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Agriculture, Food Security and Health in The Caribbean: An Indispensable Link

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INTRODUCTION

This paper articulates the need for a new food systems paradigm for agriculture that combines the current emphasis on productivity and sustainability with health and nutritional goals. New concerns have emerged in the Region that make it imperative for policy-makers to reassess the role of agriculture, and its relationship with other sectors, in the economy. In particular, there is an urgency to establish food and nutritional goals so that the Region's agriculture and food systems can deliver adequate and nutritionally appropriate quantities of food, especially to low-income and vulnerable groups. Empirical data show that the Region is in an epidemiological transition, whereby non-communicable nutrition-related chronic diseases as the major causes of death have replaced infectious and communicable diseases. These diseases cut across socio-economic, spatial and demographic lines, and are associated with a sedentary life style, and changes in diets which can be linked to domestic and import food policies.

This paper conceptualizes food security in terms of food access, availability, and nutritional and health considerations, and articulates the interaction between food security, health status and food policy in the Caribbean region. The inter- and intra-sectoral linkages, which this interaction implies, remain to be fully appreciated and exploited by regional policy-makers. This must be corrected in light of the prevailing nutritionally-related health problems in the region. It is also an urgent task in light of the globalization process that is currently transforming world economic relationships, which makes nations, hitherto local, national and regional, an integral part of a common unifying global system. The paper advances the search for ways in which domestic policies and globalization can be guided to address the food and nutrition problems in the Region, especially for low-income people and those who are in a position of vulnerability.

Following this Introduction, Section 2 develops a conceptual background to the paper. Section 3 presents some empirical data on the epidemiological, dietary and demographic transitions in the Caribbean

region, and the case for a new paradigm for agriculture is articulated in Section 4. Finally, the concluding remarks are made in Section 5.

CONCEPTUAL BACKGROUND

Food Security

This paper conceptualizes food security as transcending the narrow vision of the spatial and inter-temporal physical availability and sufficiency of food, to include the socio-economic and nutritional aspects of having adequate economic and physical access to safe and nutritious food supplies (i.e., both external food entitlements, that is, prior to dietary intake, and the body's physiological or internal entitlements to food) (UN ACC/SCN 1991). Food security is, therefore, an integral part of a process of nutrition and health development and embodies several major components - food availability, household access, nutritional adequacy, sustainability, and vulnerability (Ruel, et al., 1998). Food security overlaps with many sectors - health, trade, agriculture, environment, marketing and culture - and this conceptualization provides an entry point for nutritionists and others who are interested in food security, and also facilitates the search for synergies between and among the various sub-sectors.

Figure 1 depicts the food-health path. Three aspects of the food-health path must be emphasized. First, the nutritional and health status of the population are influenced by several seemingly disparate and unrelated sectors - domestic and import sources of foods, income, prices, marketing, distribution, etc. Second, good nutrition

depends not only on access to adequate and nutritious foods, but also on the quality of diets, food preparation practices, educational levels, and intra-household food distribution.

Finally, any conceptualization of food security must be cognizant of the inter-relationship between food, health and nutrition. In this regard, it is useful to recall that in the early post-World War II period, food security was defined in terms of production and availability, but in the 1970s economic accessibility to foods was considered important to the definition. In the 1980s, it became increasingly obvious that food security had to be situated at the household level, with particular attention to women, children and other vulnerable groups. Given the nutritional and epidemiological transitions that developing countries are currently experiencing, it is critical that food security embodies health and nutritional goals.

Theoretical Perspective

The Caribbean and other developing countries are in a rapid transition in terms of patterns and levels of physical activity, dietary structure, and patterns of obesity and nutrition-related, non-communicable chronic diseases. Developed countries have already experienced these transitions and are now implementing policies to alleviate the debilitating excesses following these transitions. The available data from both the developed and developing countries now suggest a general theory for these causally and chronologically linked dietary, nutritional and epidemiological transitions (Popkin, Horton and Kim, 2001). This theory suggests

that, as part of the development and modernization processes, populations undergo significant demographic and techno-logical shifts which impact on their food supplies and diets. As a result, the nutrition and disease patterns also change.

