603.90

BUDGET JUSTIFICATION

The Department of Food Science and Technology at Makerere University is still in its infancy, but has to shoulder the responsibility of guiding many food enterprises starting in the country as well as conduct research on many food issues of importance to the country. Therefore all analytical equipment listed in the budget if directly donated to the department would go a long way in increasing the research capacity in the food subsector area not only at Makerere University but in the country at large.

TIME TABLE

ITEM	DURATION
PER evaluation	8 weeks
Shelf life (Proximate analysis)	36 weeks
Packaging	2 weeks
Acceptability (questionnaire)	2 weeks
Analysis	2 weeks
Sensory Quality	2 weeks
Microbiological quality (10 batches)	8 weeks
Write up	8 weeks
TOTAL	68 weeks

UGANDA STANDARD SPECIFICATION FOR:	NO.
1	
2. FRESH PINEAPPLES	US 2 : 1992
3 FRESH AVOCADOS	US 3 : 1992
4 INFANT FORMULA	US 4-CS72: 1993
5 CANNED BABY FOODS	US 5-C373: 1993
6 METHODS OF ANALYSIS FOR INFANTS AND CHILDREN FOODS	US 6 : 1993
7 LABELLING OF PRE-PACKAGED FOODS	US 7 : 1993
8 WHOLE, PARTLY SKIMMED, AND SKIMMED MILK POWDERS	US 8-CS5: 1993
9 VANILLA	US 9 : 1993
10 PLANTATION (MILL) WHITE SUGAR	US 10 : 1993
11 REFINED WHITE SUGAR	US 11 : 1993
12 WHOLE MAIZE MEAL	US 12-CS154:1993
13 DEGERMED MAIZE MEAL AND MAIZE GRITS	US 13-CS155:1993
14 PULSES INC. BEANS	US 14-CS171:1993
15 RAW SUGAR	US 15 : 1993
16 SORGHUM GRAINS	US 16-CS172:1993
17 MAIZE GRAINS	US 17-CS153:1993
18 HONEY	US 18 : 1993
19 CONCENTRATED PINEAPPLE JUICE	US 19-CS139:1993
20 BUTTER AND WHEY BUTTER	US 20-CS1 :1993
21 YOGHURT AND SWEETENED YOGHURT	US 21-CS11:1993
22 FLAVOURED YOGHURT	US 22-CS 11: 1993
23 LEMON JUICE	US 23-CS 47:1993
24 WHEAT FLOUR	US 24-CS152:1993

US 3 :1992
UDC 634.13 (083.75)

UGANDA STANDARD SPECIFICATION FOR FRESH AVOCADOS

First Edition...

PRICE GROUP

THE UGANDA NATIONAL BUREAU OF STANDARDS

Physical Address
Plot 3/5
First Street
Kampala Industrial Area

P.O. Box 6329
Tel: 236606
Telex:
Fax:

Descriptors: Avocados, stone fruits, specifications, classification, technical regulations, packaging, labelling

IT IS IMPORTANT THAT USERS OF UGANDA STANDARDS ASCERTAIN THAT THEY ARE IN POSSESSION OF THE LATEST AMENDMENTS OR LATEST EDITIONS

The following table will assist the user to update the standard

AMENDMENTS

Clause	Amendment No	Date of issue	Text affected

In order to keep abreast of technological development Uganda Standards are subject to periodic review.

CONTENTS

NOTE:

1. Compliance with a Uganda Standard does not, of itself confer immunity from legal obligations.
2. A Uganda standard does not purport to include all necessary provisions of a contract. Users are responsible for its correct application.

US 3: 1992

SPECIFICATION FOR FRESH AVOCADOS

FOREWORD

Uganda consides good quality of Horticultural products as prerequisite for improving exports in this subsector. Abocados have been grown for local consumption in the past and recently they have been exported in notable amounts.

The purpose of ths standard is to guide farmers, dealers and consumers to attain hgih quality fresh avocado fruits, safe and wholesome for consumption. This is one of a series of standards on horticultural products that has been prepared by the Technical Committee on Food and Agricultural products. The local market will also benefit from this standard.
In preparation of this standard reference was made to the following publications:

1) UN/ECE Standards for Fresh Fruits and Vegetables Standard FFV-42.
2) Guidelines for Exporters of Avocados, Mangoes, Pineapples, Papayas, Passion Fruits to the UK Market - Commonwealth secretariat.

