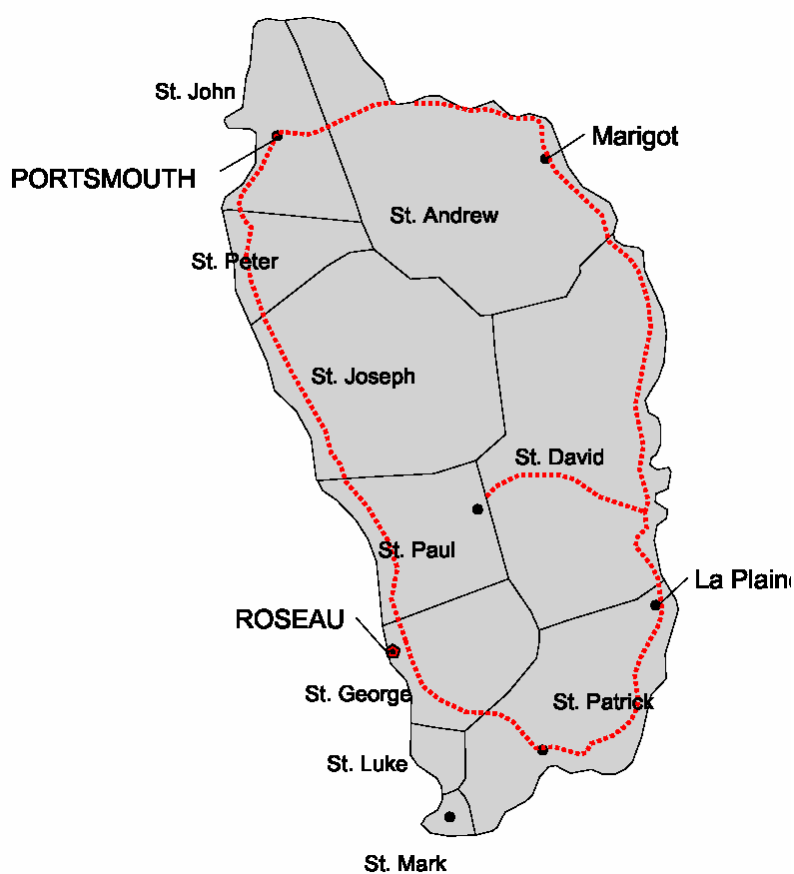


FAO - NUTRITION COUNTRY PROFILES

DOMINICA



**FOOD AND AGRICULTURE ORGANIZATION
OF THE UNITED NATIONS**

Note for the reader

The objective of the Nutrition Country Profiles (NCP) is to provide concise analytical summaries describing the food and nutrition situation in individual countries with background statistics on food-related factors. The profiles present consistent and comparable statistics in a standard format. This pre-defined format combines a set of graphics, tables and maps each supported by a short explanatory text. Information regarding the agricultural production, demography and socio-economic level of the country are also presented.

In general, data presented in the NCP are derived from national sources as well as from international databases (FAO, WHO...).

Technical notes giving detailed information on the definition and use of the indicators provided in the profile can be obtained from ESNA upon request. An information note describing the objectives of the NCP is also available.

Useful suggestions or observations to improve the quality of this product are welcome.

The data used to prepare the maps are available in Excel upon request at:

E-mail: ncp@fao.org

Nutrition Country Profile of Dominica
prepared by the Caribbean Food and Nutrition Institute (CFNI), Mrs. Jacqueline Prevost (Dominica) and Mr. Michael Ennis for the Food and Agriculture Organization of the United Nations (FAO, ESNA).

The designations employed and the presentation of material in this publication do not imply the expression of any opinion whatsoever on the part of the Food and Agriculture Organization of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers.

FAO, 2003



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-General Map of Dominica

Graphs, tables and maps can be visualised by clicking on the words in bold and underline, only in the “Full profile” pdf file.

SUMMARY

Overweight (weight for age) appears to be a bigger, and growing, problem than undernutrition among pre-school children in Dominica. Clinic data presented in the report on Obesity Prevention and Control Strategies in the Caribbean 1990 - 2000, showed an overall decrease in the level of undernutrition (weight for age) among children 0-5 years (attending clinic) over the period 1990-1999. The prevalence (among children attending clinic) of undernutrition decreased from 1.9% in 1990 to 0.9% in 1999, peaking at 2.3% in 1995. In contrast, the prevalence of overweight increased from 6.0% to 9.7% over the same period, peaking at 9.9% in 1995 among the same age group.

A micronutrient study carried out in 1996 by PAHO/CFNI, reporting on the weight for height status among children 1-4 years, indicated that 17.0% of the children were wasted while 7.2% were overweight (**Table 4a**). A significantly higher proportion of females were wasted compared with males, while interestingly a higher proportion of males were overweight compared with females. The prevalence of overweight and undernutrition vary greatly at the health district level. The children from Castle Bruce show the highest prevalence of wasting (30.0%), while those from Marigot have the lowest overweight prevalence (0.0%) (PAHO/CFNI, 1997).

While no single study of anthropometric measurements of adolescents is available, data from the food consumption study (1996) showed a 17.9% prevalence of obesity among the population aged 15 years and older, and 30.0% overweight (**Table 4b**), implying that the prevalence of obesity and overweight is high among adults as well as adolescents in Dominica.

Iron is the main micronutrient deficiency of public health concern in Dominica. The prevalence was 34.4% among children 1-4 years, 30.7% among those 5-16 years and 35.1% among pregnant women (**Table 5**). Among the 1-4 years age group, a significantly higher proportion of one year old children are iron deficient compared with the older children. There are marked variations at the health district level (among 1-4 years age group); Castle Bruce reported the highest deficiency (55.6%) and Portsmouth the lowest (30.0%) (PAHO/CFNI, 1997). A higher proportion (37.3%) of children 5-10 years is deficient in iron compared with children 11-16 years (22.8%). Among pregnant women, a higher proportion (50.0%) of those below 20 years of age is iron deficient compared with those older (32.5%) (**Table 5**).

The national survey on food consumption pattern and lifestyle completed in 1996, along with other sub-national surveys reveal that the average intake per person was 1749 calories, which appears to be an underestimation. The consumption of foods from animals and fat/oils (especially as part of condiments) is high among Dominicans. In fact, high status is accorded to the consumption of foods from animals (Maglorie and Prevost, 2000). The contribution of fat to dietary energy supply (DES) has increased between 1964-65 (19.5%) and 1998-2000 (24.2%), peaking at 24.9% in 1989-91 (FAOSTAT, 2002), and may be linked to the high prevalence of obesity and overweight in the population. The increasing demand that chronic diseases, diabetes and hypertension in particular, are placing on the health services may be a direct result of the high prevalence of obesity and overweight.

