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9. ABSTRACT

Presents a collection of statistical information on characteristics of small farmers and small-farm agriculture in the Caribbean region. The reliability and use potential of the data is evaluated, but this is not intended to be an analysis of the information provided. Information resources are the 1970 population census of the Commonwealth Caribbean, agricultural censuses (1971-75), and a series of small-farmer surveys in various Caribbean locations. Topics include: 1) farm household characteristics, 2) level of living indicators (income and income distribution, unemployment and underemployment, education, housing, water supply and toilet facilities, electricity, infant mortality, life expectancy, and nutrition), 3) land and land distribution, 4) production and production technology (crops and livestock, machinery, fertilizers and chemicals, family and hired labor), and 5) government services to small farmers.

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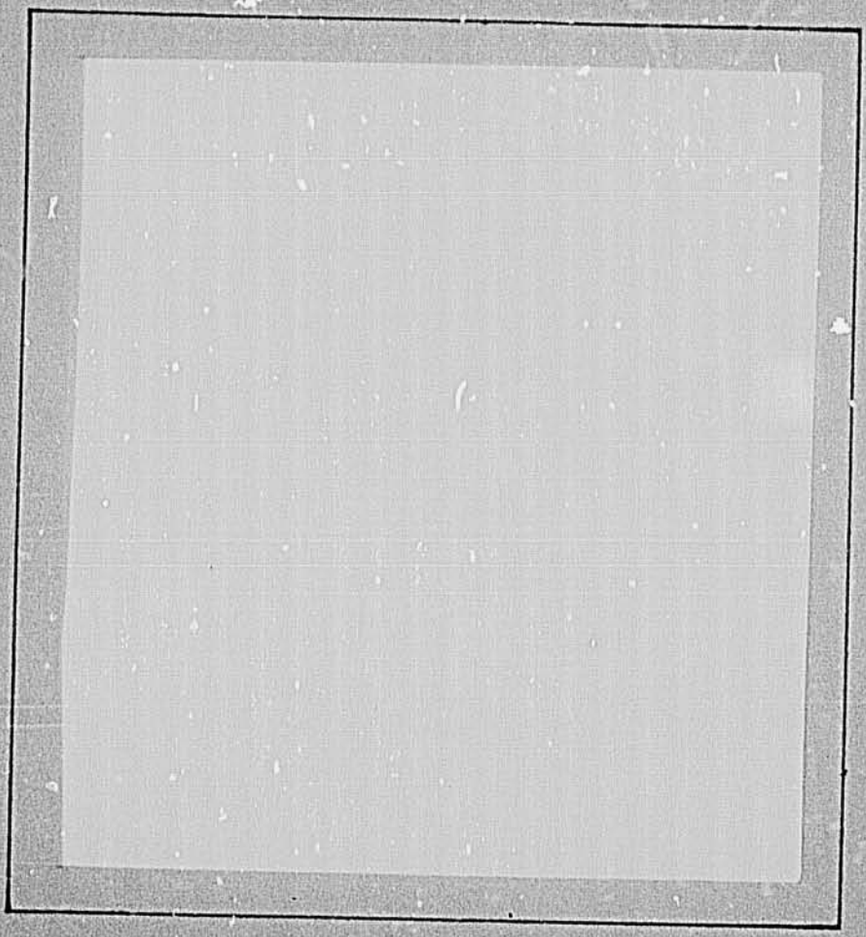

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WORKING DOCUMENT SERIES: CARIBBEAN REGION

GENERAL WORKING DOCUMENT #2

A PROFILE OF SMALL FARMERS IN THE CARIBBEAN REGION*

*Antigua, Barbados, Belize, British Virgin Is., Cayman Is., Dominica, Grenada, Montserrat, St. Kitts-Nevis-(Anguilla), St. Lucia, St. Vinient, Turks & Caicos Is.

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PREFACE

This document brings together statistical information on the characteristics of small farmers and small-farm agriculture in the Caribbean Region, defined operationally by U.S. AID as comprising the smaller English-speaking states in the Caribbean, viz.:

Antigua	Grenada
Barbados	Montserrat
Belize	St. Kitts-Nevis-(Anguilla)
British Virgin Islands	St. Lucia
Cayman Islands	St. Vincent
Dominica	Turks and Caicos Islands

Little effort will be made in this document to analyze the data reported herein, though the reliability and usefulness of the data will be evaluated. A subsequent document, focusing on income distribution and the provision of basic human needs, will discuss the implications of the data and make recommendations for research to improve the data base.

Most of the information in this document is taken from the 1970 Population Census of the Commonwealth Caribbean, agricultural censuses taken between 1971 and 1975, and the following small-farmer surveys (see References for the full citations):

Author	Countries
Antigua (1977)	Antigua
Brierley (1974)	Grenada
Mills (1974)	St. Kitts
Momsen (1970)	Barbados, St. Lucia
Weir's Ltd. (1976)	Dominica, Montserrat, St. Vincent
Yankey (1969)	Dominica

Other sources were also consulted to the extent that time permitted.

TABLE OF CONTENTS

LIST OF TABLES

I. FARM HOUSEHOLD CHARACTERISTICS

1. Number of Small Farmers

Data on the number of small farmers in the Caribbean Region[1/] are conflicting. Table I.1, taken from the 1970 Population Census of the Commonwealth Caribbean, classifies 17,641 persons as "farm managers, supervisors, and farmers."[2/] An additional 45,713 persons are classified as "other agricultural workers." In Barbados, Antigua, and St. Kitts-Nevis, the great majority of those in latter category worked on sugar-cane estates. Elsewhere, agricultural workers were employed on farms and estates devoted to a variety of crops and, to a much lesser extent, livestock production. Most agricultural workers--probably more than 90 percent--also farmed small plots of their own or kept several head of livestock. Thus perhaps 60,000-63,000 persons were engaged in farming for their own account to one extent or another. The number of farm households, however, was less, since some households provided two or more persons to the agricultural labor force. One might guess--and it is only a guess--that the number of farm households in 1970, according to this census-based definition, was approximately 50,000. Of these, all but about 4,000 could be considered small farm households (see below). Outside of Belize there were perhaps only 1,200 medium and large-scale farm units.

1/ For the definition of the "Caribbean Region," see the Preface.

2/ In addition, perhaps several hundred persons in Antigua should be placed in this category (see the note to Table I.1).

Table I.1

Employed Farmers and Farm Workers, by Sex, 1970

	Farm Managers, Supervisors, and Farmers			Other Agricultural Workers		
	Male	Female	Total	Male	Female	Other
Barbados	657	51	708	7,368	4,569	11,937
Windward Islands						
Dominica	2,400	382	2,782	3,572	1,740	5,312
Grenada	1,434	457	1,891	3,875	2,630	6,505
St. Lucia	3,450	733	4,183	4,480	1,908	6,388
St. Vincent	1,246	154	1,400	2,786	1,297	4,083
Leeward Islands						
Antigua	a	a	a	1,702[a]	577[a]	2,279[a]
Montserrat	113	48	161	415	205	620
St. Kitts-Nevis	246	77	323	2,502	1,280	3,782
Belize	5,729	276	6,005	4,257	125	4,382
Other						
British Virgin Is.	37	0	37	250	10	260
Cayman Is.	75	1	76	70	4	74
Turks & Caicos Is.	29	46	75	112	9	121
Total	15,416	2,225	17,641	31,389	14,354	45,743

Source: UWI/CRP (1976: Vol. 4, Part 16). Data for Antigua are from a separate survey conducted by that country. Classification by economic sector yields somewhat different totals (see Table II.4).

[a]These are the figures for the total agricultural labor force, including the unemployed (whose numbers were probably small). Farmers, farm managers, and supervisors are not separated from farm workers. Using the definitions employed in other countries in the region, most of the agricultural labor force in Antigua in 1970 would be classified as farm workers (primarily in sugarcane, the production of which ceased the following year).

Agricultural census data, collected between 1971 and 1975, show a larger number of farm households: 82,512, excluding the British Virgin Islands, the Cayman Islands, and the Turks & Caicos Islands. This does not mean that the number of farm households increased after 1970. Indeed, the downward trend in agricultural employment that began in 1960 most likely has continued into the 1970s.[3/] At the same rate of decrease agricultural employment in 1978 would be about 25 percent lower than in 1970. Insufficient data are available to ascertain whether such a decline has actually taken place. It is also unclear what has happened to the number of farm households: if agricultural workers per household has declined, as seems possible, then the number of farm households has not fallen as fast as farm employment.

The agricultural census data include a sizable number of so-called "landless" farm households, i.e. those who keep a few head of livestock but obtain most of their income from non-farm sources. Approximately 17,575 households,[4/] or 21 percent of the total, fall into this category. It is questionable whether these households should be considered part of the target population for agri-

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3/ Between 1960 and 1970 agricultural employment in the Caribbean Region (excluding Antigua and the Turks and Caicos Islands, for which comparable data were not available) fell by 32.4 percent, from 91,221 to 61,676. Only in Belize was there an increase, amounting to a modest 5.5 percent (Abdullah 1977: 114-115). These data refer to employment by occupational group, and include a small number of workers in mining and quarrying. Data classified by economic sector show a decline in agricultural employment of 32.1 percent.

4/ Including an imputed figure of 761 for Grenada, based on figures for the other Windward Islands (see Table III.1, footnote d).

cultural planning and policy purposes. It is also not clear how many of the 29,774 households with less than one acre of land should be included in the target population. Unpublished data from the 1971 agricultural census in Barbados show that 57 percent of those farming 0-1 acres were employed primarily in a non-agricultural occupation. If we exclude both the landless households and those with less than one acre of land, the number of farm households would be only 35,923.

Of these 35,923 households in the early 1970s (the number would be even lower now) the great majority would be considered small farmers by almost any definition. Selecting the most appropriate definition, however, is always a problem. Ideally, land quality and physical capital, as well as acreage, should be taken into account; but adequate data for doing so do not exist. One must therefore fall back on the acreage criterion. Recent surveys in the region have used widely differing upper limits in defining small farms: Brierley (1974), for Grenada, and the Ministry of Agriculture in Antigua (1977) set the limit at 15 acres; a regionwide study prepared for the Caribbean Development Bank by Weir's Agricultural Services, Ltd. (1976) uses 25 acres; and Yankey (1969), for Dominica, includes all farms up to 100 acres. The 25-acre criterion seems to be a reasonable one, though it should be recognized that (1) it is a low limit for small livestock producers and (2) intensive farming of fertile, irrigated land near the upper limit can enable a farmer to obtain a net income that is relatively high by regional standards. Using the 25-acre criterion as the upper limit, and 1 acre as the lower limit, there were 31,948 households in the early

1970s which received a sizable proportion of their income, if not most of it, from farming (see Table III.1). The number of such households in 1978 is almost certainly lower, probably fewer than 30,000.

It might be useful for policy and planning purposes to separate crop producers with less than 25 acres into two categories: those with less than 10 acres and those with 10-25 acres. The 3,799 farmers in the latter group (early-1970s data) may well have needs that differ from those with less acreage.[5/]

5/ It is possible that 5 acres is a more appropriate dividing line than 10. Additional research is necessary to clarify this matter. Brierley (1974) suggests that the dividing line in Grenada is 7 acres.

2. Age Distribution of Farmers

Table I.2, based on data from the 1970 population censuses, shows that the mean age of those classified as farm managers, supervisors, and farmers ranged from 41 in Belize to 55 in Montserrat. Except in Belize, the "typical" farm operator was in his/her late 40s or early 50s. Only 3,578 farm operators, 20 percent of the total, were less than 30 years old, and nearly half of these (1,729) were in Belize. If we exclude Belize, the proportion of under-30 farmers falls to 16 percent. The proportion of farmers 60 years of age and older is actually higher: 22 percent, or 25 percent excluding Belize (see Table I.3).

Other agricultural workers, most of whom also can be considered small-scale farm operators, were younger. The mean age ranged from 32 in Belize to about 45 in Barbados and the Leewards and 51 in the British Virgin Islands (see Table I.2).

Recent surveys confirm the population census findings of high mean ages for farm operators:

Author	Country	Date of Survey	Sample Size	Approximate Mean Age
Antigua (1977: 3)	Antigua	1977	100	55
Brierley (1974: 75)	Grenada	1969	292	54
Mills (1976: 155)	St. Kitts	1973	66	54
				Age Distribution
Montserrat (n.d.)	Montserrat	1972	*	85% were 40+
Weir (1976: I(b), 8)	Montserrat	1975	51	92% were 46+
Weir (1976: I(b), 55)	St. Vincent	1975	97	77% were 46+
Weir (1976: I(b), 107)	Dominica	1975	100	70% were 46+
Yankey (1969: 235)	Dominica	1966	96	54% were 45+

*Agricultural census.

Table I.2

Estimated Mean Age of Employed Workers in Agriculture, 1970[a]

	Farm Managers, Supervisors, and Farmers			Other Agricultural Workers		
	Male	Female	Total	Male	Female	Total
Barbados	47.5	46.7	47.4	43.8	46.6	44.9
Windward Islands						
Dominica	45.4	48.5	45.8	39.6	41.3	40.2
Grenada	53.0	52.7	52.9	41.6	42.4	41.9
St. Lucia	43.6	43.8	43.6	37.9	39.2	38.3
St. Vincent	50.3	50.3	50.3	40.0	42.5	40.8
Leeward Islands						
Antigua	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Montserrat	55.7	53.2	55.0	47.1	47.5	47.3
St. Kitts	53.0	49.5	52.2	44.3	45.2	44.6
Belize	41.0	40.4	41.0	31.7	29.8	31.6
Other						
British Virgin Is.	54.4	-	54.4	50.8	46.2	50.6
Cayman Is.	52.5	52.0	52.5	43.0	32.0	42.4
Turks & Caicos Is.	51.4	45.5	47.8	33.9	40.0	34.4

Source: UWI/CRP (1976: Vol. 4, Part 16).

[a]For the 15-19 through 60-64 age groups, the mean age of each group is assumed to be at the mid-point; for the 65-and-over age group, the mean age is assumed to be 68.

Table I.3

Age Distribution of Farm Managers, Supervisors, and Farmers, 1970

	Age Groups			
	14-29	30-59	60+	Total
Barbados	129	395	184	708
Windward Islands				
Dominica	492	1,723	567	2,782
Grenada	142	1,005	744	1,891
St. Lucia	910	2,565	708	4,183
St. Vincent	121	856	423	1,400
Leeward Islands				
Antigua	n.a.	n.a	n.a.	n.a.
Montserrat	6	94	61	161
St. Kitts	27	182	114	323
Belize	1,729	3,247	1,029	6,005
Other				
British Virgin Is.	2	19	16	37
Cayman Is.	8	40	28	76
Turks and Caicos Is.	12	37	26	75
Total[a]	3,578	10,163	3,900	17,641

Source: UWI/CRP (1976: Vol. 4, Part 16).

[a]Excludes Antigua.

3. Sex Distribution of Farmers

Data from the 1970 population census (see Table I.1) show that women accounted for 13% of those classified as farm managers, supervisors, and farmers in the region. In four countries, more than 20% of this group were women: Grenada (24%), Montserrat (30%), St. Kitts-Nevis (24%), and the Turks and Caicos Islands (61%). The same source indicates that 31 percent of other agricultural workers were women. These data, however, do not indicate whether part-time employment in agriculture was more prevalent among women than men. The same is true of the agricultural censuses conducted in subsequent years.

Other studies found that women headed 25% of the farm households surveyed in Antigua (Antigua 1977:2), 19% in Grenada (Brierley 1974:74), and 43% in Montserrat (Montserrat n.d.).

4. Household Size

The 1970 population census showed that average household size ranged from 3.5 in Montserrat to 5.2 in Belize (see Table I.4). Small-farm households appear to be larger than the national averages, as indicated by evidence from the following studies:

Author	Country	Date of Survey	Sample Size	Average Household Size
Antigua (1977:2)	Antigua	1977	100	5.2
Brierley (1974:77)	Grenada	1969	292	5.7
Mills (1976:155)	St. Kitts	1973	66	6.0
Momsen (1970:84)	Barbados	n.a.	c.200	5.2
Momsen (1970:84)	St. Lucia	n.a.	c.200	6.5
St. Lucia (1975:14)	St. Lucia	1974	*	4.8
Weir (1976:1(b),8)	Montserrat	1975	51	5.0†
Weir (1976:1(b),55)	St. Vincent	1975	97	6.9†
Weir (1976:1(b),107)	Dominica	1975	100	6.4†
Yankey (1969:195)	Dominica	1966	96	5.4

*
Agricultural census; all farm households.

†Estimated by assuming the average number of persons in the 2-3, 4-7, and 8-10 dependent categories to be at the mid-point: for the 11+ category the average number of dependents was assumed to be 12.

Table I.4

Average Household Size, 1970
(number of persons)

	Total Population	Number of Households	Persons per Household
Barbados	235,229	58,596	4.0
Windward Islands			
Dominica	69,549	15,148	4.6
Grenada	92,775	19,642	4.7
St. Lucia	99,806	21,753	4.6
St. Vincent	86,314	16,940	5.1
Leeward Islands			
Antigua	64,794	15,405	4.2
Montserrat	11,458	3,291	3.5
St. Kitts-Nevis	44,884	11,236	4.0
Belize	119,934	23,065	5.2
Other			
British Virgin Is.	9,672	2,445	4.0
Cayman Islands	10,068	2,469	4.1
Turks & Caicos Is.	5,558	1,282	4.3
Total	850,041	191,272	4.4

Sources: UWI/CRP (1976:Vol. 9) and the Antigua census of population, 1970.

