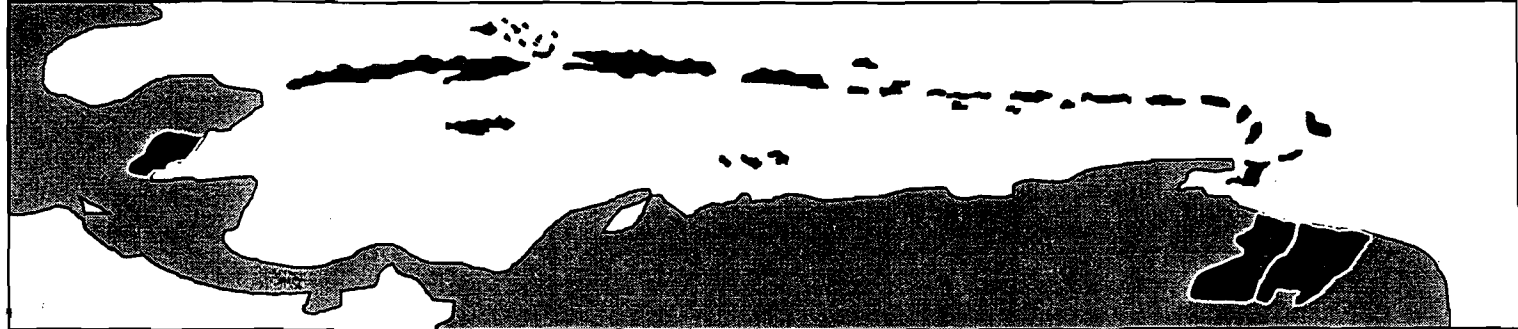


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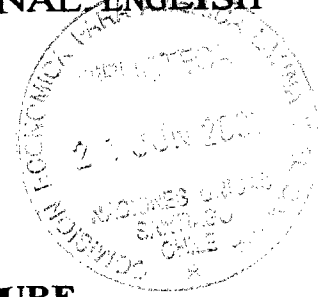
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REPORT OF THE EXPERT GROUP MEETING ON AGRICULTURE WITH FOCUS ON THE IMPACT OF NEW TECHNOLOGIES ON FOOD, NUTRITION AND HEALTH

28-29 September 2000
Port of Spain, Trinidad and Tobago



UNITED NATIONS
ECONOMIC COMMISSION FOR LATIN AMERICA AND THE CARIBBEAN
Subregional Headquarters for the Caribbean

CARIBBEAN DEVELOPMENT AND COOPERATION COMMITTEE



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Introduction

The Science and Technology Unit of the United Nations Economic Commission for Latin America and the Caribbean (ECLAC) Subregional Headquarters for the Caribbean hosted a small working group meeting on 28 and 29 September 2000 to consider some aspects of agriculture, food production and nutrition with emphasis on non-traditional, export crops. The meeting agenda is attached (Annex I).

Representatives of the Ministries of Agriculture of Grenada, Guyana, Jamaica and Saint Lucia participated in the meeting, together with officials from the Caribbean Agricultural Research and Development Institute (CARDI), the Caribbean Food and Nutrition Institute (CFNI), the Food and Agriculture Organization (FAO), the Inter-American Institute for Cooperation on Agriculture (IICA), the Pan American Health Organization (PAHO), the Caribbean Community (CARICOM) and the School Nutrition Programme of Trinidad and Tobago. (See Annex II for the list of participants).

Opening remarks

Mr. Donatus St. Aimee, Economic Affairs Officer – Science and Technology, ECLAC in his opening remarks, observed that export agriculture was still the dominant concern of policy makers in the agricultural sector. He stated that the first responsibility of a nation was to feed itself and that the Caribbean as a region was endowed with a diverse variety of flora and fauna that was sufficient to satisfy all the necessary requirements for a healthy population. It was unfortunate, he suggested, that with this emphasis on export agriculture, large-scale production of indigenous crops was never really undertaken for domestic consumption, but more to fill the needs of a niche-market in North America and Europe. There was need to determine the status of these non-traditional agricultural crops, the possibility of their meeting the nutritional needs of the populace and methods of enhancing their production. There was also need to consider aspects of food safety and new approaches to food preparation within the context of the non-traditional crops.

He also remarked upon the impact of globalization on the agricultural sectors of Caribbean nations, noting that in the past the poorer classes consumed mainly locally produced food while those in higher income brackets consumed mainly imported foods. After the abolition of slavery, certain myths had developed concerning local foods including the fact that some foods could not be eaten after a certain hour. Food imports continued, colonial eating habits and diets were copied and much research was done on export crops. All of the above created a void in terms of scientific knowledge on indigenous crops. One of the given reasons for the non-production of indigenous crops at any significant levels was the high cost of production.

Mr. St. Aimee argued that while that may be a fact, it was also a fact that costs tended to get lower with improved marketing.

In addition, some inherited agricultural practices and myths have persisted and which continue to affect food production. These include the preference for monoculture over polyculture, the use of pesticides and the supposed nutritional benefits of one crop over another e.g. soya bean as against coconut oil. He commented on the fact that previous generations who had to contend with supposedly less quality health care than that which is available today, appeared to have greater longevity and suffered fewer ailments than the present.

He advised that the definition of the term "food security" needed to be clarified for the purpose of the meeting. The term could be used to mean either that the nation had sufficient financial resources to procure food for its population or could alternatively refer to self-sufficiency in food production. The meeting should be concerned with the second definition.

Country and institution reports

Caribbean Community (CARICOM) – Ronald Gordon

Mr. Gordon noted that CARICOM was currently undertaking a study on food safety and its attendant implications for issues that related to human health and nutrition. The study was a collaborative effort between the United States Department of Agriculture (USDA), United States Agency for International Development (USAID), PAHO, IICA and other institutions. The outcome of the study is a Draft Action Plan to improve the Caribbean's structures and systems as these relate to food safety and, more specifically, to World Trade Organization (WTO) arrangements. Proposals at the regional and national levels contained national strategy recommendations on human health, which indicated the type of actions proposed and the justifications for expected end results of these actions. Among the above actions were human technical capacity building, specifically Hazard Analysis Critical Control Point (HAACP) and risk assessment training. Similar reports were done for animal and plant health. Under animal health, specific actions were identified including epidemiological survey systems and modification of veterinary services. With regard to plant health, updating of legislation, promotion of HAACP, trace-back systems, training programmes for farmers and production of indigenous crops were some of the activities identified for promotion and action. National programmes had been distributed to countries and implementation of activities was encouraged, subject to the availability of resources. A working group was also established to come up with priority areas of action at the regional level. Participants were given a copy of the Summary Report of the Technical Working Group on the Caribbean Food Safety Initiative from which the various activities were cited.

Activities under the following headings were identified:

- (a) Policy and coordination, where there was a need for a definitive policy statement on food safety to be addressed at the highest level;
- (b) Laboratory infrastructure improvement; and
- (c) Legislative framework

Mr. Gordon noted that there were a number of agencies operating in the region with programmes and projects related to food safety. For example, in the area of policy PAHO had established national food safety committees and laboratory infrastructure elements were established by the Caribbean Epidemiology Centre (CAREC). Because the available resources

were limited, it was considered useful to organize the various agency activities into one document and collate them into priority action areas. A matrix of the proposed activities with time-frames had been circulated to member States and institutions requesting further input. When input from all institutions are received the matrix will be updated and circulated to inform all concerned of the proposed plans. At the end of his presentation, Mr. Gordon expressed the hope that by the end of the two-day session, governments and agencies would be more sensitised to those issues that relate agriculture to health and nutrition and include them in any agricultural policy documents.