The demographic transition, characterized by distinct migration patterns from rural societies with low life expectancy at birth and families with many children, to urban centers with higher life expectancy at birth and families with fewer children, is well documented (Bongaats and Watkins, 1966; Bulatao and Lee, 1986). Urbanization and new technologies result in a shift away from physically active to more sedentary lifestyles, including less walking and cycling, increased use of labor saving devices both at home and in the office, and more cars and television. The nutritional transition is characterized by a shift away from diets based on locally grown indigenous staples (grains, starchy roots), locally grown fruits, vegetables, legumes, and limited foods from animal origin, to diets that are more varied and energy-dense, consisting of foods that are more processed (including processed beverages), more of animal origin, more added sugars and fats, and often more alcohol. A reduction of malnutrition and infectious diseases and an increase in diet-related chronic diseases such as obesity, hypertension, non-insulin dependent diabetes, stroke, cardio-vascular diseases, and some forms of cancers characterize the epidemiological transition.

EPIDEMIOLOGICAL DIETARY AND DEMOGRAPHICAL TRANSITION – EMPIRICAL EVIDENCE

Several studies have shown that nutrition-related chronic diseases such as obesity, diabetes, high blood pressure, stroke, heart diseases, and cancer have replaced malnutrition and infectious diseases as the major public health problems in the region (Henry, Morris and Anderson, 1997; Sinha, 1995). The case of Jamaica is depicted in Figure 2, for the years 1950-1990. Further, the burden of disease, disability, and premature death has shifted from young children to adults in the productive years of their life. Unbalanced diets and a sedentary lifestyle have increased the prevalence of chronic non-communicable diseases, even among the poor.

For the past two and a half decades there has been an increase in the prevalence of obesity throughout the region, principally in adults, but also to some extent in adolescents and infants. Associated with obesity is the concomitant increase in nutrition-related chronic diseases. It is important to note that the costs, in terms of lost productivity and the share of healthcare system costs attributable to non-communicable diseases, increase in tandem with the shift in mortality patterns. Additionally, non-communicable diseases are shown to be more costly to treat than communicable ones (Popkin, Horton and Kim, 2001). There are no rigorous studies on the cost of obesity and its co-morbidities for the Caribbean, but studies done in the developed countries and few developing countries show that these diseases involve

significant economic costs to patients and to the health system and the overall society (Colditz, 1992; Wolf and Colditz, 1998; West, 1994; Popkin, Horton and Kim, 2001).

With respect to the demographic shifts, Figure 3 shows that the aggregate urban population for the English speaking Caribbean has increased continuously over the past four decades and has overtaken rural population levels since the early 1980s. This trend continues. Further, the rate of urban population increase since the early 1980s has exceeded that in the earlier period. With the exception of St. Lucia and to a lesser extent Belize, this is also the pattern for the individual Caribbean countries (FAO, 2002). As people move to urban areas, several factors combine to create different patterns of food supply and demand. These include, *inter alia*, urban occupations, population concentrations, transportation networks, food marketing systems, etc. Consequently, food supplies, diets and body composition change.

Nutritionists recommend that 55% to 65% of dietary energy should come from complex carbohydrates (food from plant origin except sugar and oil), and sugar be limited to less than 10% of energy, protein about 10% and fat less than 25% (Henry, Morris and Anderson, 1997). At the aggregate level, food balance sheet data show that for the Caribbean region, energy from fats and sugars has exceeded the recommended population goals from as early as the 1960s and has increased consistently up to the 1980s (Figures 4-5). The data also show that the imports of both fats and sugar have been increasing over

the years. While the contribution of fruits and vegetables has been increasing since the 1960s, consumption remains well below the recommended population goals (Figure 6). In addition, the contribution of imports continues to outstrip that of local production. This pattern of consumption of fats, sugars and fruits and vegetables at the individual country level, with very slight variations, hold for most of the countries in the Caribbean (FAO, 2002).

