UNCLASSIFIED

DEPARTMENT OF STATE
AGENCY FOR INTERNATIONAL DEVELOPMENT
Washington, D.C. 20523

CARIBBEAN REGIONAL

PROJECT PAPER

CARIBBEAN AGRICULTURAL EXTENSION

LAC/DR:80-1

Project Number:538-0017

UNCLASSIFIED

AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT PAPER FACESHEET

1. TRANSACTION CODE: [A] (A = ADD, C = CHANGE, D = DELETE) — PP

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3. COUNTRY/ENTITY: Caribbean Regional (RDO/C)

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7. PROJECT TITLE (Maximum 40 characters): [CARIBBEAN AGRICULTURAL EXTENSION]

8. ESTIMATED FY OF PROJECT COMPLETION: FY [82]

9. ESTIMATED DATE OF OBLIGATION — A. INITIAL FY: [80] B. QUARTER: [2] (Enter 1, 2, 3, or 4) — C. FINAL FY: [81]

10. ESTIMATED COSTS ($000 OR EQUIVALENT $) -

A. FUNDING SOURCE	FIRST FY B. FX	FIRST FY C. L/C	FIRST FY D. TOTAL	LIFE OF PROJECT E. FX	LIFE OF PROJECT F. L/C	LIFE OF PROJECT G. TOTAL
AID APPROPRIATED TOTAL						
(GRANT)	(750)	(150)	(900)	(1,250.6)	(300)	(1,550.6)
(LOAN)	( )	( )	( )	( )	( )	( )
OTHER U.S. 1.						
OTHER U.S. 2.						
HOST COUNTRY		190	190		385.5	385.5
OTHER DONOR(S)						
TOTALS	750	340	1,090	1,250.6	685.5	1,936.1

11. PROPOSED BUDGET APPROPRIATED FUNDS ($000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	PRIMARY TECH. CODE C. GRANT	PRIMARY TECH. CODE D. LOAN	E. 1ST FY 80 F. GRANT	E. 1ST FY 80 G. LOAN	H. 2ND FY 81 I. GRANT	H. 2ND FY 81 J. LOAN	K. 3RD FY — L. GRANT	K. 3RD FY — M. LOAN
(1) FN	210	012		900		650.6			
(2)									
(3)									
(4)									
TOTALS				900		650.6			

A. APPROPRIATION	N. 4TH FY — O. GRANT	N. 4TH FY — P. LOAN	Q. 5TH FY — R. GRANT	Q. 5TH FY — S. LOAN	LIFE OF PROJECT T. GRANT	LIFE OF PROJECT U. LOAN
(1) FN					1,550.6	
(2)						
(3)						
(4)						
TOTALS					1,550.6	

12. IN-DEPTH EVALUATION SCHEDULE: MM [07] YY [81]

13. DATA CHANGE INDICATOR. WERE CHANGES MADE IN THE PID FACESHEET DATA, BLOCKS 12, 13, 14, OR 15 OR IN PRP FACESHEET DATA, BLOCK 12? IF YES, ATTACH CHANGED PID FACESHEET.

[1] (1 = NO, 2 = YES)

14. ORIGINATING OFFICE CLEARANCE

SIGNATURE: [signature]

TITLE: William B. Wheeler
Director

DATE SIGNED: MM [12] DD [06] YY [79]

15. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION: MM [ ] DD [ ] YY [ ]

AID 1330-4 (3-76)

PROJECT AUTHORIZATION

NAME OF ENTITY:	University of the West Indies
NAME OF PROJECT:	Caribbean Agricultural Extension
NUMBER OF PROJECT:	538-0017

1. Pursuant to Section 103 of the Foreign Assistance Act of 1961, as amended, I hereby authorize the Planning and Program Development component of the Caribbean Agricultural Extension Project for the University of the West Indies, involving planned obligations of not to exceed One Million Five Hundred Fifty Thousand Five Hundred Eighty-Eight United States Dollars ($1,550,588) in grant funds over a period of two years from date of authorization, subject to the availability of funds in accordance with the A.I.D. OYB/allotment process, to assist in financing foreign exchange and local currency costs for this component of the project.

2. The Project ("Project") consists of assisting the Governments of the Eastern Caribbean LDCs, Barbados and Belize in improving the effectiveness of their agricultural extension services. Improved extension services, by which essential resources are channelled to small farmers, will stimulate agricultural development in the region. It is contemplated that the overall Project will be carried out in two phases by the University of the West Indies. Phase I is Planning and Program Development and Phase II is Program Implementation. The Planning and Program Development component will involve assistance for strengthening the University of the West Indies and developing national extension plans for the countries participating in the Project.

3. The Project Agreement, which may be negotiated and executed by the Officer to whom such authority is delegated in accordance with A.I.D. Regulations and Delegations of Authority, shall be subject to the following essential terms and covenants and major conditions, together with such other terms and conditions as A.I.D. may deem appropriate:

a. Source and Origin of Goods and Services

Goods and services, except for ocean shipping, financed by A.I.D. under the Planning and Program Development component of the Project shall have their source and origin in the United States and in the English speaking Caribbean, defined as follows: Antigua, Barbados, Belize, British Virgin Islands, Dominica, Grenada, Guyana, Jamaica, Monserrat, Turks and Caicos, St. Kitts/Nevis, St. Lucia, St. Vincent and Trinidad and Tobago, except as A.I.D. may otherwise agree in writing. Ocean shipping financed by A.I.D. shall, except as A.I.D. may otherwise agree in writing, be procured in accordance with Waiver Number 69, dated September 24, 1979, as amended by Waiver Control No. 69B.

b. Conditions Precedent to Disbursement

Prior to any disbursement, or the issuance of any commitment documents under the Project Agreement, the University of the West Indies shall, except as A.I.D. may otherwise agree in writing, furnish in form and substance satisfactory to A.I.D.:

i. Evidence that the Dean of the University of the West Indies, Faculty of Agriculture, has formed a Planning Committee for the Project that includes as members at least one faculty member from each department in the Faculty of Agriculture and which assigns at least 10% of each committee member's staff time to the Project.

ii. Evidence that the Dean of the University of the West Indies, Faculty of Agriculture, has appointed a Project Leader.

iii. An executed contract with the collaborating Title XII Institution, specifying the relationship between the University of the West Indies and the Title XII Institution and the level and type of technical assistance to be provided consistent with the number of countries participating in the Project.

Edward W. Coy
Acting Assistant Administrator
Bureau for Latin America
and the Caribbean

Jan 24 1980
Date

Clearances:
GC/LAC:JLKessler JLK/1787 date 1-22-80
LAC/CAR:RMelaven [illegible] date [illegible]
LAC/DR:MDBrown [illegible] date 1/24/80
SER/COM:WSchmeisser [illegible] (telephone) date 1/24/80

Drafted:GC/LAC:DAAdams:ckg:ext:29183

PREFACE

The first Principal of the University College of the West Indies wrote of the geographical problem of the area served by the University in the following terms:

> "The British Caribbean colonies are sometimes thought of as a compact group like the Hebrides, but this is an illusion based on looking at small scale maps. To translate the distances into European terms, let us place British Honduras, the most westerly of the Colonies, at London. Jamaica is then roughly at Danzig in the Baltic, Trinidad is at Odessa in the Black Sea, with the Windwards and Leewards stretching up north far to the east of Moscow and British Guiana is Asia Minor, almost at Batum. Or in other terms, British Guiana to British Honduras is as far as Cornwall is from Newfoundland. Yet in all these distances the population is only of the order of three million."

from T. H. Henderson
"The University of the West Indies and Agricultural Extension Work in the Caribbean," Agricultural Progress, Vol. 48, 1973

In U.S. terms, if Belize were superimposed over southern Oregon and Northern California, Jamaica would lie in Eastern Wyoming, Anguilla would be

an island in Lake Michigan with the other Leeward and Windward islands extending down to the Kentucky-Tennessee border, Trinidad would occupy Northeastern Alabama, with Tobago to the Northeast in Tennessee, Guyana would extend from Southwest Georgia, across Northwest Florida into the Gulf of Mexico.

Eastern Caribbean Agricultural Extension Project Design Team

Jack Claar, University of Illinois/Cooperative Extension Service

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PART I

SUMMARY AND RECOMMENDATIONS

A. RECOMMENDATIONS

The Regional Development Office/Caribbean recommends authorization of a grant to the University of the West Indies (UWI) totalling $1,550,588 to assist in financing the first phase of a program to increase the effectiveness of agricultural extension services in the Windward and Leeward Islands, Barbados and Belize. Phase I of the project will extend from FY 80 through FY 81 (two years). The total life of the project, Phase I and II, will extend from FY 80 through FY 85 and cost an extimated $8,551,309 which includes AID assistance of $6,929,009 and UWI and local government contributions totalling $1,622,300.

B. PROJECT SUMMARY

The purpose of the Caribbean Agricultural Extension Project is to assist the Governments of the Windward and Leeward Islands, Barbados, and Belize improve the overall effectiveness of their agricultural extension services. Extension services are essential for channeling resources such as technical expertise, financial guidance and marketing information to small farmers. This information is required in order to stimulate agricultural development in the region.

At present, agricultural extension services throughout the Eastern Caribbean are seriously constrained in providing vital services due to a number of deficiences. Organization and management systems within extension programs are characterized by poorly defined goals, conflicting lines of authority, insufficient incentives and unreliable program monitoring. Extension agents have limited training in general agriculture, small farmer cropping techniques and extension delivery methods. Delivery systems are not

are not organized to reach the greatest number of farmers and have few mechanisms for accurately gauging farmers' needs and lack essential tools for maximum impact (e.g. vehicles, communication and demonstration equipment). Regional supporting services for extension agencies are presently small, poorly organized, loosely coordinated and lack resources for identifying and responding to common needs of individual extension services. Improvement in these areas will increase the benefits of other agricultural development programs by enhancing the active participation of the maximum number of the region's small farmers.

The Caribbean Agricultural Extension Project will be implemented in two phases by the University of the West Indies (UWI), Faculty of Agriculture, under the leadership of the Department of Agricultural Extension. A U.S. Title XII institution will collaborate with the UWI and provide long term technical assistance to support project activities. The Project has been divided in two distinct phases: 1) Planning and Program Development and 2) Program Implementation.

Under Phase I, the UWI will be provided resources to establish three outreach stations: the Leeward Islands (including Barbados), the Windward Islands and Belize. The outreach stations will be directed by a UWI professional and a U.S. long-term technical advisor. Assistance will also be provided to local governments to secure one additional agriculture extension officer who will serve as the country project coordinator. During Phase I, extension professionals from these outreach programs will be supported by short-term technical assistance to work with each local government to 1) conduct an institutional analysis of the agricultural support systems, 2) develop a comprehensive national extension improvement plan, 3) design an effective delivery system structured to transmit and receive information to and from small farmers and 4) secure commitments from governments to carry out the extension improvement plans.

Before authorization of Phase II activities, the UWI will present for AID

approval a synopsis of at least five national extension improvement plans and the corresponding government commitments which outline 1) organizationa changes required to maintain a dynamic and responsive extension service for small farmers, 2) long and short-term training requirements, 3) vehicle, extension and communication equipment requirements and 4) financial inputs required from the host government, the UWI and AID to carry out Phase II activities. After resources have been authorized by AID for Phase II activities, the UWI will begin implementation of the approved national extension plans and initiate regional and sub-regional training programs to up-grade extension agents' technical skills in such areas as food crop production, communication techniques and extension delivery. Technical assistance will also be provided to upgrade UWI's technical and manpower capacity to provide continued support to extension services. Also under Phase II, local governments committed to implementing a national extension improvement plan will be provided with assistance to 1) continue supporting, on a declining scale, the additional agricultural extension officer serving as the country project coordinator, 2) provide in-service fellowships for qualified members of the extension staff to receive diploma level training in regional agricultural schools, 3) provide a small number of scholarships at the Bachelors and Masters level at UWI for experienced extension officers who have completed diploma level training, 4) provide additional fellowships to extension officers for a one year UWI post diploma course in agricultural extension/communication techniques, and 5) purchase required vehicles and communication equipment sufficient to meet the current needs of extension services. Equipment purchases will be limited to those that can be maintained and replaced by local Governments after the life of the project.

C. SUMMARY FINANCIAL PLAN

The total cost of Phase I is $1,936,100. The estimated breakdown of costs and financing of Phase I is shown in the following table. A.I.D. will provide grant assistance in the amount of $1,550,588. Government contributions during Phase I amount to $213,500 and include expenses for staff salaries and in-kind contributions required to support local professionals participating in the institutional analysis and development of the national extension plans. U.W.I. will contribute approximately $172,000 which corresponds to salaries of professionals assigned to the project, office space and equipment and travel expenses normally assigned to extension professionals. Subject to the development of detailed national extension plans to be submitted as a project paper supplement, Phase II project costs are tentatively estimated at $6,615,200.

SUMMARY FINANCIAL PLAN: PHASE I ($000)

	A.I.D.	U.W.I.	HOST COUNTRIES	TOTAL
I. Staff Support	232.7	102.0	106.0	440.7
II. Technical Assistance	596.8	-	-	596.8
III. Equipment	79.0	26.0	17.5	122.5
IV. Travel and Transportation	232.2	8.8	-	241.0
V. Other Direct Costs	16.0	11.2	60.0	87.2
VI. Indirect Costs	192.6	-	-	192.6
SUB-TOTAL	1,349.3	148.0	183.5	1,680.8
Inflation - 10% per year	201.3	24.0	30.0	255.3
TOTAL	1,550.6	172.0	213.5	1,936.1

D. CONDITIONS AND COVENANTS

In addition to the stated conditions associated with AID grants the following conditions and covenants are proposed:

1. Source and Origin of Goods and Services

(a) Except for ocean shipping and vehicles, the source and origin of goods and services financed by AID under the project shall have their source and origin in Geographic Code 000 and the English speaking Caribbean defined as follows: Antigua, Barbados, Belize, British Virgin Islands, Dominica, Grenada, Guyana, Jamaica, Montserrat, Turks and Caicos, St. Kitts/Nevis, St. Lucia, St. Vincent and Trinidad and Tobago.

(b) Special Waivers:

(1) with regard to ocean shipping, for individual transactions for which shipping charges do not exceed US$250,000, it is recommended that a waiver be granted to permit AID financing of these costs on any free world (Code 935) flag vessel when US flag vessels are not available. This waiver of normal Code 000 shipping requirements is consistent with the blanket authorization issued in September, 1979 by SER/COM for most active RDO/C loans and grants, and

(2) a major element of the project deals with procurement of motor vehicles to assist National Extension Services increase their outreach capabilities to service small farms. Lack of mobility has been a severe constraint to effective farmer contact, and any attempts to introduce proven technology to small farmers will require increases in the number of motor vehicles available to agricultural extension agents. Because of the difficulty in obtaining service and spare parts in the Eastern Caribbean for US manufactured vehicles as well as the difficulty in obtaining appropriate US manufactured right hand drive vehicles, it is recommended that a waiver be granted permitting non US procurement of such vehicles.

2. Conditions Precedent to Initial Disbursement

Prior to the first disbursement under the grant or to the issuance by AID of any commitment documents pursuant to which disbursement will be made, UWI shall furnish to AID, in form and substance satisfactory to AID:

(a) evidence that the Dean of the Faculty of Agriculture has formed a planning committee for this project which includes as its members at least one faculty member from each department in the Faculty of Agriculture and which assigns at least 10% of each committee member's staff time to the project

(b) evidence that the Dean of the Faculty of Agriculture has appointed a Project Leader,

(c) evidence that UWI has entered into formal agreement with at least four countries committing those countries to participate in all project activities and establishing their agreement to collaborate with UWI and the Title XII Institution in performing institutional analyses of the country's agricultural extension system and developing a four year National Extension Improvement Plan for that country,

(d) an executed contract with the collaborating Title XII Institution outlining the relationship between UWI and a Title XII Institution, which contract will set forth a level and type of technical assistance consistent with the number of countries to participate in the project.

3. Covenants

(a) Prior to the procurement or use of any pesticide financed under the Project, UWI will inform AID in writing of the proposed procurement or use of the pesticide, including a detailed description of how the pesticide will be used and the safeguards to be followed, and shall obtain the written approval of AID prior to procurement or use of the pesticide.

PART II

PROJECT BACKGROUND

A. PROJECT SETTING

1. The Geographic and Demographic Structure

Nine territories are included in the project setting; these include the independent countries of Dominica, Grenada, St. Lucia, St. Vincent and Barbados; the Associated States of St. Kitts-Nevis (Anguilla) and Antigua; and the crown colony of Montserrat; in Central America there is the colony of Belize. The eight Eastern Caribbean islands are scattered over some 500 miles from north to south; 2,000 miles separate the most easterly island, Barbados, from Belize.

The total population in the nine territories is slightly under 1 million. Population density ranges from a low of 15 persons per square mile (Belize) to a high of 1,490 persons per square mile (Barbados). Population growth during the 1970's averaged about 1.5 percent annually for the nine territories. The average (unweighted) crude birth rate was 27 births per 1,000 inhabitants in the nine territories. Even though external migration alternatives were reduced in the 1970's all nine territories continued to experience net emigration indicating that opportunities for migration continue to be a significant influence in the region.