Discussion

Following the presentation, discussion on Mr. Gordon's observation, that there were similar programmes in the area of food safety, was substantiated by other members of the group. For example, CAREC, in collaboration with other agencies, had initiated a food safety course. With respect to laboratory services and infrastructure, it was noted that while laboratories for testing and other services were essential, it was not cost-effective to establish full-service laboratories in each Caribbean country. There was indeed an urgent need for developing testing capacity for foods within the Caribbean region, inclusive of a network of laboratories for more general food testing and more specific ones for more rigid analysis. It was suggested that more use could be made of the services of laboratories in non-CARICOM countries of the region such as the French Department Islands (Martinique) and others in Puerto Rico or Cuba, although there were other cost considerations for transportation and timeliness of reports. It would be also important to examine the interregional transport system. The group also agreed that while laboratory services were important, there was an equally urgent need for the adoption and enforcement of standards for all manufactured goods, whether for local consumption or for export.

Caribbean Food and Nutrition Institute (CFNI) – Christine Bocage

Speaking on the CFNI, Ms. Bocage indicated that it is a regional institution based in Jamaica, where most of its staff, comprising of 27 persons, are located. There is an office in Trinidad and Tobago with a staff of seven persons and one person is based in Guyana. The organization's sphere of operation is the English speaking countries of the wider Caribbean. Funding is obtained from PAHO/WHO (69 per cent), other external sources (12 per cent) and government quotas (19 per cent). The resources of the institution are acquired from the proceeds of research work, contractual services and the sale of publications. She stated that the CFNI's work is divided into four major areas as follows:

- (a) Training which includes training of trainers in education, agriculture and health issues;
- (b) Planning, which is multisectoral in origin;
- (c) Information; and
- (d) Surveillance and research

In working with its 18 member countries of the Caribbean in promoting food security and safety, the institution engages in human resource development via courses and other educational programmes, surveys and research on local products, promotes and disseminates information on healthy lifestyles and offers planning assistance to various government divisions. Within the context of nutrition the CFNI has a 3 Phase programme, details of which are outlined below.

PHASE 1

- Improvement of the delivery and guidelines for nutrition service
- Provision of public and professional education

- Advocacy for nutrition at the policy level
- Conducting of surveys

PHASE 2

- Country plans with emphasis on prevention/promotion
- Establishment of standards
- Conduct problem solving research

PHASE 3

- Stimulate social and legislative changes
- Monitor the health/nutritional status of the population.

(Annex III – A New Vision for Caribbean Health)

The next presentation examined the nutritional needs of humans at various stages in their growth, where Ms. Bocage introduced the following terms:

Requirements - the amount of a nutrient required to achieve a specific physiological endpoint.

Recommended allowance - the intake of an essential nutrient deemed adequate to meet the requirement of all healthy members of the population

Recommended Daily Allowance (RDA) - RDAs have many functions that include evaluating the adequacy of national food supply, planning diets, devising nutrition education programs and regulating nutrient content of food.

Ms. Bocage informed participants that nutritional needs varied at different stages of the life cycle - the foetal stage, the lactating stage, childhood, adolescence, adults and the aged (over 65 years). She then provided some general statistics concerning weight and height gains from birth until year nine or 10. She advised that it was important to understand these growth spurts and the associated changes in nutritional requirements to avoid the risk of malnutrition. The energy needs of a child are determined by the basal metabolism, rate of growth and activity level and this varied between male and females. There was also need to understand that some substances have antagonistic or inhibitory effects on each other when consumed at the same time.

The basic concept is that persons need food to live and the process of getting adequate amounts of the required substances for body growth and repair is the concern of nutrition. There followed a comparison of the life stages showing how nutritional requirements varied with growth stage and sex, with the important nutritional aspects of each stage highlighted. Diseases, especially those seen in elderly persons were shown to be related to an inappropriate diet, the person not understanding the processes taking place within their system at an advanced age.

Discussion

Following Ms. Bocage's presentation, an open discussion was held, with the following salient points made:

- (a) The availability of food must be considered in the context of providing a balanced diet for the population.
- (b) The need to disseminate information on the nutritional value of non-traditional, export crops;
- (c) The need to sensitize the market.

(d) Education programmes should be targeted at all levels of the population. It was also suggested that a useful strategy would be to target the higher economic classes, since in many instances, the lower social classes tend to imitate the behavioural patterns of those in the higher economic brackets.

It was also determined that an examination of cultural habits and myths would also have to be undertaken. This would involve an examination of the market to determine risky behavioural or consumption patterns. Consumers should also be in a position to demand specific requirements of primary producers and processors, thereby making the market more compliant to their needs. Education and empowerment of consumers would also serve to eliminate any inherent biases to which nutritionists might be prone. With regard to indigenous crops, there was outstanding information on their health benefits and this could only be done if laboratories in the region build their capacities to undertake such tasks.

School Nutrition Programme of Trinidad and Tobago – Mr. Ken Emrith

The School Nutrition Programme, formerly the School Feeding Programme of Trinidad and Tobago was reintroduced in 1989 operating with a budget of TT \$20 million. The budget for the year 2000 was approximately TT\$82.2 million. The programme is financed by the government but operates on a tandem basis with the private sector. Links have been created between farmers and caterers for the provision of fresh produce. The School Nutrition Programme employs four nutritionists, together with 27 food service officers who make daily visits to meal suppliers to, among other things, inspect kitchens for sanitation and proper food preparation practices, portion sizes and get feed-back from the children who benefit from these meals. HACCP practices and procedures were introduced in 1996 when all the food services officers were trained, together with other public health officials and all kitchens fall within HACCP standards. Caterers are contracted to provide an agreed number of meals to schools, for which they are paid. There are specific guidelines to which caterers must adhere and it is mandatory that their kitchens be not located more than 20 minutes away from the schools to which they provide meals. Failure to adhere to these and other guidelines results in the voiding of any agreements between the caterer and the Programme. It was determined by participants of the meeting, that this venture was very profitable to caterers whose profit margins were in many cases as much as 200 per cent.

When the programme was re-established in 1989 the main objectives were to provide one third of the recommended daily nutrient allowances for each child attending primary school in Trinidad and Tobago, enhance local food production and disseminate nutritional information. While the first two objectives have been achieved, not much progress has been made with regards to the third objective. A study conducted showed that there was indeed an increase in local food production with the introduction of the programme, although the consumption of such locally produced fruits and vegetables was seasonal. For example, in the case of cabbage 39,324.80 pounds were consumed between October and December 1999, whereas between July and September of that same year approximately 16,000 pounds were consumed. During those same periods 103,789 and 17,846 ochroses were consumed respectively. (Annex IV – School Nutrition Programme: Total Commodity Usage 1999).