Despite the fact that 27.0% of the Dominican households live below the poverty line (based on the latest available figures), undernutrition is not as great a problem as is overweight. The poor and the unemployed are, however, still at risk for inadequate dietary intake, although the high level of poverty does not manifest itself in the expected levels of undernutrition.

TABLE 1: GENERAL STATISTICS OF DOMINICA

Last updated: 27/08/2003

Indicator (§)	Year	Unit	Indicator (§)	Year	Unit																										
A. Land in use for agriculture			G. Average Food Supply																												
1. Agricultural land	1995	ha per person	0.239																												
2. Arable and permanent crop land	1995	ha per person	0.211																												
B. Livestock			1. Dietary Energy Supply (DES)																												
1. Cattle	1996-98	thousands	13	1998-2000	kcal/caput/day																										
2. Sheep & goats	1996-98	thousands	17		2980																										
3. Pigs	1996-98	thousands	5																												
4. Chickens	1996-98	millions	0																												
C. Population			<p>Percentage of DES by major food groups</p> <table border="1"> <thead> <tr> <th>Food Group</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Cereals (excl. beer)</td> <td>24.3%</td> </tr> <tr> <td>Starchy roots</td> <td>9.6%</td> </tr> <tr> <td>Meat & offals</td> <td>10.3%</td> </tr> <tr> <td>Proteins</td> <td>12.7%</td> </tr> <tr> <td>Animal Fats</td> <td>10.0%</td> </tr> <tr> <td>Vegetable oils</td> <td>6.7%</td> </tr> <tr> <td>Sweeteners</td> <td>13.7%</td> </tr> <tr> <td>Fruits & Vegetables</td> <td>4.2%</td> </tr> <tr> <td>Pulses, nuts, oilcrops</td> <td>0.8%</td> </tr> <tr> <td>Fish & seafood</td> <td>5.3%</td> </tr> <tr> <td>Milk & Eggs</td> <td>0.0%</td> </tr> <tr> <td>Other</td> <td>0.0%</td> </tr> </tbody> </table> <p>Note: Value not indicated if below 1%</p>			Food Group	Percentage	Cereals (excl. beer)	24.3%	Starchy roots	9.6%	Meat & offals	10.3%	Proteins	12.7%	Animal Fats	10.0%	Vegetable oils	6.7%	Sweeteners	13.7%	Fruits & Vegetables	4.2%	Pulses, nuts, oilcrops	0.8%	Fish & seafood	5.3%	Milk & Eggs	0.0%	Other	0.0%
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Other	0.0%																														
1. Total population	2000	thousands	71000																												
2. 0-5 years	2000	% of total pop.	...																												
3. 6-17 years	2000	% of total pop.	...																												
4. 18-59 years	2000	% of total pop.	...																												
5. >= 60 years	2000	% of total pop.	...																												
6. Rural population	2000	% of total pop.	29.6																												
7. Annual population growth rate, Total	2000-2005	% of total pop.	...																												
8. Annual population growth rate, Rural	2000-2005	% of rural pop.	...																												
9. Projected total population in 2030	2030	thousands	70000																												
10. Agricultural population	2000	% of total pop.	...																												
11. Population density	1995	pop. per km ²	94.7																												
D. Level of Development			% Energy from:																												
1. GNP per capita, Atlas Method	2000	current US\$	1	2. Protein	1998-2000 % of total energy																										
2. Human Development Index rating (new)	1997	min[0] - max[1]	6.776	3. Fat	1998-2000 % of total energy																										
3. Incidence of poverty, Total	...	% of population	3040	4. Proteins	1998-2000 g/caput/day																										
4. Incidence of poverty, Rural or Urban	...	% of population	...	5. Vegetable products	1998-2000 % of total proteins																										
5. Life expectancy at birth (both sexes)	2000	years	...	6. Animal products	1998-2000 % of total proteins																										
6. Under-five mortality rate	2000	per 1,000 live births	16																												
E. Food Trade			H. Food Inadequacy																												
1. Food Imports (US \$)	1996-98	% of total imports	18.0	1. Total population "undernourished"	1995-97 millions																										
2. Food Exports (US \$)	1996-98	% of total exports	43.2	2. % population "undernourished"	1995-97 % of total pop.																										
3. Cereal Food Aid (100 t)	1996-98	% of cereals imports	no data available																										
F. Indices of Food Production			§ see References for data sources used																												
1. Food Production Index	1996-98	1989-91=100	88.8																												
2. Food Production Index Per Capita	1996-98	1989-91=100	89.2																												

DOMINICA

I. OVERVIEW

1. Geography

The Commonwealth of Dominica became independent from Great Britain in 1978. It is the largest of the Windward Islands, and lies between the French dependent territories of Martinique and Guadeloupe. Dominica extends across 790 km²; its land mass is of volcanic origin (dotted with volcanic vents and hot springs), and is considered to be the most seismically active location in the area (PAHO, 2002). The island's topography is the most mountainous in the Commonwealth Caribbean, with its highest peak (Morne Diablotin) rising 1,447m. The island has lush forests (65% covered with rainforest), rich soil and an abundance of rivers (**General Map**).

Dominica has a tropical climate with occasional hurricanes. Rainfall is abundant and ranges from 1,200 mm per year on the east coast to 8,000 mm in the island's central areas (PAHO, 2002).

Dominica is divided into 10 regions, or parishes. The most populous is the Parish of St. George, where the capital city and main port, Roseau, is located. According to the 1991 Population and Housing Census Report, the population of St. George was 20,365, or 28.6% of the country's total population. The population of Dominica tends to be concentrated in coastal towns and villages because of the centrally located mountain range (PAHO, 2002).

2. Population

The mid-year population of Dominica was estimated at 71,000 in 2000, with 70.4% living in urban areas. However, the population is projected to decline to 70,000 (81.4% urban dwellers) by 2030 (UN, 2002). The 1991 National Population and Housing Census showed a revised final count of 71,373 persons, a decline of 2,420 (3.3%) since the 1980 census. This drop has been largely due to emigration, which has been a characteristic demographic feature of Dominica since 1960. The cities of Roseau and Portsmouth had populations of 15,853 and 4,644, respectively in 1995, with the remainder spread out among rural villages (PAHO/WHO, 1999.a).