Committee Membership

The following organisations were represented on the technical committee on Food and Argricultural products in preparation of this standard:

- Export Promotion Analysis and Development Unit (EPADU) Ministry of Planning and Economic Development
- Masaka Food Processors Ltd
- Foods and Beverages Ltd
- Horticulture Department, Ministry of Agriculture
- Uganda Consumers' Association
- Plant Quarantine Project - Ministry of Agriculture
- Kawanda Research Station
- Dairy Corporation
- Department of Public Health and Preventive Medicine, Faculty of Veterinary Medicine, Makerere University
- Department of Paediatrics & Nutrition, Medical School, Fisheries Department, Ministry of Agriculture
- Ministry of Industry and Technology
- Horticultural Exporters' Association of Uganda
- Zirobwe Horticultural Society
- Uganda Prisons (Agriculture Division)
- Government Chemist and Analytical laboratories
- Food Science and Technology Department, Makerere University.

SECTION ONE

A STANDARD SPECIFICATION FOR FRESH AVOCADOS

1.0 SCOPE
This standard specifies requirements for fresh avocado (persea americana) fruits to be supplied to the consumer. This does not include avocados for industrial processing.

SECTION TWO

2.0 DEFINITIONS
For the purpose of this standard the following definition shall apply:

2.1 Foreign matter - Any foreign substances which affects the apperance and typical smell of the avocado fruit.

SECTION THREE

3.0 MINIMUM QUALITY REQUIREMENTS

3.1 The fresh avocado fruits in all classes, subject to each class and tolerances allowed, shall be firm, mature green, sound, clean and practically free of any foreign matter.

3.2 The fruits affected by rotting and deterioration such as to make them unfit for consumptionshall not be allowed. The fruits shall be free from any damage, foreign smell or abnormal external moisture.

3.3 When tasted, the ripe fruit shall be free of bitter taste. It shall not be fibrous.

3.4 When the stalk is present, it shall be less than 10mm and cut cleanly. However, its absence is not considered a defect on condition that the place of the stalk attachment is dry and intact.

SECTION FOUR

4.0 CLASSIFICATION AND SIZING

4.1 CLASSIFICATION
For the purposes of trade the fruits shall be graded in three classes: 1) Extra class 2) Class I 3) Class II

4.1.1 EXTRA CLASS
Avocados in this class shall be of superior quality. The shape and colour shall be characteristic in the variety. They shall be free from defects, with esception of very slight scratches superficial of the skin, provided that

these do not affect quality and presentation in the package. If present, the stalk shall be intact.

4.1.2 CLASS I

Avocados in this class shall be of good quality and show the typical colour and shape of the variety. The following slight defects, however may be allowed provided that these do not affect the general appearance of the package, the quality, the keeping quality and presentation in the package:

- slight defects of shape and colour
- sligh skin defects (corkiness, healed lenticels) and sun burn; maximum total area shall not exceed 4cm2. In no case may the defects affect the fruit flesh.

4.1.3 CLASS II

This class includes avocados which do not qualify for inclusion in the higher classes bur satisfy the minimum requirements specified above. The following defects may be allowed provided the avocados retain their essential characteristics as regards the quality, the keeping quality and presentation:

- defects in shape and colouring
- skin defects (corkiness, healed lenticels) and sunburn; maximum total area should not exceed 6cm2. In no case may defects affect the fruit flesh. The stalk if present may be damaged.

4.2 SIZING

4.2.1 The size shall be determined by the weight of the fruit, the size scale is as follows:

Mass (Weight) (g)	Code Size
781 - 1220	4
576 - 780	6
461 - 575	8
366 - 460	10
306 - 365	12
266 - 305	14
236 - 265	16
211 - 235	18
191 - 210	20
171 - 190	22
156 - 170	24
146 - 155	26
136 - 145	28
125 - 135	30

The minimum weight of the avocados shall not be less than 125g.

4.2.2 TOLERANCES

Tolerances in respect of quality and size shall be allowed in each package for the produce not satisfying the requirements, for the class indicated.

FOOT NOTE:
Nevertheless, no account should be taken for a given fruit of a deviation of more or less than 2 per cent with regard to the code number indicated.

4.2.2.1 QUALITY TOLERANCES
EXTRA GLASS:
5 per cent by number of weight of avocados not satisfying the requirements of the class but meeting those of Glass I or, exceptionally, coming within the tolerances of the calss.