As noted previously, caterers are encouraged to create direct links with farmers for the supply of fresh produce. Farmers are also encouraged to register with the National Marketing Development Company (NAMDEVCO). The use of locally produced food is strongly advocated and this is evidenced by the removal of beef and goat meat from the menu because these were

imported. These have been replaced by chicken which is produced locally. Pumpkin is now being used instead of carrot, and fish is also served to embrace as many persons as possible. Locally processed foods, such as vegetable and fish patties, are also substantially utilised. The only imported product is rice, since the local industry cannot supply the needs of the programme. A new project is soon to be introduced that would significantly increase the amount of produce provided to the programme that is due to be expanded once again to include secondary schools. This involves the Ministry of Agriculture, the Youth Training Employment Partnership Programme (YTEPP) and Caroni (1975) Limited, where training in grow box culture will be provided to YTEPP participants. Graduates of the programme will be guaranteed markets for their produce. Ms Bocage of the CFNI observed that a variant of this system was in operation in Saint Lucia. Produce is grown by students, mainly for sustainability of their school nutrition programme which is not funded by the government to the extent that it is done in Trinidad and Tobago and also to protect the students from the usual market forces. Mr. Emrith pointed out that persons growing produce under the programme would be guaranteed a market and not necessarily a price. Caterers are free to purchase produce from cheaper sources and farmers are also free to sell their produce in the open market if prices obtained were higher. In this way, market forces were still in effect. The major advantage is the link that is formed between the farmers and the caterers and the positive effect on the employment situation in the country.

Mr. Emrith informed the meeting that the programme makes every effort to provide their charges with the nutrients necessary for their physical growth and development. Milk was recently introduced into the programme in the form of chocolate milk and other flavours for which children show a preference. With respect to lactose intolerance, a study showed that less than 1 per cent of persons are likely to be affected by this and less than .1 per cent extremely intolerant. This is served once per week and does not affect the recommended allowance of the percentage of fat in the diet.

Information on wastage was one of the indicators the programme used to determine consumption patterns and monitoring is done on a continuous basis. One of the discoveries made was that reaction of the children to their meals depended on the part of the country the school was located. Taste patterns also changed with age. In pre-schools teachers were encouraged to sit with their young charges during meals, mainly to encourage proper eating habits, which may not always be observed in the home. It was also observed that acceptance was less forthcoming at the secondary school level than at the pre-school and primary school levels. Breakfast was recently introduced in selected primary schools. Expansion of this programme was being considered but problems of logistics are likely to be encountered. It would require teachers to report for duty earlier than usual and this had its own implications.

One of the other initiatives of the School Nutrition Company is the expansion of the programme to all students, not only those identified as needy. A survey is to be conducted to determine if parents who presently give their children money to purchase lunches will be willing to give these children less money to purchase meals provided by the programme. The main reason behind this move is to ensure that all children be the beneficiaries of a well-balanced, nutritious meal since it is observed that many students purchase food or items that do not constitute or encourage healthy eating habits. It is believed that this initiative should be successful since the stigma that was associated with the programme was removed to a large extent and the meals provided were not only nutritious and healthy but also very tasty and well-prepared. On questions asked on the use of indigenous foods, Mr. Emrith explained that the preparation time of many of these foods was not conducive to one of the programme requirements that meals reach the schools by 11:00 a.m. What would be required for example

would be pre-cooked, already peeled green bananas to facilitate preparation of a green banana salad instead of potato salad.

The Director was concerned that after 10 years of the programme, not much was known about the effect of the programme on health or even the physiological development of its beneficiaries. All that had been revealed was that there has never been a case of food poisoning since its inception, an indication of the high value that the programme places on good hygienic and food preparation practices. It was suggested that an impact assessment of the programme be done in conjunction with the University of the West Indies (UWI). Also of concern was the fact that its third goal of nutrition education, has not been realised, although meetings are held with the parent teacher associations (PTAs) and teachers to discuss and explain and the menu from time to time.

Rural Agricultural Development Authority (RADA), Jamaica - Ms. Paulette Thomas, Senior Social Services/Home Economic Officer

Ms Thomas explained that the Rural Agricultural Development Authority helped to link the social services to those services concerned with agricultural production. The social services/home economics division worked mainly with rural communities with a focus on the use and processing of non-traditional export crops, including traditional and new recipes. One of the major problems identified was the fact there is a shortage of raw material and because of this non-continuity of supply, Jamaicans refer to their country as “a country of samples”. To alleviate this problem, government has embarked on two major programmes – a domestic food crop programme and a fruit tree project. The latter concentrates on the non-traditional fruit crops such as ackee, soursop, etc. Work is also being done with processing of cassava to promote the use of flour from this source. There are also a number of projects promoting the export of cassava, the manufacture of a pancake mix and sweet potato pudding from processed sweet potato. Production of the primary product in all cases, however, needs to be promoted whether these crops are seasonal or not.

In the case of RADA, there is an established link between agricultural extension and home economics. Agricultural extension, she explained, consisted of two parts - the first part being production at the farm level. This was run parallel with the home economics extension officer who would work with the farm family introducing processing of produce and utilisation of the crops for farm use and income generation. In one example, the FAO, working in conjunction with UWI, derived an extract from the pit and seed of the ackee that served as a protectant against insect infestation in stored grain. The research work is being expanded from a pilot phase to now determine the constituents of the extract and rates of application. This work is being seen as timely since ackee production is now on the increase. Ms. Thomas further stated that most of the projects targeted women, especially at the community level. All programmes also featured training in management skills.

Discussion

In the brief discussion that followed it was revealed that with respect to the production of non-traditional crops in Barbados and Antigua and Barbuda, to name specific country examples, it was cheaper to import non-local products such as rice and potatoes, because of the high cost of production of the non-traditional crops. It was also noted that while the effects of globalization are usually defined in terms of cheaper imports, there was the possibility that globalization could also result in reduced production costs.

Guyana – Ministry of Fisheries, Crops and Livestock: Mr. Joseph Mc Allister, Technical Manager (Ag), Crops and Livestock Department

Mr. Mc Allister first observed that there was an urgent need to include the use of more local foods in the diet of Guyanese nationals. He noted that very little processing of local produce was done simply because, as was the case in the other Caribbean countries, it is more economically feasible to import processed and fresh produce. He noted that the market was dominated by goods imported from the United States of America.

Most of the problems are related to processing of available produce, but this is being addressed to some extent by specific projects, one of which, the processing of cashew nuts, is being done in collaboration with IICA. Guyana possesses a large amount of cashew trees especially along the border with Brazil. The processed cashew nuts are in greater demand than those that are imported. A project is also ongoing to assist peanut farmers in reducing their production costs. A policy is being formulated that would result in mixed cropping instead of monoculture as presently exists in rice production and the development of cassava for processing is also being considered. Because much of the fruits and legumes are grown either upriver or in the highland areas, consideration is also being given to processing at the source to add value to the products, thereby offsetting the high costs associated with transportation. Funding is currently being sought for this project to train farmers in processing methods. Planting material in terms of both quality and quantity is also considered as one of the main constraints to increased production. To address this situation there was, recently, a complete overhaul of the propagation station.