In 1995 the population density was reported to be 95 persons per km², the same as in 1990 and down from a high of 99 in 1975 (FAOSTAT, 1999). In 1997-1998, the crude birth rate was 17 per 1,000 population (PAHO, 2002), a decline from that recorded in 1995 (20.1 per 1,000 population) (PAHO/WHO, 1999.a). The crude death rate remained fairly constant in 1998 and 1999, averaging 8 per 1,000 persons (PAHO, 2002). The fertility rate has been on the decline for more than a decade. The average for 1996-1999 was 82.7 per 1,000 women 15-44 years old, compared with 119.5 per 1,000 in the previous four-year period (PAHO, 2002). In 1991, the total fertility rate was reported at 3.0 children per woman, decreasing from 4.2 in 1981 and was expected to reach 2.9 in 1995 (PAHO/WHO, 1999.b). The population is relatively young, with 32.5% under the age of 15 years and 12.5% was 60 years old and older (PAHO, 2002). The total number of households was 17,310 in 1980 and 19,374 in 1991, an increase of 16.5% in the period between the last two census years. Most of these households

were owner-occupied (72.0%), with 19.2% private-rented; 36.9% were headed by females (PAHO/WHO, 1999.a).

Dominica is the only Eastern Caribbean territory with an indigenous Carib population, which is estimated to be around 4,500 persons. The Carib people are mainly concentrated in a reservation of some 15.3 km that stretches for 13 km along the eastern coast and up into the ridges behind. Carib villages are located in Castle Bruce and Marigot health districts (PAHO/WHO, 1999.a). The Carib population is young, with 70% under 30 years of age and 40% under 19 years old. English is the official language of the country, but French Creole is widely spoken.

3. Level of development: poverty, education and health

The 1995 poverty assessment survey for Dominica showed that 27% of households live in poverty and are unable to adequately meet their basic needs, including their nutritional needs. Further, the assessment concluded that despite considerable improvements in specific living conditions, there was a great deal of poverty and an intensity of poverty and vulnerability (PAHO/WHO, 1999.a). The country is attempting to identify issues and priorities for poverty reduction and alleviation and began preparation of a National Integrated Development Plan in 2000 (PAHO, 2002). The human development index (a composite measure of life expectancy, health, knowledge and living standard) was estimated at 0.779 in 2000 (UNDP, 2002). Gross national product (GNP) per capita, using the Atlas method (current US\$), was estimated at US\$ 3,060 in 2000, down from US\$ 3,260 in 2000, and US\$ 3,160 in 1999 (World Bank, 2002).

There is no compulsory education policy in Dominica. However, both males and females have historically maintained a relatively high level of school enrolment. In 1999-2000, primary-school enrolment was 93% and secondary-school enrolment was 88.3% (the highest ever in the country). However, enrolment at the tertiary level remains low, with only 16% of secondary-school students going on to the tertiary institution (PAHO, 2002). In 1993, 91.6% of the population 5–19 years old were registered in the school system, a percentage that has remained relatively stable for a decade. In 1993, the population's level of education attained was as follows: 67.1% completed primary school education, 15% completed secondary and post-secondary education, and 1.7% reached university or completed an advanced-level education and training (PAHO/WHO, 1999.a).

Almost two-thirds of the population terminate their formal education at the primary school level, at about the age of 15 years. The 1991 census report found that only 36% of the population aged 15–19 years were enrolled in the school system; 10.5% of the adult population had no formal education and could, therefore, be regarded as functionally illiterate (PAHO/WHO, 1999.a). However, the literacy rate in 1998 was 85%, 84% for females and 86% for males. The highest illiteracy rates were among persons over 50 years of age (PAHO, 2002).

Life expectancy at birth for the period 1993-1999 was 76 years (World Bank, 2000). This is a significant increase over the 67.8 years estimated for the period 1992-1995 (PAHO/WHO, 1999.a). In 1999, there were 22 centenarians in Dominica, including the world's oldest person (PAHO, 2002). In 2000, the infant mortality rate was 14 per 1000 live births (down from 17 in 1998), while the mortality rate for children under 5 years was 16 per 1000 live births in the same year (UNICEF, 2002).

Chronic diseases are very prominent in Dominica, and have been targeted for special attention by the health authorities. Diabetes and hypertension are currently the most common reasons for health care demand, with 2,044 persons (0.7% of total population) with diabetes

and 4,041 hypertensives (5.3% of total population) registered at primary care clinics as of December 1999 (PAHO, 2002). Unpublished data from the Ministry of Health revealed that in 1993 the prevalence of hypertension (BP > 140/90) was 20.0% among adults 18-60 years, 19.7% among persons 15 years and older and 80.0% among females 65 years and older. A 2.0% prevalence was reported for diabetes among persons 18-60 years (CFNI, 2000). The chronic diseases tend to afflict mainly the elderly (60 years and older), who made up 9.8% of the population at the end of 1995 (PAHO/WHO, 1999.a). Between 1996 and 1999, malignant neoplasms were among the top three causes of death in Dominica (PAHO, 2002). One of the driving forces behind the prevalence of these chronic diseases is the level of obesity in the population. An unpublished national study carried out in 1996, revealed that among the population, 12 years and older, 17.9% were obese and that another 30% were overweight (CFNI, 2000).

Communicable diseases such as gastroenteritis, typhoid, dysentery still affect a relatively small proportion of the population each year. These three along with tuberculosis, which continues to be a public health concern, are the most common forms of infectious diseases (PAHO/WHO, 1999.a).

4. Agricultural production, land use and food security

Dominica produces a variety of agricultural products, which are used for local consumption and export. In terms of volume, the main agricultural crops produced since 1992 have been bananas (the primary export), citrus, coconuts, and root crops, in that order. Combined, they account for 20.3% of GDP (PAHO/WHO, 1999.a). Several forms of livestock are also reared on the island. These include cattle, sheep and goats, pigs and chickens in 1996-98 (FAOSTAT, 1999). The contribution of agriculture as a percentage of GDP has been on the decline for at least the last two decades, accounting for 32.9% in 1979, 24.0% in 1989 and estimated to have contributed 18.5% in 1999 (World Bank, 2000). Dominica is not self-sufficient in food production, especially in food high in protein. Imports of meat and meat products, milk and cheese, and fish and fish products accounts for over US\$ 7.4 million (2% of GDP) annually (PAHO/WHO, 1999.a).