5. Multiple Jobholding

Small farmers in the Caribbean Region typically engage in other economic activities, mainly because their holdings are too small to provide adequate incomes. Only a minority are full-time farmers, and a large proportion earn less than half their income from farming. As Comitas (1973:158-159) has pointed out in connection with Jamaica, and Marshall (1968:252-253) for the Caribbean generally, most people engaged in agricultural activities do not neatly fit traditional definitions of "plantation workers," "farmers," or "peasants." Comitas defines a plantation worker as "a landless wage employee who is attached to a large-scale agricultural organization geared to the production and marketing of an export crop for profit"; a farmer is "an agricultural entrepreneur who owns land, hires wage labor or depends on sharecroppers or tenants for the cultivation of commercial crops"; and a peasant is an agricultural producer . . . who retains effective control of land and who aims at subsistence not at reinvestment."

Comitas (1973:162) argues that reliance on the "peasant" concept is unrealistic in anthropological research. Indeed, he argues that "no viable peasant subculture exists in Jamaica." To a large extent this statement can be applied to the rest of the English-speaking Caribbean, though it is somewhat extreme for the Windwards and even less applicable to Belize. Comitas' plea for a multi-occupational model in anthropological research in the Caribbean should be heeded by economists. Instead of speaking of "small farmers," perhaps we should use some other term ("rural residents"?) to describe the target population. Comitas (1973:172) believes that uni-occupational assistance programs in the Caribbean have "limited chances for success" because multiple jobholders "find it

impractical to develop fully one aspect of their economic life to the detriment of others." In a similar vein, economist Michael Lipton (1976: 547ff), in reviewing worldwide evidence on rural credit programs, argues that multiple-purpose loan programs are likely to be more successful than traditional, uni-dimensional, agricultural production credit programs.

Evidence regarding multiple jobholding in the Eastern Caribbean includes the following data from small-farmer surveys:

a. Handler (1965:17), who studied workers on small sugar plantations in the Scotland District of Barbados, found that 80% of the men working on these plantations had at least three other income-producing activities. These included raising livestock, growing cash crops on small garden plots, working as wage laborers on other small farms, working in the local pottery industry, and miscellaneous activities unrelated to exploitation of the land.[6/]

b. Momsen (1970:81) found that 62% of the 200 or so small farmers she interviewed in Barbados, and 36% of a similar number in St. Lucia, worked off their farms.

c. Brierley (1974:65-66) found that 39% of the 292 small farmers he interviewed in Grenada obtained at least half their income from off-farm activities.

d. Mills (1976:155-156), who surveyed 66 smallholders in St. Kitts, found that almost all of them were employed as laborers on sugarcane estates during the 5-month harvest period.

e. The Government of Antigua's (1977) survey of 100 small farmers found that 48 of the 92 farmers responding to questions on off-farm employment spent at least half their labor time on such activities.

6/ For additional comments on multiple jobholding in Barbados, from a sociological-anthropological viewpoint, see Greenfield (1964).

II. LEVEL OF LIVING INDICATORS

1. Income and Income Distribution

a. National Data

In 1976 per capita GDP at market prices in the Caribbean Region (excluding the British Virgin Islands, the Cayman Islands, and the Turks and Caicos Islands)[1/] ranged from US$320 in St. Vincent to US$1,530 in Barbados (see Table II.1). Between 1970 and 1975 per capita GNP rose only in Barbados and Belize, at a mediocre annual rate of 1.3-1.5%. In the Windwards and Leewards, per capita income declined. The Windwards made a modest recovery in 1976, but in the Leewards the decline continued.[2/]

Data on income distribution are scarce and of poor quality. The 1970 population census shows income distribution by occupational and industrial group (disaggregated in the latter case by parish or other subdivision), but the data are for individuals rather than households and thus constitute a relatively poor indicator of welfare. Also, the data measure gross rather than net income; the percentage in the "no response" category is high; and the mean of the open-ended category is difficult to guess. Household income distribution data for 1970 are available for Dominica, but since 33% of the households did not state their income these data are of little use (see Dominica 1976: 61-62). Income data for Dominica

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1/ Per capita GDP in the Cayman Islands is believed to be higher than in Barbados; in the British Virgin Islands, greater than the regional average; and in the Turks and Caicos Islands, less than the regional average.

2/ The quality of the national accounts data is poor.

Table II.1

Rates of Growth of Real Per Capita GNP, 1970-75,
Real Per Capita GDP, 1976, and
Per Capita GDP at Market Prices, 1976

	Real Annual Per Capita Rates of Growth (percent)		Per Capita GDP at Market Prices, 1976[a]
	GNP 1970-75	GDP 1976	
Barbados	1.3	3.6	1,530
Windward Islands			
Dominica	-1.3	1.7	330
Grenada	-7.3	11.2	420
St. Lucia	-2.2	0.8	510
St. Vincent	-2.3	0.5	320
Leeward Islands			
Antigua	-2.3	-8.4	690
Montserrat	n.a.	n.a.	820[b]
St. Kitts-Nevis	-1.5	-0.7	640
Belize	1.5	n.a.	740[c]

Sources: World Bank Atlas 1977 (1970-75); preliminary GDP estimates for 1976; population data as reported in Fiester et al. (1978: I-2).

[a]For the Windward and Leeward Islands, the U.S. dollar figures are based on the exchange rate of EC$2.70 = US$1.00 adopted in July 1976.

[b]Estimate of GDP at factor cost.

[c]Estimate based on a per capita GNP figure in 1975 of US$670 (1975 prices).

were also collected in a sample survey during 1976, but the results are not available. Income distribution data for Montserrat are based on taxpayers' returns and thus exclude lower income households who file no returns. In summary, there seem to be no usable data on income distribution, either at the national level or for rural areas.

Impressionistic evidence suggests that incomes in the Eastern Caribbean are distributed more equally than in most Central and South American countries. The decline (and in some cases disappearance) of plantation agriculture has tended to reduce the size and incomes of the more affluent rural groups, and government policies have consciously sought to provide a more equal distribution of income (or consumption of basic goods and services). Sugarcane workers in Barbados, St. Kitts-Nevis, and perhaps elsewhere have a guaranteed minimum annual income. The degree of inequality in the distribution of land varies, but especially if government-owned lands are excluded from the data Gini coefficients tend to be lower than in Central or South America (see Part III.1). Other level-of-living indicators, summarized below, also suggest a relatively high degree of equality.

A number of surveys and other studies provide data on farm income, but in general there are two serious problems with these estimates. First, farm income is usually reported on a gross cash basis, thus not taking into account production costs (which should be subtracted) and the imputed value of food produced and consumed on the farm (which should be added). [3/] Secondly, non-farm family income seems to be underestimated,

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3/ Other imputations, of course, should also be made in estimating total household income. But the only other imputation generally made in national income accounting is for the rental value of owner-occupied housing.

often significantly so. This is especially true for remittance income, an important source of income for the region as whole, to be discussed separately below. It also appears that some studies do not take into account earnings by family members other than the head of the household.

b. Farm Household Data

We present below, by country, income estimates for farm households collected in various years and sometimes by different methods. The limitations of these data, which will be pointed out, should be borne in mind.

(1) Antigua

The Antiguan government's small farmer survey in 1976 (N=100) provides the following information on farm and off-farm income and income distribution (Antigua 1977: 3):[4/]

Income Level (EC$)	Gross Farm Income (number of households)	Off-Farm Income (number of households)
0 - 500	39	41
501 - 1,000	31	12
1,001 - 2,000	16	12
2,001 - 3,000	4	10
3,001 - 4,000	7	11
5,001 - 10,000	3	3
No response	0	11
Total	100	100

The fact that 70 percent of the farmers in the survey have gross cash incomes from farm operations of EC$1,000 (US$370)[5/] or less suggests that part-time farming in Antigua is much more important than full-time farming. It is important to know if off-farm income tends to be higher the lower is gross farm income, but this information is not provided and the only way to obtain it would be to go directly to the questionnaires. It should be noted that 11 percent of the farmers provided no information o

[4/] Since these data refer only to small farmers, they cannot be used to indicate income distribution patterns in agriculture generally.

[5/] Based on an exchange rate of EC$2.70 = US$1.00 (beginning July 1976).

off-farm income, though all of them were willing to provide data on farm income. The latter, as we have noted, is unfortunately on a gross cash income basis, with production costs not deducted. No imputations are made for on-farm consumption and housing.

(2) Belize

Cacho (1967: 126) refers to a 1966 survey which found that average family income in rural Belize was $3576, or about TT$115 (US$67) per capita, compared with a national average of TT$524 (US$306) per capita in 1964.[6/] Unfortunately, there is no indication of (1) how the rural income estimate was made, (2) whether it includes imputed income and off-farm income, and (3) whether farm income is computed on a gross or net basis.

(3) Dominica

A survey of small farmers by Weir's Ltd. (1976:I(b),125) in November-December 1975 (N=100) provides the following data on gross (cash) farm income and non-farm income:

Income Level (EC$)	Gross Farm Income: Total	Crops	Livestock	Off-Farm Income
	(number of households)			
Less than 250	13	13	21	16
251 - 500	10	12	2	5
501 - 750	17	13	3	1
751 - 1,000	10	12	2	0
1,001 - 1,500	12	8	1	1
1,501 - 2,000	8	7	0	1
2,001 - 3,000	10	11	0	0
3,001 - 5,000	7	7	0	1
5,001 - 10,000	3	3	0	0
More than 10,000	2	1	0	1
Can't say/no answer	8	11	48	2
None	0	4	22	20
Total	100	100	100	100*

*Note that the figures in this column add only to 48. Apparently the remaining 52 farmers either had no off-farm income or provided no information.

6/ Based on an exchange rate of TT$1.71 = US$1.00 in 1966.

There is good reason to believe that farmers overstated the extent of their losses.

(4) Grenada

Summary data from the 1974-75 census (the questionnaires from which were destroyed in a fire before much analysis was done), show that nearly 60% of the country's farm operators received most of their income from non-farm sources:

	N	%
All income derived from farm holding	4,398	35.0
Income derived mainly from farm holding	699	5.6
Income derived mainly from non-farm activities	7,468	59.4
Total	12,565	100.0

No information was obtained on income amounts, and it is not clear whether farm income refers to gross cash income or some other measure.

(5) Montserrat

Unpublished data from the 1972 agricultural census show that slightly more than half of Montserrat's farm operators (N=1,232) derived most of their income from farming:

Source of Income	Number of Farmers	Percent
Own farm	628	50.9
Working on other farm	14	1.1
Non-farm activities	590	48.0
Total	1,232	100.0

As would be expected, landless farmers and those with less than one acre were more dependent on off-farm income than farmers with more land:

continued on p. 26

Size of Holding (acres)	Number of Farmers	Percent Deriving Most Income from Own Farm
Landless	88	73.9
Less than 1.00	548	40.3
1.00 - 4.99	489	64.4
5.00 - 9.99	66	72.7
10.00 - 24.99	26	61.5
25.00 - 49.99	6	83.3
50.00 - 99.99	2	50.0
100.00 - 199.99	2	0.0
200.00 - 499.99	3	33.3
500.00 and above	2	0.0
Total	1,232	50.9

No income data are provided, and the definition of income used is not clear.

The Weir survey (1976:I(b), 29-32) provides these data on gross (cash) farm income in 1975:

Income Level (EC$)	Gross Farm Income		
	Total	Crops	Livestock
	(percent of households)		
Less than 250	15	41	23
250 - 500	8	16	15
501 - 750	38	25	0
751 - 1,000	15	9	8
1,001 - 1,500	8	0*	0
1,501 - 2,000	8	0*	0
2,001 - 3,000	0	0*	0
3,001 - 5,000	0	0*	0
5,001 - 10,000	0	0	0
More than 10,000	0	0*	0
Can't say/no answer	8	9	31
None	0	0	23
Total	100	100	100

*The breakdown by size of farm, however, shows some farmers to be in these categories. Unfortunately, the data are in percentages (by size of farm); the number of farmers in each cell is not reported, and it is sometimes not clear how the numbers were rounded off to obtain percentages.

These data show that 76% of the farm households surveyed received no more than EC$1,000 (US$500) from farming in 1975. Given an average household of 5.0 persons, gross per capita cash income from farming would be $US100 or less for three-fourths of the farm households. Note, however, that 31% of those surveyed provided no information on earnings from livestock operations. Few farmers were reported to have any off-farm income, though 2(?) of the 7 in the 5-10 acre category reported off-farm incomes between EC$750 and EC$1,500. The data have the same limitations as those collected in the authors' survey in Dominica, discussed above.

Farmers surveyed in the Weir study (1976:I(b), 128) attributed crop losses primarily to the following factors:

	Percent of Farmers Citing Various Causes
Drought	54
Insect pests and diseases	39
Rats and untethered animals	23
Market surplus	15

Livestock losses were attributed principally to these reasons:

	Percent of Farmers Citing Various Causes
Praedial larceny	16
Drought	15
Disease	8
Inadequate security	8

(6) St. Vincent

The Weir survey of St. Vincent (1976.I(b).84) provides these data on gross cash income and income from other sources (N=97):

Income Level (EC$)	Gross Farm Income: Total	Crops	Livestock	Off-Farm Income
	(percent of households)			
Less than 250	7	13	29	7
250 - 500	16	17	5	1
501 - 750	10	9	4	0
751 - 1,000	15	12	2	1
1,001 - 1,500	16	18	2	0
1,501 - 2,000	6	6	0	0
2,001 - 3,000	13	9	1	0
3,001 - 5,000	5	2	0	0
5,001 - 10,000	2	2	0	0
More than 10,000	1	1	0	0
Can't say/don't know	9	10	33	6
None	0	0	24	12
Total	100	100	100	100*

*The figures actually add to only 27 percent. Presumably the remaining 73 percent reported no off-farm income.

These data show that 48% of those surveyed--and 61% of those with only 1-5 acres, received gross cash incomes of no more than EC$1,000 (US$500) from farming. Given an estimated average household size of 6.9, this amounts to no more than US$72 per capita. One-third of the farmers, however, provided no information on income from livestock operations, and the number of households having off-farm income is probably significantly higher than reported. These income data have the same limitations as those for Dominica and Montserrat.

Farmers surveyed in the Weir study (1976:I(b),85) attributes crop losses primarily to the following factors:

	Percent of Farmers Citing Various Causes
Drought	55
Insect pests and diseases	34
Hurricanes, storms, winds	21
Rats, untethered animals	13
Poor roads, poor access	10
Market surplus	10

Livestock losses were attributed principally to these reasons:

	Percent of Farmers Citing Various Causes
Disease	17
Praedial larceny	16

c. Emigrants' Remittances

The sociological and anthropological literature on the Caribbean Region, as well as estimates by economist Carleen O'Loughlin (1968), suggest that emigrants' remittances are important components of income that farm-level surveys generally record incompletely, if at all. Data on remittances, it is true, are usually aggregate national figures, and little is known about the distribution of remittance income among households within a country. It is likely that a large percentage of farm households receive income from their relatives overseas, and that these transfers tend to make the distribution of income more equal. This is only a hypothesis, however, based on (1) evidence in the sociological and anthropological literature, (2) statistical evidence provided by level-of-living indicators other than income, and (3) casual observation of living conditions in rural areas. Research is needed to test this hypothesis by obtaining more comprehensive data on household income than hitherto has been collected.

Table II.2 presents estimates of remittance income derived from various sources. Usually, the estimates are based on data on the volume of postal and bank money orders and other bank transfers. Remittance income transferred in other ways, e.g. in person, during return visits by emigrants, is thus not recorded. Also not recorded are pension checks received by returned migrants from the U.K., U.S., Canada, and elsewhere. These transfers, shared with family members and other relatives,

turn to p.27

Table II.2

Estimates of Remittance Income, Various Years, 1961-1977

Country and Source of Estimate	Year of Estimate	Remittances as a % of Total Income	Aggregate Remittances (local currency units)	Per Capita Remittances (local currency units)	Per Capita U.S. Dollar Equivalent (current prices)	Comments
Leewards and Windwards (combined)						
O'Loughlin (1968:87)	1964	3.7[a]	EC$5,500,000	EC$12	7	
Anguilla						
Fiester et al.(1978:ANG-1)	1977	33.3[b]	n.a.	n.a.	n.a.	Qualitative judgement
Barbados						
Manners (1965:190)	1962	6.7[c]	BWI$7,900,000	BWI$34	20	
Carriacou (Grenada)						
Richardson (1975)	1972	n.a.	n.a.	n.a.	92	
Montserrat						
Lowenthal-Comitas (1962)	1961?	20-25[b]	n.a.	n.a.	n.a.	Qualitative judgement
Manners (1965:191)	1962	14.7[d]	BWI$530,000	BWI$44	25	
St. Kitts-Nevis-(Anguilla)						
Manners (1965:191)	1962	7.7[d]	BWI$1,652,000	BWI$34	20	All 3 islands
Frucht (1968)	1966	n.a.	BWI$ 330,000[f]	BWI$27	16	Nevis
Fiester et al.(1978:I-13)	1977	16+[e]	EC$13,900,000	EC$290	107[g]	St. Kitts and Nevis
St. Vincent						
Manners (1965:191)	1962	6.5[d]	BWI$1,521,000	BWI$19	11	

Notes to Table II.2

Sources: As indicated in the table.