With regard to livestock production, most of the fresh and processed meats are imported. In the case of chicken, however, most Guyanese prefer the locally produced chicken even though it costs a bit more than the imported poultry. This, though, is not the case for other meats, such as mutton, that is imported from New Zealand. Mr. Mc Allister concluded by stating that the general movement is towards intensive farming systems in Guyana.

Discussion

During the discussion that ensued, Dr. Don Robinson of the FAO noted that with respect to the diversification of rice farming in Guyana, the Ministry of Agriculture requested assistance in aquaculture, and this was forthcoming. In other discussions it was noted that one of the reasons there is a high consumption of imported produce and which militated against the use of indigenous produce was the amount of work that had to go into preparation. This was a problem already identified by the Director of the School Nutrition Programme of Trinidad and Tobago. Mr. St. Aimee reiterated the point that there was the need to go beyond the established CARICOM countries and examine the work done in islands, such as Martinique and Puerto Rico, where green bananas are currently pre-cooked and packaged for sale in supermarkets. It was also suggested that there should be aggressive marketing programmes that would result in acquired tastes for locally produced foods. An example was the acquired taste for fresh water fish over that of marine fish in one Caribbean country and the preference for locally produced chicken in Guyana over those imported from the United States.

Grenada: Ministry of Agriculture, Forestry, Lands and Fisheries – Mrs. Dale Francis-Ellis, Chief Technical Officer (Ag)

Mrs. Francis-Ellis gave a brief overview of Grenada country statistics stating that this country of 133 square miles and a population of 98,900 (down from 110,000 mainly due to

migration) depended heavily on agriculture and tourism. She noted that 46 per cent of this population was below 30 years of age. Females headed 50.8 per cent of the households and 30-35 per cent of the population could be regarded as living below the poverty line. No figures were cited for unemployment but this was quite high according to Mrs. Ellis.

Agricultural production is based on the plantation type system with nutmeg, cocoa and banana being the predominant crops. Nutmeg is the main export crop. With regard to the nutmeg, this is grown organically because of the high demand for organically-grown produce in the United States. Farmers who produce these nutmegs are about to be certified. Cocoa production is on the decline mainly because it is no longer economical to produce and most of

the farmers are old and dying out. There has been talk of processing of the cocoa beans, but according to Mrs. Ellis, these plans are not likely to materialise. Attempts are being made to revive banana production for export with continuing debate as to the economic viability of this action. It should be noted that banana production is heavily subsidised and consideration is being given to produce bananas for local consumption and export to Caribbean countries only. Spices are also produced in Grenada.

In 1985 the government embarked upon a diversification programme to move away from the traditionally grown crops, but no impact has been noted to date except perhaps in some cases. For example, there was a reduction in the volume of carrots imported into the country. Mrs. Ellis also stated that there was a decline in home garden production and the extension division of the Ministry of Agriculture is encouraging persons to grow more seasonings, vegetables, etc. This is also being encouraged within the schools. There is a heavy reliance on imports of vegetables and some staples like carrots, but again, there is a drive towards import substitution and food security. A high percentage of the food import bill is on poultry. For example, nine million pounds of chicken are consumed annually while only one million pounds are produced. While there may be a preference for the taste of the locally grown, it is also more expensive than the imported poultry. The agro-processing industry is fairly vibrant with the production of pepper sauce, plantain chips, jams, etc. in small, medium and large operations. A school nutrition programme was in operation some years ago where the food was cooked in schools. However, nutritional needs were not really considered.

Discussion

Following this presentation, the discussion focused on the need for increased use of locally produced foods in the region since there is the increasing tendency for young persons to have a preference for imported products. The general consensus was that there were no concerted efforts on the part of governments and policy makers to reverse this trend. It was also noted that a considerable amount of work was done in the universities to make the local foods acceptable to the community but there were no follow-up marketing activities. One test, for example, showed that babies preferred the food made from locally produced vegetables and ground provisions, yet the amount of imported processed baby foods was very high. The meeting noted that education was the most likely key to change.

Saint Lucia: Ministry of Agriculture, Forestry and Fisheries – Mr. Christopher Augier, Coordinator - Vegetable Production Project

Mr. Augier reported that banana was still considered the major crop representing 90 per cent of the country's total agricultural production, even though production had declined. There is presently an attempt at diversification of the agricultural sector with the focus on two main areas. These are the production of alternative crops and import substitution, especially for the

hospitality industry. With regard to the non-traditional export crops, a drive to increase the production of tree crops such as mangoes and avocado for export of the fresh fruit has proven to be successful with a number of private exports forming themselves into an exporter's association. The Ministry of Agriculture also investigated the production of yam and dasheen for export, but these attempts never made any significant impact on the export market. Most of these ground provisions produced were however, consumed on the local market, even though it was *more profitable* to produce for the export market. There was an increase in vegetable production, especially tomatoes, and this led to a decrease in imports. Other indigenous foods are produced mainly for export but the volume was reduced last year because cargo space was limited. This was especially the case for hot peppers, which earned approximately US\$872,000 in 1999.

Initiatives are taking place to increase livestock production. There are a number of projects:

- Increase in milk production;
- Increase in egg production - up by 8 per cent per annum. Eggs are no longer imported.
- Increase in rabbit production
- Increase in pork and pork products such that 40 per cent of local need is being met.

In the case of poultry production, the Bureau of Standards provides poultry farmers with information on HAACP requirements. It was also noted that diagnostic facilities including testing for chemical residues, etc are soon to be placed under one institution. Efforts are also being made to improve fish production and fish landings, but in spite of these efforts the importation of fish and fish products remains high.

Produce for the school feeding programme is grown by students where pupils are encouraged to eat what they grow and grow what they eat. Short-term vegetable crops are mainly grown and any excess is sold to teachers or homes. Some schools have broiler units while one school has a fish rearing facility. There are plans to extend the programme to secondary schools.

Other initiatives to increase agricultural production include a national processing facility, an extension programme in farm and home improvement promoting a more entrepreneurial approach to production and cottage-industry type initiatives. Tissue culture is being considered for the cut flower industry, which would have implications for food security. With regard to displaced banana farmers, there is the Rural Economic Incentive Programme and other similar projects where soft loans are provided to farmers to assist in their diversification attempts. Attempts are being made to link nutrition and production via the Health Sector Reform Programme that addresses food and nutrition.

Pan American Health Organization (PAHO) – Dr. Gina Watson, Adviser, Health Promotion

Dr. Watson, adviser in nutrition in the Food and Nutrition Institute arm of PAHO/WHO, noted that Food and Nutrition Policy is multi-sectoral and related to households, national food security, welfare programmes, health systems and the formal/informal sectors, among others. As part of her job, she is involved in providing technical collaboration to countries in areas such

as health reform, technical support to various projects, Ministries of Agriculture and academic institutions.

Discussion

Based on the country and institution reports it was determined that in order to increase production and consumption of indigenous products, it would be first necessary to identify the constraints that exist. It was also suggested that there was need for information on non-traditional crops, especially with regard to any therapeutic properties. The representative from CFNI observed that much of this information was available but was not "packaged" for dissemination. Aggressive promotion of non-traditional crops was therefore imperative, making information already gathered readily available while working on other strategies. Other suggestions to increase consumption of indigenous produce included:

- Introducing to other Caribbean countries, the Health Family Life and Education Programme that is implemented in primary schools in Trinidad and Tobago.
- Promotion of the use of indigenous crops via cultural events. For example, in Dominica a week out of every year is designated local cuisine week where only indigenous products are consumed.
- The use of technology that would allow for faster preparation of indigenous crops.
- A more efficient transportation network that would allow easy access to markets.
- Incentives and/or legislation that would allow for increased use of indigenous foods especially within the hospitality industry.