A substantial proportion of the population (46 percent) in the eight Eastern Caribbean islands and Belize is under 15 years of age. By contrast, less than 5 percent of the population is 65 years of age and over, although in Montserrat the proportion of the older age group equals almost 10 percent of the total population.

TABLE I

DISTRIBUTION OF POPULATION AND LAND AREA OF THE

TERRITORIES INCLUDED IN THE PROJECT

States	Population	Land Area (Square Miles)	Density (Persons per Square Mile)	Area of Arable Land Per Capita
Barbados	247,300	166	1,490	0.30
Belize	136,000	8,866	15	2.56
St. Lucia	113,500	238	477	1.05
Grenada	102,500	133	771	0.58
St. Vincent	101,700	148	687	0.39
Dominica	78,000	304	260	0.69
Antigua	71,400	170	420	0.93
St. Kitts-Nevis	48,000	136	353	1.12
Montserrat	12,200	39	313	0.48
	911,500			

Sources: Population estimates from sources indicated in Fiester et al. (1978: Chapter I); land area and arable land from Chernwick et al. (1978: 6-7). All estimates for Belize from the Caribbean Integration Experience. World Bank Report, Baltimore: The John Hopkins Press, 1976.

2. Economic Overview and Constraints

a. Overview

The economic performance of the nine territories has been mixed. The Per Capita Gross Domestic Product (GDP) at market prices in 1976 varied from a high $1,530 (US) in Barbados to slightly over $300 in Dominica and St. Vincent (see Table II). All of the territories can be considered as less developed countries, except Barbados.

While levels of income are not severe by comparison with many other countries, the direction of change is disturbing. The growth in real per capita GDP in the late 1960s and early 1970s was good for Barbados, slow though positive for Grenada, St. Lucia and St. Vincent, and negative for Antigua, St. Kitts-Nevis and Dominica. The situation has worsened in the middle 1970s with only Grenada showing reasonably good growth for that short time period. In general, economic growth was rapid in the 1960s, slow and negative in some cases in the earlier 1970s, with possibly some gains in the later 1970s. Basic forces behind the performance in the 1960s include tourism growth and banana income in the Windward Islands. In the early 1970s the escalating costs of fuel and other imports, declining sugar prices and production, and a tapering of expansion in tourism established a pattern of dissipating economic strength.

Reliable income distribution data are not available. While asset distribution is not a perfect proxy for income distribution, it does give some indication of distribution parameters. The land asset distribution still reflects the plantation origin of most of the areas. Land holdings of 100 acres or more account for 50 percent or more of the land area in

TABLE II

SELECTED MACROECONOMIC INDICATORS

	Per Capita GDP at Market Prices 1976 (US. Dollars)	Real Per Capita Growth Rates (percent) GNP 1965-74	GDP 1974-76	Unemployment Rate (percent)[f] 1970		1977[g]	Inflation Rates[b] 1970-76 (percent)	Commodity Trade as a percentage of the GDP 1975 Exports	Imports
Barbados	1,530	5.2	0.8[e]	7.7	8	-	16.1	33.1	66.7
Belize	740	-	1.5	4.7	.7	-	-	20.0	48.0
Leeward Islands									
Antigua	690	-1.2	-5.2	12.5	-	20	12.7	53.9	85.7
Montserrat	900[a]	n.a.	n.a.	4.7	10	-	13.7	n.a.	n.a.
St. Kitts-Nevis[d]	640	-0.7	0.0	5.1	8	13.5	10.2	64.4	69.8
Windward Islands									
Dominica	330	-1.2	-0.5	7.0	10	23	13.6	36.4	67.1
Grenada	420	1.6	5.6	9.3	11	15-20	19.8	29.5	58.0
St. Lucia	510	2.0	-2.4	9.1	11	18	14.6	25.1	70.8
St. Vincent	320	2.4	-4.1	10.7	15	18	13.9	18.7	67.7
Regional Total	810	-	-	-	-	-	-	-	-

Sources: As indicated in Fiester et al (1978: Chapter 1).

[a] Estimate

[b] Consumer price indices

[c] Exports FOB, imports CIF. The data for Antigua are for 1973, and for St. Vincent, 1974

[d] These data apply only to St. Kitts and Nevis. Anguilla, which has a population of about 6,000 withdrew from the state in 1969. It is now administered separately by the U.K. but the government in Basseterre still refers to itself as the Government of St. Kitts-Nevis-Anguilla.

n.a. Not available

[e] For 1970-75

[g] World Bank (1978: The Commonwealth Caribbean: The Integration Experience, p.6.)

[f] First column from Fiester et al (1978: Chapter 1) 2nd column from Harewood, J. "Unemployment and Related Problems in the Commonwealth Caribbean" ISER Occasional Papers, Human resources, 2 October, 1978.

all countries except St. Kitts-Nevis (42 percent) while accounting for less than 2 percent of the farms, except in Belize. On the other end of the distribution scale, land holdings under 5 acres make up less than 25 percent of the total area except in St. Kitts-Nevis, and comprise over 60 percent of all the farms except in Belize (see Table III). This range may become narrower as demands for more equitable asset distribution increase and governments agree to the subdividing of plantation lands.

The reality of several income sources in households presents an interesting problem in defining numbers of farms and farm workers. As shown in Table III, farms under 10 acres account for the predominant number of farmers. A recent study in Grenada has shown that off farm earnings in one area by the farm operator equaled 32.5 percent of total earnings, while pensions, remittances, and other non-farm income accounted for another 26.3 percent of total annual earnings. (Gregory Hitz, "Part-time Farming in the Eastern Caribbean, Working Paper #1," July 1979, mimeograph draft). These small holders usually also have limited farm equipment, modest technology adoption, and a wide variety of farm activities.

Unemployment rates were moderate to high in 1970; since then, they appear to have increased to very high levels. Even these data mask the seriousness of the problem, because many employed persons are earning little in agriculture and the unorganized sectors of the urban economy. Since the number of young persons entering the job market is higher than usual for the population growth rates, employment problems become even more critical.

TABLE III

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)	
	%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		
1.00- 4.99	24.6	7.2	47.4	11.4			36.7	11.8	44.7	19.7		
5.00- 9.99	1.3	1.4	15.6	10.2			10.4	9.8	9.3	11.8		
10.00-24.99	0.5	1.3	8.0	11.4			4.5	8.9	2.3	6.0		
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.
50.00-99.99	0.1	1.7	0.8	5.4			0.6	6.0	0.1	2.1		
100.00-199.99	0.2	6.4	0.5	7.1			0.2	3.7	0.1	2.8		
200.00-499.99	0.6	33,5	0.6	17.8			0.2	11.3	0.2	10.4		
500.00 & over	0.4	43.0	0.3	30.6			0.2	37.4	0.1	40.4		
TOTAL	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.

TABLE III (continued)
PERCENTAGE DISTRIBUTION OF LAND AREA BY FARM SIZE CATEGORY[a]

Farm Size Category	Montserrat (1972) %of Farms	%of Area	St. Kitts/ Nevis (1975) %of Farms	%of Area	Belize (1973/74 %of Farms	%of Area
0.01- 0.99	47.5	3.7	60.2	8.2	12.9	0.1
1.00- 4.99	42.8	16.1	35.0	31.8	17.4	0.8
5.00- 9.99	5.7	7.5	3.3	8.1	15.7	1.5
10.00- 24.99	2.4	7.3	0.7	3.2	23.2	6.[illegible]
25.00- 49.99	0.5	3.2	0.1	0.4	16.8	8.6
50.00- 99.99	0.3	3.6	0.2	6.1	7.7	7.6
100.00- 199.99	0.3	6.2	0.2	12.6	3.8	7.5
200.00- 499.99	0.3	17.5	0.2	23.1	1.[illegible]	9.1
500.00& over	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

Inflation rates of 10-19 percent between 1970-1976 were rather even but moderate with respect to other countries during this same time period (see Table II). The lack of effective demand as reflected in slow income growth probably dampened further inflation. There is indication that inflation has slowed somewhat in 1978.

Foreign trade is an important part of each country's economy, with exports ranging from 19 to 64 percent of GDP and imports from 58 to 86 percent of GDP (see Table II). The agricultural import bill is high in all countries with only Barbados, St. Kitts and Dominica showing a favorable agricultural balance of trade (see Table IV). Total agricultural imports were over $110 million, with a per capita average (weighted by population) of $144 (see Table IV). The commodity trade gap is widening in almost all countries, causing government policy to shift toward import substitution.

Transport facilities are critical to the functioning of the regional market as well as to the ability to ship exports and receive imports with reasonable rates and dependability. Extra-regional shipping firms tend to concentrate on extra-regional export functions while neglecting the smaller islands in terms of inter-regional trade. The West Indies Shipping Corporation (WISCO) and small, privately owned vessels do most of the inter-regional trade with small islands. WISCO's management, rate structure, schedules and use of large carriers are issues raised by the smaller states as examples of WISCO's failure to meet their shipping needs. Small schooners handle a large quantity of trade between the

islands, but limited cold storage capacity and unscheduled service make them inadequate for efficient trade in agricultural produce.

Government budget deficits have been growing in the last few years as a result of slowly rising output relative to demands for government services particularly related to attempts to prevent rising unemployment (see Table V). Foreign borrowing has increased but the islands' credit ratings constrain the amount that can be obtained from commercial sources. Therefore, national public sector investment programs must depend heavily on external grant assistance.

Efforts by the governments to strengthen regional economic integration have not met with the success envisioned by the creation of the Caribbean Common Market (CARICOM). Sharply rising prices for imported fuel and other essential commodities along with member country's imbalances in levels and prospects for development, political differences, and consequent movement away from free trade within the region have dampened the effectiveness of CARICOM's impact on individual country's economic well-being.

Greater success at regional cooperation is being accomplished in the functional areas of agriculture, health and education. Governments have been showing their approval of institutions such as CARDI, the Caribbean Food and Nutrition Institute (CFNI) and the Caribbean Examination Council (CXC) through increased utilization of common services provided by these organizations and by supporting the institutions through increased budget support.

TABLE IV

AGRICULTURE'S CONTRIBUTION TO OUTPUT EMPLOYMENT, AND THE BALANCE OF PAYMENTS

	Agriculture's Share of the GDP, 1976 (percent)	Percent of Employed Workers in Agriculture	Agriculture's Share of Commodity Trade 1975 (percent)		Value of PerCapita Agricultural Trade 1975[a] (US. dollars)[b]		Total Value of Agricultural Imports (Million U.S. $)
			Exports	Imports	Exports	Imports	
Barbados	13	11 (1973-76)	68	21	246	189	46.7
Belize	15.3	36	82.5	-	-	-	-
Leeward Islands							
Antigua	8	12 (1976)	3	20	9	205	14.6
Montserrat	n.a.	20 (1970)	69	34	14	235	2.9
St.Kitts-Nevis	28	34 (1970)	64	24	304	127	6.1
Windward Islands							
Dominica	37	41[c](1976)	93	35	144	103	8.1.
Grenada	22	33[d](1970)	99[e]	37[e]	69[e]	81[e]	8.3
St. Lucia	21	40[d](1970)	77[f]	30[f]	111[f]	137[f]	15.5
St. Vincent	21	43 (1971)	99[f]	33[f]	71[f]	90[f]	9.2
						143.6	111.4

Sources: Fiester et al. (1978: 1-4 and country chapters), and published and upublished foreign trade stastics.

[a]Includes raw and processed agricultural products recorded in Standard International Trade Classification (SITC) Sections 0 (Food and Live Animals), 1 (Beverage and Tobacco) and 4 (Animal and Vegetable Oils and Fats). Other agricultural products appear in Section 2 (Crude Materials, Inedible, except, Fuel), but for lack of time Section 2 was not disaggregated.

[b]Based on the 1975 Exchange rate in the Windwards and Leewards of EC$2.00 = US$1.00. The current rate is EC$2.70=US$1.00

[c]Percent of the labour force (including unemployed workers)

[d]The actual figure is higher, since the 1970 census did not fully take into account family workers and hired labour.

[e]1973 [f]1974

In most countries, official government policy reflects concern for agriculture through trying to both improve export crop output (sugar, banana, etc.) and reduce the regional food import bill. However, effective translation of that policy into action is limited by budget constraints, resource limitations and lack of trained manpower.

The important role of women in the agriculture in the Eastern Caribbean (Belize excepted) warrants special attention. Women play a major economic role as farmers, farm operators, farm laborers, heads of farm households and as marketers of agricultural produce. Many of these women are the poorest of the poor. Despite their extensive participation in agriculture, they are underserved by government programs. It is crucially important to integrate this very significant segment of the farming population into the development service network. The proportion of women in the agricultural labor force varies from 30 percent (St. Vincent) to over 50 percent (Montserrat). These figures may be underestimated due to the under-renumeration of de facto female headed households in official statistics. Because of non-traditional forms of family organization, as well as part and full-time off-the-farm wage employment of men and the temporary emigration of males to other islands and North America, women assume the role of farm operator, even in households recorded as male-headed. If macro-level data continues to reflect a male-head, female-headed households may be more prevalent than indicated.

Women play a very prominent role in the distribution and retailing, both intra- and inter-island, of locally grown and consumed food crops. Their role is particularly important, given both the relatively undeveloped marketing channels for such crops and the lack of a significant private sector input into agriculture in the region. The nature of their role in the market is a combination of wholesaler and retailer: food crops are purchased from the farmer and retailed to the immediate consumer. It is important that the place of women in the marketing chain be protected, and that their economic basis not be eroded, if the production increases projected by this and other projects are to find their way into the local marketplace in an orderly fashion.

b. Role of Agriculture

Agriculture's share of GDP ranges from 8 to 37 percent in the nine territories; its share of employment ranges from 11 to 40 percent (See Table IV). Given the high levels of unemployment already present and the increases in numbers of people entering the labor force, agriculture will have to increase its share of employment in absolute numbers if the region is to avoid sharply higher unemployment rates,[1] despite the fact that incomes are substantially lower in the agricultural than in the non-agricultural sector.

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[1]Employment in the non-agricultural sector must increase at a rate faster than the increase in the number of labor force entrants if employment in the agricultural sector is to remain constant. For example, in St. Lucia, when agriculture represents 60 percent of total employment, if labor force entrants increased by 3 percent and none of these were employed by agriculture, then employment in the non-agricultural sector would have to increase by 5 percent.

$$3 \times \frac{100}{60} = 5$$

Agriculture's share of export earnings is substantial in all countries except Antigua; this is particularly true in the Windward Islands. (See Table IV) Bananas are the most important cash crop commodity as well as export/foreign exchange producer in the Windwards. Much of the banana export is generated by small farmers and that will likely increase. Sugar still accounts for almost all of the exports of St. Kitts and Barbados. Certain other commodities are important export earners in specific islands, such as nutmeg and mace in Grenada, cocoa in St. Lucia, and citrus crops in Dominica.

The small farmer constitutes the major agricultural group in terms of both absolute numbers and of food production, and is assuming an increasingly important role in the production of export crops. Of an estimated 73,000 farmers in the eight Eastern Caribbean islands, most have holdings of less than 5 acres. Substantial numbers of these farmers are women, an estimated two-thirds are over 45 years of age, and the vast majority have little formal education. These farmers have little in the way of equipment, access to modern inputs (including credit), and technical expertise; many are former plantation workers unused to the management decisions necessary in a commercial market oriented mixed crop small holding. Nevertheless, the economic well-being of the region will continue to depend on the efforts of these small farmers for some time to come.

TABLE V

GOVERNMENT FINANCES

Country	Total National Recurrent Expenditures 1978 (US $ .000)	Deficits as a % of Current Revenue: Current Deficit 1977[a]	Current Deficit 1978[b]	Current and Capital Deficit combined 1977[a]	Current and Capital Deficit 1978[b]
Antigua	13,777	-13.7	-22.5	-56.9	---
Dominica	9,300	-25.0	-45.3	-62.5	-76.8
Grenada	17,037	1.0	-----	-13.0	-----
Montserrat	3,200	-16.2	-----	-81.1	-----
St.Kitts-Nevis	11,o37	- 1.2	-11.2	-12.4	-127.77
St Lucia	18,333	1.3	----	- 9.6	- 62.5
St. Vincent	16,370	15.9	- 7.7	-45.1	- 33.2

a Estimated b Projected

Source: Central Bank of Barbados.

Table given in 4th Quarter, 1978 of the Quarterly Economic Review of the West Indies.

The Economist Intelligence Unit, Ltd.

B. MAJOR CONSTRAINTS TO INCREASING AGRICULTURAL PRODUCTIVITY

Since the history of applied agricultural research in the Eastern Caribbean has been oriented to plantation and export crops, there is limited knowledge about many crops and their relationship to small farm agricultural systems. Hence there are large gaps in the knowledge required to increase the productivity of small farmers: missing is knowledge about food crop, tree crop and livestock production techniques suited to the special problems faced by the small farmer, hence constraining efforts to increase production. The recognition of this fact resulted in the reorganization of CARDI and the investment of US dollars to work on multiple cropping systems for small farmers. But even the information that is available is not reaching the farmer at an efficient rate. Although the situation varies from country to country, the extension services are generally viewed as ineffective. Quoting one CAO, "extension workers are not respected by farmers, professionals and/or the legislators."