The total agricultural land was shared in 0.239 hectare per caput in 1995 down from 0.271 hectare in 1970. The agricultural land included 0.211 hectare per caput of arable and permanent crop/meadow land in 1995, down from 0.243 hectare in 1970 (FAOSTAT, 1999). In the year 2000, the forest area was estimated at 460 sq. km (World Bank, 2002). No figures were available for the agricultural population.

5. Economy

Dominica's economy has been traditionally described as small, open, and especially vulnerable to external shocks. In recent years Dominica has been trying to shift from an over-reliance on banana exports to a more diversified economy. Special emphasis is being placed on tourism (PAHO, 2002). The Dominican economy experienced sluggish growth during the 1990s. Between 1992 and 1995, the gross domestic product grew in real terms at an average annual rate of just 2.1%. In comparison, during the 1986-1990 period, GDP increased at an average annual rate of 5.6%. This flattening of economic growth was due in large measure to the poor performance of the banana industry, which dominates agricultural output: banana exports fell by 30.9% between 1994 and 1995 (PAHO/WHO, 1999.a). The increasing trend toward trade liberalization, and specifically the World Trade Organization's 1997 ruling against the European Union system of issuing preferential license to banana exporters in African, Caribbean, and Pacific countries have had a significant negative impact on the Dominican economy (PAHO, 2002).

The real per capita GDP of Dominica rose from US\$ 2,077 in 1996 to US\$ 2,177 in 1999, a 4.8% increase over the period (PAHO, 2002). This represents an economic down turn when compared to the 1988–1991 period, which showed an 8.1% increase (PAHO/WHO, 1999.a). The communication sector is the fastest growing sector of the economy, having registered the highest growth (43%) over the period 1996 to 1999. Real expansion in the communication sector is followed closely by gains in the banking and insurance and the construction sectors. In terms of overall contribution to the GDP, however, the dominant sectors have been agriculture. Banana remains the highest contributor to the GDP, averaging 19.4% for 1997-1999. Agriculture is followed by government services, banking and insurance, wholesale and retail trade, and communications in that sequence for the year 1999. Socioeconomic conditions in the rural area have deteriorated as a result of the decline of the banana industry (PAHO, 2002).

Unemployment was estimated at 23% in 1997, which represented marked increase over the level reported in 1991 (9.9%). In some parishes, unemployment may be as high as 45.9%. It is estimated to be approximately 27% and 20% among women and men respectively. Among persons 15-30 years old, the unemployment rate is 34%. A large proportion of the labour force appears to lack the training and skills that would result in suitable employment. The government appears to be addressing this problem by organising youth skills training programs in urban and rural areas (PAHO, 2002).

II. THE FOOD AND NUTRITION SITUATION

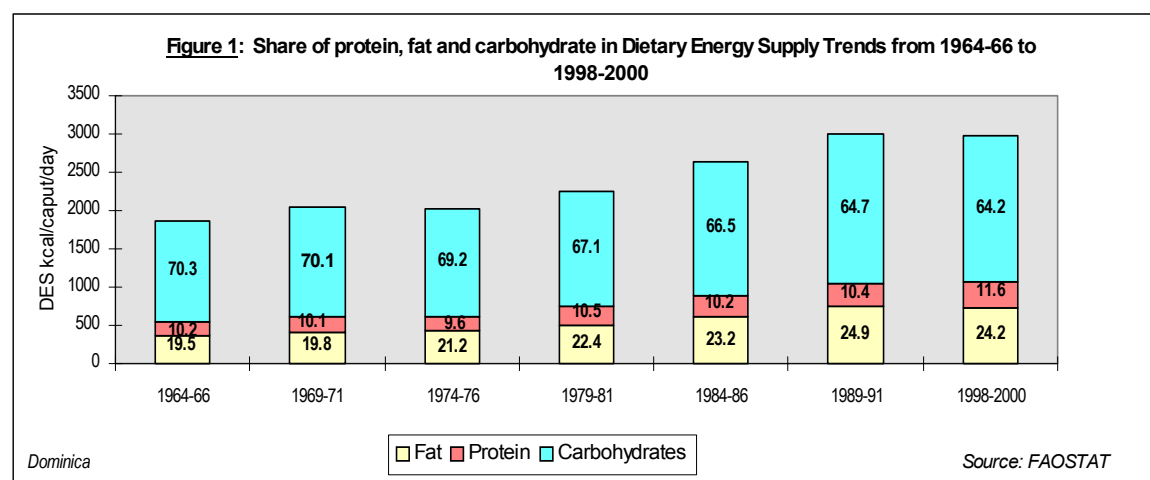
1. Trends in energy requirements and energy supplies

The population of Dominica increased overall by 7.6% between 1965 and 2000, with the proportion of urban residents rising from 47% to 70.4% over the same period (UN, 2002). The population is projected to be 70,000 in 2030, a decline of 1000 from the 2000 figure. The urban population is projected to increase from 70.4% in 2000 to 81.4% in 2030 (**Table 2**). The per caput dietary energy supply (DES) increased by 59.1% between 1965 and 2000, but no comparison could be made (to assess the adequacy of food supply) with the per caput energy requirements as no data were available for the latter.

Table 2: Total population, urbanisation, energy requirements and dietary energy supplies (DES) per person and per day in 1965, 2000 and 2030

Year	1965	2000	2030
Total population (<i>thousands</i>)	66000	71000	70000
Percentage urban (%)	47.0	70.4	81.4
Per caput energy requirements (<i>kcal/day</i>)	...	...	...
Per caput DES (<i>kcal/day</i>)*	1873	2980	—