With regard to food security and poverty alleviation, there was agreement that in the Caribbean availability of food is not the problem. There are sufficient nutritious sources of food in the region to meet the needs of the population. Poverty alleviation should be viewed not solely as the provision of food for the region, but as providing a balanced diet for the populace. The problem may be more linked to buying power, access, unemployment, improper fiscal management and budgeting within households and skewed prioritization.

Teaching students about nutrition at schools may be wasted, if different attitudes are adopted at home. There was, therefore, the need for education of consumers, especially housewives, who have the major responsibility in terms of purchase of food and in the developing of the mindset in the home. It was agreed that different education and/or promotion strategies would have to be adopted for different countries and in some cases in different sectors of a society, depending on the cultural milieu of the population. In many cases the education strategy may have to be reworked since the methodologies may not be catering to the psyche of the groups to which they are aimed. In this context, there has to be a more rigorous documentation of successful and unsuccessful approaches. By the system of process evaluation, previously tried strategies can be analysed. One may also need behavioural specialists to make the approaches more successful. Much consideration should be given to this, since most technical persons are not trained communicators. There will be need to utilize a variety of methods to reach various groups within the population. Above all, food production should be by consensus and the emphasis should not be on the export trade, but on production for local consumption.

With regard to the formulation of a food and nutrition policy, it was important for a ranking of priorities to take place within the agricultural sector and within the extension programme. Constraints need to be identified and analyzed. Farmers need to be brought into the process and their problem-solving skills and ideas should be entertained from all sectors of the

industry to avoid a top-down management approach and to make full use of traditional knowledge. Only then should implementation be attempted. External factors, such as external markets for indigenous produce and those that may impact on the local situation, need to be considered in this process. It was noted by participants that while all the above may be practiced or put into place, in the Caribbean especially, the will and ability to test and enforce the policy is not always present. There seemed to be a breakdown in communication between policy makers and those responsible for implementation. It was suggested that lobby groups or lobbyists could aid in effective policy implementation.

New Technologies

It was agreed that there is an urgent need in the Caribbean to establish policies on the issue of the use and/or adoption of new technology, since this had implications for food security and health. A policy would also be needed to determine how new technologies should be introduced into the region. It was also agreed that technology should be modified to suit the particular conditions under which it would be applied; in which case, there must be sufficient technical knowledge within the receiving country to enable modification to be done. There is also the need to channel the ideas that may arise from the "grass roots" level, for more efficient production, or the design of appropriate technology by trained engineers. Technology should also be used in the sphere of marketing non-traditional export crops. In this sense, there is already a captive market (the local population), so there was no need to "create" markets.

With regard to food, health and nutrition, it was agreed that in the Caribbean, there existed a wealth of information. However, there was a need for the sharing of information among countries and updating of this information on a regular basis. For example, there are numerous projects and programmes initiated, in many cases from the same source of funds, but the outcome or impact of these programmes is not always known or shared. The representative from IICA noted that the organization's focus is to support countries in their efforts to increase the level of production and processing of tropical produce, including fruits and root crops, for both local consumption and export. This ongoing programme is targeted at all governments which request assistance in this regard. The overall programme is linked to diversification, sustainability and economic viability. PAHO/WHO, whose membership includes several Caribbean countries, provides assistance in various projects. Selection is determined by international and national priorities, with distribution and access to resources depending on the classification of the countries. The meeting was also reminded that the countries were all competing for funds from the same sources and that it was important that there be some mechanism to determine how these funds, specifically those from the European Community, are spent. In most instances, it was participants' experiences, that funds are used as "fall back" mechanisms by governments. Also, there was a need for the relevant information to be disseminated among the general populace. A case in point is the fact that the nutritional value of most of the indigenous crops has been determined, but the general population remains unaware of this fact.

At the close of the meeting, participants all agreed that there was a wealth of information on nutrition and health available in the Caribbean, which, unfortunately, was not filtered down to the populace at large. Mechanisms had to be found to ensure that available resources are used to ensure a healthy and productive people. It was agreed that the report generated from the expert group meeting would be circulated, not just to the participants, but to all relevant agencies, for comments and input into a comprehensive document that would assist in the design and implementation of projects and programmes related to nutrition and health.

Annex I

**Expert Group Meeting on Agriculture
The Impact of New Technologies on Food Nutrition and Health**

PROVISIONAL PROGRAMME

Objectives: To develop national and/or regional policies that seek to promote a healthy population by initiating discussion on the development of national and regional policies that will enhance the use of non-traditional export crops in seeking to promote a healthy population and expansion of traditional agriculture.

Day 1 Thursday 28 th September, 2000 9:00 a.m. – 5:00 p.m.	Day 2 Friday 29 th September, 2000 8:30 a.m. – 3:00 p.m.
Opening remarks and outline of objectives Donatus St. Aimee UN ECLAC	Discussion New technologies, poverty alleviation and food security
CARICOM Programme on Food Security Ronald Gordon CARICOM	Proposals for the development of programmes/projects to address issues and/or concerns raised
Nutritional needs of children, adults and older persons Christine Bocage CFNI	Coffee Break 10:30 – 10:45 a.m.
Coffee Break 10:30 – 10:45 a.m.	Proposals for the development of programmes/projects to address issues and/or concerns raised (continued)
Report on the school nutrition programme in Trinidad and Tobago Ken Emrith School Nutrition Programme	Wrap-up Session
Comments/General Discussion	End of Meeting
Country/Other Institution Reports (a) Status of the non-traditional food sector (b) On-going work linking nutritional health and agricultural policy (c) Participants may also report on or raise any other topics as applicable.	
Lunch Break 12:30 – 2:00 p.m.	
Country/Other Institution reports (continued)	
Comments/General Discussion	

Annex II

**EXPERT GROUP MEETING ON AGRICULTURE:
THE IMPACT ON NEW TECHNOLOGIES ON FOOD NUTRITION AND HEALTH**

LIST OF PARTICIPANTS

- | | |
|---------------------|--|
| Grenada | <p>Mrs. Dale Francis-Ellis
Marketing Director
Ministry of Agriculture
Ministerial Complex
St. George's
Tel: (473) 440-3083
Fax: (473) 440-4191
E-mail: agrimark@caribsurf.com</p> |
| Guyana | <p>Mr. Joseph Ephraim M^c Allister
Technical Manager (Ag)
Crop Production
Ministry of Agriculture
Regent and Vlessingen Roads
Georgetown
Tel: (592-2) 53856/68568
Fax: (592-2)-56281</p> |
| Jamaica | <p>Ms. Paulette Thomas
Senior Social Services/ Home Economics Officer
Rural Development Agricultural Authority (RADA)
c/o Ministry of Agriculture
Hope Gardens or RADA St. Ann
Kingston
Tel: (876) 972-3258/4216
Fax: (876) 972-4286</p> |
| Saint Lucia | <p>Mr. Christopher Augier
Senior Field Officer/Co-ordinator of FAO
Extension Strengthening Project
Ministry of Agriculture, Fisheries and Forestry
MAFF, Waterfront
Castries
Tel: (758) 452-3504
Fax: (758) 453-6314</p> |
| Trinidad and Tobago | <p>Mr. Ken Emrith
Director
School Nutrition Programme
6 Newbold Street, St. Clair
Port of Spain
Tel: (868) 622-2735
Fax: (868) 622-6659
E-mail: snp@trinidad.net</p> |