In many islands, land ownership and use rights are not well defined, which serves to constrain investments in improving land productivity except for those with short-run gains. It also eliminates citrus crop investment and increases risks of planning farm activities for more than one cropping season. In a landlord/tenant situation, the tenant will derive little economic gain from investing in such output-increasing technology as fertilizer or improved seeds unless

the landlord shares in the costs of these inputs in proportion to his share of return. On Montserrat the project leader of CARDATS pointed to the annual lease system as a definite problem in improving farm income.

Credit availability is also often constrained by the lack of clarity in land ownership. Rigid constraints on collateral have in the past reduced the use of credit by small farmers for production increases. The absence of demonstrably successful cropping techniques geared to the small producer may tend to increase the level of risk perceived by such a producer and effectively lower his/her demand for available agricultural production credit.

One of the most severe constraints to be solved is the lack of market infrastructure, particularly for food crops. Lack of effective demand on the islands must be dealt with, since population numbers are small and income relatively low. Specialization in food crops will require improvement in farmer to wholesale market performance, processing techniques for perishable items, and improved transport and market intelligence for export of surpluses.

The presence of open economies places the large, efficient agricultural production-marketing systems of other parts of the world in direct competition with the small farmer in the Eastern Caribbean and Belize. Not only is price competition severe, but the quality of imported produce is often substantially higher than that produced locally. A combination of improved production practices and more timely and reliable marketing arrangements will have to be developed

if local small-holders are to compete effectively with outside agricultural systems for the potentially lucrative local market and profitable export crops.

Local institutions providing credit, farm inputs, marketing facilities and other farm services have historically been inefficient. Because of the small numbers on any one island and their limited demand for external inputs, few private sector institutions have developed and those that have tend to respond to the demands created in the production of export crops, principally bananas, coconuts, cocoa, cotton and sugar. The small farmer producing food crops is left with utilizing inputs suited for the export crop but not necessarily suited to other cropping systems.

Ministries of Agriculture - the central local institutions having responsibility to organize, coordinate and stimulate demand from farmers to all institutions in the agriculture sub-sector - have traditionally been the most deficient in levels of trained manpower, organizational capacity and finances to efficiently perform these functions. Nevertheless, given the improbability of strong inputs from the private sector, except in the support of major export crops, the government extension services appear to be the only potential resource for institutionalized technical support for small farmers.

C. AID's PROGRAM TO DEAL WITH CONSTRAINTS

AID has developed a strategy to address the constraints to agricultural development. Outlined in the CDSS, the strategy identifies six problem areas to be addressed in a phased five-year programme: research, credit, extension, marketing and infrastructure including agro-industrial development, training and technical assistance and agricultural planning.

1. Research

At present, an RDO/C programme is assisting the Caribbean Agricultural Research and Development Institute (CARDI) to strengthen its outreach capacity and provide more relevant research recommendations by establishing CARDI/Country teams in each of the Windward and Leeward Islands. This project is conducting adaptive on-farm research and development activities to identify more profitable cropping systems for small farmers. It will be a major source of technical inputs for this extension project.

2. Agricultural Credit

The USAID-assisted Agricultural Production Credit Scheme (APC) initiated in 1977, has made credit available to small farmers who do not own land or who do not have clear title to land and who therefore have been unable in the past to provide collateral traditionally required for agricultural loans. The APC Scheme is now operational in several of the Windward and Leeward Islands and Belize, providing production credit to many small farmers for the first time. The disbursement

rate of the APC Scheme, however, has been slower than originally estimated. Probable causes for this slow rate include management constraints in local Development Finance Corporations, lack of effective linkages with extension personnel and marketing channels and lack of profitable farming options. This project, which seeks to upgrade the national extension systems, should have a positive effect on the APC Scheme by preparing extension agents to 1) make small farmers aware of available credit; 2) assist these farmers in improving their management and other farming practices to make them better credit risks; and 3) assist the farmer in completing the required credit applications and farm plans.

3. Marketing and Infrastructure

One of the more persistent constraints to increased agricultural growth in the Eastern Caribbean is the lack of efficient channels for the intra- and extra-regional marketing of commodities. RDO/C and the CDB are jointly assessing alternative project designs to (1) improve handling and storage of agricultural produce, (2) coordinate and improve the quality of regional shipping services and (3) establish a regional marketing intelligence network. As the impact of improved and expanded extension services on small holders become evident in increased production and marketing during the later years of this project, infrastructure and marketing improvements carried out by AID and CDB will become crucially important for produce movements and crop profitability, thereby serving to reinforce the farmers' commitment to on-farm improvements encouraged by extension agents.

Funds are also available from an AID loan to the CDB for the development of Agro-Industries. The loan is now over a year old and fund disbursements continue to be very slow. Under the best of circumstances, opportunities for agro-industries will be limited in the Caribbean because of the small overall size of the potential market for the products of agro-industries; however, as extension services are improved in each territory and farmers begin to adopt new techniques and expand production, opportunities for increased agro-industry activities should be enhanced.

4. Training and Technical Assistance

RDO/C has recently developed a training project involving both participant training and development of short-course management workshops for public sector employees to be taught in the various islands. This regional training project was designed to be responsive to training needs not being met under specific AID supported projects. The ECCM Secretariat will conduct the public sector management workshops undertaken in the Windward and Leeward Islands. A regional training officer will be located in the CARICOM Secretariat for all other training conducted under this project. Agricultural extension and related training required to increase the effectiveness of extension agents will be an integral part of each country's national extension improvement plan and therefore must be an integrated component of the Caribbean Agricultural Extension Project.

AID, in cooperation with other donors, has assisted the CDB to establish a $4 million technical assistance fund within the Bank's structure. The purpose of the Fund is to institutionalize the capabilities of the CDB as a major source of technical assistance to the English-speaking Caribbean. Technical assistance provided under the Fund can be for (1) general development, (2) project preparation, (3) project implementation and (4) Bank development. General development activities may include advisory services of experts not found in the Bank or member countries and short-term training in planning, statistics and accounting. Activities under the Fund can be both project and non-project specific.

5. Agricultural Planning

To address the critical lack of structured agricultural planning at the national and regional level, AID has recently approved a project through the ECCM Secretariat which will assist the Windward and Leeward Islands and Barbados to increase their capacity in these areas. Short-term training and technical assistance in agricultural statistics, agricultural planning and project design techniques will be provided to key members of ministries of agriculture throughout the region. A common service pool of experts will be established at the ECCM Secretariat to backstop ECCM member states in national and regional planning and project design.

The ultimate goal of all of these projects is to increase the well being of the small farm families in the Eastern Caribbean. They also are all designed to increase the effectiveness of institutions which support or provide services to ministries of agriculture and ultimately the small farmer. One important condition on which all of these efforts depend is a well organized and functioning system for delivering information and services to the small farmer. In these states, final responsibility for coordination and maintenance of linkages between the agricultural support institutions and the small farmers rest with the local agricultural extension services. Without this structured and effective coordinating effort, most if not all of these agricultural development projects will fall short of achieving the desired impact on the target population - the small farmer. Adaptive research developed by CARDI will reach only a limited number of farmers without an effective extension service to transfer these techniques to the target group; effective agricultural planning may only be a desk-top exercise without the necessary linkage and coordination developed by the extension service between the Ministry of Agriculture and the small farmer; the agricultural production credit programme will assist only a limited number of small farmers without closer linkage between the credit programme, research programmes and marketing institutions by an effective extension service; and projects designed to improve the transportation, storage, processing and distribution of increased agricultural production will fall short without an

effective organizational effort to link the farmer and the ultimate purchaser orchestrated by the local extension field staff. The Caribbean Agricultural Extension Project is a major effort to ensure that local extension programs and personnel are organized, trained and equipped to carry out these and other agricultural development efforts in the region and to ensure that an effective regional institution is strengthened to provide sufficient backstopping to local extension agencies after the project has been completed.

D. RELATIONSHIP TO OTHER DONOR ACTIVITY

1. General Agricultural Development

The British and Canadian Development Agencies along with other donor organizations have various programs aimed at improving the region's agricultural sector. Most programs consist of numerous projects directed at solving a specific problem related to improving agricultural production, marketing or institutional deficiencies. Examples of projects funded by these various international donor organizations include fruit tree multiplication, increased banana production, supplying quality stud service to dairy farmers, constructing irrigation systems for 10 acres of vegetable products, etc.

Personnel from the Ministries of Agriculture, especially their extension division, are heavily relied upon to implement these projects. Frequently, implementation is hindered by the extension agency's limited technical expertise, the multiplicity of roles and duties previously assigned to individual agents, lack of coordination between extension agents and other sub-sectors of agriculture or a combination of all of these factors.

This project focuses on improving the technical and institutional capacities of the agricultural extension agencies which will directly increase their efficiency in carrying out development projects and programs funded by local governments or outside donor organizations.

2. Agricultural Extension Development

The British Development Division (BDD), the Canadian International Development Agency (CIDA) and the Caribbean Agricultural and Rural Development, Advisory and Training Services (CARDATS), have projects related specifically to improving agricultural extension activities.

The BDD has a major 5 year banana development program being implemented by the Windward Island Banana Growers Association (WINBAN). Through the program, WINBAN is attempting to increase the small scale producers' yield of bananas per acre. Twenty to thirty extension agents on each Windward Island are first trained in the latest banana production techniques. These techniques are then transfered by extension agents to small scale producers through intensive farmer visitations. Early reports support this extension methodology in its ability to increase the production of a specific crop. The Caribbean Agricultural Extension Project will complement WINBAN's banana extension activities by working with WINBAN to train their extension agents in food crop production techniques for those crops which can be incorporated into small scale banana production. This combined effort will support WINBAN's and local governments' efforts to assist producers increase their overall income generating activities on the farm. The linkages and activities proposed between the Caribbean Agricultural Extension Project and BDD/WINBAN's banana improvement project are responses to a request from WINBAN raised at the UWI/AID Agricultural Extension Workshop.

The BDD also sponsors scholarship programs for the former Associated States and Dependant Territories. The programs provide governments with funds to send students to a wide variety of regional training institutions including UWI and to selected British institutions. The governments are encouraged to relate their training requests to well defined manpower development programs. According to BDD officials, the countries have made some efforts in this direction. Under the Caribbean Agricultural Extension Project, the development of National Extension Plans for each State will encourage a more rational utilization of available outside resources towards manpower development

in the agricultural extension divisions.

Technical assistance to the Union Cadet Agricultural School in St. Lucia is another project sponsored by the BDD supporting manpower training efforts in the field of agriculture. The British have assigned a technical advisor to the school for one year. His task is to revise and update the School's curriculum to better prepare agricultural cadets for service in the MOA. The advisor will also examine the feasibility of upgrading the school to provide diploma level training as well as increasing the School's enrollment.

CIDA is another donor agency supporting regional manpower training. Their current program provides approximately US$3.0 million over the next four years for scholarships to Caribbean and Canadian Institutions. A strong emphasis of the program supports training for students from the LDCs and Belize to attend the regional agricultural diploma level schools and to persue the Bsc Degree at UWI. The current program will provide the LDCs as a whole with up to 10 full scholarships per year at each of the following institutions: 1) the Jamaica School of Agriculture (JSA), 2) the Guyana School of Agriculture (GSA), and 3) the Eastern Caribbean School of Agriculture and Forestry (ECIAF). In addition, the program provides up to 10 partial scholarships per year to persue a Bsc Degree at UWI. The program does not pay the economic costs of students attending UWI. Applications for this scholarship program are processed through Establishment Offices in the various countries, and CIDA officials indicate that the majority of applicants are recent graduates of secondary schools with little working experience. Ministry of Agriculture officials indicate that they have only a small degree of influence on final selection of applicants. Nevertheless, CIDA's program will provide agricultural training to a substantial number of students during the

next four years. This project has been designed to complement CIDA's training program by providing diploma level and in-service training to agricultural extension agents currently on the staffs of the Ministry of Agriculture. The MOAs will participate in the selection process to ensure the selection of agents who 1) are most likely to remain with the MOA, and 2) possess the desired experience and attitude to effectively assist the local farmer clientele.

CARDATS, through a grant from UNDP, has established small scale agricultural extension research/demonstration projects in 7 LDCs of the region. At the local level, each project leader works with 20-30 small farmers providing each with intensive exposure to recommended production techniques and in some cases provides the farmers with credit and marketing facilities. The goal of the project is to demonstrate to MOAs what can be done if the maximum amount of inputs and expertise are available, and then to encourage MOAs to adopt some or all of the recommended extension procedures. The Caribbean Agricultural Extension Project will interact closely with CARDATS and use data from their project as a potential resource base for future extension methodology training courses.

As the AID extension project assists the extension agencies organize and structure themselves to better respond to the needs of small farmers and as the project provides extension agents with agronomic expertise corresponding to the farming patterns of the region, the extension systems will be better able to utilize CARDAT's extension models on a larger scale if they prove successful.

PART III

PROBLEM DEFINITION

A. THE IMPORTANCE OF EXTENSION SERVICES IN AGRICULTURAL DEVELOPMENT

The agricultural extension services in the Eastern Caribbean and Belize must function as the prime link between the region's small farmers and the world of technology, credit, inputs, services, etc. There are virtually no other organizations which can offer this kind of mediation: agricultural societies, cooperatives, and fraternal societies are small, extremely limited in scope or non-existent. Private sector involvement in agriculture, through such vehicles as fertilizer dealerships, seed and equipment merchants, aggressive private banks, etc., particularly for small farmers, has not taken place.* Thus, the agricultural extension service is the only institution available to transmit information to the small farmer. Its importance is enhanced, because of investments presently being undertaken in agricultural research, marketing, planning, etc., which will generate a body of information and practices for transmission to farmers.

1. Overview of an Effective Extension Organization

An extension service must be developed that is 1) problem oriented; 2) research based, and 3) educational in character. Since farmers will only make changes as they clearly see the likelihood that their complex objectives can be realized without undue risk, extension agents must

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*The two notable exceptions are the closely related Windward Island Banana Growers Association and J. Geest, the extra regional shipping firm.

educate, guide and motivate the farmer after securing his confidence. Assignments that conflict or tend to destroy the educational relationship should not be made to extension personnel and the target farmers should be directly involved in program priorities and evaluation.

The extension service must start where the farmers are at the time of contact and be able to demonstrate and facilitate adoption of improved farm practices. Frequent farm visits must be made to assist farmers in the use of new technology and practices. Extension personnel must be trained in hands-on work; they must live in the area that they are assigned to serve; they must have transportation and the communication and demonstration funds that are essential for such an assignment. Furthermore, they must be backstopped when they encounter problems beyond their capacities. Through such an approach, along with sound, consistently administered personnel policy, an extension service can build a reputation for leadership and become a leading force in development. A successful extension service needs equipment and tools but in the end it depends on its employees to demonstrate knowledge, integrity, hard work, the capacity to lead and motivate, etc. Therefore, the national governments must use the services and assistance to correct problems and meet the criteria above. As one Minister of Agriculture put it, "The Country must design its own system." The Caribbean Agricultural Extension Project

addresses these needs. Without an effective extension service the investments in agricultural research and development in the Caribbean are almost certain to be disappointing.

2. Deficiencies of Current Extension Services

The objectives stated for the national extension systems in the Eastern Caribbean and Belize tend to reflect the conventional wisdom about the purpose of extension, i.e., to disseminate technical information to farmers in order to improve agricultural productivity. However, the flow of technical information has been limited. What information does move tends to focus on major export crops and not on food crops, and it has generally been shaped for large producers (in many cases information is being produced by the large commercial organizations) and may not be appropriate for the majority of small farmers. In general, the small farmer does not have access to sources of technical data suited to his level of literacy, technical competence, resource availability and showing him how to increase his productivity.

As described above, the only institutions available in the islands of the Eastern Caribbean and Belize which can provide this service are the governments, through the Extension Service of their Ministries of Agriculture. All of these governments have such extension services but their effectiveness is limited for a number of important reasons. Keeping in mind that the principal function of an extension service is to educate, the following major deficiencies will be examined: 1) non-educational roles of extension agents; 2) personnel problems;

3) organization and management; 4) skewed client groups; 5) lack of training; 6) lack of mobility; 7) weak delivery systems; and 8) insufficient backstopping. These deficiencies are endemic to all of the extension services being considered under this project although the particular seriousness in each deficiency area varies with each extension service.

1. The non-educational role of extension agents creates an image and relational problem between the agent and the farmer -- it is difficult for a government fee collector to gain sufficient acceptance among farmers to influence their production decisions. Most CAOs reported that agents are required to sell licenses and arrange for equipment use, and some reported that agents were used to settle minor land disputes. These non-educational activities are valid government activities, but they are not appropriately carried out by the same individual who is responsible for educating and guiding farmers in production decisions. In another sense it is a matter of time; the CAOs reported that as much as half of each agent's time could be devoted to these activities, which means time away from dissemination of information.

2. Personnel problems within the extension services are often related to lack of training and probably, by extension, lack of competence. One CAO noted that "lower posts are frequently filled by appointments that are made for political reasons." Historically,

farming has been held in low esteem, and this may take its toll in limiting the numbers of entrants for agricultural professions, determining how long he/she remains in that profession and how the individual performs. Although it varies considerably from territory to territory, all CAOs reported personnel problems relating to general low levels of competence, low status of agents in the community, low morale, low salaries and incentives. These factors lead to high rates of turnover and continuing vacancies for important posts. Table VI shows the staffing pattern in eight of the nine project territories; a UWI manpower study estimated that a minimum of 25 percent of the total professional positions were vacant. (Vacancies are not shown on the table.)