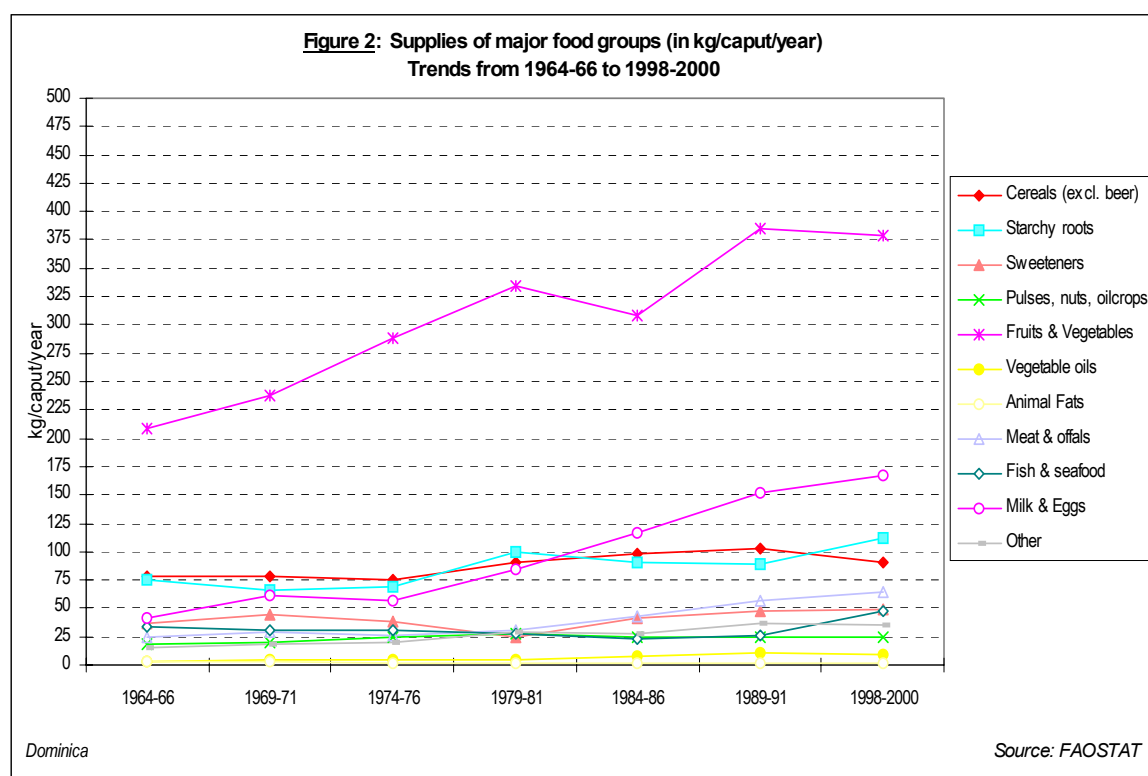
* Three-year average calculated for 1964-66 and 1998-2000 (*Source: FAOSTAT*)



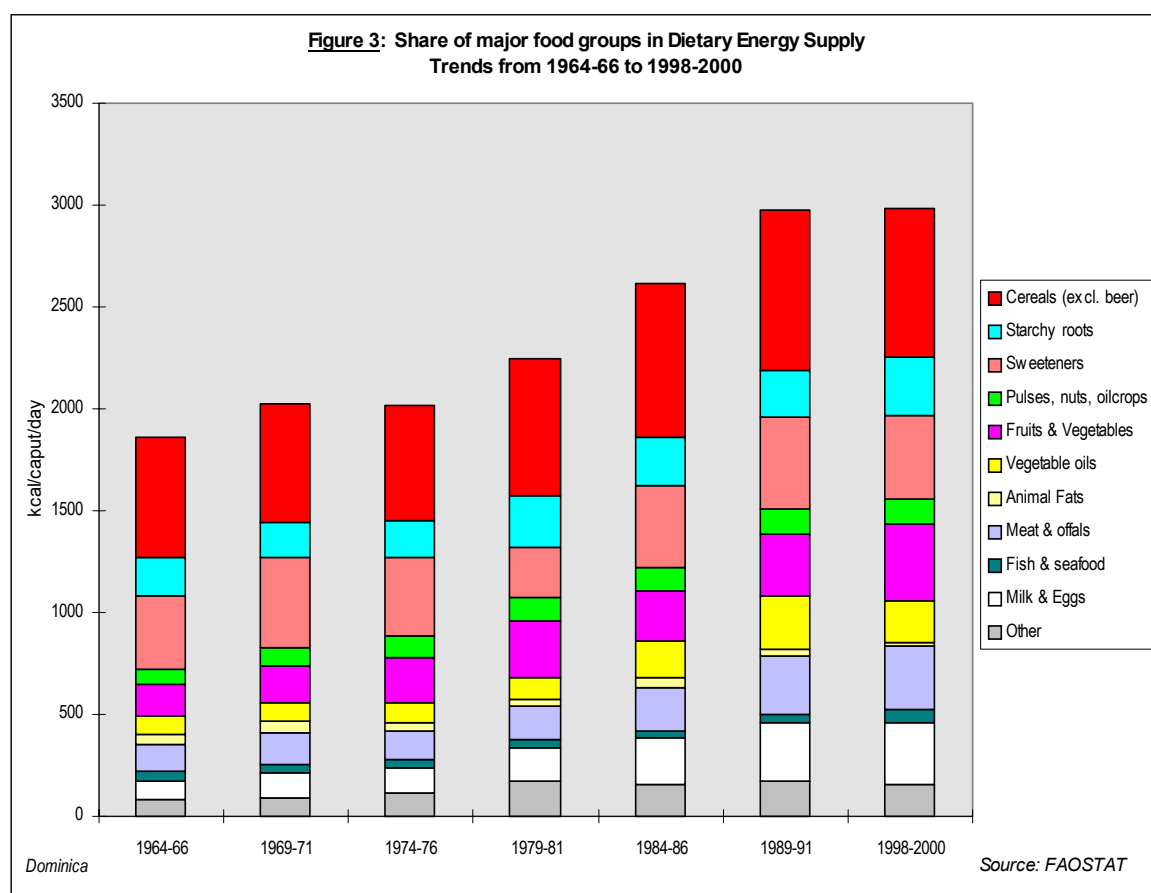
The contribution of protein, fat and carbohydrate as a percentage of DES over the period 1964-66 to 1998-2000 followed three different patterns. The contribution of carbohydrate decreased steadily from 70.3% to 64.2% over the period. The proportion of fat increased steadily from 19.5% to 24.9% between 1964-66 and 1989-91, then declined marginally to 24.2% in 1998-2000. Protein's contribution to DES fluctuated over the period, but resulted in an increase of 1.4% overall (**Figure 1**).

2. Trends in food supplies

Quantity: During the period 1964-66 to 1998-2000, the supply (Kg/caput/year) of all the food groups listed in **Figure 2**, with the exception of fish and seafood, and animal fats, increased. Fruits and vegetables had the most dramatic increase over the period, except for a slight decline between 1979-81 and 1984-86 (followed by a sharp increase between 1984-86 and 1996-98). The sharp increase in the availability of fruits and vegetables (1964-2000) is due to a similarly sharp increase in both the importation and the local production of these foods. Between 1974-76 and 1998-2000, local egg production increased significantly, while both local production and importation of milk markedly increased, accounting for the relatively sharp rise in the availability of these foods (FAOSTAT, 2002).