[a]As a percent of national income.

[b]Aggregate income concept not clear. In Montserrat remittances were reported to be "almost one-quarter" of income.

[c]As a percent of personal income.

[d]As a percent of GDP at market prices, as reported in O'Loughlin (1968: 94).

[e]Based on partial (7-month) unpublished data for bank transfers identified as remittances.

[f]According to Manners (1965:191) Frucht found that remittances in Nevis had reached a high of EC$512,000 in 1961.

[g]Converted at the 1977 exchange rate of EC$2.70 = US$1.00.

These data show that 50% of the farm households in the survey --and 63% of those with only 1-5 acres--had gross cash incomes from farm operations of EC$1,000 (US$500) [7] or less, or no more than US$78 per capita, based on an average household size of 6.4 as estimated from data in the survey (see Part I.4). However, these data are subject to all the limitations of those collected in the Antigua survey (see above). In addition, an examination of the questionnaire suggests that no information was requested on remittance income or on income received by family members other than the head of household. On balance, the income estimates in this survey, and in companion surveys in Montserrat and St. Vincent, seem to significantly underestimate small farmer household income.

The Weir survey (1970:I(b),127-128) reported that 69% of those surveyed experienced losses in their crop operations in the preceding 3 years. Farmers attributed these losses primarily to the following factors:

	Percent of Farmers Citing Various Causes
Hurricanes, storms, winds	39
Drought	23
Insect pests and diseases	21
Market surplus	17
Poor roads, poor access	12

Losses were reported by approximately 25% of the farmers keeping livestock. The principal reasons reported were:

	Percent of Farmers Citing Various Causes
Inadequate security	11
Drought	7
Praedial larceny	7

return to p. 19

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[7] Based on the exchange rate of EC$2.00 = US$1.00 prevailing at the time. The current rate is EC$2.70 = US$1.00.

can be regarded as delayed remittances. How important these other forms of transfers might be is not known. But it seems reasonable to conclude that remittance income is almost always underestimated.

d. Summary

Data on rural incomes in the Caribbean Region are of poor quality, and they tend both to underestimate total income (cash and imputed) and to give a misleading impression of levels of well-being. To present a more complete picture, we present in the following pages data on a number of other level-of-living indicatores. In general, these show that rural levels of living in the Caribbean Region are higher than in Central and South America.

2. Unemployment and Underemployment

In 1970 the economy-wide unemployment rate in the Caribbean Region was 7.9% (see Table II.3). National unemployment rates ranged from only 1.5% in the Cayman Islands to 12.5% in Antigua. Since 1970 unemployment rates appear to have risen in most, if not all countries. In Barbados, where quarterly employment surveys were begun in late 1975, the unemployment rate averaged 15.3% in the four surveys taken between December 1976 and September 1977. In Dominica, a survey of 670 households in 1976 found the unemployment rate to be 22.7%; an additional 11.9% were found to be underemployed (to an unspecified degree). A recent OAS survey of Grenada (OAS 1977) estimates the unemployment rate in that country to have been 15-20% during 1976.

Unemployment is very heavily concentrated among the younger age groups. Census data for 1970, for all countries in the Caribbean Region except Antigua, show that 67% of the unemployed men and 66% of the unemployed women were between the ages of 14 and 19. An additional 16% and 21%, respectively, were in the 20-24 age group.

Open unemployment rates in agriculture, as shown in Table II.4, were very low in 1970, averaging less than 1% of the agricultural labor force. Since most rural youth migrate from farms to urban areas, or seek employment overseas, these very low rates of open unemployment are not surprising.

There appear to be no good data on rural underemployment. One suspects that it may be relatively high in some countries, despite the widespread incidence of multiple jobholding.

Table II.3

Labor Force, Employment, and Unemployment, 1970
(number of workers 14 years of age and above)

	Male Population, 14+[a]				Female Population, 14+[a]				Unemployment Rates (%)		
	Total[a]	Employed	Unemployed	Not in Labor Force[b]	Total[a]	Employed	Unemployed	Not in Labor Force[b]	Male	Female	Total
Barbados	62,553	50,412	3,242	8,899	76,645	32,074	3,646	40,925	6.0	10.2	7.7
Windward Islands											
Dominica	15,012	12,293	807	1,912	18,795	7,159	652	10,984	6.2	8.3	7.0
Grenada	19,409	16,086	1,266	2,057	24,800	9,713	1,371	13,716	7.3	12.4	9.3
St. Lucia	21,479	16,975	1,509	2,995	27,345	9,095	1,111	17,139	8.2	10.9	9.1
St. Vincent	17,259	13,509	1,427	2,323	22,372	7,266	1,070	14,036	9.6	12.8	10.7
Leeward Islands											
Antigua	16,319	12,203	1,336	2,780	19,952	6,882	1,384	11,686	9.9	16.7	12.5
Montserrat	2,996	2,409	80	507	3,699	1,267	100	2,332	3.2	7.3	4.7
St. Kitts	9,217	7,657	336	1,224	11,839	4,598	327	6,914	4.2	6.6	5.1
Belize	29,183	25,192	1,284	2,707	29,460	5,684	228	23,548	4.8	3.9	4.7
Other											
British Virgin Is.	3,116	2,808	79	229	2,458	1,007	54	1,397	2.7	5.1	3.4
Cayman Is.	2,647	2,220	36	391	3,232	1,186	16	2,030	1.6	1.3	1.5
Turks & Caicos Is.	1,211	966	89	156	1,542	492	25	1,025	8.4	4.8	7.3
Total	200,401	162,730	11,491	26,180	242,139	86,423	9,984	145,732	6.6	10.4	7.9

Source: UWI/CRP (1976: Vol. 4, Part 16). Data for Antigua are from a separate census conducted by that country.

[a] Excludes those attending schools, except for Antigua, where the total refers to all males and females 15 years of age and above.

[b] Includes the following categories: wanted work and available, home duties, student (apart from those in school), retired/disabled, other, and not stated.

Table II.4

Agricultural Employment, 1970
(workers 14 years of age and above)

	Total Employment in Agriculture[a]			Agriculture's Share of Total Employment (%)			Agricultural Unemployment Rate (%)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Barbados	8,327	4,907	13,234	16.5	15.3	16.0	1.0	0.5	0.8
Windward Islands									
Dominica	5,732	1,947	7,679	46.6	27.2	39.5	0.3	0.1	0.2
Grenada	5,504	3,097	8,601	34.2	31.9	33.3	0.3	0.3	0.3
St. Lucia	7,833	2,526	10,359	46.1	27.8	39.7	0.5	0.3	0.4
St. Vincent	4,357	1,676	6,033	32.2	23.1	29.0	0.5	1.2	0.7
Leeward Islands									
Antigua	1,709[b]	740[b]	2,449[b]	12.0	8.4	10.6	n.a.	n.a.	n.a.
Montserrat	484	262	746	20.1	20.7	20.3	0.2	0.4	0.3
St. Kitts	2,809	1,386	4,195	36.7	30.1	34.2	0.2	0.1	0.2
Belize	10,610	451	11,061	42.1	7.9	35.8	0.4	2.8	0.5
Other									
British Virgin Is.	282	12	294	10.0	1.2	7.8	1.4	0.0	1.3
Cayman Is.	134	7	141	6.0	0.6	4.1	0.0	0.0	0.0
Turks & Caicos Is.	154	82	236	15.9	16.7	16.2	0.0	0.0	0.0
Total	47,935	17,093	65,028	-	-	-	-	-	-

Source: UWI/CRP (1976: Vol. 4, Part 16). Data for Antigua are from a separate census conducted by that country.

[a]According to classification of employment by economic sector. Classification by occupation group (farm managers, supervisors, and farmers; other agricultural workers) yields different figures.

[b]Total labor force in agriculture.

3. Education

Educational levels in the Caribbean Region are high in comparison with those in other developing countries. Data from the 1970 census, presented in Table II.5, show that 75-90% of the heads of household had completed at least 5 years of school in all countries except St. Lucia, where the figure was only 37%. Disaggregation of the national totals by parish or other subdivision shows that functional literacy is not just an urban phenomenon. While educational levels are higher in urban areas than in predominantly rural subdivisions, the differencesare not great: with the exception again of St. Lucia at least 70% of the heads of households in all but a few rural subdivisions had completed 5 years of school or more. In St. Lucia, the exceptional case, only 21-36% the heads of rural households had attained this level of education.

Farm-level surveys also show a relatively high degree of functional literacy, though it appears that small farmers sometimes have less education than rural residents generally.

- Brierley (1974: 61-63 and passim) found a mean of 4.3 years of educational attainment among small farmers in Grenada, with the parish figures ranging from 3.3 in St. John's to 5.4 in St. David's. Educational attainment was lowest among what Brierley call "commercial" farmers (those deriving more than half their income from farming), and highest among the operators of "miniature estates" (7-15 acres).

- Momsen (1970:81-82) reports that all of the 200 or so small farmers she interviewed in Barbados were literate, while in St. Lucia 37% could neither read nor write. Momsen's analysis found literacy to be "the single most important element in determining the efficiency of small farming."

Table II.5

Level of Education Attained by Head of Household, by Country and Major Subdivision, 1970
(percent in each category)

	< 5 Years	5 Years or More	Not Stated
Barbados	13.2	85.3	1.5
St. Michael	9.7	88.7	1.6
Christ Church	8.5	90.4	1.1
St. George	9.9	88.5	1.6
St. Philip	16.4	82.6	1.0
St. John	24.4	74.7	0.9
St. James	16.9	81.0	2.1
St. Thomas	24.8	74.2	1.0
St. Joseph	19.1	79.5	1.4
St. Andrew	25.6	71.6	2.8
St. Peter	23.8	75.6	0.6
St. Lucy	18.6	79.0	2.4
Dominica	19.1	80.7	0.2
Roseau	8.1	91.6	0.3
St. George	19.0	81.0	0.0
St. John	14.1	85.8	0.1
St. Peter	3.5	96.5	0.0
St. Joseph	22.1	77.9	0.0
St. Paul	20.8	79.2	0.0
St. Luke	15.1	84.9	0.0
St. Mark	24.0	75.8	0.2
St. Patrick	32.3	66.8	0.9
St. David	21.5	78.5	0.0
St. Andrew	20.9	78.8	0.3
Grenada	12.2	84.5	3.3
Town of St. George	5.3	92.1	2.6
Parish of St. George	6.3	87.7	6.0
St. John's	14.6	78.2	7.2
St. Mark's	26.3	73.1	0.6
St. Patrick's	16.0	81.0	3.0
St. Andrew's	18.7	78.2	3.1
St. David's	7.0	91.4	1.6
Carriacou	13.5	82.5	4.0
St. Lucia	62.2	37.4	0.4
Town of Castries	28.4	71.1	0.5
Suburbs of Castries	39.9	59.4	0.7
Marchand	63.4	35.8	0.8
Anse-La-Raye	79.0	20.9	0.1
Canaries	65.6	34.4	0.0
Soufriere	63.9	35.6	0.5
Choiseul	72.7	27.1	0.2
La Borie	65.9	33.9	0.2
Vieux-Fort	67.9	31.8	0.3
Micoud	71.7	28.1	0.2
Dennery	75.0	24.9	0.1
Gros Islet	64.5	35.1	0.4

Table II.5

(continued)

	< 5 Years	5 Years or More	Not Stated
St. Vincent	18.2	79.5	2.3
Kingstown	12.3	85.2	2.5
Rest of Area	21.7	75.9	2.4
Calliagua	14.3	82.3	3.4
Marriagua	22.2	76.8	1.0
Bridgetown	35.1	62.0	2.9
Colonarie	28.2	70.3	1.5
Georgetown	16.6	80.3	3.1
Sandy Bay	20.4	78.7	0.9
Layou	14.9	82.5	2.6
Barrouaille	27.7	72.1	0.2
Chateau Belair	26.1	71.7	2.2
North Grenadines	2.4	96.6	1.0
South Grenadines	7.9	89.0	3.1
Antigua	not available		
Montserrat	15.8	81.6	2.6
Plymouth	7.1	91.5	1.4
St. Anthony's	16.3	82.7	1.0
St. Peter's	12.9	85.8	1.3
St. George's	25.5	66.0	8.5
St. Kitts-Nevis	9.3	89.0	1.7
Basseterre	8.4	88.7	2.9
Rest of St. George	4.0	96.0	0.0
St. Paul	11.2	86.2	2.6
St. Anne	5.2	93.3	1.5
St. Thomas	14.0	84.8	1.2
Trinity	4.4	95.6	0.0
Christschurch	15.8	81.5	2.7
St. John's	7.1	92.5	0.4
St. Mary	9.8	89.2	1.0
St. Peter	13.2	85.8	1.0
St. Paul-Nevis	9.6	87.3	3.1
St. John-Nevis	12.9	86.8	0.3
St. George-Nevis	6.2	92.3	1.5
St. Thomas-Nevis	13.9	85.7	0.4
St. James-Nevis	8.1	91.5	0.4

Table II.5

(continued)

	< 5 Years	5 Years or More	Not Stated
Belize	22.4	77.0	0.6
Belize City	6.1	93.4	0.5
Belize District	25.7	73.8	0.5
Corozal	34.2	65.7	0.1
Orange Walk	29.7	69.9	0.4
Staan Creek	16.3	83.0	0.7
Toledo	48.4	51.0	0.6
Cayo	36.5	61.8	1.7
Belmopan	9.8	86.9	3.3
British Virgin Islands	13.2	84.9	1.9
Tortola	12.0	85.9	2.1
Anegada	2.9	97.1	0.0
Virgin Gorda	17.2	82.0	0.8
Jost Van Dyke	60.5	39.5	0.0
Other Islands	32.0	68.0	0.0
Cayman Islands	11.2	86.8	2.0
Grand Cayman	10.6	87.1	2.3
Cayman Brac	13.3	86.4	0.3
Little Cayman	58.3	41.7	0.0
Turks & Caicos Is.	9.7	88.6	1.7
Grand Turk	2.2	96.2	1.6
Salt Cay	1.5	98.5	0.0
South Caicos	4.4	92.9	2.7
Middle Caicos	21.6	78.4	0.0
North Caicos	23.5	74.7	1.8
Blue Hills	22.4	75.4	2.2

Source: UWI/CRP (1976: Vol. 9, Parts 2-4).

- Yankey (1969:235), who surveyed 96 small farmers in 1966, reports the following distribution of educational attainment in Dominica:

	N	%
No schooling	12	12.5
Less than 3 years	27	28.1
3-5 years	33	34.4
More than 5 years	22	22.9
High school	2	2.1
Total	100	100.0

4. Housing

The quantity and quality of housing is an important component of welfare. In this section we examine one measure of the quantity dimension, the number of rooms per household. These data, which are available only at the national level, are presented in Table II.6. For the region as a whole the average number of rooms per dwelling unit is 3.2. For the individual countries, the range is from 2.7 in St. Lucia and Belize to 4.1 in the Turks & Caicos Islands. These figures may be compared with an average of 2.1 rooms per dwelling unit in Haiti, the poorest country in the Western Hemisphere. 8/

The limitations of this indicator should be kept in mind: it tells us nothing about the quality of construction or the size of rooms. In addition, the census data do not indicate how small farmers' housing differs from the national average. Other evidence, though, suggests that the average small farmers' dwelling unit does not differ much in size from the national average.

The Weir Survey (1976:I(b), 12, 59, 108) reports the following data on number of bedrooms per dwelling unit on small farms in Dominica, Montserrat, and St. Vincent:

Number of Bedrooms	Dominica	Montserrat	St. Vincent
1	19	9	20
2	41	40	48
3	23	40	27
4+	18	9	7
Total*	100	100	100

*Columns do not add to 100 because of rounding.

These data show that at least 80% of the farm households in the survey had at least two bedrooms. No information is provided on other rooms.

8/ Average household size in Haiti is 4.5, about the same as that for the Caribbean Region (4.4., as shown in Table I.4). The average number of persons per room is 1.4 in the Caribbean Region and 2.3 in Haiti.

Table II.6.