There are three important aspects of the information presented in Figures 4-6 that must be emphasized. First, the graphs clearly demonstrate a major element of food insecurity in the Region, namely the failure of the food system to meet the nutritional and health requirements of the population. It is for this reason that nutritional goals must be established so that the Region's agricultural and food systems can deliver adequate and nutritionally-appropriate quantities of food, especially to the poor and marginalized groups of the society.

Second, the information presented in the graphs underline the importance of an efficient surveillance system as a critical element in decision-making. The achievement of food security is not an automatic process but depends on conscious, deliberate and focussed policies designed specifically for the task. The information needed to conduct this kind of intervention is not trivial, and entails knowing who are food-insecure and who are the most vulnerable groups, where they are located, the nature and causes of the food insecurity problem, and other related data.

Third, currently, as in the past, the emphasis in the Region, with respect to food security, is on the supply side. This is understandable. The litany of constraints to production and distribution that farmers face in the region appear to be insurmountable. Additionally, the uncertainty of food supplies from foreign sources as a result of the events of September 11, 2001, in the USA, has opened up the debate in the Region on reducing import food dependency, reducing the food deficit, increasing food production and improving competitiveness and quality of produce. However, on the demand side, there is an urgency to improve access to, and distribution of, adequate and healthful food through efficient marketing channels and through availability of income. The current disproportionate focus by regional policy-makers on the supply side of the food security equation must be corrected in light of the prevalence and negative impact of nutrition-related chronic diseases in terms of quality of life and loss of labor productivity in the Region. At the household level, income inequality and poverty are major factors that impact negatively on food security. Although substantial advances have been made in economic and social development in the Region over the years, poverty is still pervasive in several countries, with the greatest concentrations in Belize, Guyana, Jamaica and Trinidad. This has been made worse in recent years following economic reforms and globalization.

At the national level, evidence suggests that the nutritional profiles of most Caribbean countries, while fairly good, can be improved, since pockets of malnutrition and

micronutrient deficiencies exist in several countries. Indeed, rapid urbanization and imbalances in diets have resulted in the co-existence of malnutrition and obesity within many households in the Caribbean region. This is an additional reason why food security must embody aspects of health and nutrition, rather than be concerned only with production and availability of food.

While food balance sheets paint a favorable picture of the availability of staples in the region (FAO, 2002), there are several emerging concerns that warn against complacency: (i) as shown in Figures 4-6, the food systems are not providing enough balanced nutrient output to meet all nutrient goals, thereby compromising food security in the Region. This is particularly important in light of the fact that nutrition-related chronic diseases have overtaken infectious diseases as the major health problem in the region; (ii) small farmers, who supply a large proportion of food to the domestic markets, have been adversely affected by the liberalization activities, both in terms of the higher prices they must pay for credit and other inputs, and the increased competition they now face from low-priced imports; (iii) as preferential markets for traditional crops, such as bananas, erode, small farmers will face a transitional period making their economic future uncertain. Hence, specifically designed programs to assist these persons to move into other income-generating activities will be critical to sustaining food security and preventing further economic hardships.

IMPERATIVES FOR PARADIGM CHANGE

The health and nutritional concerns which have been raised in this paper were brought into sharp focus by data published by the World Health Organization (1992), and the World Bank (1994), in the last few years, regarding the nutritional deficiencies, diet-imbalances and the general deteriorating health status of large proportions of people in the developed and developing countries, especially people who are in vulnerable situations. These are basic and incontestable reasons upon which to argue for a new paradigm in agriculture, building upon the production/sustainability orientation that already exists, but incorporating issues related to diets, health and nutrition. This new paradigm must begin with a change in the mind-set of policy makers. The conceptualization captured in Figure 1 earlier suggests a systems approach, and also clearly demonstrates that health issues cannot be mere appendages to agricultural policies but must be an integral part of policies and strategies of several sectors of the economy. In the past, the issues of health status, food security, diets, and agricultural trade, have been approached in the Region as originating from disparate, unrelated sectors of the economy. However, there are strong links between and among these sectors, and recognizing and acting upon them can contribute to the sustainability of development and to the enhancement of health status in the Caribbean.