4.2.2.2. CLASS I
10 per cent by number or weight of avocados not satisfying the requirements of the class but meeting those of Class II or exceptionally, coming within the tolereances of that class.

4.2.2.3 CLASS II
10 per cent by number or weight of avocados not meeting the requireents of the class nor the minimum requirements, with the exception of fruit affected by rotting,marked bruising or any other deterioration rendering it unfit for consumption.

4.2.3 SIZE TOLERANCES

For all calsses: 10 per cent, by number or weight of avocados conforming to the size range immediatly below and or above that metioned in marking shall be allowed.

SECTION FIVE

5.0 PACKAGING AND UNIFORMITY

5.1 UNIFORMITY
The contents of each package shall be uniform and contain only avocados of the same variety, quality and size. The visible part of the contents of the package shall be representative of the entire contents.

5.2 PACKAGING

5.2.1 The avocados shall be packed in such a way so as to protect the produce properly.

5.2.2 The material used inside the package shall be new, clean and of a quality such as to avoid causing any external or internal damage to the fruit. The use of materials and particularly of paper and stamps bearing the trade and specifications is allowed provided that the printing or labelling has been done with a non-toxic ink or glue.

5.2.3 Packages shall be free of all foreign matter.

SECTION SIX

6.0 LABELLING

6.1 Each package shall bear the following particulars in letters grouped on the same side, legibly and indelibly marked and visible from the outside.

6.2 Identification
Packer's name and address

6.3 Nature of the produce
- "AVOCADOS", if the contents are not visible from outside;
- Name of the variety

6.4 Origin of produce
"PRODUCE OF UGANDA" as country of origin

6.5 Commercial specification
- Class
- Size expressed in net and gross weight
- Code number of the size scale and number of fruits.

6.6 Official control mark.

MEETING OF FOOD PROCESSORS
ADDRESSED BY DR. JOHN NELSON OF PROJECT SUSTAIN
AND
MR. JERRY BROWN OF USDA/USAID
MARCH 29, 1993

LIST OF PARTICIPANTS

1.	Africa Basic Foods	Kakunta, Mr. D.
2.	Africa Basic Foods	Mpyisi, Mr.
3.	Apico (U) Ltd.	Matthew, Mr.
4.	Apico (U) Ltd.	Matthew, Mrs.
5.	Arocha Millers	Ebong, Mr. Tom
6.	Banapo Wines	Batuma, Ms. Pamela
7.	Corpus Food Processors and Packers	Gamwanga, Mr. Godfrey
8.	Corpus Food Processors and Packers	Mwogera, Mr. John
9.	Craft Bazaar (U) Ltd.	Nsibirwa, Ms. Allen
10.	Dairy Corporation	Gasana, Mr. John Bosco
11.	Dairy Corporation	Mutabazi, Mr. Henry
12.	Dairy Corporation	Ngobi, Mr.
13.	Desa Enterprises	Masifa, Mr. D.
14.	East Ankole Diocese	Buzukaine, Rev. Canon
15.	East Ankole Diocese	Tibahwerayo, Rev. A.
16.	Export Policy Analysis and Dev. Unit	Sekabembe, Mr B. M.
17.	Faculty of Agriculture, Makerere University	Mugerwa, Prof. J. S.
18.	Fishsoya Whole Foods Ltd	Nsubuga, Mr. P.
19.	Food Science Dept., Makerere University	Magala-Nyago, Ms. Christine
20.	Food Science Dept., Makerere University	Sserunjogi, Mr. Mohammed
21.	Food World Ltd.	Otika, Mr. Raymond
22	Fourways Group of Companies	Krishna Keddy, Mr. G. G.
23.	Home Pride Ltd.	Ndegeye, Mr. Robert
24.	Hot Loaf Bakery	Kiiza, Mr. Aloysius
25.	Jupiter Oil Industries	Ramji, Mr.
26.	Kaboona Enterprises Ltd.	Kassiira, Mr. Isaac
27.	Lenco Ltd.	Oyukutu, Mr. V.
28.	Maganjo Grain Millers Ltd.	Kiddu, Mr. Fred
29.	Maganjo Grain Millers Ltd.	Kivumbi, Mr. Patrick
30.	Masaka Food Processors	Kiwanuka, Mr. Peter

