

# FOOD PATTERNS IN CENTRAL AMERICA AND PANAMA<sup>1</sup>

MARINA FLORES

*Instituto de Nutrición de Centro América y Panamá (INCAP), Guatemala,*

THE DIAGNOSIS of any human suffering requires a thorough study of all possible factors affecting such conditions. In order to measure the seriousness of the nutritional problem in Central America, one of the first steps taken by INCAP personnel was the investigation of dietary habits of the people.

## *Geographical location*

The six countries of Central America lie between Mexico and Colombia, [approximately 8° to 18° north latitude and 78° to 90° longitude, and include Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica and Panama. This part of the world has one of the most complex geographic configurations and covers 569,262 square km. A chain of mountains, parallel to the Pacific Coast, has some 250 volcanoes varying in elevation from 6,500 to 13,000 ft. The Atlantic Coast is characterized by extensive flat land. Mean annual temperatures in this small area range from 30° or 35°C at sea level to 10° at 8,000 ft. above sea level. The climates are modified by the winds and rains, which start in May and last until October. The seasons are, therefore, characterized as wet and dry, the dry season being called "summer" and the wet season "winter", irrespective of temperatures and the months in which they fall. The tropical latitude, the fertility of the land and the variations in altitude make numerous varieties of agricultural products possible.

The main crops can be classified in two groups, those basically for local consumption, such as corn, beans, rice, sugar, bananas and other tropical fruits, and the cash crops of coffee and cotton, on which the economy

of these countries, with the exception of Panama, is largely based.

## *The people*

Three ethnic groups are the ancestors of the people in Central America, the Mayan Indians and Caribs, Spaniards, and African Negroes. The predominant type of population in each country differs according to the settlement of these groups. The Mayans first inhabited southern Mexico and northern Guatemala, and the greatest Indian population is, therefore, found in these two countries. Since the Spanish Conquest of these areas, an intensive process of integration of Mayans and Spaniards created a new group called "mestizos" or ladinos, who are the majority of the inhabitants of El Salvador, Honduras and Nicaragua. In Costa Rica, the predominant group is Spanish. The Caribs long ago mixed with Negroes brought to the Caribbean Islands. Their descendants now occupy various parts of the Atlantic littoral, remaining isolated except in Panama where they have mixed with the Spanish population and even now constitute one of the main population groups in that country.

The 1952 census gives a total population figure of about 9,360,000 for all these countries, but the distribution is irregular because of the climatic conditions. In Nicaragua, for instance, there are seven persons per square km in comparison with 89 persons in El Salvador. Consequently, the social problems in the area differ from country to country in spite of the similar historical background.

Although the culture of a given society will determine the food habits of the people, the topography of the land, the climate and

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the general environment will modify these habits. In Central America, these two fundamental factors, one the cultural and the other the geographical, play an important role in the prevailing food pattern.

### *Methodology*

A series of family food consumption surveys in about thirty localities and representing the areas of greatest population density and the groups of major economic importance in these countries have provided information on this area. Random sampling techniques were used, and the same methods applied in the analysis of all the data to allow the comparison of results. The data presented in this paper do not include upper or middle income classes.

Daily food consumption records were kept over a period of seven days, during which the different items were weighed on every possible occasion. Since the nutritionist visited the families every day, she was able to observe the treatment and preparation of foods and dishes. The intake of calories and nutrients was averaged by family and expressed per person per day for comparison with the nutritional requirements estimated for each family or consumption group.

### *Characteristics of the diets*

The basic and most important food of the Indians is maize treated with lime water and prepared as "tortillas", which are the daily bread at all meals. The Spanish and Mestizos, on the other hand, consume more wheat bread and rice than maize, while the Negro-Carib group prepare a kind of pancake with wheat flour and fat. It is interesting to note that the Mestizos have developed a typical bread called "rosquillas", prepared with maize flour and cheese, a combination of two important food items of Indian and Spanish culture, and eaten throughout Honduras, Nicaragua and Costa Rica. Atole (a thin gruel of maize) and chocolate were the common beverages of the Indians in pre-Spanish times; in the last century, however, coffee has been almost universally adopted

by them. Nevertheless, atole is still a popular beverage, not only among the Indians, but with the Mestizos as well. Some groups of Negro-Carib extraction drink all kinds of tea and fermented beverages prepared with corn or palm sap.

Leguminous seeds of some kind always supplement the cereal diets in Central America. In this area, beans (*Phaseolus vulgaris*) occur in a variety of colours, and are consumed daily by all, differing only in the preparation in each group. The Indians boil the beans and use flavouring herbs such as *Chenopodium*. The Spanish add lard and onion during boiling, and usually mash, strain and fry the beans after boiling. The Caribs like the beans fried whole. Meat is present in all diets, although the amount and frequency depend on the economic status of the family. Beef is most popular among the Indians while the Spanish prefer pork. The Negro-Caribs, on the other hand, like fish fried in large quantities of fat. Fish is holy food for the Indians and Mestizos and is consumed principally during Lent. As fish becomes very expensive during this season, alligator takes its place among the Indians.