A useful way of conceptualizing the links and the interactions is to view the sectors as opportunities for finding common ground in

order to maximize mutual benefits. This is tantamount to policy coherence, that is, efforts directed at seeking synergies between policies of different sectors that support their common goals. This requires frequent dialogues, constructive engagement and coordinated action among policy makers from all the sectors in order to achieve the right balance among the various objectives and goals of the sectors. In effect, this supports the need for a multi-sectoral approach to address the problems of food security, health status and sustainable development in Caribbean countries.

The synergy between food availability, consumption and health has long been recognized by CFNI (Sinha, 1992; 1995). Inadequate quantity or quality of food consumed deprives the body of nutrients that help to protect it from diseases, and the quality of diets influences the body's immune response capacity. For example, protein energy malnutrition and specific nutrient deficiencies reduce the body's ability to resist infection. This leads to greater severity, a higher incidence, and more prolonged duration of illness. Further, infection affects food intake and utilization by (i) reducing dietary intake through loss of appetite; (ii) increasing nutrient requirements due to increased nutrient loss during illness; and (iii) creating a metabolic response that both stimulates the immune response and suppresses body growth (Beisel, 1984; Stephenson, et al. 1994; Campos, Flores, and Underwood, 1987; Mahalanabis, 1991).

This information is particularly useful to Caribbean countries where, although malnutrition and infectious diseases have

been on the decline, pockets of these health problems still exist, especially in rural and inner-city communities (Henry, Morris and Anderson, 1997; CFNI, 2001). Equally important, as real incomes fall, and relatively cheaper imported foods that are high in fats and calories but low in complex carbohydrates become more available, traditional diets (high in complex carbohydrates) have been largely supplanted by diets that are high in fats and sugars and red meats, predisposing consumers in the Region to obesity and its related diseases (Henry, Morris and Anderson, 1997; Sinha, 1995). Consequently, this observation motivates the need for comprehensive studies on productivity and competitiveness, since ultimately, the rational consumer demands products whose prices compare well with close substitutes, whether domestic or imported. In other words, people consume less-healthy foods because of cost and availability (i.e. they make economically rational, but nutritionally detrimental decision to consume foods). Hence, poor diet is as much a health-education issue as it is an economic one.

Agricultural development implies a link of the sector to health and nutrition, given the food and employment generation functions which agriculture is expected to perform. However, this synergy and its importance in policy making have not been explored explicitly in the Caribbean. Since 1971, the Caribbean region has been a net food importer, and currently spends well over \$US1 billion annually on food imports to close the gap between food consumption and domestic food production (Davis, et al.,

1999). This includes most of the energy and protein requirements. Some countries, for example, import about 70% of dietary energy and approximately 60% of protein. Table 1 shows that since the late 1980s, with the trends towards trade liberalization, the food import indices for most regional economies have increased significantly (FAO, 2002).

CONCLUSION

In the past, there have been several programs to deal with food insecurity in the Region, but no systematic attempt to use food and nutritional policies to address the Region's major health problems. The current period provides a good opportunity for policy makers to take a new vision, one that seeks to address, on a national and regional scale, nutritional well-being and public health issues in terms of food production, marketing and the general food supply systems. The developed countries have instituted several policies and programs over the years to deal with their nutrition-related chronic diseases. While there are lessons to be learned from these experiences, they are nonetheless of limited applicability to developing countries. These programs are being implemented at very late stages in the demographic, nutritional and epidemiological transition, when these countries' traditional agricultural and food systems long-established diets have mostly disappeared.