3. Organization and management is perhaps the area of principal need in the extension services, often because neither appear to be present. (Again it should be clearly noted that there are differences among the islands.) The general pattern which emerges is that lines of authority are very weak; no one checks to determine if the district agent is doing his job. But more frequently there is no statement or job description for what the agent should do, and such job descriptions as do exist emphasize selling of licences etc., rather than educational activities. No island reported fully developed plans for activities to follow specific crops or seasons, and it appears that in several territories no effort has been made to plan activities for the service.

TABLE VI

CURRENT LEVEL OF EXTENSION STAFFING BY COUNTRY

	Antigua	Barbados*	Belize*	Dominica**	Grenada	Mont-serrat	St. Kitts/ Nevis/Anguilla	St. Lucia	St. Vincent	Totals
Administrative/ Supervisory	5	2	7	1	7	2	1	4	3	32
Technical Specialist	-	-	-	-	-	-	-	-	-	-
Extension Officers	10	-	12	4	5	4	8	6	19	68
Extension Assistants	5	9	12	30	30	-	-	16	-	102
Total Staff	20	11	31	35	42	6	9	26	22	202

* 1974 data from MUCIA's International Survey of National Extension Organizations and

** Estimate Provided by T. Henderson, Personal Conversation.

a. These figures may not include all extension personnel who are assigned to particular commodity schemes, particularly those associated with export crops.

One CAO noted that "relationship problems exist between the administrators on the political side and the technical side — the administrators want to dictate." Throughout the services weaknesses were identified in accounting, financial reporting and program reporting mechanisms.

4. Skewed client groups have resulted from the propensity of extension services to work with cash crops at the expense of food crops and larger more successful farmers at the expense of small-holders. These biases are based in the history of agriculture in the territories but also may be a prime factor in heavy foreign exchange burden which several of the islands spend to import foods. The activities of CARDI in developing information on multiple cropping systems for small farmers should provide the extension services with a key element of the information they will need to provide a better balance in their approach to the farm population. Activities of this project, such as redefinition of extension agent roles and training to increase their educational and communications skills, should stimulate a more balanced approach to the farm sector on each island.

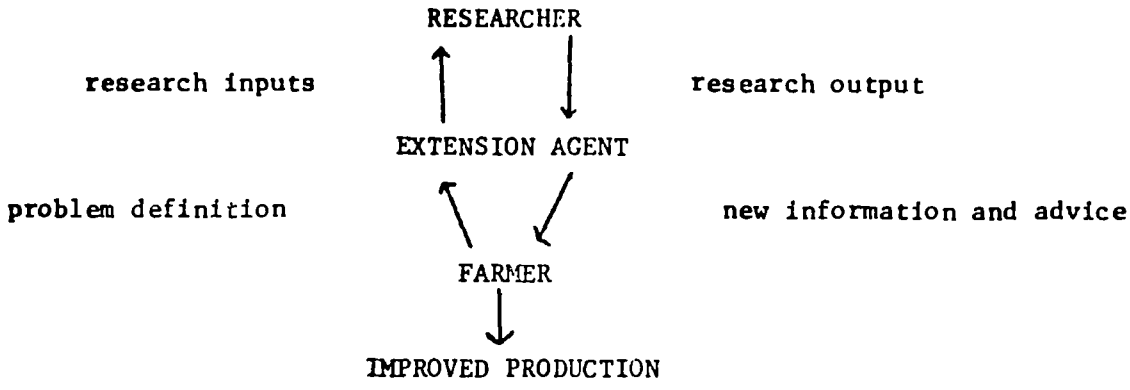
5. Training is also deficient in a number of areas. A survey of manpower needs (T.H. Henderson,"Trained Manpower Needs in Agricultural Sector of the Leeward and Windward Islands,"1974) in the Eastern Caribbean in 1974 indicated that about 20 percent of the total extension staff had earned a university diploma. Individuals with such training are crucial to the leadership function of extension, but none of the

territories had much more than half of their staff with university degrees (Antigua, 56 percent); and in the case of St. Kitts none of the extension personnel had graduated from a university. There is also substantial evidence that many of the extension staff have little knowledge of extension methods, including the use of communication techniques and that they lack knowledge of available support services such as credit.

Most agents have gained their field experience working with large plantation crops and have not been exposed to commercial methods of growing food crops on a small scale. Skills in record keeping and report writing are also below par. Existing regional facilities for training extension agents (e.g., Jamaica School of Agriculture, Eastern Caribbean Institute of Agriculture and Forestry, etc.) do not have adequate capacity to meet the demand for extension officers. Funds for training at any level are in very short supply, and there is no real consensus as to training requirements. U.W.I.'s degree-level programs have high admission standards, take several years to complete, and are judged to be too costly by many local governments for more than a very few students. Moreover, until recent years women have not been trained or appointed to the extension services as field agricultural officers. This omission has probably partly contributed to the under-representation of female farm operators as extension service clients.

6. The delivery systems of these extension services have evolved as a "top down" model, which places two significant limitations on them. First, there has been little opportunity for upward flow of information concerning farmer needs and production problems; hence, there has been no effective mechanisms for insuring that problem definitions for the research establishment, principally CARDI, are based on the actual needs of farmers. This is a key weakness in the systems as currently structured because it means that the field agent has no backstopping for the problems he may actually encounter -- he must be expert enough to solve problems from his general knowledge, and it is not likely that he can do this for all problems at all times. The second related limitation of a "top down" delivery system is the lack of rapport between the field agent and the farmer-client in which the farmer does not see the agent as a source of information and/or assistance for solving his -- the farmer's -- specific problems.

Th development of extension systems which not only provide information to the farmer but which actively seek to solve problems as defined by the farmer is a crucial element for increasing agricultural production, particularly for food crops, in the Eastern Caribbean and the key to success for this project. The concept as illustrated in the diagram below is deceptively simple, but the concept is not currently operational in the extension services of the Eastern Caribbean and, because it will involve changes in long entrenched patterns of human behavior, an effort of the magnitude prescribed for this project will be required to introduce the revised system.



7. The lack of mobility of extension agents is a limiting factor in agent-farmer contacts. Without frequent contacts, the agent cannot develop the closeness and immediacy in problem resolution required to gain and maintain the farmer's confidence. Some type of transportation must be provided for the agents. Most CAOs in the workshop and others met on the site visits felt that high-clearance vehicles would be necessary to reach farms not served by roads, although the various infrastructure, especially road building projects, will greatly reduce this problem.

Providing vehicles for the more than 175 field agents would not appear possible. Most CAOs felt that some vehicles should be assigned directly to the extension service within the Ministry (as opposed to a common Ministry motor pool). The need in St. Lucia for such vehicles was estimated at five, Grenada specified six, St. Vincent could not specify a number but all felt a minimum of two vehicles should be assigned to the extension services. On the other hand, extension agents from Montserrat pointed to the need for vehicles assigned directly to field agents.

Alternatives to high-clearance vehicles were discussed, particularly motorcycles. Most CAOs indicated that they had tried these with very limited success. Problems noted included safety, poor travel conditions during rainy months, and low status of such vehicles. Some officials acknowledged that for specific tasks some motorcyles might be used but the motorcycle was not considered a viable general transportation alternative.

Another element in mobility related to agents living in their districts. (This also has implications for knowledge of the district and trust and familiarity between agent and client.) It was pointed out that in most cases the agents had better mobility between the Ministry or central office and the district than within the district. Although most CAOs recognized the value of living in the district, they noted that inadequate housing was often a problem.

8. The lack of equipment is another factor limiting the effectiveness of extension agents. Equipment needs can be divided into educational and service categories. In the area of educational equipment, tape recorders, cameras, slide projectors, overhead projectors and other basic equipment were noted as in short supply or non-existent. There is some use of radio time and newspaper space by extension services but these other types of equipment would greatly increase the flexibility of agents in making small group presentations instead of relying principally on one-to-one contacts.

For service equipment, some CAOs noted a need for tractors, plows and other heavy equipment, but others placed emphasis on smaller items ranging from typing and duplication equipment to knapsack sprayers and mist blowers. For farm production equipment, it was generally noted that agents must have available and be able to demonstrate equipment and techniques which they feel the farmer should adopt. There was unanimous and strong concern among all CAOs and others that lack of equipment of all kinds was a serious continuing constraint for the extension services.

9. Small farmer receptivity has been limited because the farmer, in some instances, has strong doubts about the ability of agriculture to provide a "reasonable" quality of life and doubts also exist about the ability of the extension service to respond to agricultural problems. Data from the UWI Survey, 1979, commissioned by CARDI, indicated that only 4 percent of the farmers interviewed said that they were influenced by the extension officer in adoption of new practices. Moreover, only about one-fifth of farmers reported that the extension service was used as a primary source of authority for adopting technology. Part of the limited commitment of the farmer to the extension service may be attributed to the lack of opportunities that farmers are given to be involved in the operational activities of the extension organization. This low level of involvement is pervasive throughout

much of the region so that farmers are generally excluded from the every day activities, whether they be programme planning, problem identification, etc.

An equally serious deficiency in the relationship between the extension systems and the small farmer is found in the exclusion of the female farm operator. Since female farm operators comprise a substantial proportion of agriculturists on some islands, the extension service is failing to serve an important segment of its clientele. Moreover, the composition of farm households is such that many are female headed either legally or de facto by the long-term absence of the male in urban employment, on other islands or in North America. In addition, studies indicate that farm decisions are most commonly mutual -- made between husband and wife. These factors suggest the economic importance of extending agricultural extension services to more female farmers.

The small farmer is often dependent on the extension service for non-traditional perspectives on farm management, particularly related to risk perception. However, many extension officers have few skills in this area. The Agricultural Extension Staff Survey, reporting on one aspect of farm management -- farm accounting -- revealed that

three-quarters of the extension personnel in the Leeward Islands had a "felt need" for training in farm accounting and two-thirds expressed a similar need in the Windward Islands.

Both demographic data and the realities of the import figures make clear that the needs of the small farmer must be better met if agriculture is to be sufficiently enhanced to provide the required employment opportunities. Meaningful efforts to raise the level of living of the many small farm families in the Caribbean are required. This project is one such effort.

10. Lack of backstopping for the extension services is crucial, particularly in research and research dissemination. These functions must be carried out by such regional organizations as UWI, CARDI, CARDATS, WINBAN and others. While all of these organizations have been and continue to play a backstopping role, and projects funded by AID and other donor agencies have served to increase this role, much remains to be accomplished. There is now a need for a regional effort to bring together and coordinate the diverse backstopping efforts being carried out through these organizations, and the University of the West Indies, through its Department of Agricultural Extension appears to have the greatest potential for successfully carrying out this coordinating role.

The University can fulfill this role because it had been mandated by its governing board, constituted of representatives of all the island governments, to expand its role in public service and particularly

rural development related services in the LDC islands. The Faculty of Agriculture, under the leadership of Dean John Spence, has made serious and significant efforts to operationalize programs under this mandate. They have planned and implemented through the Department of Agricultural Extension a three-point program of staff development, rural development research and development communications. Although confronting serious limitations in its own staff and funding levels, UWI's efforts include 1) expansion and improvement of undergraduate and graduate programs through the monitoring of the success of graduates; 2) development of in-service training courses and rural training centers; 3) support for an expanded program of home economics; 4) preparation of a manual for extension agents throughout the region. The second major thrust of the University in fulfilling the regional role relates to rural development research with activities in Windward Islands communications, Acono-Maracas Rural Development and Country profiles of Caribbean agriculture. In the area of development support communications, the University has published a quarterly newsletter and a series of subject-matter bulletins for agricultural production.

The U.W.I. also appears to be the appropriate institution to play this regional role in coordinating backstopping of extension services because of its links with other regional organizations. It has formal linkages with CARDI and has developed an increasingly close working relationship with them. The ties to CARDI as well as to the U.W.I.

research faculty need to be more fully developed and systematized in order to insure the research and information base needed to train and backstop extension personnel. The University also maintains informal but continuous contacts with WINBAN, CARDATS, CARICOM, the three regional intermediate agricultural schools and the Ministries of agriculture in the region. The Faculty of Agriculture and the Department of Agricultural Extension play a particularly important role in these contacts with the island governments.

These programs demonstrate the depth and seriousness of the U.W.I. commitment to its regional public service mandate. The team is confident that U.W.I. can fulfill this backstopping role but it will be important to provide additional support before this role can be fully realized. First, U.W.I. will need to establish outreach offices in the Leeward Islands, Windward Islands and Belize. Second, it will be necessary to develop a communications center within the Department of Agricultural Extension. Third, it will be necessary to redistribute assignments of some staff to maximize inputs for this project. Despite the mandate of the University and an already heavy commitment of resources to that mandate, UWI will need support and assistance through the life of this project to increase its capacities for fulfilling this regional backstopping role.

B. DETAILED PROJECT DESCRIPTION

1. Project Goals and Purposes

The goals of this project are to improve the economic and social well-being of small farm households within the region through an increase in the value of agricultural production and generation of agricultural employment. The extension services of the island governments are a key deficiency in obtaining this goal.

To address this problem, based on the field experience of the design team, this project will have three major purposes: to increase the effectiveness of national extension services in nine territories; to increase the effectiveness of selected regional institutions which serve the national extension systems; and to involve women actively and more fully in extension policies and programs.

The major existing regional institution to implement this project will be the University of the West Indies under the leadership of the Department of Agricultural Extension in the Faculty of Agriculture. This Department already serves as the regional information clearinghouse for agricultural extension and provides in-service training to the extension services of the nine territories involved. In addition, a Regional Agricultural Extension Coordinating Committee (RAECC) will be organized to provide continuing review and coordination of national

extension programs. (It is not intended that this group develop as a regional institution in the sense of having physical facilities, staff, etc., but that it continue to operate as an ad hoc committee and communications network.)

U.W.I. will collaborate with a U.S. counterpart institution which will provide long-and short-term technical assistance in the following activities: drawing up and later implementing national extension plans for each of the nine territories; designing and carrying out educational activities at U.W.I.; implementing project follow-up procedures to reinforce the effective use of education and training programs for extension personnel; developing and testing models for integrating women into the staff and programs of national extension services.

2. Major Project Activities

Activities in this project are divided into two phases: 1) Planning and Program Development, and 2) Program Implementation. Activities 1 and 2 described below cover the Planning and Program Development Phase, while Activities 3 and 4 cover Program Implementation. Each of the participating territories will sequentially undertake each activity; however, some territories may progress through vaeious activities and phases more rapidly than other territories. This is significant because approval and authorization for commencing phase II will be contingent upon preparation and AID review of national extension improvement plans for five territories.

Activity 1: Establishment of a Regional Agricultural Extension Coordinating Committee

The first major task of the project staff will be to establish a Regional Agricultural Extension Coordinating Committee (RAECC), which will provide advice and counsel to U.W.I. about the implementation of the project and serve a communication function for agricultural extension in the region. The Chief Agricultural Officer and the Director of Agricultural Extension in each territory as well as farmers, representatives from farmer associations, extension-related institutions such as WINBAN and

a representative from the Women in Development Unit at U.W.I. will be invited to serve on the Committee which will meet five times during the life of the project.

The specific objectives of the Coordinating Committee will be as follows:

1. To give advice and counsel to U.W.I. regarding the implementation of the project;

2. To provide an essential linkage between the project and the national territories, as well as an important linkage between territories for sharing ideas;

3. To share insights about regional resources in the development of national extension systems;

4. To participate in the periodic evaluation of the National Extension Plans and of the project.

It is anticipated that the first meeting of the Coordinating Committee will be held during the last half of January 1980, and will be devoted to the following topics: 1) details of the project will be discussed, including the main foci of the project to improve national extension systems (see the ten deficiency areas described above); 2) each phase of project implementation will be discussed so that policy-makers from each territory will understand how the project will proceed and the responsibilities of all interested parties; and 3) the instrument* which is to serve as the basis for developing national extension improvement plans will be presented for review by RAECC participants.

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*A preliminary document outlining the major areas to be examined and types of questions to be asked in the analysis of the national extension systems will be prepared in advance by U.W.I. and the counterpart institution.

After the first year of the project, periodic review meetings of the Coordinating Committee will be held. In each case (including the initial workshop) these meetings will be held on a rotating basis in the smaller territories of the Eastern Caribbean, so that CAOs, Directors of Extension and representatives of the Women in Development Unit of the U.W.I. can actually visit small farmers and see how selected delivery systems are being deployed.