ORGANIZATIONS/INSTITUTIONS

Caribbean Agricultural Research and Development Institute (CARDI)

Mrs. Joan Petersen, Organic Agronomist, P.O. Bag 212, UWI St. Augustine Campus, Trinidad and Tobago. Tel: (868) 645-1205/7, Fax: (868) 645-1208, e-mail: ttunit@cardi.org

Caribbean Community (CARICOM)

Mr. Ronald M. Gordon, Deputy Programme Manager - Agricultural Development, P.O. Box 10827, Georgetown, Guyana. Tel: (592-2) 52961-5, Fax: (592-2) 57341, e-mail: rmg@caricom.org

Caribbean Food and Nutrition Institute (CFNI/PAHO/WHO)

Mrs. Christine Bocage, Nutritionist, c/o the University of the West Indies, St. Augustine, Trinidad and Tobago. Tel: (868) 663-1544, Fax: (868) 663-1544, e-mail: cfni@cablenett.net

Food and Agriculture Organisation of the United Nations (FAO)

Dr. Don Robinson, Representative, First Floor, Winfield Scott Trust Building, 134-138 Frederick Street, Port of Spain, Trinidad and Tobago. Tel: (868) 623-5175, Fax: (868) 623-0995, e-mail: FAO-TTO@field.fao.org

Inter-American Institute for Cooperation on Agriculture (IICA)

Mrs. Judith Ann Francis, Regional Coordinator, Tropical Fruits Project, #3 Herbert Street, Newtown, Port of Spain, Trinidad and Tobago. Tel: (868) 628-4403/4078, Fax: (868) 628-4562, e-mail: iica@iicacarc.org

Pan American Health Organization/World Health Organization (PAHO/WHO)

Dr. Gina Watson, Advisor for Health Promotion, Control and Prevention of Disease, 49 Jerningham Avenue, Belmont, P.O. Box 898, Port of Spain, Trinidad and Tobago. Tel: (868) 624-7524/4376, Fax: (868) 624-5643, e-mail: watsongi@trt.paho.org

United Nations Economic Commission for Latin America and the Caribbean (UN ECLAC)

Mr. Donatus St. Aimee, Economic Affairs Officer, Science and Technology Third Floor, CHIC Building, cor. Park and Edward Streets, Port of Spain, Trinidad and Tobago. Tel: (868) 623-5595 Ext 370, Fax: (868) 623-8485, e-mail: dstaimee@eclacpos.org

Annex III**CCH – Phase II A New Vision for Caribbean Health****FOOD AND NUTRITION**

Traditionally, where energy intake is concerned, the Caribbean's main concern has been under-nutrition, resulting in Energy Protein Malnutrition (EPM) which accounts for unacceptably high rates in some vulnerable groups in the region. In CCH-11, mapping of high-risk areas will be an important strategy to target interventions. For the past few decades, however, there has been an increase in the prevalence of obesity, principally in adults, but also to some extent in adolescents and infants. With this increasing prevalence of obesity we observe the concomitant increase in nutrition-related chronic diseases such as diabetes mellitus, hypertension, heart attacks, stroke and some forms of cancer.

In the region, food production has long been surpassed by consumption and today the countries depend to a large extent on food importation. In fact, most of the energy and protein requirements are fulfilled by importation of raw or processed foods or food components. The region has a mere 6 million people yet we spend over 1.5 billion US dollars each year on food imports.

Most English-speaking Caribbean countries are progressively moving away from regulated markets involving direct state intervention in food marketing activities and price controls on basic foodstuffs to more liberalized marketing systems. The creation of the World Trade Organization (WTO) in 1995 substantially affects international trade in agricultural products which is an important aspect of the food security problem.

In CCH-11, food security will therefore emphasize how food and nutrition policies overlap with many other sectors - health, trade, agriculture and education. A wide spectrum of players needs to be involved because food security is an integral part of a process of nutrition and health development.

Thirty years ago food security in the Caribbean may have been conceived mainly as a supply problem i.e. attempting to increase the availability of various foods. Now, with availability of calories and protein much in excess of average requirement, the focus of food and nutrition security must include issues of cost-efficient food distribution and consumer education to achieve nutritional adequacy at the household level.

In CCH-11, policies on food security will strive to fulfill population nutrient goals. The approach is to identify the level of population intakes that, for the population as a whole, will lead to a low risk of inadequacy and a low risk of excess. The determination of food goals needs careful analysis as it must relate to the agricultural policy and economic opportunities in each specific country. Governments that take diet-health relationships seriously can make considerable savings in health expenditures.

Iron deficiency anemia remains a problem especially in pregnant women and pre-school and school-aged children. This has been attributed to inadequate iron intake and to poor absorption. CCH-11 will intensify efforts within the strategy of iron supplementation, diet modification and iron fortification to reduce the prevalence of anemia in the region.

SUB-PRIORITY AREAS

NUTRITION- RELATED DISEASES

HUMANRESOURCE DEVELOPMENT

**NUTRITION PROMOTION & INFORMATION
DISSEMINATION**

SURVEILLANCE

FOOD SECURITY

OVERALL GOAL AND INDICATORS

GOAL

Safe food made accessible to the most vulnerable population groups and the nutritional status of selected groups in the population improved.

INDICATORS:

1. Mechanisms established in all countries to ensure that persons living below the poverty line spend less than 25% of their income to obtain a nutritionally adequate basket of food, by end 2003.
2. Prevalence of obesity Body Mass Index (BMI>30) among the persons aged 35-64 years reduced by at least 3% of 1997 level and baseline established for persons between the ages of 12 to 15 years by end 2003.
3. Prevalence of anaemia in pregnancy reduced by 10% and, in children less than 15 years, by 12% between 1997 and 2003.
4. Under-nutrition weight for height (W/H) Z-score for children under 5 years reduced by 50% of 1997 levels by end 2003.
5. Exclusive breastfeeding at three months increased by 30% of 1997 rates by end 2003.
6. Number of outbreaks of food-borne diseases reduced to less than 50% of the 1997 levels in all countries by end 2003.

NUTRITION-RELATED DISEASES

PRIORITY ISSUES

1. Lack of strategic multi-sectoral plans and policies to combat the deficiency diseases and the multifactorial problems of obesity and nutrition -related chronic diseases.
2. Insufficient attention to the causes of persistent anemia.
3. Inability of vulnerable groups to obtain continuous supplies of a nutritionally adequate and safe diet.

OBJECTIVE 1

Plans, policies and guidelines in place and mechanisms to monitor their implementation functional.