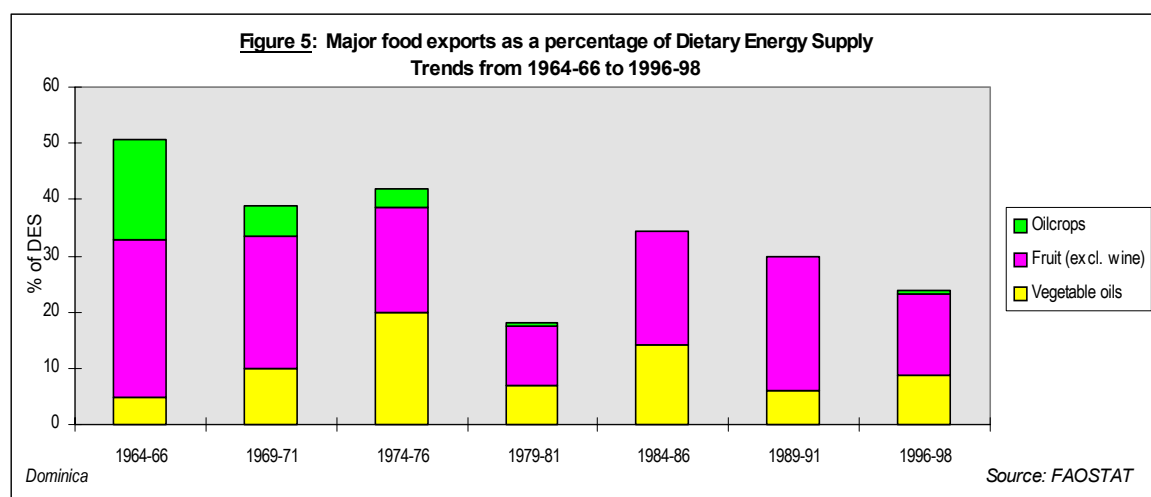
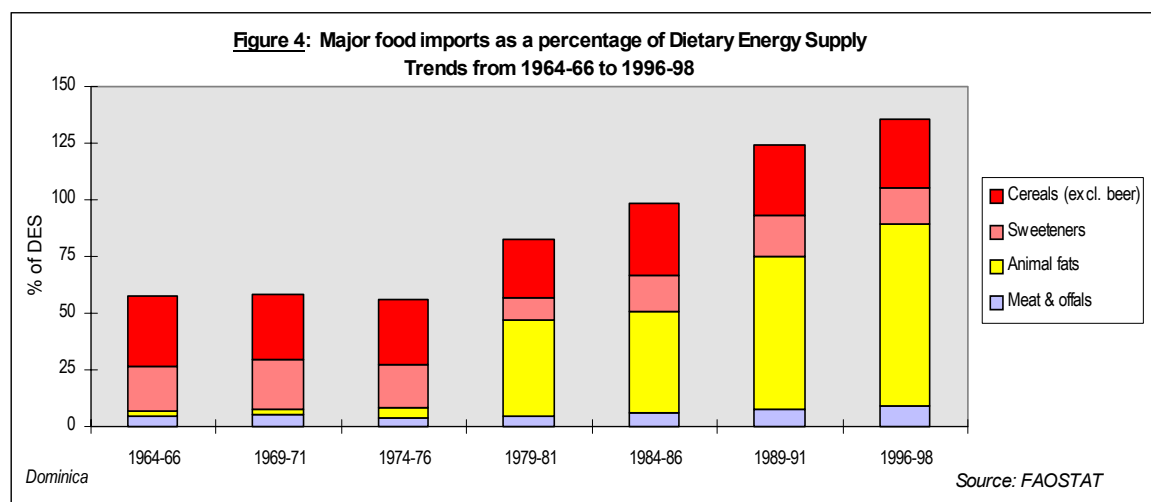


Energy: As shown in **Figure 3**, cereals increased in volume and remained the major share in DES over the period 1964-66 to 1998-2000. Sweeteners (sugar) maintained the second largest share over the same period (except in 1979-81, when it had the fourth largest share). The third largest group in terms of share in DES was starchy roots in 1964-66 and 1979-81, and fruits and vegetables in 1969-71 to 1974-76 and 1984-86 to 1998-2000. In fact, fruits and vegetables occupied second position in 1979-81 and fourth position in 1964-66 in terms of share in DES. Similarly, meat and offals moved from being the fifth position between 1964 and 1986 to fourth position between 1989 and 2000, replacing starchy roots. All the major food groups increased over the 1964-66 to 1998-2000 period, except animal fats, and pulses, nuts and oilcrops, which decreased slightly over the same period.



Major food imports and exports: **Figure 4** shows the increase in food imports as a percentage of DES since 1964-66, which moved from approximately 60% in 1965 to over 130% in 1997. As a percentage of DES the animal fats imports increased sharply between 1974-76 and 1979-81, after increasing steadily from 1964. This was accompanied by a steady increase in the importation of meat and offals throughout the period. The importation of cereals and sweeteners varied over the period, both recording lower levels in 1998 than they were in 1964 (0.6% and 4.0% lower, respectively).

Over the period 1964-1998, Dominica has been increasingly dependent on international trade for sufficient foreign currency in order to supply the population with most of its food, especially since 1984-86.



Vegetable oils and fruit export as a percentage of DES varied considerably between 1964-66 and 1996-98 (**Figure 5**), with the former peaking at 19.8% in 1974-76 and the latter reaching its highest level in 1964-66. The 1996-98 level of export for fruit as a proportion of DES was significantly less than that of 1964-66. In sharp contrast, the reverse was seen in the case of the export of vegetable oils. Oilcrops export, which was a significant proportion (18.0%) of DES in 1964-66, decreased over the years to a relatively insignificant level in 1984-86, but later increased to 8.7% in 1996-98.