Activity 2: Conducting an Institutional Analysis and Developing a National Extension Improvement Plan for each Territory

Following the first REACC meeting, a comprehensive, institutional analysis of each national extension system is to be undertaken and, based on these findings, a national extension improvement plan will be developed. It is critical to understand that each national plan will be tailored to the specific needs of the territory in question -- no preconceived model will be "forced" into operation and the plan will rely on host government input and approval. Project staff, assisted by short-term technical advisors, will be responsible for conducting the institutional analyses and preparing recommendations for the national extension improvement plans. The teams to conduct this work in the Leewards (including Barbados) and Belize will consist of the U.W.I. and U.S. counterparts assigned to the region; the Project Director and the U.S. Team Leader will help to finalize the plans in these territories. For the Windwards, the team will consist of the U.W.I. staff person resident in the region and the Project Director and Team Leader. All

three teams will be assisted by short-term experts -- a specialist on the role of women in agriculture, a specialist in agricultural communications, and a third specialist whose expertise should be left unspecified until closer to actual implementation. Each government will be asked to designate its CAO and Extension Director (or their nominees) to work with the teams.* Governments will also be asked to name a national planning committee. Each national government will be strongly urged to appoint to the planning committee government officials as well as lay people (farmers, including women, and representatives from agricultural business firms, agricultural banks, marketing boards, etc.). The purpose of this joint planning committee will be to collect additional information on the current strengths and weaknesses of the national extension system and to formulate and finalize recommendations in the form of a national plan to improve the following features:

a. Relationship of the national extension system to other institutions serving the agricultural sector -- how extension relates with sources of agricultural credit (agricultural banks, credit societies, etc.) marketing (including both marketing boards and private marketing channels such as the higglers and hucksters), sources of inputs (both public and private), and sources of improved/appropriate technology (especially CARDI and U.W.I.).

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* A corollary activity to develop baseline data on the status of women in agriculture should be undertaken during the first year, so that women are made an integral part of the national plans.

b. Policies and procedures within national extension systems that are related to performance (organizational features), including information regarding: 1) the organizational structure of the national extension system; 2) personnel policies such as, recruitment criteria for new personnel, role definition, including the availability of job descriptions, personnel evaluation and supervision; 3) procedures for program planning and development, including client selection and participation; 4) internal channels of communications and patterns of decision-making; and 5) budgetary allocations to extension and the proportion of these expenditures allocated to particular extension activities and programs.

c. Analysis of delivery systems currently employed by national extension systems and an examination of the types of programs currently carried out by each national extension system, including the types of extension methods employed, and the types of extension software available and used.

d. Extension personnel resources currently available to or lacked by the national extension system. Specific attention will be given to identifying standing vacancies within each system because trained personnel are not available. Also, the current educational level of each extension officer will be reviewed, including his/her potential to pursue additional diploma- or degree-level training as part of this project. Specific technical extension-education deficiencies will be identified which might be best handled by either a national or regional in-service training workshop.

e. Extension hardware and other resources currently utilized or needed by national extension systems will be examined. The purpose of this analysis is to outline the resource base of each national system in terms of buildings, vehicles and equipment, so that when decisions are made about distribution of commodities during the life of this project there will not be any provision of new resources that will duplicate resources already in place.

f. In addition to these factors, household survey data will also be collected in the three territories not included in the original U.W.I./CARDI survey. This information is important since the agricultural conditions in Belize and Barbados are considerably different than in the other territories of the Eastern Caribbean. These data will be shared with CARDI.

The final outcome of these joint planning and analyses activities will be a set of comprehensive, four-year plans for the improvement of the national extension systems. Given specific weaknesses identified as part of project development and during the intensive institutional analysis, each national extension improvement plan will identify specific programmatic deficiencies to be addressed, how these deficiencies or problems will be solved and which institutions (i.e., U.W.I., backstopped by the U.S. counterpart institution, or the national extension system) will be responsible for carrying out the specific task.

Each national extension service improvement plan will be developed collaboratively between the national government, U.W.I. and the U.S. counterpart institution. Each plan will be formalized by a written cooperative agreement between U.W.I. and the appropriate national government. Signing of these agreements will be a Condition Precedent to U.W.I. spending project money in each territory for any .....

activity other than conducting the intensive institutional analysis and drawing up the extension improvement plans. In cases where there is consensus that a particular action should be taken, it will be implemented in an appropriate manner throughout the national system. In cases where there is less agreement about innovative programmes or techniques (such as appropriate delivery systems to reach women in agriculture) these interventions will be handled on a pilot basis and then generalized throughout the national system if they prove to be effective.

Activity 3; Implementing the National Extension Improvement Plans

The ten major deficiencies identified among the national extension services can be alleviated through organized activities in four major areas: organization and management, training, delivery systems, and backstopping.

A. Organization and Management

The extension system currently used is a vestige of the past and is geared to the delivery of service functions in an authoritarian framework. Extension services must be guided by the extension improvement plans to make them more responsive to farmer's needs. The national planning committees, working with project staff, will design extension services which are flexible, responsive, and organizationally sound. The CAO for each territory should be in charge of the reorganized services units; the number of hierarchical levels should be kept to a

minimum. It is essential that reorganization plans keep in mind the need for an extension service which can earn the trust of small farmers so as to be able to perform the needed educational services for them in an atmosphere of shared confidence.

In addition to organizational problems a great many administrative management needs are also urgent. Although the degree of need varies on the different islands, these management needs involve the development of a programme of work procedures and work plans, reports and accountability requirements and the deployment of staff. Supervision is inadequate, yet very important because of the limited training of many existing extension personnel. The work performance requirements to which extension officers are held appear to be very indefinite. Thus job descriptions, output expectations and instructional methods, including teaching demonstrations and evaluation techniques, need to be included as the institutional reviews are made.

It is important that a good understanding be reached with each cooperating government as to an appropriate organizational and management plan. Staff assistance can then be offered in moving toward implementing these plans by the Leeward, Windward, and Belize programme teams.

B. Training

The training section of each national extension plan will identify priority needs for staff development which can be met at diploma and degree level educational programmes in agricultural extension, as well as in-service training programmes devoted to specific topics or problem areas that seriously limit the effectiveness of extension personnel and programmes in one or more of the territories or in the region as a whole. Trainees will be selected primarily from among existing extension personnel who have experience and knowledge of extension work and who possess proven capabilities to relate to the small farmer clientele. The national extension plans will also include appropriate position and job descriptions which will effectively utilize the talents and newly acquired skills of the returned trainees.

Governments will be encouraged to make long-term training plans that utilize Peace Corps Volunteer resources available on a bilateral basis. Peace Corps has participated in the development of this project and is ready to respond to individual requests by governments when the training program developed in the national extension plan may entail the long-term absence of key staff members. The Associate Peace Corps Director/Agriculture for the Eastern Caribbean will be a participant in the RAECC and thus will be in a position to monitor the project during implementation and be able to advise the governments of additional Peace Corps assistance which could be made available to meet other staffing requirements of national extension services.

It is recognized that levels of prior training vary widely among extension agents and among countries, and individual abilities and background preparation for additional training will also be diverse. The provision of a wide range of training opportunities should provide maximum opportunities to upgrade and utilize existing talent, to expand leadership capacities in the extension

services and increase the professional skills of individual extention agents. The following sections describe how training reosurces will be allocated:

1. Education Programmes*

a. Diploma-Level Programmes in Agriculture

Since a substantial proportion of personnel in national extension systems are untrained, it is recommended that 36 scholarships be allocated within the region over the life of the project for "appointed" extension personnel to persue the Diploma of Agriculture at an intermediate level School of Agriculture, e.g., J.S.A., ECIAF, or G.S.A., or at a new institution in the region, if one should be created. These trained diploma level extension agents along with those agents presently holding diploma level degrees will combine to establish a minimum core of experienced personnel who can successfully implement newly established National Extension Plans. New entrants to extension systems are expected to be trained through scholarships available from CIDA and BDD as mentioned above. The Caribbean Agricultural Extension project's diploma level training component will complement CIDA and BDD scholarship programs by assuring that qualified, experienced and proven extension agents receive adequate training for career advancement. (Estimated cost: $252,000.00)

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* Since it will be too late to place students in an educational programme during 1979, education programme costs begin in year 2 of the project.

1. b. Degree-Level Programmes in Agriculture Extension

An effective extension organization needs both well-trained agents in the field working with farmers and competent personnel at the mid-management and technical specialist level. To help the smaller territories begin building this leadership component for the future, it is recommended that some educational resources be allocated for B.Sc. and M.Sc. level training in agricultural extension at U.W.I. Therefore, it is proposed that over the life of the project four B.Sc. level scholarships and four M.Sc. level scholarships be allocated within the region, based on the results of the institutional analysis. (Estimated cost: $180,000.00)

c. Diploma Program in Extension Education

U.W.I. will establish a one-year Diploma Course in Extension Education for School of Agriculture Diploma-level graduates. The purpose of this course is to offer special training in agricultural extension for younger, but experienced extension personnel who want to upgrade their professional qualifications. This program is responsive to concerns expressed by territorial governments that degree-level training takes too long and is too costly. U.W.I.'s previous experience with a Diploma in Management Studies has been very successful. It is recommended that nine annual one-year Diploma Course Scholarships be awarded (on average) for years 2 - 5 of the project. (Estimated cost: $270,000.00)

2. In-Service Training Programmes

Based on the institutional analysis in the first year and on field observations by the project staff in subsequent years, it will be possible to identify and carefully design in-service training programmes which will be handled on a national and/or regional basis. The following is a projection of some anticipated regional training programs that will be required:

a. Agricultural Communications (Mass Media) Workshop (Year 1):

This two week regional workshop will be for 1 - 3 selected members of each national extension system who will learn how to use the media (mainly the radio and newspaper) effectively in accelerated agricultural production campaigns. In addition to learning how to write news stories and to conduct taped radio interviews, trainees will actually prepare media materials for use immediately after returning home. This course will meet a need expressed by all local government extension personnel with whom the project paper team talked. (Cost for 25 trainees - travel, per diem and training materials: $25,000.00)

b. Four Subregional Extension Methods Workshops (Windwards and Leewards, including Belize) (Year 2):

These workshops will concentrate on how to organize farmer field days (to be done in cooperation with CARDI at their on-farm test plots) and how to plan and conduct on-farm demonstration

plots. Included in this three-week workshop will be instruction on group extension methods and the effective use of the extension hardware to be provided by the project. Since all field level extension personnel should attend these workshops, and since all extension personnel cannot be off the island for three weeks simultaneously, it will be necessary to have two sessions of each workshop in each subregion (4 workshops @ $20,000 each = $80,000.00).

c. Regional Rural Youth Workshop (Year 2):

These workshops will concentrate on how to organize rural youth (4-H type) clubs and young farmer organizations. It is expected that in each national extension system a national rural youth club leader and a national young farmer organization leader would be designated. These two individuals from each territory would learn how to organize rural youth organizations, begin developing materials for use by local clubs in their country and learn how to conduct a national workshop on youth organizations for field level extension personnel in their country (project personnel would assist with these national workshops). It is crucially important to the future of agriculture in the region that young people be helped to make careers in farming. (Cost of the regional workshop $20,000.00).

d. Women in Development Workshop (Year 2 or 3):

To develop, implement and test extension models that are effective in reaching female farmers and women in agriculture, in at least three territories, it will be necessary to hold a workshop to develop plans for implementing these models. Three or four leaders from three national extension systems would attend the one-week workshop. (Cost $10,000.00).

e. Four Subregional Farming Systems Workshops (Year 3):

These workshops, which will be held early in year 3, will concentrate on helping field level extension personnel understand the basic approach being utilized in developing farming system technology, to learn about the agronomic characteristics of the farming systems being developed for each ecosystem in the subregion and how extension agents should work with farmers to carry out effective, on-farm demonstrations of this new farming systems technology. (Note: Belize would not be included in the Leewards' workshops but would have its own national workshop conducted by project, CARDI and U.W.I. personnel). (Cost of the four subregional and Belize workshops: $80,000.00).

f. Training and Visit System Workshop (Year 3):

The design team recommends that a more intensified extension approach be tried on three territories using paraprofessionals to provide a level of extension input and concentrated level of farmer contacts on an experimental or pilot basis which would be significantly higher than what current extension activities project. It will be necessary to train three or four individuals from each national system who will be expected to give leadership in implementing this system. (Cost: $10,000 for the workshop and $5,000/country to deploy this T & V system in Year 4 of the project or $25,000 total cost.)

g. Subregional Extension Leaders "Update" Workshop (Year 4):

This workshop for national and district extension directors will serve two purposes. First, to allow each national program to describe their programs and the progress being made through the project (i.e., share ideas and talk about successes), and second to receive new technical information on multiple cropping systems. (Cost $25,000).

h. Women in Development "Update" Workshop (Year 4):

This workshop will allow the WID leadership in each of the three national programs to discuss program problems and successes and to develop plans for Year 5 of the project. (Cost $10,000).

1. Two Subregional Traveling Workshops (Year 5):

These workshops, which will be held toward the end of the project, will enable extension leaders in each territory to share program successes with their colleagues in the subregion. Included in this workshop will be a close examination of WID programs, the T & V system, rural youth programs, on-farm demonstration work, etc. (Cost: $25,000/workshop).

At the beginning of each project year, the Project Director and Team Leader will submit to USAID/Barbados a detailed training plan outlining the types of workshops planned and a budget for each training activity. It is expected that the project will pay air travel and per diem for both participants and trainers, at the subregional and regional workshops, but that local governments will pay travel and living expenses of its employees at national workshops. It is anticipated that no salaries or consultant fees would be paid directly to either U.W.I. or CARDI personnel as part of these short-term training programmes, but that the salaries of counterpart institutions short-term training personnel will be charged to the project.

C. Delivery Systems

A major output of the national extension improvement plans will be the design of a delivery system for transmitting appropriate improved technology to small farm households in each territory. There will be commonalities in these systems, but each will be in some measure unique to the territory it is to serve, taking into account such variables as the characteristics of the indigenous farm population, the prevailing cropping mix, and the characteristics and ability of the extension staff. Local participation by the national planning committees in the development of national extension improvement plans will be of crucial importance to the design of locally effective delivery systems.

In at least three territories special attention will be given to developing and testing appropriate models for transmission of technology to women farmers. The project design team concluded that three territories would be a large enough number to account for regional differences, yet manageable given the resources available to the project for training, diffusion, etc. It is expected that short-term consultants will be of major importance to this output, and cooperation has been promised by U.W.I. Women in Development Unit.

In developing delivery systems, consideration will be given to alternative forms of diffusion. Efforts will be made to identify farmers who have the potential for borrowing new technology from those who are more receptive to being adopters. Special emphasis will be directed to increasing the use of crop demonstrations geared to involve larger numbers of small farmers. Project monies will support farm demonstration techniques in early stages of implementing more effective delivery systems. In addition, attention will

be given to farm sites where agricultural technology being introduced may be appropriately transferred from one crop system to another. Special attention will be directed to understanding why some farmers revert back to traditional methods after "adopting" improved technology.

Also in developing appropriate delivery systems, attempts will be made to understand "folk" communication methods and systems to see if these communication resources can be utilized in transmitting information on new farm technology.

An effective extension service must provide for effective feedback of information from farmers to the systems (especially research and development) serving them. Increased farmer contact by extension agents and increased on-farm trials and demonstrations conducted by extension agencies will facilitate the flow of information up from the farmers. Formal linkages between the extension services and research organizations (CARDI, CARDATS, etc.) will ensure that feedback from farmers reach sources responsible for development of new technology. Given the conflicts in existing delivery systems on some islands between educational and regulatory functions assigned to the same individual agent, it is expected that it will be necessary to work out appropriate roles and divisions of labour for these subsystems to maximize the effect of new inputs.

1. Vehicles Needed by National Extension Systems:

Lack of mobility was consistently pointed out by CAOs and others as a critical factor inhibiting effective extension work. Vehicles are absolutely essential to the sort of extension service this project seeks

to develop -- one which is in close, frequent touch with the farmers, providing information, listening to responses, etc. A major output of the national extension improvement plans will be the development of a list of vehicles which can be provided by the project for each territo Part of the cooperative agreement for implementing the improvement plans will be a commitment by the government to assign to field agents, manage, maintain and eventually replace these vehicles.

Given the fact that there are about 175 field level extension personnel working in over 60 districts throughout the region, and that the majority of these agents do not have transportation available to them, the need for vehicles is clear.

The budgetary limitations of the participating countries and overall prudent use of USAID funds will not permit a vehicle to be provided for each extension district. Therefore, a two-dimensional approach is recommended to maximize transportation available.

Based on discussions and recommendations of CAOs, there appears to be a need for adding vehicles to the motor pool of each extension service. The number of vehicles needed will vary with one or two islands perhaps needing none and others needing five or six. Based on a preliminary survey by the project design team, it is recommended that approximately 24 vehicles be acquired to be distributed in conjunction with approved national extension improvement plans. This number appears to balance approximately with the maximum number the extensions services are likely to be able to accept and still provide assurances of local funds for maintenance, operation and replacement. (Estimated cost $148,000.)

A second recommendation for improving mobility is to make vehicles available to field level extension personnel through a carefully regulated programme administered by each Ministry of Agriculture. For example, if the project in essence covered the interest costs on a 5-year loan, this would be considerable incentive for agents to purchase and maintain vehicles themselves. If the national governments would waive the import duty on these vehicles as part of their local contribution, this would be a considerable additional incentive for field-level extension personnel to purchase vehicles. If such a waiver was not possible to negotiate with a local government, then the project should negotiate to have mileage rates paid to extension agents which reflect the actual costs of operating a vehicle in that territory. If such a vehicle incentive programme was impossible to arrange with the national governments, then it is recommended that these monies be applied toward the purchase of additional vehicles and made available to national extension systems on the basis of greatest need. (Estimated cost: $50,000.)

The team was cognizant of the concern expressed by the DAEC that less expensive vehicles might be adequate, motorcycles, etc. The consensus of local extension leaders was that these vehicles are not suited to the terrain, particularly in the rainy season, and that they would not be widely or well used. However, all transportation alternatives will be analyzed during the intensive review on a country-by-country and position-by-position basis.