INDICATORS

- 1.1 In all countries, national Food and Nutrition Plans updated to a) incorporate contribution of agriculture, health, trade and education sectors, b) link to national development policies and strategies; and c) include measurable population food and nutrition goals by end 2001.
- 1.2 Policy makers in at least 15 countries made aware of the economic benefits of interventions to combat nutritional problems by end 2002.
- 1.3 In each country, mechanism for multi-sectoral monitoring of implementation of plans established by end 2001 and meeting at least once per year thereafter
- 1.4 Dietary guidelines for the Caribbean developed and disseminated to **all** countries by end 2003.

OBJECTIVE 2

Projects to reduce anaemia and obesity developed and implemented.

INDICATORS

- 2.1 Barriers to effective preventative and therapeutic iron supplementation researched and programs aimed at reducing the prevalence of anaemia in pregnancy developed and/or refined and executed in three (3) selected countries by end 2003.
- 2.2 Multi-sectoral, health promotion Initiatives to reduce availability and consumption of saturated fats; increase the consumption of local fruits and vegetables, ground provisions and legumes; and introduce scientifically-based exercise programs in public and private institutions designed and initiated in at least 2 countries by end 2003.

(See complementary indicators in Chronic Non-Communicable Diseases section).

NUTRITION- RELATED DISEASES

HEALTH PROMOTION STRATEGIES

HEALTHY PUBLIC POLICY

Ensuring firm political commitment to promoting nutritional well-being as part of national research and development plans.

Altering regulations and policies that impact negatively on consumer food choices, particularly in relation to food prices and low quality food items, in order to encourage more nutritionally beneficial diets.

RE-ORIENTING HEALTH SERVICES

Establishing or strengthening regulatory bodies to develop, support and monitor dietary guidelines.

Strengthening institutional structures with attention to management to cope with multi-sectoral aspects of nutritional diseases.

EMPOWERING COMMUNITIES

Providing incentives to those who promote healthy diet and exercise habits.

Involving community groups in all aspects of nutrition improvement programs and supporting community initiatives.

CREATING SUPPORTIVE ENVIRONMENTS

Promoting and launching healthy eating and exercise programs at work-sites, training institutions and communities.

Sensitising public and private sector managers to the economic benefits of a healthy work force.
Organising NGOs and health clubs to promote and practise healthy lifestyles.

DEVELOPING PERSONAL HEALTH SKILLS

Development of advocacy and evaluation skills of key managers and community leaders.

Development of low-fat cooking skills of homemakers.

Using a mix of media and face-to-face strategies to enable clients to manage diseases.

BUILDING ALLIANCES

Developing or strengthening food and nutrition coordination committees with education, trade, agriculture and other related sectors

Supporting organizations that promote physical activities and sports.

Developing awareness in these organizations about the importance of diet in enhancing physical activities and sport.

HUMAN RESOURCE DEVELOPMENT

PRIORITY ISSUES

1. Insufficient number of qualified health care professionals to impact on nutrition-related problems.
2. Roles of nutritionist and dietitians in health care teams not universally understood and not clarified in health sector reform initiatives.
3. Ministry of Health capacity to monitor food safety has not kept pace with growth in food processing and hospitality sectors.

OBJECTIVE I

Human resource needs for the provision of adequate nutrition services determined, and implementation initiated.

INDICATORS

- 1.1 Needs assessment of nutrition and dietetic professionals required at specified levels within the public and private sectors of the health system completed in all countries by end 1999.
- 1.2 In each country, roles, responsibilities and method of functioning of all categories of nutrition-related professionals documented by end 1999.
- 1.3 Common standards for practice of professionals in nutrition-related areas developed and adapted or adopted by at least 75% of countries by end 2003.
- 1.4 In all countries, number and quality of nutrition -related professionals in the public sector strengthened in accordance with plan by end 2003.

OBJECTIVE 2

Selected persons trained and capacity of selected health training programs to provide graduates with required skills in nutrition counselling improved.

INDICATORS

- 2.1 Over the period 1999-2002, at least 100 community-based persons trained each year in basic and/or intermediate skills and knowledge of the relationship between diet, exercise and chronic diseases.
- 2.2 Regional programs for production of physicians, public health nurses and health educators evaluated against standard competencies related to managing diet, exercise and disease using the health promotion process (Knowledge, Attitudes, Practices [KAP] studies and course evaluations) by mid-2002.
- 2.3 Curricula and methods of teaching in relevant regional training programs upgraded to address deficiencies identified in evaluations by end 2003.

HUMAN RESOURCE DEVELOPMENT

HEALTH PROMOTION STRATEGIES

HEALTHY PUBLIC POLICY

Developing policies to attract persons into related professional areas.

Enabling effective registration and monitoring of performance at national and regional levels,

RE-ORIENTING HEALTH SERVICES

Focus on diet and lifestyle in community health care.

Preparing health care personnel with adequate knowledge in food, nutrition and health.

Incorporating nutrition personnel in Primary Health Care (PHC) management team.

EMPOWERING COMMUNITIES

Training of NGOs to help lead the health promotion action on healthy lifestyle.

Educating families in healthy eating and exercise programs.

Public information training and recruitment opportunities.

CREATING SUPPORTIVE ENVIRONMENTS

Funding for training and continuing education.

Ensuring appropriate salary levels for professionals.

Inclusion of prerequisite topics in secondary school curriculum and conducting wide range of nutrition training in education, trade, agriculture and health sectors.

Career development opportunities.

DEVELOPING PERSONAL HEALTH SKILLS

Encouraging staff to act as role models for healthy lifestyle.

Individuals accepting responsibility for continuing education.

Ensuring that all nutrition workers are computer literate.

BUILDING ALLIANCES

Developing linkages with NGOs, work-sites and community groups.

Strengthening alliances with regional training programs, including those with distance education capacity, in order to improve food and nutrition modules.

NUTRITION PROMOTION AND INFORMATION DISSEMINATION

PRIORITY ISSUES

1. Inappropriate mix of dissemination strategies to reach stakeholders in public and private sectors.
2. Lack of consistent, credible, relevant and scientifically based health and nutrition messages.
3. Inadequate counselling by health team.
4. Infrequent evaluation of promotion or education initiatives.

OBJECTIVE I

Nutrition communication and information strategies implemented in support of nutrition promotion programs.

INDICATORS

- 1.1 Information, education and communication strategies for improving nutrition-related behaviours of selected population groups and in support of national food and nutrition goals defined and disseminated to stakeholders in all countries by end March 2002.
- 1.2 Regional nutrition/education strategy defined and disseminated to stakeholders by mid-2002
- 1.3 Selected manuals, journals, newsletters and books written/updated by CFNI and disseminated to identified clients in all countries over the period 1999-2003.

NUTRITION PROMOTION AND INFORMATION DISSEMINATION

HEALTH PROMOTION STRATEGIES

HEALTHY PUBLIC POLICY

Ensuring that the public is aware and convinced of the benefits of healthy dietary practices.
Financial disincentives for unhealthy foods.
Policies to protect health of children.

RE-ORIENTING HEALTH SERVICES

Conducting multi-disciplinary training workshops so that all partners of the health care team provide consistent advice to clients.
Provision of space for client counselling and exhibitions in health facilities.
Ensuring budget allocation for communication strategy and related training.

EMPOWERING COMMUNITIES

Promoting community participation given that their knowledge and actions are driving forces for behavioural and social change.
Encouraging vegetable gardening.
Educating the public on how to use nutrition labels.