3. Food consumption

The Dominica Food and Nutrition Council (DFNC) carried out a national survey on food consumption patterns in 1996 in Dominica. Quantitative data collected via the food frequency method showed that the average caloric intake per person was 1748.8, with variations according to parish. Mean daily protein intake per person was 44.1g, while that of fat was 69.3g (DFNC, 2001). Maglorie and Prevost (2000) reported on aspects of the qualitative data, which reveal that consumption patterns are strongly influenced by traditional patterns, especially in rural areas among the older residents at the lower income levels. Meat, especially pork products, chicken and fish intakes are high and are assigned equally high status. Chicken is readily available and consumption rates are high due mainly to low prices. High salt intake is common (including salted, preserved and/or otherwise cured meats) as well as snacking between main meals. The qualitative data also reveal that consumption of oils is high, with tendencies towards its use as condiments at point of consumption (Maglorie and Prevost, 2000).

Prior to this national survey, other community surveys, food supply and availability data gave a general picture of the eating habits of the population. These suggested that the Dominican diet was generally high in starchy foods and low in vegetables. The main staples were ground provisions, bread, rice, pasta, and cornmeal. Legumes were consumed in the form of peas, beans and lentils. Animal products, fish and chicken, beef and pork were heavily consumed (PAHO/ CFNI, 1997). The quantitative findings from the 1996 survey seem to confirm this pattern. Two of the special dishes of Dominica are "Tannia (coco) soup" and "Mountain chicken (frog's legs)" (CFNI, 1983).

A study conducted in 1987-88 by Trotter and Lambert (1992) on the dietary practices of pregnant and lactating women and infant feeding in three areas of Dominica, revealed that dietary practices were similar in all three areas (rural areas of Portsmouth and La Plaine, and the urban area of Roseau South). In general, 2-3 meals were consumed, one each in the morning, midday and in the evening, a pattern typical of the Caribbean. Some had a light mid-afternoon snack, consisting usually of bread/cake and a drink. About 30-40% of the women in each area ate 1-3 meals/week away from home, usually at relatives/friends' homes. The foods commonly eaten in all areas included ground provisions, lots of green bananas, rice, bread, fresh/frozen fish, chicken parts (legs, wings, backs and necks), whole powdered milk, eggs, cheese, citrus fruits and margarine/oil. Food items such as heart, kidney and liver, dried milk, and fish were reported to be consumed by no more than one-third of the pregnant and lactating women, or were avoided completely. The high cost or lack of availability of these foods in the areas was the reason given for their low level of consumption.

In the same study the weekly food consumption was estimated based on data from a food frequency questionnaire. On average, the weekly intakes were approximately the same for both groups of women in all three areas. The main difference was the extent to which the staple consumed was local or imported. The percentage contribution of the different food groups to the total weekly intakes of the women were similar to (or larger than) CFNI recommended amounts except, in the case of legumes, fats and sugars which were less. Among the pregnant women, the percentage contributions of the different food groups were as follows: staples (49.7%), legumes (2.3%), food from animals (17.6%), vegetables (4.1%), fruits (12.4%), fats (2.8%) and sugars (8.5%). Among the lactating women, the percent contributions of the different food groups were as follows: staples (52.3%), legumes (2.0%), food from animals (17.8%), vegetables (2.3%), fruits (9.4%), fats (2.7%) and sugars (9.6%). CFNI recommendations are as follows: staples (44%), legumes (12.0%), food from animals

(14%), vegetables (2%), fruits (4%), fats (14%) and sugars (10%) (Trotter and Lambert, 1992).

The weaning foods reported by the women in these three areas included formula, cereal/porridge, tolima (arrowroot) and food from the family pot. An unpublished survey on young child feeding conducted by CFNI in 1999 also listed the foods mentioned above as weaning foods, in addition to glucose/sugar water, fruits/fruit juices (fresh/canned/bottled), bush tea, eggs, cheese, bread, crackers, meat, fish, chicken, bottled foods and food mixtures. Plain water, fresh fruit juice, milk formula, fresh fruits, porridge/cereal and food mixtures, in that order, were the most common complementary foods given to the children in their first six months of life. The survey results confirm the view, in Dominica, that weaning foods are introduced very early. For example, water, milk formula and bush tea are introduced to a small proportion of children before they are a month old, and by the first month of life some of the children were introduced to most of the weaning foods listed above. By the time the children were three months old some were introduced to all the foods listed above (CFNI, 1999 - Unpublished).

Exclusive breastfeeding rates up to the first four months of a child's life in Dominica are low, as only 33.9% of children less than 4 months old are exclusively breastfed. In fact, only 45.8% of these children are given breastmilk and water only (CFNI, 1999 - Unpublished). At the health district level, the highest rates of exclusive breastfeeding are in the urban Roseau (56.5%) and Grand Bay (50.0%) districts, while the lowest rates are in the Castle Bruce (5.6%) and Portsmouth districts. Although exclusive breastfeeding rates are low, a relatively large percentage of mothers continue to breastfeed their babies long after the introduction of weaning foods. At the time of the survey, involving children 0-10 months old, 86% of the mothers who initiated breastfeeding were still doing so, even though many had introduced other foods. Hence it is not surprising that approximately 75% of the children 6-9 months old are receiving breastmilk and complementary foods. The lowest rates for this type of feeding are found in the health district of St. Joseph (60.0%) and Grand Bay (66.7%), while the highest are found in La Plaine (81.8%) and Portsmouth (90.9%).

4. Anthropometric data

Clinic data presented in a report prepared by CFNI (2000), showed an overall decrease in the level of undernutrition among children 0-5 years over the period 1990-1999. The prevalence of undernutrition (defined as < 60% weight for age) decreased from 1.9% in 1990 to 0.9% in 1999, peaking at 2.3% in 1995. In contrast, the prevalence of overweight (defined as > 120% standard weight for age) increased from 6.0% to 9.7% over the same period, peaking at 9.9% in 1995 for the same age group (CFNI, 2000).

A micronutrient study carried out by CFNI in 1996 (PAHO/CFNI, 1997), reporting on the weight for height status among children 1-4 years, indicated that 17.0% of the children were wasted (using the Z-score index) while 7.2% were overweight (**Table 4a**). A significantly higher proportion of females were wasted compared with males, while a higher proportion of males were overweight compared with females. The prevalence of overweight and wasting varied greatly at the health district level. While the sample size for the districts are small, it was found that the children from Castle Bruce had the highest prevalence of wasting (30.0%), while those from Marigot had the highest prevalence of overweight (%) (PAHO/CFNI, 1997).

While no single study of anthropometric measurements of adolescents was found, the national food consumption study (1996) reported the prevalence of obesity to be 17.9%

among the population aged 15 years and older, and overweight prevalence was 30% (**Table 4b**; CFNI, 2000).