The Caribbean region is still at an early or mid-way part of this transition. Fortunately, significant traditional agriculture, food system, and food habits still flourish or at least survive. Several countries in the

Region still produce significant amounts of food to sustain traditional diets based on fruits, pulses, and roots, the main sources of complex carbohydrates. However, the processes of globalization and economic reforms are rapidly displacing these traditional diets and leading to health problems that impact significantly in term of costs on the health system. It is imperative that policy makers take a different approach to issues of food security, health and nutrition than in the past. In this regard, food

security policies must strive to straddle the problems of both under- nutrition and over-nutrition. This means a radical departure from the received paradigm, which equated food security with food sufficiency. In particular, a new paradigm in agriculture is required, and a multi-sectoral and synergistic approach to solving the food, health and nutritional problems of the Region must be engendered.

Table 1. Food Import Value Indices, Selected CARICOM Countries (Period Averages, 1989=100)

Countries	1966-69	1976-79	1986-89	1996-99
Antigua & Barbuda	14	34	80	92
Bahamas	19	35	95	88
Barbados	22	60	87	119
Belize	19	62	94	115
Dominica	13	32	77	127
Grenada	15	41	80	136
Guyana	50	131	71	149
Haiti	6	38	74	162
Jamaica	27	69	89	152
St. Kitts/Nevis	17	39	84	132
St. Lucia	8	31	77	130
St. Vincent/Grenadines	12	47	83	133
Suriname	28	85	77	291
Trinidad & Tobago	22	77	103	117

Source: FAOSTAT.<http://www.fao.org>. February 19, 2002.