31.	Masaka Food Processors	Pekke, Ms. Milly
32.	Mbale Central Industries	Okiria, Mr. Joseph
33.	Morut Farms	Syagi, Dr. A. O.
34.	Mossewa Food Processors	Matovu, Mr. Joseph
35.	Nagongera Millers and Farmers Ltd.	Lwerere, Mr.
36.	Natural Foods	Mirembe, Ms. Faith
37.	Natural Foods	Okirok, Mrs. Miriam
38.	Natural Foods	Tendo, Mrs. Lilian
39.	Nkuruba Mills Ltd.	Agaba, Br. Charles
40.	Nutra Sweet	Sutton, Ms. Donnelly
41.	Nyakesi Oil Mill/South Bukedi Co-op. Union	Were, Mr. S. G.
42.	Osubuk Enterprises	Gitta, Mr. Willy
44.	Paul and Sons Oil Mill	Manyegera, Mr. Moses
45.	Private Grain Specialists	Kanyisije, Mr. Dan
46	Private Grain Specialists	Odong, Ms. Rose
47.	Radco Industries	Wasswa, Mr. Mayanja
48.	Reco Industries	Acola, Ms. Margaret
49.	Ro-sa Bros. Ltd.	Senyonga, Mr. John Bosco
50.	Sugar Corporation of Uganda Lugazi	Isodo, Mr. J.
51.	Tamco Milling Industries	Ngobi, Mr. J. C.
55.	Tusetuke Bakery	Mukesi, Mr. Isaac
56.	Uganda Export Promotion Council	Ogwal, Mr. Moses
57.	Uganda Fisheries Enterprises Ltd.	Ssali, Dr. W. M.
58.	Uganda Maize Industries	Kirya, Mr. L.
59.	U.S.A.I.D	Komakech, Mr. Bruno
60.	U.M.A	Baryaruha, Mr. Azarius
61.	U.M.A	Muwemba, Ms. Evelyn
62.	U.M.A	Olet, Ms. Dorothy
63.	U.M.A.C.I.S	Bbosa, Mr. Wycliff
64.	U.M.A.C.I.S	Kalema, Dr. William (Chmn)
65.	U.M.A.C.I.S	Kitakule, Mr. Dan
66.	U.M.A.C.I.S	Nsonzi, Ms. Frances
67.	U.M.A.C.I.S	Sseguya, Mr. Michael

EXPORT POLICY ANALYSIS & DEVELOPMENT UNIT

MEMORANDUM

To : Director

From : B.M. Sekabembe

Date : March 29, 1993

Subject: UMA MEETING WITH FOOD AND PROCESSORS, UGANDA INTERNATIONAL CONFERENCE CENTRE

==========

1. you asked me to attend the above meeting today. It was chaired by Dr. W. Kalema of UMA Consultancy Services.

Present also were:

- Dr. John Nelson, Vice President for Research of McCormicks Food Processing Company in Maryland, USA; and

- Mr. Jerry Brown of the US Department of Agriculture.

2. Dr. Kalema briefed the Ugandan food processors present, ranging from bakers, millers, manufacturers, etc. on the **SUSTAIN** Program i.e.

- **Sharing US Technology to Aid the Improvement of Nutrition** (SUSTAIN), is an USA NGO agency affiliated to the USAID. (A paper detailing the program is attached).

3. Dr. Nelson was on an exploratory mission to find out how Uganda's private sector can exploit the advantages of the SUSTAIN Program by looking into the problems faced by Uganda's processing industries which fall under the program's operatives.

4. From the forms submitted by UMA and filled in by the Ugandan food processors, the 4 high priority areas deduced as needing assistance included:

a) Marketing;
b) Food quality and sanitation;
c) Food preservation and storage; and
d) Packaging.

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- By the end of Dr. Nelson and Mr. Brown's mission, there would be a plan for Uganda on which to work over the next few years.

- Some time this year, UMA will organize 1-2 days' workshop on selected areas of food processing and participants will visit selected factories in the country.

- Dr. Kalema appealed to the audience to contact UMA for the necessary advice and assistance.

Mr. Jerry Brown

He is an Agribusiness Advisor to USAID, Washington. He is here to help UMA on agricultural exports (i.e. trade & investment). In this role at home, Mr. Brown:

- Organizes and facilitates trade and investment missions; and

- Organizes and facilitates Marketing Information in order to bridge the communication gap between the USA and the developing world. He thus presents Africa in business in a positive perspective.

- Works on policy issues, by looking at them from a practical point of view - e.g. the transfer of technology from USA to Africa.