Distribution of Dwelling Units by Number of Rooms, 1970
(number of dwelling units in each category)

	Number of Rooms								Total Number of Dwelling Places	Estimated Average Number of Rooms[a]
	1	2	3	4	5	6	7+	Not Stated		
Barbados	1,433	8,678	11,144	22,068	9,242	2,551	1,292	2,190	58,596	3.8
Windward Islands										
Dominica	2,357	5,423	1,577	2,130	779	403	293	217	15,149	2.8
Grenada	1,275	7,076	3,639	3,719	1,049	499	421	1,763	19,644	3.0
St. Lucia	2,985	8,904	2,991	4,244	1,070	514	301	742	21,753	2.7
St. Vincent	1,421	6,857	4,083	2,365	912	374	334	561	16,940	2.8
Leeward Islands										
Antigua	1,735	4,866	1,713	3,174	2,259	1,305	936	-	15,488	3.6
Montserrat	246	1,062	444	824	295	131	84	175	3,291	3.2
St. Kitts-Nevis	1,928	3,295	1,570	1,834	1,031	575	628	398	11,236	3.1
Belize	3,032	9,386	5,813	2,722	1,052	348	309	423	23,085	2.7
Other										
British Virgin Is.	389	588	559	433	328	152	188	112	2,447	3.5
Cayman Is.	156	254	518	721	440	187	61	110	2,449	3.9
Turks & Caicos Is.	47	189	228	340	197	120	116	45	1,282	4.1

Sources: UWI/CRP (1976: Vol. 9, Parts 2-4), and the separate population census conducted by the Government of Antigua.

[a] Assumes that the mean in the 7+ category is 8 rooms. The calculations exclude dwelling units for which the number of rooms is not stated.

5. Water Supply

Table II.7 provides data on household water supply systems at the national and parish level. In Barbados and St. Kitts-Nevis, more than 55% of all households had public water supplies piped into their dwellings or yards. Elsewhere the figures ranged from virtually zero in the Turks and Caicos Islands to 48% in Montserrat. If private piped and catchment systems are added to these figures the percentage of households having their own water supply rises to 80-83% in the British Virgin Islands and Cayman Islands; jumps from 14% to 38% in Belize and from zero to 30% in the Turks and Caicos Islands; and increases by 3-10 percentage points in the other countries. In addition, a substantial number of households obtain water from public standpipes: at least 74% of all households in 1970 had access at least to this type of water supply except in St. Lucia (66%), Belize (54%), and the Turks and Caicos Islands (36%).

The disaggregated data in Table II.7 show that rural households are less well served with water supply systems than urban households. Still, of the 105 parishes or other subdivisions in the 12 countries surveyed, only in 13 does the percentage of households not served at least by a public standpipe exceed 50%. Of these, 4 are sparsely populated islands in the Turks and Caicos; another 4 are in Belize and 3 are in St. Lucia, the two countries where small farm households have the poorest access to water supply systems. Also poorly served are Nevis and some parts of rural Dominica.

Table II.7

Type of Household Water Supply, by Country and Major Subdivision, 1970
(percent in category)

	Public Piped[a]	Private Piped or Catchment[b]	Public Stand-pipe	Other[c]
Barbados	55.6	5.3	36.6	2.5
St. Michael	63.2	5.9	28.8	2.1
Christ Church	64.7	4.3	27.9	3.1
St. George	45.4	3.2	46.3	5.1
St. Philip	51.3	6.4	39.1	3.2
St. John	51.5	3.2	44.2	1.1
St. James	49.5	6.6	40.5	3.4
St. Thomas	40.6	1.8	53.6	4.0
St. Joseph	38.2	2.7	57.0	2.1
St. Andrew	21.7	10.1	67.2	1.0
St. Peter	41.1	9.2	48.9	0.8
St. Lucy	38.4	1.7	59.0	0.9
Dominica	15.7	7.3	51.1	25.9
Roseau	32.2	7.4	59.2	1.2
St. George	33.2	15.8	38.7	12.3
St. John	8.9	12.4	62.4	16.3
St. Peter	5.1	3.8	51.1	40.0
St. Joseph	12.3	9.7	71.6	6.4
St. Paul	8.6	8.1	61.1	22.2
St. Luke	10.8	5.6	82.5	1.1
St. Mark	12.3	5.8	81.4	0.5
St. Patrick	5.2	2.3	43.0	49.5
St. David	4.6	4.2	15.3	75.9
St. Andrew	11.7	2.6	43.4	42.3
Grenada	32.2	10.0	49.7	8.1
Town of St. George	80.6	1.9	13.9	3.6
Parish of St. George	37.3	9.4	46.7	6.6
St. John's	21.0	9.6	62.4	7.0
St. Mark's	30.4	5.5	60.4	3.7
St. Patrick's	27.0	4.4	60.4	8.2
St. Andrew's	31.2	3.5	59.4	5.9
St. David's	25.3	4.6	61.8	8.3
Carriacou	0.9	62.5	6.8	29.8
St. Lucia	17.6	7.8	40.6	34.0
Town of Castries	63.6	5.5	22.2	8.7
Suburbs of Castries	27.6	8.0	59.8	4.6
Marchand	18.4	13.1	29.4	39.1
Anse-La-Raye	4.5	13.1	38.3	44.1
Canaries	9.3	3.1	68.9	18.7
Soufriere	17.5	5.9	37.3	39.3
Choiseul	4.3	3.3	20.8	71.6
La Borie	11.6	3.2	25.9	59.3
Vieux-Fort	27.2	3.8	35.5	33.5
Micoud	7.6	2.6	37.8	52.0
Dennery	7.6	2.1	71.1	19.2
Gros Islet	7.1	16.2	47.2	29.5

Table II.7

(continued)

	Public Piped[a]	Private Piped or Catchment	Public Stand-pipe	Other[c]
St. Vincent	22.1	8.0	62.0	7.9
Kingstown	55.7	5.1	36.3	2.9
Rest of Area	12.5	4.0	80.0	3.5
Calliagua	25.5	4.8	63.7	6.0
Marriagua	15.1	4.9	67.0	13.0
Bridgetown	4.7	5.1	79.9	10.3
Colonarie	11.1	1.9	80.9	6.1
Georgetown	17.4	3.4	75.4	3.8
Sandy Bay	0.9	0.7	66.5	31.9
Layou	16.2	1.7	79.9	2.2
Barrouaille	6.8	5.4	85.7	2.1
Chateau Belair	8.8	4.0	82.5	4.7
North Grenadines	1.5	60.8	23.9	13.8
South Grenadines	0.6	42.4	10.4	46.6
Antigua	21.0	5.1	64.4	9.5
St. John's City	33.2	2.4	59.7	4.7
St. John's N.	28.4	12.4	54.8	4.4
St. John's S.	13.7	5.1	73.6	7.6
St. Mary	9.9	3.1	75.3	11.7
St. Paul	14.5	6.2	66.3	13.0
St. Philip	6.0	6.6	77.1	10.3
St. Peter	4.1	6.6	70.4	18.9
St. George	13.9	5.8	71.8	8.5
Barbuda	0.0	0.0	0.0	100.0

	Public Piped[a]	Private Piped or Catchment	Public Stand-pipe	Other[c]
Montserrat	48.2	3.3	36.5	12.0
Plymouth	75.5	0.0	19.5	5.0
St. Anthony's	50.7	3.9	32.5	12.9
St. Peter's	53.0	2.3	32.0	12.7
St. George's	16.8	5.6	63.4	14.2
St. Kitts-Nevis	55.5	5.7	53.3	11.7
Basseterre	29.3	5.9	37.6	5.4
Rest of St. George	41.4	23.5	33.9	1.2
St. Paul	11.9	2.9	75.8	9.4
St. Anne	24.3	3.3	66.5	5.9
St. Thomas	24.3	4.5	64.1	7.0
Trinity	26.2	3.6	68.4	1.8
Christchurch	15.6	3.3	76.1	5.0
St. John's	15.3	4.2	79.0	1.5
St. Mary	10.4	2.6	74.8	12.3
St. Peter	20.2	11.2	66.1	2.5
St. Paul-Nevis	45.7	5.9	43.7	4.7
St. John-Nevis	17.1	9.6	23.6	49.7
St. George-Nevis	16.6	5.0	48.8	29.6
St. Thomas-Nevis	9.8	7.5	59.1	23.6
St. James-Nevis	18.2	2.9	38.4	40.5

Table II.7

(continued)

	Public Piped[a]	Private Piped or Catchment[b]	Public Stand-pipe	Other[c]
Belize	13.5	24.3	25.7	36.5
Belize City	7.7	29.1	51.0	2.2
Belize District	2.6	25.9	17.4	54.1
Corozal	15.1	18.0	2.9	64.0
Orange Walk	4.0	23.5	14.4	58.1
Stann Creek	39.4	10.5	5.3	44.8
Toledo	1.4	7.7	22.9	68.0
Cayo	28.9	12.0	16.7	42.4
Belmopan	13.1	32.8	8.2	45.9
British Virgin Is.	4.3	74.9	3.1	17.7
Tortola	5.1	73.6	3.7	17.6
Anegada	0.0	81.2	0.0	18.8
Virgin Gorda	0.0	83.1	0.0	16.9
Jost Van Dyke	0.0	65.8	0.0	34.2
Other Islands	0.0	92.0	4.0	4.0
Cayman Islands	0.6	81.0	0.0	18.4
Grand Cayman	0.1	82.1	0.0	17.8
Cayman Brac	0.9	74.4	0.0	24.7
Little Cayman	0.0	75.0	0.0	25.0
Turks and Caicos Is.	0.1	36.6	19.0	44.3
Grand Turk	0.0	41.0	44.5	14.5
Salt Cay	0.0	82.4	0.0	17.6
South Caicos	0.0	33.3	0.0	66.7
Middle Caicos	0.0	38.6	0.0	61.4
North Caicos	0.0	19.0	0.0	81.0
Blue Hills	0.7	28.4	0.0	70.9

Source: FWI/CRP (1976: Vol. 9, Parts 2-4), and Antigua (1976: 15).

[a]Piped into dwelling or yard. For Antigua the figures included private piped systems.

[b]Private system piped into dwelling or private catchment system, unpiped (public catchment in Antigua).

[c]Public tank, other, or not stated.

Several small farmer surveys also provide data on household water supplies. In Grenada, Brierley (1974:79) found that 44% of the farmers he surveyed had piped-in water. The figures by parish were as follows:

	Sample Size	Percentage of Houses with Piped-in Water
St. George's	52	54
St. John's	38	32
St. Mark's	21	57
St. Patrick's	46	35
St. Andrew's	86	44
St. David's	49	47
Total	292	44

More recent data for Grenada were obtained in that country's agricultural census of 1974/75. These data show that 68% of all farm households had water either on their farms or no more than a half-mile away. Seventeen percent had piped-in water and an additional 9% obtained water from catchments, wells, or springs on their farms. Another 30% had access to piped water within a half mile of their farms.

The Weir survey (1976:1(b), 13, 61, 108) in Dominica, Montserrat, and St. Vincent reported the following data:

	Percent of Households Surveyed	
	Piped-in Water	Public Standpipe
Dominica	44	19
Montserrat	77	15
St. Vincent	49	39

More recent data for Dominica are provided in that country's new agricultural sector plan (1977:4), which reports that water is supplied to approximately 83% of the population through 36 separate water supply systems. Of the amount of water supplied, 84% is chlorinated.

6. Toilet Facilities.

Table II.8 provides data from the 1970 census on household toilet facilities by country and parish (or other subdivision). At least 75% of the households in all countries had some type of toilet facility (usually a pit latrine) except in Dominica, where 51% were reported to have none. Paradoxically, Dominica also had the highest percentage of households with a W.C. attached to a sewer, though this figure (9%) is still relatively low.

If the national figures are disaggregated we find that in some parts of rural Dominica 70-90% of the households have no toilet facilities. The figures are also relatively high in rural St. Lucia and in scattered parts of other countries.

The only other data found on toilet facilities are from Brierley's (1974:79) study in Grenada. Of the 292 small farmers interviewed in 1969, 19% were found to have sewerage facilities. Some of the remaining 81% presumably used pit latrines. The data by parish are as follows:

	Sample Size	Percentage of Houses with Sewerage Facilities
St. George's	52	25
St. John's	38	16
St. Mark's	21	29
St. Patrick's	46	9
St. Andrew's	86	21
St. David's	49	16
Total	292	19

Table II.8

Type of Household Toilet Facilities, by Country and Major Subdivision, 1970
(percent in each category)

	Pit Latrine	W.C. with Sewer	W.C. No Sewer	Other/ Not Stated	None
Barbados	70.5	1.5	25.0	2.3	0.7
St. Michael	68.5	1.3	29.0	0.7	0.5
Christ Church	54.3	2.0	39.5	1.8	2.4
St. George	82.8	1.5	14.0	1.0	0.7
St. Philip	77.1	2.5	15.5	2.1	2.8
St. John	82.9	0.3	14.6	1.8	0.4
St. James	67.9	2.9	23.4	2.9	2.9
St. Thomas	80.1	0.5	13.7	5.1	0.6
St. Joseph	75.9	1.8	13.1	8.2	1.0
St. Andrew	89.2	0.2	8.1	1.6	0.9
St. Peter	77.6	2.3	17.2	2.4	0.5
St. Lucy	84.3	0.8	10.1	0.3	4.5
Dominica	33.5	8.8	3.5	3.1	51.1
Roseau	3.5	21.5	3.8	4.7	66.5
St. George	29.5	29.4	7.2	1.7	32.2
St. John	19.5	1.6	6.3	13.9	58.7
St. Peter	5.5	1.3	1.1	1.8	90.3
St. Joseph	13.1	2.1	2.6	0.7	81.5
St. Paul	22.2	3.0	4.7	0.8	69.3
St. Luke	10.1	0.9	7.6	10.7	71.2
St. Mark	5.6	9.6	2.9	0.3	81.6
St. Patrick	63.2	2.0	1.5	1.6	31.7
St. David	64.1	1.3	0.3	1.1	33.2
St. Andrew	66.4	2.0	1.6	1.1	28.9
Grenada	66.5	8.0	15.0	1.5	9.0
Town of St. George	11.8	62.6	20.3	1.8	3.5
Parish of St. George	70.3	6.0	17.4	1.0	5.3
St. John's	55.6	5.4	20.6	1.8	16.6
St. Mark's	52.9	1.3	10.4	2.7	32.7
St. Patrick's	55.7	1.7	31.4	1.4	9.8
St. Andrew's	83.5	1.6	8.3	1.2	5.4
St. David's	78.8	4.5	6.5	1.1	9.1
Carriacou	81.1	0.4	3.5	2.6	12.4
St. Lucia	54.4	5.1	5.9	10.2	24.4
Town of Castries	5.1	59.5	1.5	20.3	13.6
Suburbs of Castries	54.1	8.6	8.4	10.7	18.2
Marchand	76.2	2.0	10.3	4.5	7.0
Anse-La-Raye	37.4	0.0	2.9	5.0	54.7
Canaries	12.0	0.7	2.4	14.2	70.7
Soufriere	40.8	2.2	10.2	21.6	25.2
Choiseul	60.5	0.2	1.2	4.8	33.3
La Borie	55.4	0.2	1.7	6.3	36.4
Vieux-Fort	60.2	0.9	4.6	4.6	29.7
Micoud	50.4	0.4	2.6	4.5	42.1
Dennery	48.0	0.8	2.1	29.2	19.9
Gros Islet	56.3	3.6	5.8	9.5	24.8

Table II.8
(continued)

	Pit Latrine	W.C. with Sewer	W.C. No Sewer	Other/ Not Stated	None
St. Vincent	77.5	1.4	12.4	2.1	6.6
Kingstown	48.8	2.3	31.9	10.1	6.9
Rest of Area	91.1	0.6	5.2	0.6	2.5
Calliagua	81.1	1.1	16.2	0.8	0.8
Marriagua	90.5	1.2	5.5	0.5	2.3
Bridgetown	89.9	1.3	2.5	2.1	4.2
Colonarie	86.7	1.0	4.1	0.2	8.0
Georgetown	81.2	1.4	6.5	0.4	10.5
Sandy Bay	91.9	0.2	0.5	0.2	7.2
Layou	75.6	0.5	6.9	0.5	16.5
Barrouaille	82.7	1.2	3.1	0.3	12.7
Chateau Belair	86.8	0.6	3.3	1.0	8.3
North Grenadines	80.5	2.9	11.2	2.1	3.3
South Grenadines	93.9	1.0	3.5	1.0	0.6
Antigua	n.a.	-17.0-		n.a.	16.1
St. John's City	n.a.	-21.9-		n.a.	15.5
St. John's N.	n.a.	-31.6-		n.a.	8.6
St. John's S.	n.a.	-12.8-		n.a.	10.9
St. Mary	n.a.	- 3.1-		n.a.	28.5
St. Paul	n.a.	- 9.4-		n.a.	23.3
St. Philip	n.a.	-10.3-		n.a.	12.6
St. Peter	n.a.	- 8.2-		n.a.	10.2
St. George	n.a.	-18.4-		n.a.	16.6
Barbuda	n.a.	- 7.1-		n.a.	27.9