THE FOOD-HEALTH PATH

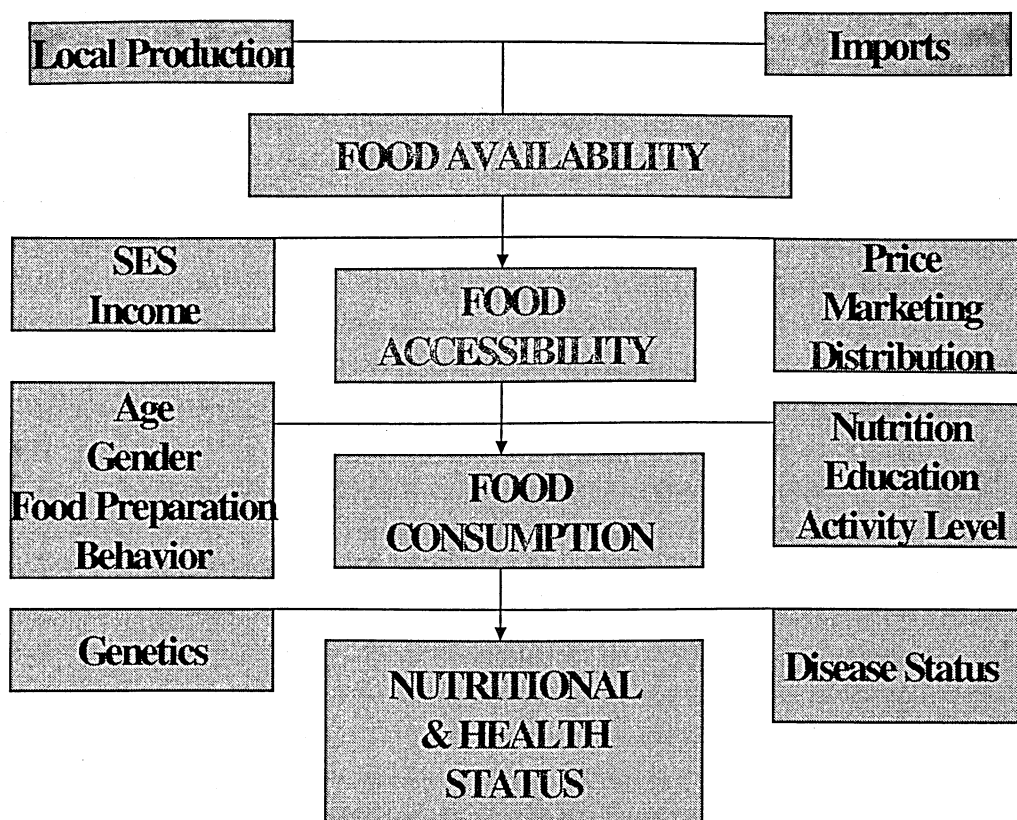


Figure 1. The Food-Health Path

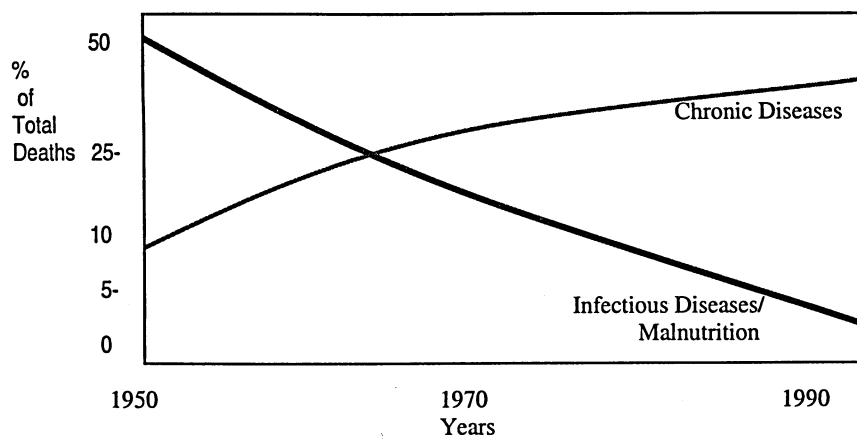


Figure 2. Mortality Transition from Infectious Diseases/Malnutrition to Chronic Diseases in Jamaica, 1950-1990.

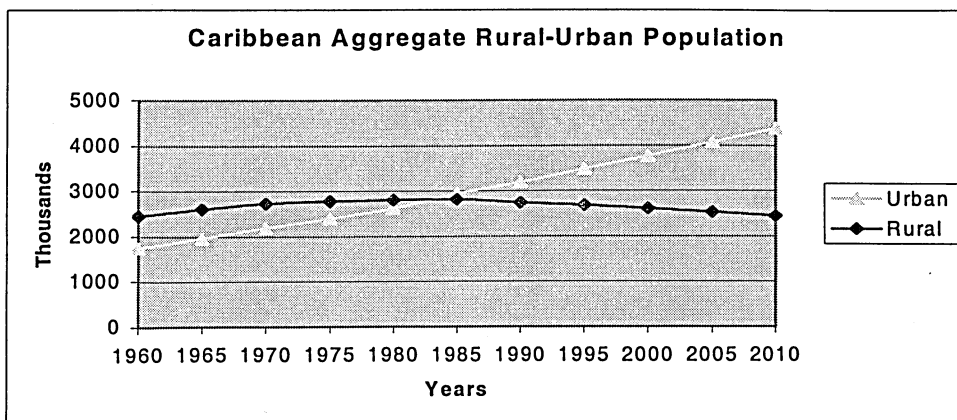


Figure 3. Aggregate Rural-urban Population in the Caribbean.