The vegetables consumed by each group also differ greatly. The Indians prefer wild green leaves or shoots which they collect in their own field, and wild or cultivated tomatoes, both red and green. It is pertinent to mention that they always cook vegetables with very little water, boiling them only a few minutes in small clay pots and adding green or dried peppers. The Spanish or Mestizos prefer other cultivated vegetables, specially starchy roots and tubers, often dipped in egg batter and fried after they are boiled. Tomatoes and green vegetables are observed in many Spanish and Negro-Carib diets, but only for flavouring and in minute amounts. The most common vegetable in these last two groups is green plantain. In areas not under the Negro-Carib influence, the plantain is used only when it is yellow and mature, and as a dessert.

Fruits are not common in Indian diets; an exception is the avocado which is considered

a vegetable and is eaten with lime juice, onion, chile pepper and salt. However, oranges, bananas and local fruits are often available in Indian homes, but are usually given to the children and in a very ripe stage. Mestizo and Spanish groups consume all kinds of fruits, but usually in cooked form and with white sugar. The Caribs like all fruits raw and when they are green.

Milk is consumed in small quantities by all groups, but least frequently by Indians. It is generally considered a food for children and is almost invariably boiled. When prepared with a cereal such as rice or corn, it is considered a delicacy, and is consumed by adults as well. Due possibly to the hot climate, where the Negro-Carib groups live and the economic situation of many of these people, condensed milk is very popular. Wherever cheese is available, it appears in all diets, but the general scarcity of dairy products in most of these countries limits the consumption.

Most Indian and Spanish families in rural areas raise chickens, although the egg consumption is not great, varying with the availability and need. The Indians may boil one or two eggs for the father or a small child. The Spanish use eggs more for coating other foods, especially meat-stuffed vegetables such as green peppers and caivas (*Cyclanthera pedata*), before frying.

Sugar is less used by Indians than by the other groups. The sugar they use is in the form of brown sugar-cake or "panela", added to the coffee in boiling. White sugar, candies or other sweets are eaten at special celebrations. The Mestizos or Spanish prefer white sugar, except for certain kinds of desserts. In Costa Rica, panela or white sugar water is a common beverage. The Negro-Carib groups use only white sugar.

Fat is the food item which most clearly differentiates the several cultural groups. While the Indians rarely use fat of any kind, the Spanish use lard for frying many foods. The Negro-Caribs use lard and also large quantities of coconut "milk" in boiling rice, vegetables and fish. To obtain this milk, the

coconut meat is grated and washed with water, or coconut-water, and strained through a fibre sieve. The milk obtained is rather thick and gives a coconut flavour to the food cooked with it. Butter, margarine or vegetable oils are found only in the diets of the upper or middle economic levels.

Certain typical dishes served on Sundays or feast days are important for the animal protein and fat which they contribute to the diet, especially in the Indian group; for instance, the "tamale", prepared with maize dough and fat, wrapped in banana leaves and boiled, with a filling of pork, tomatoes and chile pepper. Different kinds of candies, prepared with oily seeds and panela, are sold during native celebrations and must be considered in dietary studies.

These food patterns are not strictly adhered to by the corresponding population groups, but are modified by culture contacts, urbanisation and improvement in the economic status, the latter often accelerating the changes. These modifications in the diet do not always improve, but sometimes deteriorate, their nutritive value. New foods may be adopted because of their prestige value. This is the case when yellow maize used by the Indians is substituted by white maize among Mestizos. Wheat bread and rice replace part of the lime-treated maize tortillas in the diets of the more sophisticated Indian and Mestizo groups, refusing a good inexpensive source of calcium. The degree of urbanisation determines in many cases the use of wheat bread or rice instead of maize, and white sugar instead of panela. Green leaves, peppers and wild tomatoes are not observed in Spanish or Mestizo diets, except where there is an abundance of these products. The introduction of fat into the Indian diets is associated with the degree of Spanish influence or urbanisation. Fish, green bananas, rice and starchy roots comprise a large part of the Mestizo diets in the Negro-Carib areas.

A daily soup served at noon in all Central American countries, and prepared with different kinds of vegetables, meat, onions

and condiments, is of excellent flavour and nutritive content. In Panama, where there is extensive trade with the United States, home-made soup has been replaced by inexpensive dehydrated products. Carbonated beverages and canned fruit juices, introduced into the diets of families of higher income, are now extending into other groups. In Honduras, near the Atlantic coast, the better-off families prefer imported apples and other fruits to local ones richer in vitamin C and pay prices ten times higher. It is interesting to mention that some foods native to these countries are no longer important items in the diet, for example, chocolate or cacao.

If we consider the results obtained from the most representative groups in each country, we can appreciate quantitatively these social and cultural food differences. Table 1 gives the consumption of each food group in the Central American countries in both rural and urban areas. The striking differences in the rural diet of Guatemala, in comparison with the diets of the other countries, are due to the fact that the Guatemalan rural population is Indian and the urban, Mestizo. Approximately 500 g per head of dry cereal, mostly maize, are consumed daily in rural Guatemala compared to only 189 g, mainly rice, in rural Nicaragua and Panama. In urban areas, the cereal figures are similar for all countries.