	Pit Latrine	W.C. with Sewer	W.C. No Sewer	Other/ Not Stated	None
Montserrat	48.7	0.7	24.7	2.8	23.1
Plymouth	35.1	1.4	45.6	1.0	16.9
St. Anthony's	48.6	0.7	27.6	1.4	21.7
St. Peter's	53.1	0.3	21.1	2.4	23.1
St. George's	51.3	1.0	10.3	7.1	30.3
St. Kitts-Nevis	52.8	2.2	29.6	6.6	8.8
Basseterre	35.9	5.4	51.9	6.1	0.7
Rest of St. George	61.0	2.4	32.3	3.5	0.8
St. Paul	75.6	0.2	14.1	1.5	8.6
St. Anne	57.2	0.7	38.4	2.6	1.1
St. Thomas	39.0	1.6	20.6	0.8	38.0
Trinity	67.6	0.4	19.6	1.1	11.3
Christchurch	75.5	0.0	10.5	2.1	11.9
St. John's	67.6	0.0	20.9	1.4	10.1
St. Mary	74.3	1.0	12.7	0.7	11.3
St. Peter	60.6	1.4	27.2	1.3	9.5
St. Paul-Nevis	51.9	0.0	36.4	5.0	6.7
St. John-Nevis	45.0	0.8	20.6	18.0	15.6
St. George-Nevis	46.2	0.2	6.2	35.4	12.0
St. Thomas-Nevis	77.8	1.8	6.9	1.3	12.2
St. James-Nevis	62.4	1.2	8.3	2.5	25.6

Table II.8
(continued)

	Pit Latrine	W.C. with Sewer	W.C. No Sewer	Other/ Not Stated	None
Belize	47.1	1.2	12.9	23.2	15.6
Belize City	0.9	0.7	28.2	56.5	13.7
Belize District	76.3	1.2	5.0	5.0	12.5
Corozal	88.2	1.1	6.5	0.4	3.8
Orange Walk	92.0	0.3	3.4	0.8	3.5
Stann Creek	41.8	3.8	5.2	22.6	26.6
Toledo	18.8	1.1	3.3	6.3	70.5
Cayo	91.0	0.7	5.1	0.9	2.3
Belmopan	57.4	29.5	1.6	—1.5—	
British Virgin Is.	29.3	1.2	48.9	4.0	16.6
Tortola	23.3	1.0	53.9	3.7	18.1
Anegada	50.7	0.0	23.2	4.4	21.7
Virgin Gorda	67.8	3.1	21.8	5.4	1.9
Jost Van Dyke	68.4	0.0	5.3	5.2	21.1
Other Islands	4.0	0.0	60.0	4.0	32.0
Cayman Islands	39.1	0.9	46.3	5.5	8.2
Grand Cayman	39.1	1.0	47.1	4.6	8.2
Cayman Brac	38.6	0.0	42.9	10.7	8.4
Little Cayman	75.0	0.0	0.0	8.3	16.7
Turks & Caicos Is.	68.6	1.6	11.0	2.3	16.5
Grand Turk	75.5	1.1	21.4	1.5	0.5
Salt Cay	91.2	2.9	1.5	1.5	2.9
South Caicos	81.3	0.9	5.8	2.2	9.8
Middle Caicos	62.5	2.3	0.0	5.7	29.5
North Caicos	43.0	0.0	0.5	3.1	53.4
Blue Hills	53.7	6.7	6.7	3.0	29.9

Source: UWI/CRP (1976: Vol. 9, Parts 2-4), and Antigua (1976:15).

7. Electricity

In reviewing the literature on Grenada, the Weir study (1976: 1(a), 288-289) states that "the electricity system covers nearly the whole island except the North-West parish of St. Mark and Carriacou also has an electricity generating plant." Most small farmers in Grenada, however, are not served by this system.[9/] Brierley (1974: 79), whose field work was conducted in 1969, found that only 22% of the 292 small farmers he interviewed had household electricity. The distribution by parish was as follows:

	Sample Size	Percentage of Houses with Electricity
St. George's	52	37
St. John's	38	26
St. Mark's	21	29
St. Patrick's	46	11
St. Andrew's	86	12
St. David's	49	23
Total	292	22

Surveys conducted by the Weir group in Dominica, Montserrat and St. Vincent found that the percentages of small farm households having electricity were higher than in Grenada (1976:1(b), 13, 61, 108):

Dominica	47%
Montserrat	69%
St. Vincent	52%

9/ In 1976 only 35% of all households were served by electricity, and the percentage was higher in urban areas than in rural areas (Grenada, UNPPU, 1977:52).

8. Infant Mortality

Infant mortality rates in the Caribbean are relatively low in comparison with those in other regions in the developing world. Data are available from several sources, and unfortunately the figure for a given country may vary considerably according to the source and the year. This suggests either that the data are poor or that they are subject to significant annual fluctuations because of a relatively small number of observations. Table II.9 presents data collected by the Pan American Health Organization. These show that infant mortality rates in 1972 were generally less than 50 per 1,000 and in three cases less than 20 per 1,000. In St. Kitts-Nevis and St. Vincent, however, the figures were nearly 70 per 1,000.

Among small farmers, infant mortality rates are most likely higher than the national averages. But there is no clear indication of how much higher they might be.

Table II.9

Infant Mortality Rates, 1972
(deaths per 1,000 live births)

	Infant Mortality Rate
Barbados	33.9
Windward Islands	
Dominica	32.0[c]
Grenada	16.0
St. Lucia	52.3
St. Vincent	69.6
Leeward Islands	
Antigua	19.1
Montserrat	31.4
St. Kitts	69.6
Belize	38.5[c]
Other	
British Virgin Is.	44.9[c]
Cayman Is.	11.0[a]
Turks and Caicos Is.	47.4[b]

Source: PAHO (1976: 505).

[a]1970.

[b]1971.

[c]1973.

9. Life Expectancy

Data on life expectancy from the latest (1976) United Nations Demographic Yearbook are presented in Table II.10. Even though these data are at least 15 years old (and more than 30 years old in a few cases), they show that life expectancy in the region is relatively high. In countries for which the data are for the late 1950s and early 1960s (Barbados, the Windwards, and the Leewards except for Montserrat), life expectancy is reported to be from 57 to 65 years. In Montserrat, the Cayman Islands, and Belize, where the data are for the mid-1940s, the figures range from 47 to 52 years.

It is believed that life expectancy in the Caribbean Region now exceeds 60 in all countries, except perhaps Belize. No estimates are available for political subdivisions below the national level. One would expect life expectancy for small farmers to be below the national figures, but given the high average age of the small-farmer population (see Part I.2) the difference probably is not great.

Table II.10

Life Expectancy at Birth

Country	Year(s)	Male	Female
Barbados	1959-61	62.7	67.4
Windward Islands			
Dominica	1958-62	57.0	59.2
Grenada	1959-61	60.1	65.6
St. Lucia	1959-61	55.1	58.5
St. Vincent	1959-61	58.5	59.7
Leeward Islands			
Antigua	1959-61	60.5	64.3
Montserrat	1946	49.5	54.8
St. Kitts-Nevis-(Anguilla)	1959-61	58.0	61.9
Belize	1944-48	45.0	49.0
Other			
British Virgin Is.	1946	49.5	54.8
Cayman Islands	n.a.	n.a.	n.a.
Turks & Caicos Is.	n.a.	n.a.	n.a.

Source: United Nations, Demographic Yearbook 1976 (New York, 1977), pp. 131-132.

10. Nutrition

The results of various nutritional studies are summarized in Table II.11. These show that for children under 5 the incidence of severe (third-degree) malnutrition is less than 2% in all countries except Dominica, where it was 3.4% in 1970. The percentage of young children with second-degree malnutrition ranges from 3.5% in Montserrat to 18% in Belize.

The incidence of malnutrition is likely to be greater in small-farm families than in the population generally, but data to test this hypothesis do not seem to be available.

Table II.11

Nutritional Status of Children Less than 5 Years Old
(percent in various Gomez-scale categories)

	Date	Number of Observations	Nutritional Status				
			Normal	Malnourished[a] I	II	III	Total
Barbados	1969	248	48.8	39.0	11.0	1.2	100.0
Windward Islands							
Dominica	1970	117	71.8	19.7	5.1	3.4	100.0
Grenada	-	-			n.a.		
St. Lucia	1974	363	56.1	33.0	9.0	1.9	100.0
St. Vincent	1967	2,490	37.5	47.0	14.0	1.5	100.0
Leeward Islands							
Antigua	1975	535	56.9	35.5	6.8	0.8	100.0
Montserrat	1971	372	63.1	28.0	3.5	0.0	100.0[b]
St. Kitts-Nevis-(Anguilla)	1974	1,209	61.2	33.3	5.4	0.1	100.0
Belize	1973	3,546[c]	40.8	40.0	18.0	1.2	100.0
Other							
British Virgin Is.	-	-	n.a.	n.a.	5.0[d]		100.0
Cayman Is.	-	-			n.a.		
Turks and Caicos Is.	-	-			n.a.		

Source: Various studies, as reported in PAHO (1976: 503).

[a]Degree I (mild) malnutrition is characterized by body weights that are 75-90% of standard weights by age; Degree II malnutrition occurs when body weights are 60-75% of the standard; and Degree III malnutrition is characterized by body weights less than 60% of the standard.

[b]Includes 5.4% who were overweight by 10% or more.

[c]5½-year-olds only.

[d]Estimate.

III. LAND AND LAND DISTRIBUTION

1. Distribution of Agricultural Land

Except in Belize, the great majority of farmers in the Caribbean Region have holdings of less than 5 acres (see Table III.1). The predominance of smallholdings is particularly striking in the two principal sugar exporting countries, Barbados and St. Kitts, where more than 95% of the holdings with land are less than 5 acres and 60-72% are less than one acre (see Table III.2). [1/]

The number of medium-sized holdings is relatively small. In the Eastern Caribbean no more than 2.5% of all farm units are between 25 and 100 acres, and in at least 4 countries the figure is less than 1.0%. Only in Dominica and St. Lucia do medium-sized holdings account for as much as 10-15% of all land in farms. In Belize, where medium-size holdings may be considered as those having 50-200 acres, 11.5% of all farms, accounting for 15.1% of all farm land, can be so classified.

The percentage of land in large holdings (100 acres and above in the Eastern Caribbean, 200 acres and above in Belize) ranges from 42.2% in St. Kitts-Nevis to 82.9% in Barbados. In general, the distribution of land in the Caribbean Region countries is not as skewed as in the Andean countries of South America, though in all cases the Gini coefficient exceeds .70. If only private land were considered the distribution of landholdings would be less unequal than indicated in Table III.1. Unfortunately, complete data on landholdings by private and public ownership are not available.

1/ In examining the distribution of land, it is not realistic to consider the "landless" farmers as part of the farm population, since farming is not their primary activity.

Table III.1

The Distribution of Agricultural Land
(number of farm units, by size of farm)

	Size of Farm (acres)										
	No Land[b]	Less than 1.00	1.00-4.99	5.00-9.99	10.00-24.99	25.00-49.99	50.00-99.99	100.00-199.99	200.00-499.00	500.00 or More	All Farms
Barbados (1971)	13,159	9,298	3,170	161	68	23	16	31	80	46	26,052
Windward Islands											
Dominica (1972)	462	1,921	3,556	1,170	601	91	58	38	45	26	7,968
Grenada (1974/75)	d	5,959	4,938	741	343	75	51	27	30	8	12,172
St. Lucia (1973)	502	4,730	3,828	1,082	475	199	58	19	26	19	10,938
St. Vincent 1972/73)	706	3,032	3,171	659	161	28	10	7	11	9	7,794
Leeward Islands											
Antigua[a] (1973/74)	461[a]	1,098[a]	729[a]	81[a]	23[a]	7[a]	12[a]	13[a]	12[a]	13[a]	2,449[c]
Montserrat (1972)	88	551	496	66	28	6	3	3	4	2	1,247
St. Kitts-Nevis (1975)	999	2,036	1,222	125	26	10	25	28	25	28	4,524
Belize (1973/74)	437	1,149	1,553	1,401	2,074	1,498	688	342	145	80	9,367
Total	16,814	29,774	22,663	5,486	3,799	1,937	921	508	378	231	82,511

Sources: Agricultural censuses of the respective countries.

[a]Data by farm size from the 1973/74 census are not available. According to a source in Antigua, farmers engaged in crop production had an average of only 1.5 acres. No figure was provided for livestock producers. The figures we use for Antigua are imputed figures based on the percentage in each farm-size category in the other Leeward Islands.

[b]Households having no land but keeping a few head of livestock.

[c]1970 population census data.

[d]Households classified as "landless" in other Caribbean countries appear to be classified in the "Less than 1.00 acre" group in Grenada.

Table III.2

Percentage Distribution of Land Area, by Farm Size Category[a]

Farm Size Category	Barbados (1971)		Dominica (1972)		Grenada[b] (1974/75)		St. Lucia (1973)		St. Vincent (1972/73)		Antigua (1973/74)		Montserrat (1972)		St. Kitts-Nevis (1975)		Belize (1973/74)	
	% of Farms	% of Area	% of Farms	% of Area	% of Farms	% of Area	% of Farms	% of Area	% of Farms	% of Area	% of Farms	% of Area	% of Farms	% of Area	% of Farms	% of Area	% of Farms	% of Area
0.01- 0.99	72.1	4.4	25.6	1.2			45.3	2.4	42.8	3.8			47.5	3.7	60.2	8.2	12.9	0.1
1.00- 4.99	24.6	7.2	47.4	11.4			36.7	11.8	46.7	19.7			42.8	16.1	35.0	31.8	17.4	0.3
5.00- 9.99	1.3	1.4	15.6	10.2			10.4	9.8	9.3	11.8			5.7	7.5	3.3	8.1	15.7	1.5
10.00- 24.99	0.5	1.3	8.9	11.4			4.5	8.9	2.3	6.0			2.4	7.3	0.7	3.2	25.2	6.1
25.00- 49.99	0.2	1.1	1.2	4.9	n.a.	n.a.	1.9	8.7	0.4	3.0	n.a.	n.a.	0.5	3.2	0.1	0.4	16.8	8.6
50.00- 99.99	0.1	1.7	0.8	5.4			0.6	6.9	0.1	2.1			0.3	3.4	0.2	6.1	7.7	7.6
100.00-199.99	0.2	6.4	0.5	7.1			0.2	3.7	0.1	2.8			0.3	6.2	0.2	12.6	3.8	7.5
200.00-499.99	0.6	35.5	0.8	17.8			0.2	11.3	0.2	10.4			0.3	17.5	0.2	23.1	1.6	9.1
500.00 and over	0.4	43.0	0.3	30.6			0.2	37.4	0.1	40.4			0.2	34.9	0.1	6.5	0.9	58.7
Total	100.0	100.0	100.0	100.0			100.0	100.0	100.0	100.0			100.0	100.0	100.0	100.0	100.0	100.0

Source: Agricultural censuses of the respective countries.

[a]Excludes farmers with no land.

[b]Complete data on land distribution were not available. It is reported, though, that 56% of the farm land is held by 1% of the farmers, while at the other extreme 89% of the farmers hold 24% of the land.

n.a. Not available.

2. Fragmentation of Holdings

Census data show that the average number of plots per farm holding, in the five countries for which data are available, ranges from 1.1 in St. Lucia to 1.6 in Grenada. Small farmer surveys, however, have tended to show a greater degree of fragmentation. Except in Antigua, where a recent survey found only 1.2 plots per holding, the average number of plots reported by the various surveys ranges from 1.5 in St. Lucia to 2.4 in Grenada (see Table III.3).

The issue of farm fragmentation is the subject of considerable controversy. Brierley (1978: 135) argues for Grenada that "there is little economic or agricultural justification for the degree of fragmentation that exists." But Hills, Ilon, and Lundgren (1972) maintain for the Commonwealth Caribbean generally that "there is little doubt that under certain circumstances fragmentation of the farm is a necessity and may be economically and socially advantageous." Fragmentation is usually justified on the grounds that it spreads a farmer's risk. Moreover, if farmers cannot purchase land contiguous to their existing holdings, it is the only means by which they can expand their operations. A disadvantage of fragmented holdings in the Eastern Caribbean, though, is that the reportedly high incidence of praedial larceny restricts crop choices on land away from the farmer's home to low-value crops.

Table III.3

Fragmentation of Farm Holdings, Census and Survey Data

A. Census Data

	Date of Census	Average Number of Plots per Farm
Barbados	1971	n.a.
Windward Islands		
Dominica	1972	1.4
Grenada	1961	1.6
St. Lucia	1973	1.1
St. Vincent	1972/73	n.a.
Leeward Islands		
Antigua	1973/74	n.a.
Montserrat	1972	1.6
St. Kitts-Nevis	1975	1.3
Belize	1973/74	n.a.

B. Survey Data

Author	Country	Date of Survey	Sample Size	Average Number of Plots per Farm
Antigua(1977)	Antigua	1977	100	1.2
Brierley(1974:103)	Grenada	1969	292	2.4
Mills(1976:155)	St. Kitts	1973	66	1.6
Momsen(1970:84)	Barbados	n.a.	c.200	1.6
Momsen(1970:84)	St. Lucia	n.a.	c.200	1.5
Weir(1976:I(b), 15)	Montserrat	1975	51	2.1[a]
Weir(1976:I(b), 65)	St. Vincent	1975	97	2.0[a]
Weir(1976:I(b), 111)	Dominica	1975	100	2.2[a]
Yankey(1969:178)	Dominica	1966	96	2.0

Sources: Agricultural censuses of the respective studies and farm-level studies as identified in the References at the end of this document.

[a]Assumes that the average number of plots in the 4+ category is 5.