2. Communications Equipment for National Extension Services:

A major need expressed by local extension personnel was for greatly expanded communications capacity -- i.e., the ability to use radio, films, newspapers, bulletins, video, etc., to a far greater extent than can now be done to more efficiently share technical information with farm families. The project proposes to supply each national extension service with the communications equipment it does not have but can use in its improved system. Again, a major output of the national extension improvement plan will be to draw up a list of such equipment. An agricultural communications specialist will come to the Eastern Caribbean early in the life of the project to participate in the refinement of equipment recommendations in the national extension improvement plans and to conduct a regional communications workshop. As with the vehicles, a portion of the cooperative agreement which is to implement the extension improvement plans will specify local government arrangements to assign, manage, maintain, and eventually replace communications equipment. These estimates have been developed through 1) an assumption that outreach offices will be developed with no existing equipment base; 2) the U.W.I. communications center will be expanded along lines and with equipment needs already rather clearly defined by the Department of Extension; 3) the discussion during the regional workshop where CAOs outlined in considerable

detail what they saw as their equipment needs; and 4) the site visits which gave the design team a clearer picture of actual limits and condition of equipment. Nevertheless, more detailed planning will be required as part of the national extension improvement plan to maximize the impact of equipment acquisitions. (Estimated cost of this equipment: $43,560.) Equipment purchased by the project for this purpose will be shared with CARDI, WINBAN, etc., through the U.W.I. communications unit. (See Annex B for detailed lists.)

Activity 4: Strengthening U.W.I.'s Backstopping and Outreach Programme and Agricultural Information Unit for the Region

U.W.I. already has in place the nucleus of an outreach capacity which this project will materially strengthen. The University has an Extra-Mural Program on each island in the region, but the Department of Agricultural Extension has been constrained by staff shortages from being a fully effective presence within this program. This project will allow the Department to station a full-time resident staff member, with an appropriately equipped office, in the Leewards, the Windwards, and Belize. The core of the project staff will be resident in Trinidad,

with office space supplied by U.W.I. as part of their contribution to the project. At the end of the project, U.W.I. will have added to its staff at least one, and possibly two full-time professionals who will be permanently engaged in outreach activities; this will approximately double the present commitment.

A major component of this expanded outreach capacity will be a greater capacity on the part of U.W.I. to serve as an information clearinghouse for extension activities in the Eastern Caribbean and Belize. The Department of Agricultural Extension will add to its staff for the life of the project a full-time specialist in agricultural communications, whose work will be supported by technical assistance provided by short-term consultants from the U.S. counterpart institution. Given a combination of the facilities and equipment to be made available to the Department when its new building is ready in September 1980, and the equipment which this project will provide, the Department will be able during the life of the project to:

Continue its quarterly newsletter and expand its subject-matter bulletins;

Tape informational and educational programmes for distribution to local radio stations for broadcast (the project will provide the necessary tape dubber);

Develop color slide series and filmstrips with accompanying audio-tapes and written scripts for use by extension workers in the region;

Prepare, publish, and distribute a wide range of illustrated bulletins and pamphelts, including those for use in programs involving youth and women.

Serve a regional training center to assist cooperating countries develop local expertise in all aspects of communication techniques.

Outreach offices will be set up and supplied by the project in the Leewards, the Windwards, and Belize. They will be staffed by long-term professionals from U.W.I. and/or the U.S. counterpart institutions, and by locally hired secretaries. Estimated total cost of the enhanced outreach capacity for U.W.I.: $298,799.

3. Project staffing Pattern:

The professional staffing structure designed for this project will obtain two major objectives. First, intensive technical assistance inputs will provide maximum stimulation for developmental change within the extension services of the participating countries. The assistance provided to the governments for the planning of extension reorganization and improvement will be reinforced through the continued presence of the same technical assistance specialists to help with implementation. As the changes and improvements within the national extension services are institutionalized and as trained agents return to their posts, the objectives for the technical assistance inputs will be accomplished. These positions will be terminated at the end of the project or will substantively be carried on by personnel within the extension services

The second objective to be accomplished through the professional staffing in this project is the expansion of the development capacities of the extension services and of U.W.I. This will be accomplished by using AID funds to create new positions which will be absorbed by the appropriate institution over the life of the project. For the host governments, the integration of the new position into the extension service will vary depending on the needs of the country as identified in the national extension plan. For the University of the West Indies, new staff will enable the extension department to better backstop the national extension services by increasing U.W.I. communications capacities and by establishing a permanent staff position in the Leeward Islands. The backstopping capacities of U.W.I. may be further increased at the

end of the project if the Windward Island governments can provide continuing support to enable U.W.I. to post a full-time position instead of its current half-time position in the Windward Islands.

Staff for this project will be drawn from the University of the West Indies and the U.S. counterpart institution. The counterpart concept for technical assistance will provide sufficient strength to the inputs to establish a high probability of success. In addition, the combination of U.S. and U.W.I. technical assistance will provide valuable developmental experience for local personnel and institutions.

The project calls for a combination of short-term and long-term assistance including five experts from the University of the West Indies (Project Director, Leewards Program Leader, Windwards Program Leader, Belize Program Leader, and a communications specialist), three from the U.S. counterpart institution (Team Leader, Leewards Program Counterpart and Belize Program Counterpart).

The U.S. Counterpart Team Leader will be resident in Trinidad so as to interact with the Project Director and will also serve as long-term advisor to the extension services in the Windward Islands. This person (or persons - it is anticipated that two individuals, each on a 30-month contract, will be required to fill each long-term advisory position) should have a social science or extension background, including administration, and his/her background should include work and study on methods of organization and organizational change.

The long-term specialists will be designated as Program Associates; one to be resident in the Leewards (including Barbados), the other in Belize. These individuals will serve as counterparts to the long-term U.W.I. staff resident in these areas, and should have knowledge of extension work, including experience in demonstrations, field days, mas media programs and administration.

In addition, the U.S. counterpart institutions will be responsible for providing up to 45 months of short-term technical assistance over the life of the project. Short-term inputs may include specialist on women in agriculture, agricultural communications, organization and management, agricultural technicians, development planning, environmental management and others, but the specialties of short-term advisors will be identified and individuals selected by the Project Director and Team Leader as the project develops. One important task for these specialists will be the collection of baseline data on rural areas. The U.S. counterpart institution will make every effort to involve the same short-term staff on a continuing basis so as to insure continuity in this area of the project; some of these specialists may be natives of the Eastern Caribbean and/or Belize, but it is important that their participation be coordinated over the life of the project. (Estimated cost of U.S. counterpart personnel $1,280,860).

The U.S. counterpart field personnel will be supported through their home institution by a quarter-time Campus Coordinator and a half-time secretary. It is planned that the Campus Coordinator will provide a professional input to the project under the short-term staff positions.

The five staff positions from the University of the West Indies will be divided between technical assistance and positions designed to assist UWI in the expansion of its extension backstopping capacities. The Project Director, Windward Island Program Leader (half of this position is being contributed by UWI to the project) and the Belize Program Leader will be technical assistance positions, which will be supported by AID and terminated at the end of the project. The Communications Specialist and the Leeward Island Program Leader will initially be supported by AID funds, but by the fifth year of the project will be fully supported by UWI. These two positions, plus the half-time position in the Windward Islands will be continued after the project ends.

(Estimated cost of UWI technical assistance is $294,000; costs for expansion of extension backstopping capacities are $92,000).

In each of the nine territories involved, the project will provide support for one extension position in each national extension service. It may be best to second a man from the extension service to ensure that he remains in place after the project. In other cases, when the person may have to be recruited from outside the service, the government will be encouraged to add the man to a staff position. Recruitment of this additional extension officer will be subject to concurrence by the governments to continue employment beyond the end of the project. These staff positions will be supported in increasing increments by the host government and by the fifth year of the project will be supported entirely by the local government.

In three territories, a group of up to eight paraprofessionals will be recruited to develop and implement an intensified training and visit delivery system during Years 3, 4, and 5 of the project. This intensified effort should correspond with developments elsewhere such as reorganization of the extension services, return to service of early trainees and refinement of technical packages from CARDI. Three of these paraprofessionals will be charged with helping to develop strategies for improving the involvement of women in agriculture. (Host country professional and paraprofessional costs $152,500).

Funding for long-term positions will come primarily from AID, but U.W.I. and the national extension services will support increasing percentages of their respective development staff (not technical assistance) positions as shown on the following page.

LONG-TERM PROFESSIONAL FTE STRUCTURE AND FUNDING

	TECHNICAL ASSISTANCE AID FUNDS		EXPANSION OF DEVELOPMENT CAPACITY				
			UWI		Host Countries Extension Agents		
	U.S. Institution	UWI	AID Funds	UWI Funds	AID Funds	H.C. Funds	Total
1	3.0	2.5	2.0	.5	4.5*		12.5
2	3.0	2.5	1.0	1.5	9.0		17.0
3	3.0	2.5	.7	1.8	6.3	2.7	17.0
4	3.0	2.5	.3	2.2	2.7	6.3	17.0
5	3.0	2.5		2.5		9.0	17.0
	15.0	12.5	4.0	8.5	22.5	18.0	80.5

*Assumes nine agents added for second half of Year 1.

The funding for the UWI project staff as summarized above may be shown as follows:

	Technical Assistance	Expansion of Development Capacity		
	AID Funds	AID Funds	UWI Funds	Total
Project Director	5.0			5.0
Leeward Program Leader		1.0	4.0	5.0
Windward Program Leader	2.5		2.5	5.0
Belize Program Leader	5.0			5.0
Communications Specialist		3.0	2.0	5.0
Total	12.5	4.0	8.5	25.0

One aspect of this staffing pattern is worthy of special notice -- the decision to station two long-term staff members, one from U.W.I. and one from the U.S. counterpart institution, in Belize. This aspect of the project is crucial to the development of a truly regional approach to agricultural extension

systems. Although approximately one-third of AID's program monies are spent in Belize, the country is typically omitted from projects like this one (e.g., the agricultrual planning project). Nevertheless, Belize has significant potential as a supplier of fruit and vegetable crops needed in the Eastern Caribbean if the islands are to reduce their food import bills. The distance between Belize and the rest of the region is so great that occasional visits from the long-term project staff stationed in the Leewards and Windwards will not be sufficient to develop the country's agricultural extension system; neither will visits from U.S.-based short-term technical advisors. Long-term resident staff are absolutely essential, and one staff person alone could not cope with the size of the country or the magnitude of the problem, hence it is imperative that two long-term project staff members be maintained in Belize.

C. END OF PROJECT STATUS

There are several elements in this project which make detailed cataloguing of project outcomes difficult to prepare. As the first activity of this project, the nine island governments will work collaboratively with the University of the West Indies and the U.S. counterpart institution to analyze their extension services and to prepare a national extension plan for reorganizing and upgrading these services. The detailed project outcomes will be determined from these national plans. However, sufficient analyses have been done to outline the general end of project status. The overall outcome of the project should provide

1. Significantly more effective extension services playing expanded educational and leadership roles among small farmers, particularly in food crop education; and

2. Significantly expanded backstopping capabilities to be provided to the national extension services by the University of the West Indies, including improvements in integrating regional organizations and information sources for the national extension services. Other

more detailed outcomes should include, but will not be limited to the following:

1. Organization and Management outcomes. Improvements will be in: a) work procedures including written work plans, increased reporting of work activities, clearly defined accountability requirements and systems to verify work inputs, development and evaluation of staff deployment plans; b) work performance requirements such as job descriptions, output expectations and evaluation procedures, instructional methods and demonstrations; c) supervision including levels within the service, authority patterns and conflict resolution within the service; and d) organization which will include differentiation by function so that educational activities are not mixed with adjudicatory activities and service functions, although all of these activities may continue as part of the extension service.

2. Training will, by the end of the project, have touched nearly every extension agent involved in educational activities. The type of training per individual will vary from M.Sc. or B.Sc. training to short in-service workshops. In the latter category, most agents will be participants on several occasions over the life of the project. Estimates of personnel experiencing training are as follows:

M.Sc. level --	4 persons	
B.Sc. level --	4 persons	
2 yr. diploma --	36 persons	
1 yr. diploma --	36 persons	
In-service --	612 persons	(including repeating personnel)
Total --	692 persons	

3. Delivery System outcomes will focus on human capital, mobility and techniques. In the human capital area, most of the training will focus on methods and techniques for more effective delivery of technical information and guidance of producers. An important element of organization, separating educational activities from adjudicatory and service functions, will also greatly improve the delivery systems. Mobility will be increased through acquisition of 24 vehicles specified for program assignment and additional individually financed vehicle acquisitions for extension agents. (Transportation alternatives for these funds will be examined in detail in the first year of the project.) Delivery techniques will stress the use of demonstrations, audio-visual equipment, posters, small group meetings and other alternatives to the face-to-face contacts currently in wide use.

Assuming that there are about 60 districts in the 9 territories covered by this project and that the typical district has 3 extension officers assigned to it (1 agricultural officer in charge and 2 assistants) and that this program for improving national agricultural extension systems is fully supported by each territory, the following is a realistic program of work for that extension staff to carry out over the life of the project. This scenario does not include mass media and other activities to be conducted at the national level and extensive visits to individual farms.

PROJECT YEAR	ACTIVITIES COMPLETED
Year 1:	(Planning: developing national extension plans, begin training programs, assess markets and production opportunities in the district, develop a program of work with specific work targets for the district.)
Year 2:	Assist CARDI with test plots, help organize, and publicize field days to show results, incl: preparing signs and exhibits, organize 2-3 rural youth clubs (like 4-H).
Year 3:	Assist CARDI with field days, organize 2-3 on-farm high yield demonstration plots. Hold 2 field days - one with CARDI, one on demo. plots. Establish District Extension Advisory Committee. Organize 2 young farmer clubs (Lend-A-Hand clubs). Start 3-4 more 4-H clubs. Participate in 1st Annual National Agriculture Show.
Year 4:	Continue to work with CARDI on field days. Organize 5 demonstration plots, conduct 3 field days attended by 15 farmers each. Hold 1st Annual District Agriculture Show.

PROJECT YEAR	ACTIVITIES COMPLETED
Year 4: Contd.....	Participate in 2nd Annual Agriculture Show. Organize 2-3 more young farmer clubs. Start 4-5 more 4-H clubs.
Year 5:	Organize 10 High Yield Demonstration plots. Conduct 4-5 Field Days attended by 20 farmers each. Hold 2nd Annual District Agriculture Show. Organize 4-5 more young farmer clubs, 12 members each. Organize 4-5 more 4-H clubs, 20 members each. Participate in 3rd Annual Agriculture Show.

Assuming it is possible to approximate this typical program of work in each of the 60 districts of the region, it is anticipated that the level of activity in the final year of the project would be as follows:

ACTIVITY:	DISTRICT	REGIONAL
Demonstration plots	10	600
Field Days:		
Number conducted	5	300
Farmers attending (20 each)	100	6,000
District Agriculture Show:		
Number held	1	60
People attending	500	30,000
Young Farmer Clubs:		
Number organized	10	600
Membership (12 each)	120	7,200
4-H Clubs:		
Number organized	15	900
Membership (20 each)	300	18,000
District Ext. Advisory Committee:		
Number organized	1	60
Meetings held	6/year	360/year

4. Backstopping activities will be continued by U.W.I. with support from the island governments after the completion of the project.

a) Leeward Islands Outreach Office -- The University will add to its staff in August of 1980 a full-time staff position which will be assigned permanently to the Leeward Islands.

b) Windward Islands Outreach Office -- The University currently maintains a half-time position in the Windward Islands (or its equivalent as full-time graduate student) and if a contribution equal to the other half of the position can be secured from the Windward Island governments -- a possibility which should be increased significantly by the expected success of this project, the University is eager to maintain that office.

c) U.W.I. Communications Unit -- The position paid under the project for a communications technician will be carried by the University subject to approval by local governments. The caveat which limits the University's ability to definitely commit itself to supporting the position will be the availability of funds, which come from the island governments.

d) U.W.I has endeavored for years to fill the backstopping role envisioned for it at the end of this project. Limited resources have allowed for only piecemeal progress. The catalytic impact of this project will leave the island governments better prepared to utilize U.W.I. backstopping resources and U.W.I. better able to provide them.

IV. PROJECT ANALYSES

A. TECHNICAL ANALYSIS

Agricultural extension services in the Eastern Caribbean and Belize are the major means for disseminating technology and information about services, and cropping practices to the farm families of the region. The issue then becomes how best to organize these services and to train agents to provide the services so as to make them most useful as a mediating organization.

The goal of this project is to improve the economic and social well-being of the small farm households within the region by increasing the effectiveness of the national extension services in the nine territories and of certain regional organizations supporting these national extension systems. There are several ways which these objectives might be obtained. While this may not include the entire universe of alternatives, the project design team considered and rejected the following alternatives:

a) creation of a regionalized extension service was considered unacceptable because of the determination of island governments that they alone have authority to directly interact with farmers in their territory, the expense of continual travel for such a regionalized extension service, and the broad differences in agricultural and social conditions among the islands;

b) an alternative of placing long-term technical assistance on each island was rejected as too costly particularly recognizing that a wide variety of technical expertise will be necessary and can better be provided through short-term inputs coordinated on a regional basis; and

c) consideration was given to making a direct transfer of funds to the governments for improving their extension services but was rejected due to

the needs for regional support and coordination as well as the recognition that capabilities for analyzing, planning, implementing and accounting within many of the island governments are quite limited.