Milk is consumed in very small quantities in the rural areas of Guatemala, El Salvador and Panama, increasing somewhat in the urban areas; in Honduras, Nicaragua and Costa Rica, on the other hand, the availability of milk is greater in both areas and the consumption of dairy products higher.

The recent industrialisation of egg production in El Salvador has increased the consumption in the urban areas, but for the other countries the figures are low. Only Panama, through the use of fish, and urban Nicaragua, with sufficient beef, have a considerable consumption of the food group comprising fish and meat.

The figures for fresh vegetables are mis-

leading in regard to the nutritive content because these vegetables consist mainly of green corn and a type of squash in Honduras, Nicaragua and Costa Rica, and green leaves and tomatoes in Guatemala. Fruits are not eaten in appreciable amounts in any part of the area, and bananas in large quantities only in Panama. Costa Rica has the highest figure for starchy roots for the urban areas and Panama, for the rural areas. Costa Rica is remarkable in both areas for the consumption of sugar. In all rural areas except Panama, the consumption of fat is extremely low, Guatemala having the lowest figure. Panama has the highest fat consumption for both urban and rural areas. For some of the Negro-Carib groups, the fat consumption reaches as high as 120 g daily per person.

When the chemical composition of these diets is calculated, the significance of some of the food habits becomes evident. Table 2 gives the caloric and nutrient intake of the different population groups in both rural and urban areas.

The rural area of Guatemala shows the highest consumption of calories, total protein, calcium, thiamine and niacin, reflecting the high intake of lime-treated maize. Because more yellow maize and green leaves are consumed in Guatemala, the vitamin A figure is significantly higher than in the other rural areas. For all these nutrients, the figures for urban areas are lower and similar in all the countries. Animal protein intake is in general very low, but in all cases increases from the rural to the urban area. The diets in Central America, lowest in fat, are those of rural Guatemala and El Salvador, where maize is also the principal source of fat. Panama shows the lowest intake of calcium and vitamin A; there are no inexpensive sources of these nutrients in this country.

Because a great proportion of the total caloric intake in Costa Rica comes from sugar, total protein, thiamine and niacin are very low. Nicaragua and Honduras have the highest riboflavin intake and Panama the highest intake of animal protein.

TABLE 1—AVERAGE FOOD CONSUMPTION/PERSON/DAY IN RURAL AND URBAN AREAS OF CENTRAL AMERICA

FOOD GROUPS*	GUATEMALA		EL SALVADOR		HONDURAS		NICARAGUA		COSTA RICA		PANAMA	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
Dairy products† ...	g 10	g 129	g 46	g 118	g 136	g 231	g 316	g 378	g 114	g 200	g 47	g 75
Eggs ...	4	6	5	21	5	4	4	2	4	6	8	1
Meats and fish ...	34	45	21	66	49	59	32	71	20	50	83	87
Pulses ...	58	64	60	48	56	47	85	45	64	68	54	20
Fresh vegetables ...	61	46	32	82	127	82	214	31	82	82	6	30
Fruits... ...	23	33	1	34	30	33	8	16	49	22	36	26
Musaceae ...	2	16	27	44	18	24	16	58	51	52	36	67
Starchy roots ...	5	9	5	14	9	32	7	15	24	80	35	29
Cereals ...	494	290	326	244	367	264	182	231	250	240	189	183
Sugars ...	47	40	32	32	40	33	33	54	122	112	53	43
Fats ...	1	7	6	23	5	21	12	22	7	17	35	26

\* Amounts of edible portions.

† In terms of liquid milk.

TABLE 2—INTAKE/PERSON/DAY OF CALORIES AND NUTRIENTS IN RURAL AND URBAN AREAS OF CENTRAL AMERICA

NUTRIENTS	GUATEMALA		EL SALVADOR		HONDURAS		NICARAGUA		COSTA RICA		PANAMA	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
Calories ...	2,243	1,727	1,666	1,723	1,964	1,740	1,623	1,843	1,822	2,049	1,927	1,454
Total protein g	66	53	48	52	59	54	55	60	40	53	55	44
Animal protein %	11	24	12	35	24	35	31	45	20	30	36	50
Calcium ... mg	1,320	787	782	664	846	732	701	750	480	554	200	200
Iron ... mg	23	18	13	18	31	23	27	24	27	25	12	14
Vitamin A ... I.U.	2,273	1,300	547	2,110	1,447	3,530	1,493	1,337	977	1,480	438	338
Thiamine ... mg	1.4	0.9	0.9	0.9	1.2	0.9	1.0	0.7	0.7	1.0	0.7	0.6
Riboflavin ... mg	0.7	0.7	0.5	0.8	1.0	0.9	1.0	1.2	0.7	0.9	0.6	0.5
Nicotinic acid mg	12.2	8.8	8.4	10.0	11.1	9.7	9.5	9.3	6.9	10.1	10.2	9.8
Ascorbic acid mg	35	38	37	68	52	52	36	38	62	68	48	41