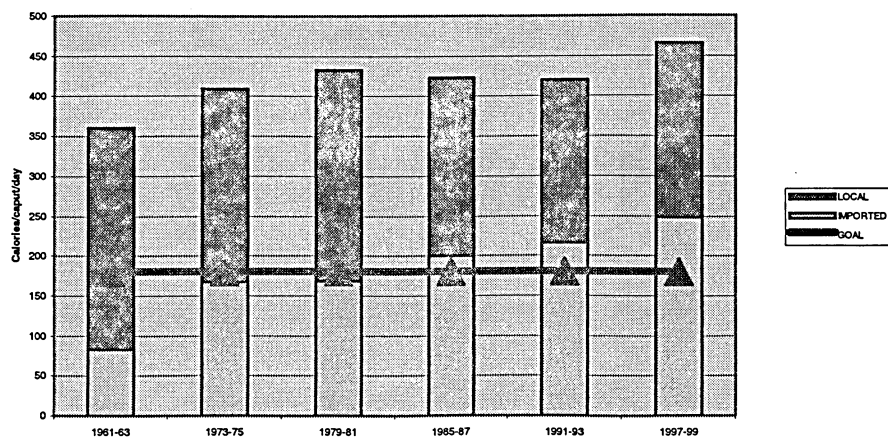


Figure 4. Contribution of Fats to Total Energy Compared to Population Goals in the Caribbean, 1961-99.

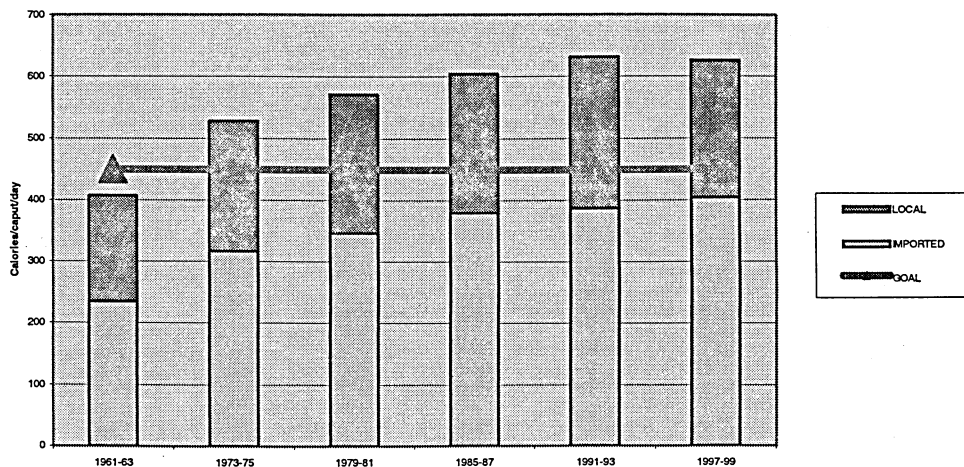


Figure 5. Contribution of Sugar to total Energy Compared to Population Goals in the Caribbean, 1961-99.

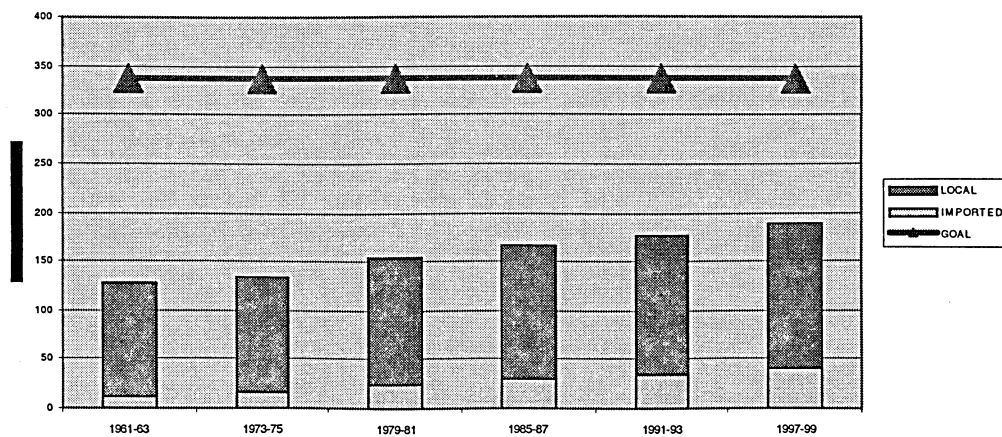


Figure 6. Contribution of Fruits and Vegetables to Total Energy Compared with Population Goals in the Caribbean, 1961-99.

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