In seeking a balance in cost efficiency and technical feasibility, this project has combined the regional approach with significant inputs at the national level supported by a limited technical assistance component. The extension services and activities directly related to farmer contacts will be carried out through the national extension service of each government, while the technical backstopping will be provided through regional organizations, principally the University of the West Indies. In addition, requested technical assistance will be provided for both the national and regional levels.

For purposes of this project, islands are grouped into two sub-regions — the Leewards (including Barbados) and the Windwards, with Belize as a separate unit — and staffing and training activities are arranged accordingly. Training activities will be at three levels: regional, subregional, and country specific as needs dictate.

Agricultural technology and information generation in the Eastern Caribbean and Belize is rapidly changing. The small farm sector of the economy remains stagnant, however, with many poor farmers lacking information and inputs necessary to increase production and raise their levels of living. Knowledge regarding a whole range of inputs must be provided by an effective agricultural extension service in each of the nine territories. Means must be developed (or learned) which will allow extension agents to assimilate newly emerging technical recommendations from organizations such as CARDI, WINBAN, CARDATS, U.W.I., etc., and to transform these sometimes conflicting pieces of technical and services oriented information into a coherent package of practices to be communicated

to small farmers. The problem is made more difficult by the facts that the small farmers are not accustomed to receiving advice from extension agents, do not have many of the technical and decision-making skills they need, tend to be older and not highly literate, and are often women who have traditionally been ignored by the various service sectors.

Clearly, the task of sorting out information and then repackaging it in ways useful to small farmers is a very large one. It requires extraordinary effort on the part of both the national governments of the individual territories, and the staff of the regional institution best equipped to undertake the task, the Faculty of Agriculture of the University of the West Indies under the leadership of the Department of Agricultural Extension. The individual governments already have extension systems, albeit systems which need a good deal of reorganization and revitalization if they are to become optimally useful. The Department of Agricultural Extension has years of outreach work in the region with these systems, and with other government agencies concerned with agriculture.

The project proposes a cooperative attack on the problem. U.W.I. with the assistance of a U.S. counterpart institution will work with each national government to develop an individual national extension improvement plan. The governments will agree to implement the plan by means of a cooperative agreement with U.W.I. Implementation will then go forward, jointly undertaken by the government, U.W.I. and the U.S. institution. Governments will carry out institutional changes required by the plan, e.g., shifting supervision of certain functions of extension, changing the job descriptions and roles of agents. The U.W.I. and the U.S. institution will assist governments to identify agents who qualify for various types of training, will undertake

in-service training within each territory and/or region, and will assimilate the packages of technical recommendations to be transferred to individual agents within each extension system. All three of these organizations will work together toward integrating the ultimate beneficiaries of the project - the region's small farm families — into the extension system as both recipients of information and dispensers of information about their needs.

The training programs provided in this project vary because of divergences among national extension systems and differing levels of expertise among the individual agents within the systems. The training programs will range from M. Sc.-level scholarships (4 in the project), through two-year, diploma-level B.Sc.-level scholarships (the same number), through two-year, diploma-level training at one of the region's intermediate schools of agriculture (36 scholarships over the life of the project), through one-year, diploma-level training at U.W.I. (36 over life of the project) to in-service training programs at the country or regional level which should affect every extension agent. This mix of training is intended to develop a range of skills allowing the services to work well with farmers and with agencies which are developing new technology; it will provide a cadre of leadership which will serve extension systems well after the project is completed.

Training is of little use without adequate equipment. Accordingly, the project will provide high-clearance vehicles to allow extension agents maximum opportunity to cope with weather, poor roads and terrain to visit and interact with farmers; it will provide educational, demonstration and communications equipment to allow agents more effectively to share information with farmers, and it will establish three U.W.I. outreach offices in the Windwards, Leewards, and Belize to better institutionalize regional backstopping for national extension activities.

B. SOCIAL ANALYSIS

The goal of the project is to increase the effectiveness of the national extension services in transferring technology to the small-scale farmers and in developing linkages between the small-scale farmer and other agriculturally related organizations. Special attention will be given to women in agriculture, since women represent a substantial percentage of those engaged in agricultural production on small-scale farms in the Eastern Caribbean. Women comprise from 30 percent of the agricultural labor force in St. Vincent to over 50 percent in Monteserrat (by contrast only 4 percent in Belize) while it was reported during the St. Lucia site visit that as few as ten percent of farm visits by agents were to farms where females were principal operators.

Historically, it is the small farmer (male and female) who, though numerically dominant in the region, has generally been neglected by extension services and to whom the transfer of improved technology has been minimal. Several social and cultural factors are associated with the limited opportunity of the small farmer to acquire new agricultural information, tools and implements. In fact, several studies indicate (Weil et al., 1976, and Zuvekas, 1978 etc.) that marginal subsistence as a "way of life" has been transferred for generations in many small farm households. In addition, a substantial number of small farmers are over 45 years of age, with minimal formal education and with little contact and support from formal organizations (e.g., agricultural societies, cooperatives, etc.). A survey of small farmers undertaken during 1978-79 by the Department of Agricultural Extension at U.W.I. under contract to CARDI reported that about two-thirds of farm operators were over 45 years of age although most had some formal education, 95 percent had less than a secondary school education and more than four-fifths had no affiliation with an

agricultural society or an agricultural coooperative. In fact, the limited formal participation patterns reported for the small farmer mitigate against their being exposed to a significant source of peer group influence which might reinforce positive attitudes toward agriculture.

These relatively limited contacts by small farmers with the private agri-business sector are of great importance for an understanding of the significance of this project. In larger societies many activities which are "extension" in nature are carried out by the private sector, e.g., recommendations for such inputs as fertilizer and pesticides for improved seeds and cultivation practices. In the Eastern Caribbean and Belize, however, the potential markets are too small to attract and stimulate strong competition from the private sector. Thus, there is no serious effort to sell products or services by private agri-business sources. As a result, the agricultural extension agent must play a larger role here than in some other societies, doing the entire task of informing the small farmer of the technical and marketing options available as well as credit and other agricultural inputs available to him. Thus far, extension agents have not been successful in this very important task; this project will reduce their deficiencies by improving the organizations within which they work, and enhancing their own delivery skills so they can more effectively interact with small farmers.

The differences in the participation of women in farming are striking throughout the territories of the Eastern Caribbean and Belize. Women play significant roles in the Eastern Caribbean as farm operators, farmers, farm laborers, heads of farm households, and marketers of farm produce; but not in Belize. While the proportion of the labor force employed in

agriculture declined over the past several decades in the Eastern Caribbean region, the proportion of women in the agricultural labor force rose. Women are also prominent in the distribution and retailing of locally grown food crops in the Eastern Caribbean, both on the island where produced and in inter-island trade. In 1979 women in the agricultural labor force varied from 30 percent (St. Vincent) to over 50 percent (Montserrat). Belize, however, represents a substantially different social pattern: only four percent of the agricultural labor force is female.

The extensive role of women in agricultural production in the Eastern Caribbean is partly related to household and family structure. In the Eastern Caribbean, among those in the lower economic strata, there is no single predominant form of family structure. Legal marriages coexist with common law unions and "visiting relationships," whereby the father visits his children and their mother from time to time and perhaps provides some economic support, but does not reside regularly in the household. These latter forms of family organization, as well as other economic circumstances, may well lead to an increase in de facto female-headed farm households. While men may be reported (at least by the census taker) as de jure heads of household, they frequently are away for their working lives and return to the farm only at the age

of retirement. Even when the male resides daily in the household, the woman may be the principal farm operator, while the male works part or full-time for wages at a non-agricultural job.

It is not uncommon in the nine territories to find among both male and female farm operators limited interaction with the extension service. This relationship with the extension service may be particularly tenuous for the female farmer. For example, in a four-day visit to St. Lucia (June 19-24, 1979) male senior agricultural assistants reported that about 10 percent of their farm visits were to female farmers, while female agricultural extension agents reported 25 percent of their farm visits were to female farmers. Such differential services to women farmers are reported in other parts of the world (See Annex on Women in Agriculture in Eastern Caribbean and Belize) and are quite possibly due to lack of awareness on the part of officials and to communication networks differentiated upon the basis of gender. Moreover, trained women in the extension services are not always well used. In Antigua, for example, the project design team learned of a woman with a B.Sc. in Agriculture (one of very few individuals with such a background) who had been seconded to the extension service from the Ministry of Agriculture and Supply -- to serve part-time as a secretary to the Acting Extension Officer, part-time as a general secretary, and part-time as a statistician!

If the perceptions of male and female small farm operators are to become more positive, agricultural opportunities must become more profitable - economically and socially. Modifications in the extension services and in the agricultural related organizations with which the extension services interact will contribute toward increasing the effectiveness of the small farm enterprise and the outlook of the small farmer toward farming. For example, the project will contribute toward increasing confidence in the quality of technology and information made available to and transmitted by the national extension services.

But also the project will ensure a more rapid and effective flow of information about farm practices between adaptive research organizations (such as CARDI), the Department of Agricultural Extension, U.W.I., commodity organizations such as WINBAN, the national extension services and the small farmer. In addition, the upgrading of training programmes at all levels for extension personnel will increase their sensitivity and effectiveness in dealing with the problems of the small farmer, particularly female farm operators.

Finally, it is expected that modifications will take place in the delivery systems of the national extension services. These changes in the delivery system should result in the extension service broadening the base of its clientele, especially among part-time farmers and women farm operators.

In addition, these changes in the delivery system should increase adoption rates, decrease the time interval required for adoption to

take place and reduce the proportion of "drop outs." Improved delivery systems and more effective extension agents, moreover, should also increase the likelihood that more small farmers will borrow new ideas and material items, i.e., raise the ability of the small farmer to define problems, to know the existence of resources necessary to resolve problems, to seek out these resources and to apply the appropriate technology available from them. Extension, of course, is only one factor in adoption rates, but in these small territories it will be a crucial one.

The project will not attempt directly to bring about changes in community participation by the small farm household. Nevertheless, it is anticipated that modifications will take place in the organization of the extension service, some of which will influence the small farmer's participation in extension activities. It is expected that two types of changes will take place: 1) existing opportunities for the small farmer to participate in the operational activities of the extension service will be strengthened; and 2) the scope of the opportunities for small farmers to participate in extension activities will be broadened. The extension services will be better prepared to facilitate the participation of the small farmer by their personnel receiving more effective training in group methods.

Finally, the potential of this project for having differential impacts on various segments of rural society must be noted, and should

be monitored by project staff. As the levels of living for farm families are improved by better delivery of information and technology, the socio-economic distance between this group and landless rural families can be expected to increase. Social tensions may result. Extension agents need to be aware of these possibilities and should encourage programs which will have positive effects on all segments of rural society.

C. ECONOMIC ANALYSIS

The purposes of this project include increasing the effectiveness of agricultural extension services and regional institutions in the Eastern Caribbean and Belize and the involvement of women in agriculture by means of improved organizational structure and management, increased training of extension related personnel, improved technology and information dissemination systems and increased capacity of regional institutions to serve extension services. This implies substantial investment in human capital through education and training - an investment known elsewhere to have been economically productive and necessary not only to take advantage of change but to instigate it as well. This analysis examines the cost/benefit ratios of the project: does it make economic sense to invest in agricultural extension.

Increased education and training of extension related personnel and farmers is of importance in preparing people for greater individual freedom of action and choice which is the direct objective which many set for economic development. The key to increased agricultural economic development of small farmers in the Eastern Caribbean lies with individual farmers being able to make and execute decisions which increase their incomes. This requires, among other things, training farmers, providing them with information about technology and institutions, and educating persons to work within the institutions which serve farmers. In the absence of these educational activities, the economic impact of research programs designed to increase small farmers' incomes will be reduced.

The adverse economic consequences of the lack of an effective agricultural extension system are reduced when there are well-established rural mass communication systems, private competitive firms which extend technology through selling inputs and buying output from farmers, good transport facilities to make knowledge seeking less costly, and high levels of literacy among farmers. In almost all of the areas to be served by this project, these conditions are not present. In addition, in a relatively static traditional agriculture the farmer's decision spectrum is limited. His decisions become standardized and are usually well adjusted to the situation. It is only when disequilibria appear due to technical change or other phenomena that new opportunities arise. These new opportunities raise uncertainties as well as possibilities for increased incomes. This changing economic environment can be characterized as: 1) the possibility of increased participation in the monetized sector where information regarding prices becomes much more important; 2) increased availability of new inputs, causing physical productivities to change and requiring knowledge and skill in utilizing them; 3) increased numbers of input combinations becoming possible, making production more complex, record-keeping necessary, and returns to management higher. This kind of dynamic agricultural situation, which is being brought to the Eastern Caribbean and Belize by USAID and other regional and international development agencies' programs involving adaptive research, transportation, agricultural planning, etc., increases the economic value of extension services.

Some learning by farmers takes place even in the absence of a formal agricultural extension system; a country does not have to have such a system in order to experience rises in agricultural productivity. But to accelerate the economic development of small farmer agriculture in the Eastern Caribbean or to sustain improved production, an improved agricultural extension system is necessary.

A dynamic agricultural environment is beginning to develop in the Eastern Caribbean. In many territories small farmers are receiving productive plantation lands, credit programs through the CDB are operating, agricultural planning implementation is being improved, technology useful to small farmers is being generated, marketing organization improvement is being planned and several specific commodity schemes are beginning to operate. This situation has two ramifications relevant to extension: 1) the changes occurring will increase the returns to information gathering and management, two activities on which extension activities can focus; and 2) the lack of effective extension services can substantially reduce the economic impact of the investments in farmer-oriented programs. The roles designed for extension personnel in this project increase the economic value of extension services by providing information and access to programs designed to reach small farmers, disseminating technology relevant to the needs of small farmers, and providing farmer feedback to adjust institutions designed to serve farmers.

The cost effectiveness of the approach selected for this project will be good relative to alternative approaches. For the most

part, training of extension related personnel will be done in the region through in-service and/or diploma-level programs offered by U.W.I. and other regional institutions. Two alternatives to this approach would be to send extension related personnel to the U.S. or international agricultural research centers for training and to establish extension training institutions in each territory involved in the project. Projected costs of these alternatives would be higher than the strategy chosen for this project. Moreover, the expertise, experience and capacity in the Eastern Caribbean region for accomplishing results equal to those of U.S. or international agricultural research center training can be developed with the help of inputs from this project.

A cost benefit analysis of this project is difficult to quantify since measurement of benefits of extension is conceptually and operationally troublesome. Some benefits will result from farmers using extension services to increase their net incomes from farming activities. Other benefits would occur from assisting farmers to more effectively utilize such institutional support as credit programs, CARDI small farmer research results, U.W.I. research results, etc. Therefore, benefits to the project will also be realized by improving the effectiveness of programs other than extension per se.

An approach to estimating the balance between costs and likely benefits is to assume an acceptable internal rate of return to equate the discounted present value of costs with the discounted present value

of returns. To handle the uncertainty of appropriate internal rates of return and likely time horizon for benefit realization, two possible annual benefit levels are given to illustrate the most likely range. The following assumptions are used in alternative I and II.

Alternative I	Alternative II
1. The project has a useful life of 20 years.	1. The project has a useful life of 15 years.
2. The opportunity cost of capital is 12%.	2. The opportunity cost of capital is 15%.
3. The majority of costs are incurred during the first five years.	3. The majority of costs are incurred during the first five years.
4. The benefits begin in year 2 at 1/3 of eventual annual benefit level, increase to 1/2 in year 3, increase to 2/3 in year 4, and reach full level by year 5 and constant through year 20.	4. The benefits begin in year 3 at 1/3 of the eventual annual benefit level, increase to 1/2 in year 4, increase to 3/4 in year 5, and reach full level by year 6 and reamin constant through year 15.

No inflation factor is used in estimating costs and hence the benefits must be interpreted as constant dollar data as well. The results of the cost benefit analyses are given in Table VII and VIII.

Total public sector investment in agriculture was estimated at $1[illegible] million in 1978. With increased emphasis on agricultural investments in numerous development organizations, IBRD expects this level of investment to increase over time. The annual benefits needed to realize the internal rates of returns to investments in alternatives I and II represent 7 and 10 percent of this annual public sector investment,

respectively. Increased net income of farmers as a result of improved extension delivery of known technology only might reasonably be expected to account for one-half of the annual benefit levels derived from alternatives I and II. In this case, the project would have to increase the effectiveness of public agricultural investments by 4 to 5 percent of the 1978 level. Since these investments particularly from donor agencies seem likely to increase in constant dollars through time, one-half of this extension project benefits would represent less than 4 percent of these investments.

A small increase of less than 4 percent in efficiency of these programs through a more effective extension service seems attainable. First, the extension program will focus on the delivery of research results coming from CARDI, WINBAN, CARDATS, UWI and the various research programs of the ministries of agriculture. Second, the credit program of the CDB ought to be more effective by extension training of farmers to be aware of credit availability and use as well as receiving farmer feedback on credit problems. Third, several commodity schemes in various islands are employing extension workers whose increased effectiveness ought to return benefits to these program investments as well. Fourth, a sound extension program should assist in the identification, planning, and implementation of new agricultural programs.