Recent and Near future Activities of SUSTAIN

- 8 African produce exporters were invited to the USA last year. The aim was to introduce the African exporters to the US markets for such commodities as mangoes, papaya, cassava, etc.

- July 1993: there will be a meeting of food processors in the USA.

- October 1993: there will be a Produce Show (the largest) in Washington DC.

Dr. John Nelson

- His company handles commodities worth $1.5 billion per annum.

- Believes, marketing is even more important than research it's the leading need in the private sector, for one has to find the market first and then develop a product.

- The USA provides a niche market

- Believes, when they help to improve food technology in the developing countries (through SUSTAIN), nutrition will go up. Their main function is to assess the problem and find

solutions to it through projects.

5. Questions and Answers

In the questions and answers session, both Dr. Nelson and Mr. Brown assessed that:

- There is much work to be done for Uganda; a lot of information need to flow back to the Ugandan food processors. The questions touched on:
  - products to the US,
  - machinery (technology obsolescence),
  - food quality,
  - possible financial assistance and access;
  - importance of business planning;
  - expert assistance from SUSTAIN;
  - possible creation of a linkage between SUSTAIN and Makerere University, for onward transfer to food processors;
  - SUSTAIN to help in availing some unseen raw materials;
  - the restriction on importing new technology from the US;
  - possible assistance in lowering airlines' freight charges, etc.
- Uganda has a diversified food processing industry;
- There is great need to solve technical problems;

In his closing remarks, Dr. Kalema appealed to food processors to join UMA so that they work together on a large scale under the Association.

q1

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Agricultural Development Officer

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In association with
Neville Russell
Chartered Accountants

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J. Mulwana
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THE UGANDA GRAIN MILLING COMPANY LTD.

John B. Kasiisiri
Personnel and
Administration Manager

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Uganda Feeds Ltd.,
Uganda Millers Ltd.
Uganda Maize Industries Ltd.

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Kamlesh M. Madhvani
M.Sc. (Econ.) (Lond.)

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ERPAU

Erisa O. Ochieng
Director

EXPORT POLICY ANALYSIS AND DEVELOPMENT UNIT

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HE FOR A BETTER UGANDA

NEW VISION

No. 76 DAILY THURSDAY, APRIL 1, 1993

American food expert meets processors

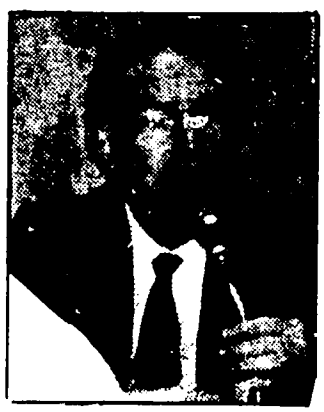
By George Kawule

A VOLUNTARY association of American food processing experts, has sent a representative to acquaint himself with problems facing Uganda's food processing industry.

The expert, Mr John H. Nelson, arrived on Sunday, and lectured to a group of Ugandan food processors on Monday at the Uganda International Conference Centre. He is here until Saturday.

Mr Nelson said his association is called Sharing United States Technology to Aid in the Improvement of Nutrition (SUSTAIN).

He told the Ugandan group that his organisation is interested in helping countries like Uganda to improve the quality of her food supplies. He added that



Nelson - here to help Ugandans

he was also here to create awareness about his organisation.

Monday's seminar was organised by the Uganda Manufacturer's Association (UMA). Mr Nelson was accompanied by the Agribusiness Advisor to the United States Agency for International Development (USAID) in Kampala, Mr Douglas Jerome Brown; and Mr William Kalema of UMA.

According to pamphlets disributed to the seminar participants, SUSTAIN provides access to US expertise in food processing for improving nutrition in developing countries especially for the benefit of women and children.

SUSTAIN programme is supported by USAID and is managed through a cooperative agreement with the National Cooperative Business Association (NCBA).

The programme provides free technical assistance by professionals from US firms and universities, who agree to donate their time and expertise to the project. It aims at helping to improve food quality, expand production, and lower operating costs of locally grown and processed foods by providing technical assistance.