The annual average for the prevalence of low birth weight (< 2,500g) among new-born babies was 7% over the period 1992-1995 (PAHO/WHO, 1999a).

Table 4a: Anthropometric data on children

Source/ Year of survey	Location	Sample			Percentage of malnutrition						
		Size	Sex	Age	Underweight		Stunting		Wasting		Overweight
		Number		Years	% Weight/Age	% Weight/Age	% Height/Age	% Height/Age	% Weight/Height	% Weight/Height	% Weight/Height
					< -3SD	< -2SD	< -3SD	< -2SD	< -3SD	< -2SD	> +2SD
PAHO/CFNI, 1997	National	153	M/F	1.0-4.0	...	...	...	...	...	17.0	7.2
Micronutrient	"	70	M	"	...	...	...	...	...	7.1	10.0
Study, a three	"	83	F	"	...	...	...	...	...	25.3	4.8
country survey											
1996	Health District:										
	Castle Bruce	10	M/F	1.0-4.0	...	...	...	...	...	30.0	10.0
	Roseau	67	"	"	...	...	...	...	...	23.6	12.5
	Portsmouth	30	"	"	...	...	...	...	...	19.4	6.5
	Grand Bay	22	"	"	...	...	...	...	...	9.0	9.1
	Marigot	24	"	"	...	...	...	...	...	0.0	15.4
					< 80%	>120%					
CFNI, 2000	Clinic Data		M/F	0-5.0							
Obesity	1990	...	"	"	1.9	6.0					
Prevention	1991	...	"	"	1.7	6.4					
and Control	1992	...	"	"	1.6	7.1					
Strategies in	1993	...	"	"	1.5	8.0					
the Caribbean	1994	...	"	"	2.1	7.1					
1990-2000	1995	...	"	"	2.3	9.9					
	1996	...	"	"	1.0	9.3					
	1997	...	"	"	0.9	8.9					
	1998	...	"	"	1.0	9.1					
	1999	...	"	"	0.9	9.7					

Notes: ... no data available

Table 4b: Anthropometric data on adults

Source/ Year of survey	Location	Sample			Anthropometric status and Percentage of malnutrition							
		Size	Sex	Age	Body Mass Index (kg/m ²)			Chronic Energy Deficiency % BMI			Overweight % BMI	Obesity % BMI
		Number		Years	mean	SD	median	<16.0	16.0-16.9	17.0-18.5	25.0 - 29.9	>30.0
CFNI, 2000	National	...	M/F	>15	...	...	...	...	...	...	30.0	17.9
Obesity Prevention and Control Strategies in the Caribbean 1990-2000 (DFNC, 1996.)												

Notes: ... no data available

5. Micronutrient deficiencies

Iron is the micronutrient deficiency of public health concern in Dominica. The prevalence of this deficiency is 34.4% among children 1-4 years, 30.7% among 5-16 year olds and 35.1% among pregnant women (**Table 5**), using the WHO standard. Among the 1-4 years age group, a significantly higher proportion (53.8%) of one year old children are iron deficient compared with the older children (20.5-35.7%). There are variations at the health district level, as Castle Bruce is reported to have the most deficiency (55.6%), followed by Roseau (35.2%), Grand Bay (33.3%), Marigot (30.8%) and Portsmouth (30.0%) (PAHO/CFNI, 1997). A higher proportion (37.3%) of children 5-10 years are deficient in iron compared with children 11-16 years (22.8%), but this difference is not significant. Among pregnant women, a higher proportion (50.0%) of those below 20 years of age are iron deficient compared with those 20 years and older (32.5%) (**Table 5**). Vitamin A deficiency is not a concern in Dominica. Only 1.3% of children 1-4 years old suffer from this deficiency and only marginal deficiency is seen in older children and pregnant women (PAHO/CFNI, 1997).

Data from health centre and hospital records indicate that iron deficiency is declining slowly among the 1-4 year old children, but has increased among pregnant women. In 1988, health centre records showed a prevalence of 24.7% for iron deficiency among pregnant women compared with the present level of 35.6%. Hospital records for 1978, indicated an iron deficiency prevalence of 55% among children 1-4 years (cut-off point: < 12g/dL). Using the WHO cut-off point (<11g/dl), health centre records indicated a prevalence of 46%, compared with 34.4% reported in the micronutrient study in 1996 (PAHO/CFNI, 1997).

The level of deficiency, particularly of iron, present in the vulnerable groups mentioned above may be related to diet. The food consumption survey (1996) showed that only 18.5% of women were having less than 10 mg of iron per day. In addition, cereal, pulses, vegetables and fruits are commonly consumed, and since iron from plant food (non-haem iron) is not readily absorbed because of inhibitors such as polyphenols, coffee, caseins, etc, the iron deficiency observed may in fact have dietary origins. Information on the extent of consumption of haem-iron foods is not available, but the level appears to be low particularly among children (PAHO/CFNI, 1997).

Table 5: Surveys on micronutrient deficiencies

Source/ Year of survey	Deficiency	Location	Sample			Percentage
			Size Number	Sex	Age Years	
Iron						
CFNI/PAHO, 1997	< 11g/dL	National	157	M/F	1.0-4.0	34.4
Micronutrient Study, a three country survey 1996	"	"	39	"	1	53.8
	"	"	28	"	2	35.7
	"	"	51	"	3	29.4
	"	"	39	"	4	20.5
"	< 12g/dL	National	401	M/F	5.0-16.0	30.7
	"	"	217	"	5.0-10.0	37.3
	"	"	184	"	11.0-16.0	22.8
"	< 11g/dL	National	148	Pregnant	All	35.1
	"	"	22	"	< 20	50.0
	"	"	126	"	>20	85.0

Note: ... Data not available

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References of data presented in Table 1, unless otherwise stated:

<i>Source:</i>	<i>Indicator:</i>
FAOSTAT. 1999/2002	<i>A.1-2, B, C.10-11, E.1-3, F, G</i>
UN. 2000/2001 rev.	<i>C.1-9, D.5</i>
World Bank. 2002.	<i>D.1</i>
UNDP. 2002.	<i>D.2</i>
Tabatabai H. 1996.	<i>D.3-4</i>
UNICEF. 2002.	<i>D.6</i>
FAO/WFS. 2002.	<i>H</i>

**NCP of DOMINICA
MAPS**

-General Map of Dominica