3. Land Tenure

Land tenure patterns in the Eastern Caribbean are not uniform. In Barbados and the Windward Islands individual ownership predominates, with recent agricultural census data showing that about 70-75 percent of the holdings are wholly owned. In the Leewards rental arrangements are dominant, and governments have become the principal landowners through purchases of estates from private owners for whom production of sugar and cotton had become unprofitable. In Antigua the government now owns an estimated 70 percent of the agricultural land, and some 75 percent of the crop producers are renters (Fiester et al. 1978:ANT-5-6). The Antiguan government is also renting land to small livestock producers. Land tenure data for individual countries are presented in Table III.4.

It appears that the rationale for leasing land to small farmers, rather than offering it for sale, is based on a lack of government confidence in small farmers' decision-making abilities. One of the arguments used against freehold tenure is that small farmers might not devote their energies to productive farming but rather will keep much of their land idle, holding it for speculative purposes (particularly tourism or foreign retiree housing development.) Beckford (1972) argues that the distribution of landholdings under freehold tenure inevitably will become very unequal. Thus he favors government ownership of existing estate lands and their distribution to farmers under long-term lease arrangements. In Dominica, leases given to farmers under three recent resettlement schemes are only for 3-5 years, while elsewhere renewable leases of up to 20 years are granted. Farmers can be evicted, or their leases not renewed, if they do not

Table II.4

Land Tenure Patterns, Latest Agricultural Census Data

	Number of Farm Holdings with Land, by Tenure Category						Number of Acres by Tenure Category					
	Owned	Cash Rental	Share Tenancy	Mixed	Other[a]	Total	Owned	Cash Rental	Share Tenancy	Mixed	Other[a]	Total
Barbados(1971)	8,986	3,126	153	362	293	12,893	69,516	1,736	114	2,366	265	73,995
Windward Islands												
Dominica(1961)	6,614	——	1,390[b] ——	580	83	8,667	——	——	n.a. ——	——	——	——
Grenada(1974/75)	——	——	n.a. ——	——	——	——	45,193	2,420	183	-	701	46,576[c]
St. Lucia(1973)	7,563	2,001	400	469	-	10,433	66,667	2,049	874	2,411	-	72,001
St. Vincent(1972/73)	——	——	n.a. ——	——	——	——	29,918	1,320	1,640	-	1,477	34,355
Leeward Islands												
Antigua(1973/74)[d]	——	——	n.a. ——	——	——	——	——	——	n.a. ——	——	——	——
Montserrat(1972)	553	——	261[b] ——	345	-	1,159	3,844	——	688 ——	1,348	-	5,880
St. Kitts-Nevis(1975)	1,763	763	190	399	411	3,525	36,894[e]	1,966	303	2,246	469	41,909
Belize(1973/74)	——	——	n.a. ——	——	——	——	——	——	n.a. ——	——	——	——

Sources: Agricultural censuses of the respective countries.

[a] Mostly rent-free.

[b] Most of these farmers are probably cash renters.

[c] Total area held by farmers in various tenure categories minus owned area rented out.

[d] The government of Antigua reportedly owns about 70% of the country's agricultural land. It is believed that about 75% of the crop producers rent their land from the government; most of the remainder, especially in the southeast, are owners. Most livestock operators also rent their land from the government.

[e] Approximately 60% of the agricultural land in St. Kitts is government-owned.

work the land to the government's satisfaction. The power of eviction or non-renewal may or may not be used, but in any event it appears that farmers generally do not regard even 20-year leases as providing sufficient security for making long-term investments. Some governments are willing to consider alternatives to present leasehold arrangements, but others--particularly St. Kitts--seem strongly committed to this form of tenure.[2/]

Governments in the Eastern Caribbean have shown very little interest in encouraging the development of small-farmer cooperatives or in promoting other forms of group farming. A recent effort in Dominica to form a cooperative among young farmers has encountered serious difficulties, probably due largely to poor government administration.

A form of land tenure that appears to be an obstacle to small-farmer development in St. Lucia, and to a lesser extent in some other islands,[3/] is the so-called "family land system," based historically on French land legislation under which all heirs have equal rights to inherited land, which is not formally subdivided and for which legal titles are not issued. This system gives family members the right to claim a share of the harvest even if they have done nothing to prepare the land or cultivate it (Finkel 1964: 171-172; Mathurin 1967). Investment in the farm enterprise by entrepreneurial-minded family members thus seems to be discouraged, though how strong this disincentive might be is open to question (Momsen 1972). About 20% of all holdings of all holdings in St. Lucia, four-fifths of them with less than 10 acres, are believed to have multiple owners. Lacking a clear title, farmers on these holdings have had virtually no access to

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[2/] In St. Kitts, unlike some of the other islands, agricultural workers on the sugar estates seem to have little interest in landownership (Finkel 1964:166).

[3/] Family-land systems have also been reported in Barbados (Greenfield 1960), Dominica (O'Loughlin 1968:102), and Grenada (Brierley 1974:88-99). Brierley estimates that about 10% of the land at the disposal of small farmers in his survey was held in this form.

credit through official channels. [4] The Government of St. Lucia has talked about land tenure reform to overcome the obstacles imposed by the family land system, but no action has yet been taken.

Small farmers in the Eastern Caribbean find it difficult to purchase land, despite the decline of the private estate system and the exodus of farm operators from the countryside since 1960. Part of the problem is availability: though some private land continues to be subdivided and made available as small plots, much of the estate land has been passing into government hands and is not available for sale. Where land is available the cost is often high, particularly in areas where there is tourism potential. In Grenada, Brierley (1974:66-67) found that former estate workers and skilled laborers were usually at least 50 years old before they had money to buy enough land to become independent farmers. Even skilled workers did not save enough money until their late 30s or early 40s. The average age of the 292 farmers interviewed by Brierley was 54 years.

Governments, of course, could promote more widespread landownership by selling former estate lands they hold at favorable prices and with long repayment periods. Some sales have been made, but often the parcels have been too small to permit the buyers to engage in farming on a full-time basis. In addition, small farmers--renters as well as potential buyers--have not always had access to good quality land.

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[4] This situation is changing, though, because the CDB's new Agricultural Production Credit scheme permits borrowers to use crop liens as security.

IV. PRODUCTION AND PRODUCTION TECHNOLOGY

1. Crop and Livestock Activities

a. Antigua

National accounts estimates for 1975 show that livestock activity accounted for 5.9% of the GDP in that year, considerably more than crop production, whose share of the GDP was only 1.1%. The latter figure, however, is probably underestimated. Unpublished Ministry of Agriculture data for 1976 show that small farmers produce a variety of field crops, the most important of which are sweet potatoes, tomatoes, pumpkins, cucumbers, carrots, and yams (in descending order of importance, by volume rather than value of production).

The Government of Antigua's small farmer survey (1977) provides the following data on the principal crops and livestock operations of the farmers interviewed:

Crop or Type of Livestock	Number of Farmers, by Degree of Importance		
	First	Second	Third
Cotton	33	2	6
Vegetables	25	21	19
Root Crops	16	46	21
Tree Crops	11	7	4
Dairy Cattle	11	3	2
Beef Cattle	3	3	0
Small Livestock*	0	12	18
Other	1	6	30
Total	100	100	100

*Sheep, goats, pigs, poultry.

On the island of Barbuda, cattle raising is by far the most important agricultural activity (Berleant-Schiller 1977).

Ministry of Agriculture data for 1974 (reported in Weir 1976: I(a), 197) show that small farmers accounted for most of the output of a number of food crops:

Crop	Percentage Produced by Small Farmers
Corn	82.8
Sweet potatoes	44.2
Cassava	93.5
Yams	94.7
Tomatoes	70.2
Cabbage	95.0
Carrots	27.9
Onions	5.8
Eggplant	59.1
Pumpkins	88.3

(2) Barbados

Ingersent (1969) reported that small farmers were growing most of the carrots, cabbage, string beans, lettuce, beets, shallots, and other minor vegetables in the late 1960s, while most tomatoes were grown on estates. Momsen (1970:80) referring to the same period of time, reported that small farmers grew almost all of the vegetables and ground provisions. More recent evidence, though, indicates that the estates are now important producers of onions, carrots, yams, and perhaps other field crops.

(3) Belize

Data from the agricultural censes of 1973/74 (reported in Weir 1975: I(a), 263-265) show that small farmers produce about 80% of the total production of red kidney beans, 30% of the corn, and almost all of the vegetables. Rice was produced almost entirely by smallholders in the early 1960s, but by 1970 Mennonite farmers on larger holdings were producing

about the same amount as the smallholders.

(4) Dominica

Of the 96 small farmers interviewed by Yankey (1969: 247-248), 93 grew bananas, attracted to this crop because it provided a guaranteed source of (year-round) income.

The Weir survey (1976:1(b), 113) found that bananas were a major source of income for 47% of the small farmers interviewed. Other important cash crops were ground provisions, a major source of income for 44%; citrus fruits, 18%; and plantains, 16%. Livestock operations were less important than crop production, with 51% of the farmers not selling or keeping livestock. The principal types of livestock sold were goats, pigs, and cattle, listed as a major source of income for 15%, 14%, and 12%, respectively, of those interviewed.

Unpublished Ministry of Agriculture data for 1976 show that the principal domestic food crops in 1976, in descending order by value of production, were dasheen, tannia, yams, plantains, cucumbers, cabbages, tomatoes, and sweet potatoes.

Most of the bananas, bay oil, cocoa, root crops, and vegetables are produced on small farms. Large farms are dominant in the production of coconuts and citrus fruits.

(5) Grenada

The Weir study (1976:1(a), 304-305) reports that farmers with less than 5 acres grew 55% of the 1970 nutmeg crop. About 20% of the cocoa is grown on farms of less than 5 acres. One-fourth of the banana crop is reportedly grown on small farms; but "small" is not defined in this case, and if farms of up to 25 acres are included the percentage is probably much higher. Most coconut production, and almost all production

of cotton and limes, is reportedly on small farms. Root crops, fruits and vegetables, meat, and milk are also reported to be produced mainly on small farms.

Brierley's study of small farmers in Grenada (1974) found that production patterns varied with the type of farm:

- Non-Commercial Farms (N = 42)

Principal Field Crops	Number of Farms	Principal Tree Crops	Number of Farms
Pigeon peas	30	Bananas	38
Dasheen	22	Coconuts	26
Yams	22	Breadfruit	24
Tannias	21	Mangoes	23
Corn	20	Cocoa	22
Tomatoes	17	Citrus(exc. lime)	16
Sweet potatoes	16	Nutmeg	14
Okra	15		
Lettuce	13		

Livestock	Number of Farms
Pigs	33
Goat	21
Sheep	19
Beef cattle	17
Dairy cattle	14

- Semi-Commercial Farms (N = 96)

Principal Field Crops	Number of Farms	Principal Tree Crops	Number of Farms
Pigeon peas	68	Coconuts	81
Yams	63	Bananas	79
Tannias	52	Breadfruit	67
Okra	39	Mangoes	66
Tomatoes	38	Cocoa	56
Dasheen	38	Citrus(exc. lime)	53
Corn	34		
Peppers	34		

Livestock	Number of Farms
Pigs	45
Dairy cattle	27
Beef cattle	24
Sheep	23
Meat Goats	22

Semi-commercial farms, like non-commercial farms are highly diversified. Livestock operations are of lesser importance, while tree crops are of greater relative importance. The principal cash crops on the semi-commercial farms were primarily export crops:

Crop	Number of Farms, by Degree of Importance		
	First	Second	Third
Cocoa	32	15	9
Bananas	20	11	14
Nutmeg	16	26	10
Sugarcane	8	2	1
Ground provisions	5	9	6
Beans, corn, peas	5	6	5

- Commercial Farms (N = 118)

Principal Field Crops	Number of Farms	Principal Tree Crops	Number of Farms
Pigeon peas	83	Bananas	105
Yams	78	Coconut	93
Tannias	71	Breadfruit	82
Tomatoes	52	Cocoa	82
Dasheen	50	Mangoes	77
Corn	47	Avocados	62
Okra	47	Citrus(exc. lime)	61
Sweet potatoes	45	Nutmeg	57
Peppers	43		

Livestock	Number of Farms
Pigs	48
Dairy cattle	33
Beef cattle	20

The pattern of field crop production is similar to that on semi-commercial farms. There is a further shift toward tree crops and away from livestock. Export crops, particularly cocoa and nutmeg, are of even greater importance as sources of cash income:

Number of Farms,
by Degree of Importance

Crop	First	Second	Third
Cocoa	41	30	16
Nutmeg	31	33	17
Bananas	12	20	22
Sugarcane	10	2	3
Salad vegetables	8	3	3
Ground provisions	6	6	15
Beans, corn, peas	6	6	10

- Miniature Estates (N = 36)

Principal Field Crops	Number of Farms	Principal Tree Crops	Number of Farms
Dasheen	18	Bananas	31
Pigeon peas	15	Cocoa	29
Yams	14	Breadfruit	25
Tannias	13	Coconut	25
Lettuce	11	Mangoes	23
Okra	10	Nutmegs	23
		Avocados	21
		Citrus(exc. lime)	20

Livestock	Number of Farms
Pigs	16
Dairy cattle	12
Milch goats	8
Meat goats	7

Field crop production on the miniature estates is of considerably less importance than on other types of small farms, and the relative importance of tree crops is greatest. Cash income from farm operations comes almost entirely from export crops. Cocoa is the principal source of income for more than half of these farmers:

Number of Farms,
by Degree of Importance

Crop	First	Second	Third
Cocoa	56	30	8
Bananas	19	30	33
Nutmeg	16	24	33

(6) Montserrat

The 1972 census (Montserrat n.d.) shows that virtually all crops are produced overwhelmingly on farms of less than 10 acres. The most important field crops, in descending order by acreage, were sweet potatoes, cotton, dasheen, hot peppers, yams, and carrots. Bananas are the most important tree crop, followed at a considerable distance by coconuts, mangoes, and breadfruit. Livestock operations were also dominated by small farms, with farms of less than 10 acres accounting for 84% of the pigs, 69% of the cattle, and more than half of all other types of livestock except for horses, the number of which was neglibible. According to Arthurton and Henry (1975), small farmers prefer livestock production to crop production.

The principal cash crops are ground provisions, listed as a principal source of cash income by 62% of the farmers interviewed in the Weir survey (1976:I(b), 19). Other major cash crops were cotton (31%), bananas (23%), vegetables (23%), and tomatoes (16%). Cattle were a major source of income for 23% and sheep for 16%.

(7) St. Kitts-Nevis

For all food crops, most production is on farms of less than 5 acres. Root crops, particularly sweet potatoes, are by far the most important type of crops grown. Farms of less than 5 acres also dominate cotton production (all on Nevis), all tree-crop production except mangoes and coconuts, and all types of livestock holdings, except for a negligible number of draft animals (St. Kitts 1977:11, 12, 30).

(8) St. Lucia

Data from the 1973/74 agricultural census (summarized in Weir 1976: I(a), 45) show that farms of less than 10 acres account for most of

the production of almost all crops:

Crop	Percent of Total Production by Small Farms	
	0-10 acres	10-25 acres
Green corn	79	12
Dry shelled corn	96	0
Pigeon peas	95	4
Red kidney beans	88	9
Other peas and beans	55	1
Tannia, dasheen, eddoes	89	9
Yams	79	15
Cassava	94	5
Sweet potatoes	90	6
Ginger	68	21
Peanuts	88	7
Oranges	47	19
Grapefruit	58	24
Limes	11	4
Breadfruit	67	17
Export bananas	57	13
Other bananas	76	12
Plantains	62	18
Coconuts	26	9
Nutmeg (export)	33	0
Coffee	73	16
Cocoa	56	7

Bananas are the principal cash crop for small farmers. Livestock sales are also a principal source of cash income for small farmers, as indicated by the following unpublished data from the 1973/74 census which appear to refer to the gross value of marketings:

Type of Activity	Income (EC$000)	
	All Holdings	0-10 Acres
Permanent crops	11,151	5,786
Other crops	1,951	1,627
Cattle, sheep, goats	6,184	4,314
Pigs, poultry	436	341
Total	19,722	12,068

(9) St. Vincent

Data from the 1961 agricultural census show that farmers with less than 10 acres accounted for 57% of the acreage in bananas, and it is believed that their share of production was even higher (Weir 1976:I(a), 408). Their share of other crops was as follows:

Arrowroot	32%
Sweet potatoes	72%
Coconuts	1%
Sugarcane	24%

Unpublished data from the 1972/73 census was not located, but it is believed that farmers with less than 25 acres now produce about 85% of all bananas (by far the leading export crop), and also produce most of the ginger, yams, sweet potatoes, and carrots (which also are exported). Large farmers dominate the production of arrowroot and coconuts (Fiester et al. 1976:STV-6).

Bananas were listed as a major source of income by 49% of the farmers interviewed in the Weir study (1976:I(b),70). Also reported as major sources of income were ground provisions (66%) and cattle (22%). No other crop or type of livestock was a major source of income for more than 12% of the farmers.

2. Machinery, Fertilizers, and Chemicals

a. Agricultural Technology: Some General Comments

The level of technology employed by small farmers in the region is relatively low. Poor farming practices include use of varieties that are not appropriate for local soil and climatic conditions; inappropriate applications of fertilizer (used mainly in the production of bananas); poor plant spacing (low density and irregular planting); poor weeding; and inadequate pest control, either through lack of attention or by the use of dangerous chemicals applied by unskilled operators.