CREATING SUPPORTIVE ENVIRONMENTS

Improving school and office lunch programs as well as providing facilities for physical exercise.
Promotion of direct access to nutritionist services.
Nutrition information at time of choice in restaurants and supermarkets/groceries.

DEVELOPING PERSONAL HEALTH SKILLS

Ensuring that each individual knows his or her nutrition profile and has plans on its improvement and maintenance.
Development of life-time exercise skills in adolescents and to be conducted at least 3 times per week.
Ensuring that individuals are knowledgeable about the nutritional value of foods often eaten.

BUILDING ALLIANCES

Ensuring that the private sector is aware of the relationships between health, agriculture and food. Encouragement of corporate sponsorship of nutrition messages.
Support of health promotion programs in supermarkets/groceries.
Strengthening links between the media and the nutrition and health sectors to ensure appropriate information is received by all stakeholders.

SURVEILLANCE

PRIORITY ISSUES

1. Routine data analysis limited to children and pregnant women.
2. Available information not effectively used to inform policy decisions and programme planning.

OBJECTIVE 1

More effective nutrition surveillance in place.

INDICATORS

- 1.1 Regional electronic nutrition Information database, including indicators of nutritional well-being to inform and monitor social development, established and accessible in all countries, including nutrition coordinators, by end 1999.
- 1.2 Food and nutrition surveillance information systems, producing at least annual reports of individuals and groups at risk of, and actually suffering from, the most prevalent nutrition-related diseases established in at least five (5) countries by end 2000 and in all countries by end 2003.

HEALTH PROMOTION STRATEGIES

HEALTHY PUBLIC POLICY

Policy of national decision-making on food and nutrition based on surveillance data.

Policy to increase public access to data.

Provision in budget for surveys.

RE-ORIENTING HEALTH SERVICES

Increase in the perception, knowledge, demand for information, and technical capability of staff to improve health services.

Capture collected data to provide surveillance of adults.

EMPOWERING COMMUNITIES

Inclusion of communities in the planning of nutrition information.

Provision of feedback information to the community in user-friendly manner.

CREATING SUPPORTIVE ENVIRONMENTS

Conducting workshops and other participatory activities to demonstrate the value of the cycle of data collection, decision-making, feedback, data collection, etc.

Provision of training at various levels on the variety of communication methods using various sources of information.

Improving access to computers for health care workers.

BUILDING ALLIANCES

Collaboration with general practitioners and nutritionists in private sector.

Building alliance with media and using other avenues to increase understanding and facilitate dialogue on nutrition situation.

FOOD SECURITY

PRIORITY ISSUES

- 1 Lack of comprehensive programmes on food security.
- 2 Lack of an effective mechanism to monitor foods to assure minimum acceptable levels of food quality: surveillance systems rudimentary and laboratory capacity inadequate.
- 3 Food handlers and the community not adequately trained.
- 4 Inadequate legislation, regulation and standards for monitoring safety/quality of imported and exported foods.
- 5 Nutritionally-appropriate foods too expensive for many people.

OBJECTIVE 1

Food security plans developed and infrastructure for implementation established.

INDICATORS

- 1.1 Strategies to modify the food production and consumption profile, in order to prevent obesity and other nutritional disorders and ensure sustainable food security, developed in each country by end 2003.
- 1.2 Regional technical support unit to facilitate institutional linkages and ensure complementarity of national and international actions established by end 2002, and annual reports disseminated to all countries thereafter

OBJECTIVE 2

National systems to ensure safe food available for local consumption and export.

INDICATOR

Legislation, regulations and standards in all countries by end 2001, in keeping with PAHO/FAO Caribbean model.

Annex IV

School Nutrition Programme
Total Commodity Usage 1999
National

Ave. No. of Meals: 79,268

	January – March	April – June	July – September	October – December	Total
Cheese	18335.50	23200.48	6991.54	26752.82	75280.34
Chicken	302206.91	292381.42	103911.70	379062.56	1077562.59
Chicken Burger (ea)	112019	132645	35956	139261	307863
Fish	74904.42	51711.45	36708.64	70869.96	234194.47
Fish Fingers (ea)	329657	220474	47528	123122	720781
Black eye Peas	5592.28	6366.85	2782.51	5824.18	20565.82
Channa	15856.93	20348.68	9800.37	27537.37	73543.35
Lentil Peas	13507.89	12102.45	2802.54	10199.09	38611.97
Pigeon Peas	9587.17	766034.35	581.27	1197.18	777399.97
Red Beans	46676.07	34629.40	9085.38	22288.27	112679.12
Split Peas	7007.03	10497.26	3126.68	7472.45	28103.42
Veggie Burger (ea)	110542	120483	59571	127886	418482
Veggie Mince	Nil	Nil	Nil	3.00	3.00
					0
Bread	358284	410588	136363	401192	1306427
Flour	51148.02	40483.86	14732.30	67770.27	174134.45
Macaroni	1240.47	19181.73	9561.37	26021.60	56005.17
Noodles	22745.10	47640.52	3689.58	23426.69	97501.89
Potato	51581.23	15884.93	5124.04	18389.04	90979.24
Rice	178925.61	207080.29	57354.74	194499.10	637859.74
Spaghetti	72442.80	27256.62	13955.44	53245.49	166900.35
Spiral Pasta	28869.88	32517.00	8414.44	26912.73	96714.05

TOTALS ARE IN LBS UNLESS UNITS ARE STATED

	January – March	April – June	July – September	October – December	Total
Bodi	23106.53	41734.61	13496.00	33602.54	111939.68
Cabbage	31856.22	36837.99	16097.77	39324.80	124116.78
Carrot	73118.20	69714.77	23901.66	72153.86	238888.49
Celery (BND)	3759	4111	2209	5020	15099
Chive (BND)	6616	4002	2482	3405	16505
Christophene	31026.60	19815.22	2919.99	10724.26	64486.07
Coconut (ea)	7455	8922	1158	5189	22724
Cucumber	3468.15	17540.91	2170.83	9120.73	32300.62
Dasheen Bush (BND)	9845	577847	2376	12970	603038
Eggplant	16186.23	15431.47	5066.97	18469.88	55154.55
Mango/ Pommecythere (ea)	53346	65756	38573	170840	328515
Ochro (ea)	201247	149016	17846	103789	471898
Patchoi	8426.21	10118.69	3681.88	13863.06	36089.84
Pimento Pepper	267269.21	27591.52	63035.84	218573.92	576470.49
Plantain	25833.02	34310.02	3244.89	18123.92	81511.85
Pumpkin	94831.36	93738.00	44153.97	150204.34	382927.67
Spinach	Nil	1684.57	1289.54	2480.77	5454.88
Sweet Pepper	18984.90	19087.86	6677.30	18287.45	63037.51
Tomato	26203.19	26982.74	6845.57	24576.99	84608.49
Banana (ea)	524612	619276	152294	448448	1744630
Citrus (ea)	915949	234681	1242	53921	1205793
Watermelon (ea)	7003.50	73185.58	19771.30	20748.14	120708.52
Juice (ea)	335134	599594	201822	666828	1803378

TOTALS ARE IN LBS UNLESS UNITS ARE STATED