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SUSTAIN Program

Sharing United States Technology to Aid in the Improvement of Nutrition

March 19, 1993

Dr. William Kalema
Uganda Manufacturers Association
Fax: 302 529-1103

Dear Dr. Kalema:

This letter will confirm the arrangements and conditions concerning Dr. John Nelson's trip to Uganda to initiate SUSTAIN technical assistance efforts in Uganda in collaboration with the Uganda Manufacturers Association and to outline plans for future interventions. We ask that UMA facilitate his trip by:

- sending us the itinerary of his visit
- consulting with Holly Wise and Jim Dunn at USAID/Kampala regarding meeting and debriefings
- providing or arranging for local transportation (including from airport to hotel on arrival, any necessary transportation during the visit, and to airport for departure)
- taking photos (If possible, we would like "action shots," with Dr. Nelson working with the personnel at UMA and at the sites he will visit. I have informed Dr. Nelson of the restrictions on what cannot be photographed.)
- ensuring that Dr. Nelson gets assistance with preparing the report of his trip, including a list of all the sites visited and people interviewed (including name, title, organization, address, phone, fax)

Below are the arrangements being made for Dr. Nelson's trip:

Airfare & Related Expenses: SUSTAIN will cover Dr. Nelson's international travel expenses. He arrives at Entebbe on Sabena flight # 573 from Brussels at 10:40 AM on March 28. He departs from Entebbe on Sabena flight #573 at 10:40 AM on April 4.

Program: UMA is arranging Dr. Nelson's itinerary in coordination with UMA's principal contact at USAID/Kampala, Holly Wise, Head of the Private Sector Office. Liz has touched based with both Holly

NCBA
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SUSTAIN Program
National Cooperative Business Association
1401 New York Avenue, N.W. • Suite 1100 • Washington, D.C. 20005-2160
(202) 638-6222 • Telex 440344 • Fax (202) 628-6726

Wise and Jim Dunn, Head of the Agriculture Office at USAID/Kampala. Both will be involved in planning the itinerary, as well as debriefings.

Per Diem: In the event that UMA cannot cover Dr. Nelson's per diem (due primarily to short notice on this event), SUSTAIN will cover it.

Hotel: USAID/Kampala has made reservations for Dr. Nelson at the U.S. government rate at the Kampala Sheraton Hotel (phone 244590-7; fax 256696).

Medical: Dr. Nelson has gotten the required immunizations for typhoid, cholera, yellow fever, and malaria and will bring proof.

Visa: Dr. Nelson's office is getting his visa.

SOS: SUSTAIN has made arrangements to cover Dr. Nelson under International SOS Assistance, Inc., known as SOS. SOS is a service for travelers that provides assistance in the event of a medical emergency medical requiring evacuation that occurs during the membership period.

Non-Medical Emergency: In case of a non-medical emergency, Dr. Nelson should call the Consular Officer at the U.S. embassy (242-896 or 235-879 or 258-124) and ask for Emergency Services.

Sincerely,

Ellen Quinn

Ellen Quinn
Program Assistant

cc: Liz Turner

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Uganda Manufacturers Association (UMA)
Consultancy and Information Services Limited
PLOT 10, KALITUNSI ROAD P. O. BOX 9113 PHONE: 236182 TELEX: 61281 UGA SHIP FAX: 243292, 242455 KAMPALA

OUR REF: UMACIS/SUSTAIN YOUR REF: DATE: 25/04/93

Ms. Elizabeth Turner
Director, Project SUSTAIN
National Cooperative Business Center
1401 New York Avenue, N. W.
Suite 1100
Washington D. C. 20005-2160
U. S. A.

Dear Ms. Turner,

The visit by Dr. John Nelson and Mr. Jerry Brown during which they initiated SUSTAIN program efforts in Uganda was a success. We also enjoyed working with them.

Our staff benefitted greatly by this visit, during which they were able to meet directly with the food processors and to make an on-the-spot assessment of some of the problems our food processors face. This will enable us, together with Project SUSTAIN, to assist them better, and thus improve on nutrition in Uganda.

During their visit, Dr. Nelson and Mr. Brown visited some food processing industries and also met with heads of organisations which have a direct role to play in the improvement of nutrition in the country. Please find attached a report of this visit, and the recommendations made; I have also included the final copy of the itinerary and photographs taken during this visit for your information.

We look forward to working with the USAID and Project SUSTAIN in implementing these recommendations, so that we can contribute to the development of agro-based industry and food processing in Uganda.

Yours sincerely,

William S. Kalema, Ph.D
DIRECTOR

cc: James Mulwana, Chairman UMA
Aga Sekalala, Vice Chairman UMA