Technological levels usually are higher for export crops than for domestic food crops. Most small banana growers use fertilizer, purchased on credit from their producer associations and often applied also to other crops. The Weir survey (1976:I(b), 75, 117) found that 65 percent of the small farmers interviewed in St. Vincent used fertilizer on bananas and 59 percent applied it to root crops; in Dominica 67 percent fertilized bananas and root crops and 23 percent fertilized their citrus trees. Many of these farmers reported that they also used other agricultural chemicals for banana production, but for other crops use of chemicals was not widespread. The productivity of banana production on smallholdings is thought to be lower than on plantations (reliable estimates do not seem to be available), but the difference may not be great. Moreover, it probably can be explained largely by land quality (higher on the estates) and by the greater incidence of intercropping on smallholdings. Yields generally are very low in comparison with other producing countries.

Production costs in the Eastern Caribbean tend to be relatively high because of soil fertility limitations, the high cost of imported fertilizers and chemicals, and what appears to be an unfavorable relationship between

labor costs and the physical productivity of hired labor. Compounding these problems is what the AID Survey Team (Fiester et al. 1978:II-16) referred to as a "fascination with advanced technology." Survey Team members visited livestock projects where the investment costs of pasture development, fences, and water storage tanks could have been reduced significantly by using less sophisticated but still productive technology. Tractors are very much in demand, very likely because of an aversion to the hard physical labor that historically was associated with the plantation system. The availability of subsidized land-clearing and other machinery services artificially stimulates the substitution of capital for labor. Low (and in some cases zero) rent on government-owned land artificially encourages farmers to substitute land (not always of good quality) for labor and other production inputs. In both cases the result is higher production costs which must be absorbed directly by the government or by consumers in the form of higher product prices.

b. Machinery and Equipment

(1) Antigua

Small farmers may obtain tractor services from the government at nominal cost (Weir 1976:I(a), 198). No information was found on the extent to which small farmers use these services. The number of tractors in Antigua declined from 190 in 1966 to 130 in 1970 (Weir 1976:I(a), 197), but unpublished Ministry of Agriculture data for 1976 show a figure of 228, roughly one tractor for every 10 farm households. However, small farmers own few tractors, and the recent increase is probably attributable both to government purchases and to imports by a subsidiary of a U.S. corporation renting 10,000 acres of land from the government, with about 3,000 acres now being used for corn and sorghum production.

(2) Barbados

Unpublished data from the 1971 census show that there were 584 tractors in Barbados in that year. Among the other machinery and equipment inventoried were 113 plows, 60 rotary tillers, 125 harrows, 78 cultivators, 159 crop dusters, and 930 crop sprayers. Momsen's survey of small farmers (1970:84) found that 48% used some machin .

(3) Belize

The 1973 74 census (Belize n.d.) reported that farmers owned 968 tractors. It was also reported that 896 tractors were rented. Farmers with less than 25 hectares, however, accounted for only 5% and 13%, respectively, of these totals. Similarly, they accounted for only 4% of the plows owned and 20% of the plows rented. The data are as follows:

	Acres				
	Less than 10.00	10.00-24.99	25.00-99.99	100.00 & over	Total
Tractors owned	10	43	331	584	968
Tractors rented	40	74	444	335	896
Plows owned	10	11	214	299	534
Plows rented	52	48	302	88	490

(4) Dominica

There appears to be relatively little use of machinery and equipment by small farmers in Dominica. Yankey (1969:189) found that only 15 of the small farmers he interviewed in 1966 used their savings to purchase such tools as hoes and machetes (though a much higher proportion apparently used these tools). The Weir survey (1976:145), 1243 found that only 3 of the 100 small farmers interviewed purchased mechanical inputs.

(5) Grenada

Very little farm machinery is used in Grenada. Unpublished data from the 1974/75 census show that there were only 9 tractors, 15 plows, and 3 harrows in the country. Farmers owned only 19 crop dusters and

135 crop sprayers. Among the 100 "operators of miniature estates," the small farmers with the largest operations (7-15 acres) covered in Brierley's (1974: 239) study, only 5 had portable sprayers and 3 had irrigation equipment. Most farmers used only small tools (machetes, hoes, etc.) the incidence of which Brierley records by type of tool, type of farm, and parish.

(6) Montserrat

Unpublished data from the 1972 agricultural census show that only 2 of the 1,159 holdings with land had tractors, plows, and harrows, the numbers of which were 11, 13, and 6, respectively. Seven holdings reported having a total of 12 crop sprayers. Small farmers, though, can rent tractor services at very low cost from the Ministry of Agriculture, which also provides equipment for land clearing, crop spraying, and planting.[1/] The 1972 census data show that 144 holdings used mechanical power exclusively, and an additional 38 employed both animal and mechanical traction. The Weir survey (1976: I(b), 28) found that 38 percent of the 51 small farmers interviewed incurred some expenses for mechanical inputs.

(7) St. Kitts-Nevis - (Anguilla)

The sugar industry in St. Kitts has been characterized by a moderately high degree of mechanization. The number of tractors varied from 183 to 202 between 1966 and 1972, though the current number may be somewhat smaller.[2/] The government provides free plowing services to sugar industry workers growing food crops and charges other farmers only a nominal fee

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[1/] The Weir study (1976:I(a), 112) reports that the total number of tractors in the country averaged 19 between 1966 and 1972. Most were government-owned.

[2/] The 1975 agricultural census (St. Kitts 1977:28) reported 152 tractors on farm holdings, but this figure may not include all tractors owned by the government.

(Weir 1976:I(a), 153). The 1975 census (St. Kitts 1977:28) shows that there is little use of other agricultural equipment.

(8) St. Lucia

The 1973/74 census of agriculture (St. Lucia 1975:88) reports that there were only 43 tractors in the agricultural sector. Eight of these were on holdings of 10-25 acres and the rest on holdings of 100 acres or more. Six of the 10 rotary tillers were on farms of less than 25 acres, but all of the 9 harrows were on holdings of at least 200 acres. Of the 174 plows reported, 164 were on holdings of less than 5 acres, suggesting that these are relatively simple pieces of equipment. The census reported 337 crop sprayers, of which 110 were on farms with less than 25 acres.

(9) St. Vincent

Unpublished data from the 1972 agricultural census show that farm holdings had a total of only 35 tractors, 13 plows, 7 rotary tillers, 9 harrows, 5 cultivators, and 159 crop sprayers and dusters (Weir 1976: I(b):83). The Weir survey (1976:I(b), 41) found that 14% of the 97 small farmers interviewed rented machinery or equipment from the Ministry of Agriculture.

c. Fertilizer and Chemicals

(1) Antigua

No information was found on use of fertilizers and chemicals by small farmers, though it appears to be very limited. The Central Marketing Corporation, which has a near-monopoly on the sale of these inputs, sold only 32,430 pounds of fertilizer, for approximately US$16,000, in 1974. The value of pesticide sales was about US$13,000.

(2) Barbados

Momsen (1970:64) found that 96% of the small farmers she interviewed

used fertilizer. Unpublished data from the 1971 Census of Agriculture show that 46,080 acres, or 84% of all arable land, was fertilized. Total fertilizer consumption in 1971 was 24,471,000 pounds.

(3) Belize

The 3,000 or so farmers engaged in milpa (shifting cultivation) agriculture use very few modern inputs. Small sugarcane farmers, who produce about 80% of the country's production, can obtain fertilizers and pesticides on credit from the Sugar Board. A few small banana growers also use fertilizer and chemicals (Weir 1976:I(a), 261-264).

(4) Dominica

Most small farmers use fertilizer for bananas. Of the 96 small farmers interviewed by Yankey (1969:189, 230), 58% sought (and presumably received) credit for fertilizer, and 38% purchased fertilizer out of their savings. The Weir survey (1976:I(b), 117) found that 67% of the 100 small farmers interviewed used fertilizers on bananas. Except perhaps for bananas, fertilizer applications were thought to be inadequate. Percentages reported for other crops were : ground provisions, 67%; plantains, 34%; citrus, 23%; and vegetables, 16%. Chemical use was high (45%) only for bananas, though a government spraying program protects most banana trees from leaf spot. Only for one other crop (plantains, 18%), did more than 10% of the farmers use chemicals.

(5) Grenada

Brierley (1974:147, 180, 212, 238) found fertilizer use among the various categories of small farmers to be as follows:

Type of Farm	Percentage of Farmers Using: Chemical Fertilizer	Chemical Fertilizer & Manure	Manure Only
Non-commercial	19	16	12
Semi-commercial	17	56	21
Commerical	12	55	20
Miniature estate	22	78	0

Except for the non-commercial, "weekend" farmers, at least two-thirds of the small farmers interviewed used chemical fertilizer.

(6) Montserrat

Unpublished data from the 1972 Census of Agriculture show that only 8.6% of the farm holdings used fertilizer. Fertilizer use varied considerably by size of farm:

Acres	Percentage of Farmers Using Fertilizer
Less than 1.00	5.6
1.00 - 4.99	8.9
5.00 - 9.99	18.0
10.00 - 24.99	50.0
25.00 - 49.99	0.0
50.00 and over	50.0

The Weir survey (1976:I(b), 20-21) found a higher incidence of fertilizer use among small farmers: 31% used fertilizer for cotton, ground provisions, and vegetables; 23% for bananas, and 15% for tomatoes, onions, and carrots. Twenty-three percent used chemicals on vegetables and 15% on cotton, ground provisions, and tomatoes. Chemicals were not used on citrus fruits, carrots, or plantains.

(7) St. Kitts-Nevis

Fertilizer use in 1975, according to that year's agricultural census (St. Kitts 1977:30), was 2,698,000 pounds, considerably less per acre than in Barbados, the other country in the region where agriculture is still dominated by sugar. Virtually all fertilizer was used in St. Kitts, with Nevis accounting for only 0.7% of the national total. Very little fertilizer was used on small farms: holdings of less than 25 acres

accounted for just 2.5% of total consumption (66,209 pounds). Among the small farmers studied by Mills (1976), fertilizer use was negligible.

(8) St. Lucia

Fertilizer is widely used in banana production in St. Lucia, even by small farmers. Momsen (1970:84) found that 78% of the small farmers she interviewed used fertilizer. Persaud (1967:16, as cited in Weir 1976:I(a), 39) found that fertilizers accounted for 24% of banana production costs on farms of less than 10 acres and 31% on larger farms. A survey conducted in 1975 (cited in Weir 1976:I(a), 40) found that 90% of the banana growers used fertilizer, with 49% applying it 4 times a year in accordance with the recommendations of the Windward Islands Banana Growers' Association (WINBAN). The same survey found that 30% of the growers used chemicals for weed control. Fertilizer applications were greater on large farms than on small farms, but even on large farms they tended to be less than WINBAN recommendations (Weir 1976:I(a), 55).

For small farmers generally, including those not growing bananas, the 1973/74 agricultural census (St. Lucia 1975 :94) reports the following adoption rates by size of farm for artificial fertilizers and soil dressings:

Acres	Adoption Rate (%)
Less than 1.00	27.8
1.00 - 4.99	51.4
5.00 - 9.99	48.5
10.00 - 24.99	71.8
25.00 - 49.99	37.7
50.00 - 99.00	32.8
100.00 and over	32.8
All farms*	40.8

*Excludes 502 holdings without land.

(9) St. Vincent

The Weir survey (1976:I(b), 75) found that 65% of the 97 small farmers interviewed used fertilizer for bananas, 59% for ground provisions, and 11-15% for plantains, peanuts, tomatoes, and carrots. For other crops the percentage using fertilizer was lower. Sixty percent of these farmers used agricultural chemicals for bananas, but the adoption rate for all other crops was less than 10%.

3. Family Labor and Hired Labor

a. Barbados

Momsen's survey of small farmers in Barbados (1970:81, 84) found that 33% of the "work force" (labor time?) was provided by the farm family, 4% by unpaid non-family workers, and 63% by hired labor. Hired labor was used by 83% of the farmers surveyed; the average number of hired workers was 1.78.

b. Dominica

Yankey's survey of small farmers in Dominica (1969:194) found that 60 of the 90 farmers with families used family labor. No data are provided for hired labor, but apparently little was thought to be used.

The Weir survey (1976: I(b), 118-119), conducted nearly 10 years later, reported that family labor was used regularly by 42% of the small farmers interviewed and irregularly by another 9%. Thirty-two percent of the farmers used up to 100 work-days of hired labor annually; 9% used between 101 and 250; and 23% used more than 250 work-days.

c. Grenada

Brierley (1974: 149, 182, 212-213, 239-240) provides quantitative data only on the labor time of small farmers themselves, but he does provide qualitative information on family labor and hired labor for the four types of small farms he identified:

- Non-commercial farms: Farmers spend an average of 7.6 hours per week on their plots. Family members assist in planting, and male farmers wives' often do the weeding, a task that may be neglected by unmarried farmers. "Hired labor is uncommon and is engaged usually by female farmers or the aged when strenuous tasks, such as digging, are necessary."
- Semi-commercial farms: Farmers spend an average of 16 hours per week on their plots. Both hired labor and exchange labor are used at planting and harvest times.

- Commercial farms: Farmers spend an average of 28 hours per week on their plots. Wives often work in the kitchen garden for an hour each day and sell food crops at the Saturday markets. Most commercial farms do not use hired labor, though some of the older and more affluent farmers employ workers for cutting bananas or preparing vegetable beds. Exchange labor is sometimes used for urgent, seasonal tasks.

- Miniature estates: Farmers spend an average of 26 hours per week on their plots, though full-time farmers in their fifties usually work 35-45 hours. "On all these farms regular assistance is found, usually in the form of a regular hired hand although occasionally a diligent wife [sic, or grown-up son provides help. During the cocoa and nutmeg harvest further assistance might be employed." For status reasons, exchange labor is not common.

d. Montserrat

The Weir survey (1976: I(b), 24) reported that family labor was used regularly by 38% of the farmers interviewed and irregularly by 8%. The data on hired labor are confusing, but it appears that about 60% of the farmers used hired labor. In most cases, however, small farmers contracted for no more than 25 work-days of labor.

e. St. Lucia

The 1973 Census of Agriculture (St. Lucia 1975:86) provides the following data on various types of labor on farms of less than 25 acres:

	Less than 1 acre	1.00-4.99	5.00-9.99	10.00-24.99
Family workers	10,400	9,392	2,749	1,260
Male	5,925	4,986	1,583	681
Female	4,475	4,406	1,166	579
Other unpaid workers	806	828	321	78
Male	473	591	290	58
Female	333	237	131	20
Paid workers	401	1,120	706	585
Male	319	876	549	450
Female	82	244	157	135

f. St. Vincent

The Weir survey (1976: I(b), 78) found that family labor was used regularly by 44% of the farmers interviewed and irregularly by 12%. Approximately 75% of the farmers used wage labor: 27% for up to 50 work-days, 17% for 51-100 work-days, 16% for 101-250 work-days, and 15% for more than 250 work-days.

V. GOVERNMENT SERVICES TO SMALL FARMERS

1. Extension and Information Services

Agricultural extension services in the Caribbean region directly reach a higher percentage of small farmers than in most developing countries. Information obtained by an AID Survey Team in the fall of 1977 (Fiester et al. 1978) found that the ratio of field instructors to farmers in the Eastern Caribbean was often quite favorable:

	(1) Ministry of Agriculture Field Instructors	(2) Farmers*	(1):(2)
Antigua	9	2,449	1: 272
Barbados	12	26,052	1:2,171
Dominica	20	7,968	1: 398
Grenada	24/14†	12,173	1:507/1:870
Montserrat	5	1,247	1: 249
St. Kitts-Nevis	12/9†	4,524	1:377/1:503
St. Lucia	14	10,938	1: 781
St. Vincent	27	7,794	1: 289

*Data from the 1971-75 agricultural censuses (see Table III.1).

†In some cases the number of extension instructors actually on the job (second figure, which is not always exact) is known to be fewer than the number of budgeted positions (first figure).

Since the above data include the so-called landless farmers and others for whom farming is a secondary activity, and since the number of farmers has probably declined since the early 1970s, the ratios of Ministry of Agriculture field instructors to half- to full-time farmers are even more favorable than the above data suggest. In addition, many small farmers have access to extension services provided by government corporations (e.g. NACO, the sugar corporation in St. Kitts-Nevis) and producers' associations (e.g. those for bananas in the Windwards and sugar in Barbados). In short, lack of sufficient numbers of extension personnel is not a serious problem.

There is a problem, however, with the quality of the services provided. Though senior extension officers appear to have good basic training, a survey of extension in the Windward Islands in 1971 (Henderson 1973: 105) found that

> of a total of 85 extension workers only two possessed a university degree or its equivalent on first joining their respective department. Of the others eleven possessed a farm institute diploma, the remaining 72 having no training from a formal agricultural education institution. Furthermore over 70 per cent of the extension officers in the Southern Caribbean expressed the opinion that training in extension principles and methodology before their having been assigned to a district would have resulted in their performing much more efficiently.

While the AID Survey Team noted in the fall of 1977 that some progress had been made in upgrading the average level of training for extension workers, extension services on the whole were still quite weak (Fiester et al. 1978). In the Leewards, many older extension workers whose only training or experience was in sugar and cotton had not been retrained to work in food crops following the abandonment or sharp decline in production of these crops.

Several farm-level surveys have provided information on farmer contacts with extension personnel. The results of these studies are summarized below.

a. Antigua

The Government of Antigua's 1976 survey of 100 small farmers (Antigua 1977) found that more than three-quarters (77%) had had some contact with an extension instructor, and most also dealt with at least two other government agricultural agencies. Of those receiving assistance from government agencies generally (information was not reported separately for extension assistance), 30% said they were "completely

satisfied"; 26% were "fairly satisfied"; 17% were "not satisfied"; and the remaining 27% gave no answer. When asked where they would go to receive information on improved practices, 59% listed the extension instructor, a higher percentage than for any other category. This is a fairly high figure, but considering that the Ministry of Agriculture conducted the survey the results should be interpreted cautiously.

Fifty-eight percent of the farmers reported that they listened to agricultural information programs on the radio, especially the Ministry's "Agriculture on the Move." Only 7 farmers, however, said that they listen to these programs "every time they are on"; 49 said that they listened "occasionally." Almost all who listened found the program either "very useful" (18) or "of some use" (37).

b. Dominica

Yankey's 1966 survey revealed that small farmers had little contact with extension instructors, even though the instructor/farmer ratio of 1:300 was relatively favorable. Most extension workers were described as more than 40 years old, possessing only a primary education, and having little technical training. The 96 small farmers surveyed obtained most of their technical information from neighbors. In addition, Yankey (1969: 198) reported that "the demonstration effect of progressive estate management has influenced small scale farmers to adopt certain proven practices established on these estates."

The survey by Weir's Ltd. in 1975 also found that the extension service had little contact with farmers. Of the 100 farmers surveyed, only one reported "regular" exposure to field demonstrations, and only 3 others said that they "occasionally" went to field demonstrations. Twenty-two percent said that they regularly used printed materials to

obtain information, while a very high 63% said that they listened regularly to radio information programs (Weir 1976: 1(b), 134).

c. Grenada

Brierley's 1969 survey of small farmers in Grenada revealed that extension instructors were a relatively minor source of information, with radio broadcasts, friends and neighbors, and MacDonald's Farmers' Almanac all being much more important (Brierley 1974: 68):

Source of Information	Use by Farmers N	Use by Farmers %
Radio broadcasts	230	79
Friends and neighbors	225	77
Tradition (family)	219	75
MacDonald's Farmers' Almanac	217	74
Estate experience	77	26
Extension instructors	70	24
Total	292	-

Farmers' contacts with extension personnel tended to increase significantly with the degree of commercialization (Brierley 1974: 145, 178, 210, 236):

Type of Farm	Number of Farms	Percentage Having Contact with Extension Personnel
Non-commercial	42	12
Semi-commercial	96	54
Commercial	118	67
Miniature estates	36	91
Total	292	58

It may be noted that the percentage of farmers relying on extension instructors for information (24%) is much lower than the percentage having contact with extension instructors (58%).

d. Montserrat

The Weir survey in Montserrat (1976: 1(b), 39-43) found that a substantial proportion of the 91 small farmers in the sample used the

Ministry of Agriculture as a source of plants and seeds (apparently more than half) and advance market information (46%), and 14% rented equipment from the Ministry (for a very low, subsidized fee). However, none of the 51 farmers surveyed said that they were exposed to demonstrations or printed materials even occasionally, let alone regularly. Only a handful (15% and 8%, respectively) said that they "seldom" received technical information from these sources, and the great majority received none at all. On the other hand, 47% said that they obtained information from the radio, and all of them claimed to be regular listeners.

e. St. Vincent

Small farmers in St. Vincent were found to have even less contact with the Ministry of Agriculture than those in Montserrat (Weir 1976: 1(b), 92). Fewer than half of the 97 farmers interviewed appear to have obtained seeds from the Ministry, only 12% obtained advance market information, and 12% rented equipment. Only 27%, 12%, and 6%, respectively, were even aware of information available from radio broadcasts, printed materials, and demonstrations. Most who were said that they used these sources regularly (22%, 10%, and 4% of all farmers, respectively).

2. Credit

Agricultural credit institutions in the Caribbean Region are relatively new: except for the three public credit agencies in Barbados (now being combined into a single institution) the development finance corporations (DFCs) were established between 1965 and 1973.[1/] Their resources come both from government contributions and, more importantly, from funds borrowed from the CDB. With the partial exception of two of the credit institutions in Barbados, and perhaps the one in Belize (with which this writer is not acquainted), the DFCs share a number of serious weaknesses. These include: (1) inadequate--sometimes nonexistent--training and experience of managers and other key staff members in development banking, (2) insufficient loan documentation and poor loan supervision, (3) inadequate accounting systems, (4) weak loan recovery procedures, and (5) low interest rate policies which preclude the possibility of institutional viability and growth without continued government subventions.[2/] In some countries political considerations seem to play an important role in the selection of beneficiaries.

The number of small farmers receiving credit from the DFCs is relatively small, fewer than 100 in some countries. And where it is relatively large, as in Montserrat,[3/] the amount received by most

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1/ The DFCs also provide credit for manufacturing, housing, and other economic activities.

2/ Many observers also believe that low-interest-rate policies are not even in the best long-run interest of small farmers. See Lipton (1976:543-553).

3/ Of the 372 loans made by the Development Finance and Marketing Corporation in fiscal year 1976-77, 241 (65 percent) were for less than EC$100 (US$37).

farmers is so small that it does not permit them significantly to improve production technology. Until this year small farmers not owning their land were unable to apply for loans under the CDB/AID Farm Improvement Credit program (US$. million) because collateral in the form of land was required. Loans under the new Agricultural Production Credit program (US$4.0 million) can be made against crop liens, thus permitting cash tenants, sharecroppers, and other non-owners to participate. Unless the quality of management in the DFCs improves, though, expansion of DFC operations is likely to be slower than anticipated.

Alternative sources of credit in the Caribbean Region are (1) commercial banks, (2) producer associations, and (3) private moneylenders. Small farmers have little access to credit from commercial banks, for which small loans are unprofitable, and there are few viable cooperatives of small farmers which would give them access to this source of credit. Many small farmers, though, receive short-term production credit from producers' associations, particularly the banana growers' associations in the Windward Islands. There is reason to believe that producers' associations are more efficient vehicles than the DFCs for providing credit to small farmers. This possibility deserves investigation.

Little is known about the activities of private moneylenders. Almost no "non-institutional" credit for agricultural purposes is reported, but more research is needed to determine the accuracy of these observations. It should also be pointed out that borrowed funds are fungible, and consumer credit obtained in the non-institutional market can free other household resources for use in farming (Lipton 1976). This phenomenon may be more widespread in the Eastern Caribbean than is commonly believed.

Several farm-level surveys conducted in the region provide some information on small farmers' use of credit. These findings are summarized below.

a. Antigua

The Government of Antigua's 1976 survey (Antigua 1977) reported that 14 of the 100 small farmers interviewed "had dealings with" the Antigua and Barbuda Development Bank, and 4 dealt with commercial banks. Also, 16 farmers dealt with the Antigua Sugar Estates Development Board, which in effect also provides credit to promote agricultural diversification. No information was obtained on the amounts and types of credit received.

b. Dominica

Yankey's 1966 survey of 96 small farmers found that 58, or 60.4%, sought (and presumably obtained) credit. Sources and uses were as follows (Yankey 1969:230):

Number of Farmers, by Use of Credit

	Farm Construction	Fertilizer	Tools & Equipment	Chemicals	All Borrowers, by Source
Commercial banks	1	7	2	2	7
Credit unions	1	0	3	3	9*
Producer associations	0	41	0	0	41
Other	0	1	0	0	1
Total	1	58	5	3	58

* Yankey (1969:147-149) estimates that only 2% of credit union savings were channeled into agricultural activities.

These data show that producers' associations (principally the Dominica Banana Growers' Association) were the principal source of credit, most of which was for fertilizer. Typically, fertilizer was obtained

> on a payment plan that ranged from no payment to a payment of twenty (20) per cent of the total value of the quantity required at the time of purchase, with further repayments to be made on a contractual basis by weekly deductions from banana market sales commencing after a specified minimum period of time (Yankey 1969:231).

The Weir survey (1976:I(b), 136-139) found that 90% of the 100 farmers interviewed had never applied for credit from a commercial bank or a development bank (though presumably many obtained credit from the barana growers' association). The percentage seeking credit from these sources was even lower than in Yankey's 1966 survey, but the earlier study included farmers with up to 100 acres, and the larger farmers in this group were more likely to apply for credit than those with less than 25 acres. Most of the farmers interviewed in 1975 were successful in their applications for credit, most of which was used to purchase fertilizers and chemicals and to hire labor. When asked how they would use more credit if it were available, 48% said they would buy fertilizers and chemicals, 40% would establish different crops, and 29% would buy more land.

According to the Weir survey (1976:I(a), 382), "Money lender credit is not very popular in Dominica. It suffers typically from excessive interest rates (not defined), and critical credit needs are more easily met by credit from the Banana Association." An important observation is that "fertilizer obtained from the Banana Association is used not just on bananas but also for other crops under a mixed cropping system" (Weir 1976:I(a), 374).

c. Montserrat

In Montserrat, the Weir survey (1976:I(b), 44) found that 92% of the 51 farmers interviewed had never applied for credit. A few farmers

with 1-5 acres sought credit for fertilizer and chemicals, labor expenses, materials, and livestock, while one of the 3 farmers with 10-25 acres sought credit to purchase equipment. When asked how they would use additional credit, if available, 39% said they would purchase fertilizer and chemicals, 16% would buy land, and 15% would use the money to clear and prepare land. Only a few mentioned new crops or the purchase of equipment.

d. St. Vincent

As in Montserrat, 92% of the farmers interviewed in St. Vincent had never applied for credit (Weir 1976:I(b), 93-97). Credit from commercial banks was used mainly to purchase fertilizer and chemicals, hire labor, and buy land. Credit from the development bank was used for labor, materials, and livestock. Farmers said that they would use additional credit, if available, for fertilizers and chemicals (59%), different crops (31%), land clearing and preparation (23%), and land purchases (18%). Few said that they would borrow to make investments in irrigation and fences, even though lack of this infrastructure was said to be a major reason for loss of crop and livestock income.

3. Marketing

In the view of some observers, the most important constraints to increased agricultural production in the Eastern Caribbean are those associated with internal, regional, and overseas marketing. Production is sometimes discouraged by ceilings on farm-gate or consumer prices, food import policies that depress local prices, and the inability of government marketing boards to fulfill their purchase commitments to farmers. Even when marketing boards do buy all that small farmers offer, thus apparently stimulating production, the long-run effects on agricultural development can be unfavorable if other aspects of marketing are ignored. In Antigua, the Central Marketing Corporation (CMC) discarded more produce than it could sell in a recent 10-month period, partly because it has been reluctant to use its powers to set quality standards and thus buys produce that is unmarketable.[4/] Instead of stimulating foreign exchange earnings or helping to reduce food imports, the CMC in effect operates as a welfare agency, redistributing income rather than creating real wealth. If the CMC's financial losses force it to cease or severely curtail its operations, as may well happen, farmers' incomes will suffer unless alternative buyers can be found--which is unlikely without quality improvements.

Although the CMC in Antigua may be an extreme case, all of the government marketing boards in the Eastern Caribbean are weak institutions which are not always effective in dampening price fluctuations through commercial purchases and sales in the open market, or in providing services such as transport, storage, packaging, and exporting. Their operational and policy weaknesses include (1) inadequately trained managers and supervisory personnel, (2) poor technical knowledge of commodity handling and storage, (3) poor communications with farmers, (4) inadequate linkages and untimely

4/ If a marketing board will purchase all produce offered, it is rational for farmers to concentrate on low-quality produce that can be grown at lower cost than high-quality produce.

contacts with potential domestic and external buyers, and (5) unclear policies that complicate operational decisions and undermine farmer confidence. Except in St. Vincent, the marketing boards regularly incur operating losses. The St. Vincent Marketing Board operates profitably because it deals mainly in a few export crops (coconuts, carrots, sweet potatoes, and ginger) and limits its purchases to amounts it knows in advance can be sold.

Marketing boards do not monopolize the purchase of all farm commodities but sometimes compete with private intermediaries.[5/] When market forces push farm prices up and marketing boards rigidly adhere to fixed prices, farmers prefer to sell to private buyers, and the marketing boards become attractive only when the market price falls below the minimum guaranteed price. Little is known about private intermediaries, and how their operations are affected by the marketing boards, but it is believed that marketing margins are generally high. This is not due so much to monopoly power as to small volumes and poorly organized marketing channels. Governments in the Eastern Caribbean have done little if anything to improve the efficiency of private marketing systems.

Deficient marketing systems, compounded in the Windwards by internal transportation problems,[6/] limit the competiveness of export comodities by raising their FOB price. Export possibilities within the CARICOM region are further restricted by the lack of frequent and regular transportation services among the islands. Air freight capacity--which can be exploited only by a few high-value crops--is very limited, and users complain about poor handling and unrealiable schedules. Most islands have no regularly scheduled sea transport services, and unscheduled vessels rarely have refrigeration facilities.

5/ Competition occurs mainly in domestic food crops. Export crops tend to be exported exclusively either by marketing boards or by producer associations.

6/ Banana growers in Grenada place the blame for the high rejection rate on bananas offered for export (reportedly 40 percent) on poor roads which damage fruit being transported to dockside by truck.

To help rationalize intraregional trade, and to reduce rapidly rising regional food imports, the Caribbean Free Trade Association (CARIFTA) countries signed an Agricultural Marketing Protocal (AMP) in the late 1960s covering 22 products. The CARIFTA (later CARICOM) Secretariat was to coordinate intraregional trade by collecting and disseminating data on the anticipated export surpluses and import requirements of each country and by providing for guaranteed prices to farmers. The AMP has not worked particularly well.[7/] Countries have been more willing to declare export surpluses than import requirements, and recent intraregional trade restrictions imposed by economically troubled Jamaica have further hindered Caribbean integration. Price policies have been too rigid, not taking sufficient cognizance of seasonal fluctuations. Because export surpluses cannot be easily marketed, seasonal gluts, alternating with serious shortages during the dry season, continue to plague Eastern Caribbean agriculture, thus discouraging increased output of the commodities so affected.

The Government of Antigua's recent survey of small farmers (1977:8-9) found that marketing problems were a particularly important determinant of crop choice. Twenty-three percent of the 100 farmers interviewed identified the presence/absence of an assured market as the most important factor (second to weather, which 34% of the farmers listed first.) Another 20% reported marketing as the second most important factor affecting crop choice, giving marketing the highest total of combined first and second ratings. In addition, prices were rated first by 11% of the farmers and second by 22%.

7/ The Guaranteed Marketing Scheme, under which the More Developed Countries (MDCs) in CARICOM agreed to take fixed quantities of a few commodities from specific LDCs at negotiated prices, likewise has not functioned well. On the other hand, the Oils and Fats Agreement has been fairly successful in stimulating intraregional trade in products derived from coconuts.

The Weir survey of small farmers in Dominica, Montserrat, and St. Vincent (1976) found that marketing problems were among the most important factors identified by farmers as constraints to increased production. Poor access roads were identified as a major problem by 58% of the farmers in Dominica and 35% of those in St. Vincent, though in Montserrat the figure was only 8%. Lack of market demand was cited by 37%, 17%, and 16%, respectively, and low product prices by 39%, 35%, and 24%. In Dominica, lack of access roads was regarded as the second most serious constraint. In St. Vincent, poor access roads and low product prices shared second place, while in Montserrat low market prices ranked second and lack of market demand was tied for third place. (In all three countries, as noted in Part IV.2, the cost of fertilizers and chemicals was regarded as the most serious constraint.)

The Weir survey (1976:I(b), 129-133) found that the most important crop marketing outlets for small farmers in Dominica were the producers associations for bananas and grapefruits, which control all exports of these crops. Nearly as many small farmers dealt with private produce dealers. The Dominica Agricultural Marketing Board (DAMB) was a distant third as a marketing outlet, even though it operates several buying depots and has a system of guaranteed prices. Farmers expressed dissatisfaction with the prices offered by the DAMB and preferred the convenience of being able to sell to private buyers who would come to the farm gate. Marketing costs were believed to be high, but no quantitative evidence was provided. Forty-seven percent of the small farmers in Dominica used hired transport.

In St. Vincent, the Weir group (1976:I(b), 87-91) found that producers' associations, private produce dealers, and the St. Vincent Marketing Board (SVMB) were of roughly equal importance as marketing outlets for small

farmers' crops. Though the average small farmer was closer to his/her major selling point than in Dominica, 66% still used hired transport to take their products to market.

In Montserrat, the Development Finance and Marketing Board (DFMB) was found to be the most important marketing outlet (Weir 1976: 1(b), 33-39). The DFMB has only one buying depot, and farmers bringing their produce there were believed to incur significant transport costs in view of the "sizeable" discounts from the guaranteed prices paid by higglers buying at the farm gate. "Sizeable," unfortunately, was not quantified. Sixty-nine percent of the farmers interviewed reported that they used hired transport.

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