If one-half of the benefits are attributed to improving farmer net income through known technology, this would amount to $460,000

to $665,000 per year by year five and six respectively for alternatives I and II. This would entail improving net incomes on an average three-acre farm by $50/acre for 3000 to 4400 farmers each year (i.e., 20-30% of the 73,000 smallholders). This seems to be a reasonable achievement. Better trained, motivated, and equipped extension workers should be in the field working by years five and six with at least this many farmers. Fertilizer demonstrations and recommendations, more effective disease identification and remedies, and more economic management practices ought to increase farmers' incomes by the required amounts to pay back $460,000 - $665,000 in constant dollars per year especially with increased incomes expected from new technology derived from the research activities underway and being planned.

Given the critical role the extension service must play in extending technology being developed, helping farmers increase incomes from known technology and improving public program investment efficiency, the returns shown to be necessary seem to be attainable.

TABLE VII

BENEFIT COST ANALYSIS USING ALTERNATIVE ASSUMPTION I

(in constant US. $)

Year	Annual Cost of project	DPV of project costs	Benefit Stream	DPV of Benefits
	(-------thousand US$-------)			
1	890.5	890.5	-	-
2	1,285.3	1,147.8	0.33 x	.30 x
3	1,392.7	1,110.0	0.50 x	.40 x
4	1,257.1	695.1	0.67 x	.48 x
5	1,249.2	794.5	x	.64 x
6	187.1	106.1	x	.57 x
7	187.1	94.9	x	.51 x
8	187.1	84.6	x	.45 x
9	187.1	75.6	x	.40 x
10	187.1	67.5	x	.36 x
11	187.1	60.2	x	.32 x
12	187.1	53.7	x	.29 x
13	187.1	48.1	x	.26 x
14	187.1	42.8	x	.23 x
15	187.1	38.4	x	.18 x
16	187.1	34.2	x	.16 x
17	187.1	30.5	x	.15 x
18	187.1	27.3	x	.13 x
19	187.1	24.3	x	.12 x
20	187.1	21.7		
		5,647.8		6.16 x

$$\frac{B}{C} = 1 = \frac{6.16\ x}{5647.8}$$

$$x = \frac{5647.8}{6.16} = 916.9$$

TABLE VIII

BENEFIT COST ANALYSIS USING ALTERNATIVE ASSUMPTION II

(in constant US $)

Year	Annual cost of Project	DVP of Project costs	Benefit Stream	DPV of Benefits
	(-------thousand $----------)			
1	890.5	890.5	-	-
2	1,285.3	1,118.2	-	-
3	1,392.7	1,052.9	.33 x	.23 x
4	1,257.1	827.2	.50 x	.33 x
5	1,249.2	714.5	.75 x	.43 x
6	199.2	99	x	.50 x
7	199.2	86.1	x	.43 x
8	199.2	74.9	x	.38 x
9	199.2	65.1	x	.33 x
10	199.2	56.6	x	.28 x
11	199.2	49.2	x	.25 x
12	199.2	42.8	x	.22 x
13	199.2	37.3	x	.19 x
14	199.2	32.5	x	.16 x
15	199.2	28.1	x	.14 x
		5,174.9		3.89 x

$$\frac{B}{C} = 1 = \frac{3.89\ x}{5,174.9}$$

$$x = \frac{5,174,9}{3.89} = 1,330$$

D. INSTITUTIONAL ANALYSIS

The central foci of this project are the national extension systems in the Eastern Caribbean and Belize. It is proposed to impact on these systems by a combination of technical skills to be provided by two institutions - the University of the West Indies (UWI) and a U.S. counterpart institution.

1. The National Extension Services

Each of the nine territories to be affected by this project has its own national extension service. There are numerous organizational similarities and differences. The project intends to work with each extension service to develop improvement plan which will be based on local conditions. Some of the services will probably be asked to undertake fairly extensive reorganizations; others will be encouraged to make minor adjustments in their programs.

The national governments will be expected to make contributions in money and personnel to the project (See Annex B). In each of the nine territories involved, the project will share the salary cost for one extension position. Extension services will be expected to contribute to the costs of training their personnel, and of maintaining and replacing vehicles and commodities assigned to them by the project. Their estimated contribution over the life of the project is $719,500.

The national extension services can be characterized at present as follows:

1. Agents are involved up to 50 percent of their time in non-educational activities.
2. Personnel are undertrained, underpaid, not motivated and suffering from low morale.
3. Extension services are poorly organized and badly managed.
4. Extension services do not reach a broad spectrum of the farmer population but tend to focus on larger farms and major export crops.
5. Training in technical agricultural skills as well as extension methods are very limited among agents.
6. Delivery systems are generally "top down" and make little provision for upward articulation of needs from farmer to researcher.
7. Mobility of agents is severely restricted.
8. Most extension services are severely limited in equipment.
9. Most extension agents are not well received by farmers.
10. Regional backstopping of the national systems is not yet adequately developed.

The project and its various components will make major inputs to provide the following general characteristics as an end of project status.

1. Educational activities will be separated and assigned to individuals who do not have adjudicatory or service roles to fulfill.
2. Better job-descriptions, organization and incentives will be used to raise the morale of the services.
3. Extension services will be reorganized and management plans developed based on the national extension improvement plans.
4. Extension agents will have received training and have redefined position descriptions to encourage them to work in small farm multiple cropping systems.
5. More than 600 training courses will have been completed by agents (some completing more than one) to improve their technical knowledge and extension skills.
6. Reorganized national extension services will be linked closely to regional organizations to insure adequate technical backstopping and upward communication of research needs.
7. The project will have increased the mobility of the national extension services and hence the frequency of farmer contacts.
8. The project will have provided basic equipment for education services to the regional outreach offices and the communications unit of U.W.I.

9. Extension agents will be prepared to provide information of immediate and obvious value to small farmers, thus, over time building confidence and trust between the farmer and the agent.
10. U.W.I. will be prepared to continue the backstopping capacities developed under the project.

Although this is a sizable contribution given the national budgets, and despite the fact that some of the changes which may be suggested will be difficult to undertake, the project design team believes that the dedication to improve extension services exists in the territories, and that a sufficient number of governments will execute cooperative agreements with U.W.I. to make the project viable.

The number of extension positions of about 225 to 250 when authorized vacancies are filled, provides a reasonable number of people with which to work. In fact, it appears to be about all that the countries could logically continue after the project. In the islands visited (Antigua, Montserrat and St. Lucia) the territory assigned was not unreasonable in size and could be served with reasonable adequacy when transportation is made available. While staff shortages are serious, the greatest limitations do not lie so much in the number of extension staff but in their assignments, deployment, training, backstopping, methodology and supervision. These problems are directly addressed by the project. The project will provide paraprofessionals to augment the current staff in selected areas to test and demonstrate the relationship between more intensive input of service and increases in rates of change in agricultural production.

2. The University of the West Indies

The project will be implemented by the Faculty of Agriculture under the leadership of the Department of Agricultural Extension, at the University of the West Indies (St. Augustine campus in Trinidad and Tobago). The Department of Extension, which was formally established in 1969, carries out three basic functions that relate to improving agricultural extension in the region: teaching, research, and outreach.

Every graduate of the Faculty of Agriculture's B.Sc. programs is exposed to courses offered by the Department of Agricultural Extension in each of the three years of the degree program. In addition, the Department offers two-week courses every summer to extension personnel in both the Windwards and the Leewards Islands. For this project, the Faculty proposes to institute a new one-year diploma program in extension which would be open to graduates of the intermediate level agricultural training schools in the Eastern Caribbean who have several years of field experience as extension personnel. This program would enable such an individual to spend one year at U.W.I. undergoing specialized training, and would return him to his territorial extension service with a new credential and new skills. U.W.I. estimates that ten candidates per year would be needed to make such a program viable.

The research programme of the Department of Agricultural Extension seeks to assist extension administrators in developing techniques and utilizing educational and communication methods most appropriate to local conditions for speeding up agricultural development. The program

objectives include the experimental evaluation of various extension approaches, the determination of factors which may be deterrents to the adoption of agricultural technology, and the evaluation of the extension organizations and workers to determine organizational and individual characteristics which impede or enhance the effectiveness of extension efforts. Because of limited staff and research funds much of the research has been conducted through graduate student projects. Efforts are now being made to obtain funding from outside sources. The Overseas Development Administration of the Foreign and Commonwealth Office, London, have recently financed an agricultural extension research project in the Windward Islands of Dominica, St. Lucia, St. Vincent and Grenada.

The Department maintains a regional Agricultural Information Service, which includes publication of teaching materials, bulletins, newsletters, etc., and a library of visual teaching aids such as films, slides, transparencies, etc. It has also been mandated by a committee appointed by the Vice-Chancellor of the University to involve itself in a wide range of services to the agricultural programs of territorial governments. It is this particular service or outreach function of the department that this project is designed to strengthen in a direct effort to improve agricultural extension systems in the region. To assist the Department of Agricultural Extension in carrying out this project, the Dean of the Faculty of Agriculture has appointed a planning committee composed of representatives of each department in his Faculty. This committee will

participate actively in planning and evaluation for the project. Each department will commit 10 percent of the time of one of its members to this committee, for a total of 60 percent FTE; an additional 10 - 20 percent commitment will be expected of the Field Station Managers who will participate in the training programs U.W.I. will conduct as part of this project, as well as 5 percent of the time of the Dean of Agriculture. This is a substantial commitment of staff time to a single project. It is indicative of a strong faculty and University commitment to increasing outreach capacity, which is a primary purpose of this project.

Further, much of the research activity of the Faculty as a whole is geared towards the provision of appropriate technology for the production of local crops grown by the small farmers of the region, along with relevant economic studies on marketing, credit, crop insurance and cost of production.

3. Relationship of U.W.I. to Organizations Developing Small Farm Systems Techology

The U.W.I. Faculty of Agriculture maintains formal and informal relationships with a variety of organizations concerned with developing technology for the small-scale farmer in the Eastern Caribbean and Belize.

A formal affiliation exists between U.W.I. and CARDI, a principal agricultural organization charged with establishing a small farm multiple cropping system research program for the LDC's in the Eastern Caribbean and Belize. This affiliation involves three representatives from U.W.I.

(in practice the Dean of the Faculty of Agriculture, the principal of the St. Augustine campus of U.W.I., a faculty member of Agriculture, who sit on the CARDI board). In addition, the Executive Director of CARDI sits on three important U.W.I. committees (University Senate, the Academic Board and the Faculty of Agriculture Board). These cross memberships on CARDI and U.W.I. committees provide for the formal exchange of information and policy formation between the University and CARDI. A Memorandum of Understanding also exists between CARDI and the Faculty of Agriculture expressing their mutual intent to cooperate in agricultural assistance to the countries of the region. To this effect CARDI has subcontracted a portion of their Multiple Cropping Systems research project (financed by USAID) to U.W.I. The first part of this subcontract -- the collection of field data to ascertain the cropping and livestock practices of small-scale farmers on three islands has been completed. The second field phase involving the collection of data on three more islands will be undertaken in the summer and fall of 1979. It should be stressed that this commitment to CARDI is faculty-wide; thus, the Department of Agricultural Extension undertook the first phase of the CARDI contract, while the second phase will be the responsibility of the Department of Agricultural Economics.

While CARDI is an important source of technological information on agriculture, the Faculty of Agriculture at U.W.I. maintains formal and informal relations with other organizations involved in agricultural research and development, such as WINBAN, CARDATS, CARICOM, the three

regional intermediate agricultural schools, and the ministries of agriculture of the Eastern Caribbean region. For example, the Dean of the Faculty of Agriculture (along with a CARDI representative and others) is a member of the Committee on Research and Policy of the Trinidad-Tobago Ministry of Agriculture, a committee which identifies and sets priorities for agricultural research. The UWI/St. Augustine has also had a Faculty of Agriculture representative in Jamaica, who serves a liaison function with the Jamaican Ministry of Agriculture.

The formal links between the Faculty of Agriculture at UWI/St. Augustine and the LDC's of the region comes principally through the work of the Department of Agricultural Extension and through the offering of scholarships. As a result of financial support from the European Development Fund (EDF), UWI Faculty of Agriculture is offering 45 scholarships over a five-year period. The Faculty of Agriculture's policy is to award many of these scholarships to applicants from the LDC's. These scholarships cover tuition, room and board but not the "economic cost" that LDC governments must pay for their use of U.W.I. faculties.

The Faculty of Agriculture also maintains formal contacts with the three intermediate agricultural training schools of the region (JSA, ECIAF, and CSA). Diplomas from these schools are accepted for matriculation to the Faculty, but students spend four years doing the B.Sc. degree program rather than the customary three years, with the exception of students from JSA who have completed an Associate degree program.

These latter students are exempt from the first two years and are able to complete the degree program in two years. Their success is due to the cooperation between JSA and UWI, whereby the latter admits only those applicants recommended by the JSA faculty.

Informal links between the Faculty of Agriculture and other agricultural organizations also exist. Many of the professionals in ministries of agriculture in the region and faculty at the intermediate agricultural schools (as many as 75 percent of ECIAF) are graduates of the Faculty of Agriculture at UWI/St. Augustine. Many UWI students conduct their research on LDC's and MDC's in the region under the field supervision of local ministry of agriculture professionals. The importance of these informal linkages for relationships of UWI to LDC governments in the region cannot be overstressed.

It is the conclusion of the project team that U.W.I. is well equipped to play a principal role in this project, with assistance from an appropriate U.S. counterpart institution, and that the University will be able to secure the cooperation of local governments in sufficient measure to enable the project to be successful.

4. Title XII Counterpart Institutions

A. Collaborative Assistance

The collaborative assistance contracting mechanism reflected in this project is designed to- increase the joint implementation authority and responsibility of the contractor and the host institution and encourage more effective collaboration among all participating parties -- AID, host institution and contractor at all stages of the project, including the design stage.

This contracting mode is particularly appropriate for projects in which it is difficult to define, in advance, precise and objectively verifiable contractor inputs and long-term project content as a basis for payment. Certain types of institution-building projects and other projects involving strong inputs directed toward human capital and/or organizational adaptation may require a flexible approach to project design, contracting and implementation. Such flexibility is essential for collaborative assistance to remain responsive in problem areas of great complexity and varying uncertainty.

Flexible implementation authority for the contractor and the host institution is a key element in collaborative assistance. It requires that USAID play a discrete but no less crucial role in project management. This role must be prescribed by AID's (1) acceptance of the proposition

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* Based on USAID's PD No. 65, "Use of Collaborative Assistance Method for Director Contracts for Technical Assistance." Handbook 14, Appendix H and AID Procurement Regulations (AID PR 7-4.10, Sub-part 7-4.58 Collaborative Assistance).

that the host institution, in consultation with the contractor, is in the best position to make tactical decisions within agreed-upon limitations; (2) maintenance of sufficient trust and respect for the host institution and contractor to allow this flexibility, and (3) ability to provide Agency staff with appropriate background to be knowledgeable of progress and to assist in an advisory and facilitative role. In addition to assuring U.S. foreign assistance priorities are met through the project, AID's principal roles are to facilitate the collaboration between contractor and host institution and to monitor the project and participate in joint evaluations. AID should give contractors and host institutions the authority and responsibility for using their specialized expertise to the fullest extent in the scheduling and managing of project inputs.

In operation, the management flexibility and responsibility should take several forms. First, detailed workplans should be developed in conjunction with major review and evaluation activities but should not be part of the contract. Second, contract budgets and fiscal controls should be shifted from fixed line items to program categories, permitting the contractor and/or host institution to adjust amounts and timing to achieve approved project purposes and outputs.

The relationship between the host institution (country) and the contractor has been less well defined but is predicated on the need to use the flexibility described above to maximum benefit for the project. The key here appears to be the joint nature of the relationship.

If collaboration is to be meaningful, both host institution and contractor must draw upon their respective strengths for project inputs. To the extent possible, a partnership must be developed between the host institution and the contractor. The relationship must have more depth than a typical contract for services, and project activities must be jointly discussed, approved and implemented. While the major directional impetus for the project should come from the joint review and evaluation process, considerable breadth should remain for detailed decision-making between the host institution and contractor.

As the general capability levels and special strengths of host institutions and contractors will vary widely in each project, it will be necessary to exercise great caution in drawing up agreements and/or contracts to assure that both parties are free to respond in the frame of the professional capabilities and not in the frame of contractual superiority/inferiority.

B. Title XII Counterpart Institutions

The Congressional charge to USAID and to the Board for International Food and Agricultural Development under Title XII of the Foreign Assistance Act of 1961 is to develop programs which are "designed to achieve the most effective interrelationship among the teaching of agricultural sciences, research and extension." This same title also specifically prescribes a role for American land-grant universities in developing these programs because of their unique experience in integrating these features of agricultural systems.

In response to this Congressional charge, AID has given increased consideration to the Collaborative Assistance contracting mechanism (see AID Handbook 14, Subpart 7-4.58 and Appendix H which provide greater detail).

USAID/Barbados and the L.A. Bureau in Washington have determined that the Eastern Caribbean Agricultural Extension Project will be developed under Collaborative Assistance procedures, and the evaluation panel has selected the Midwest Universities Consortium for International Activities, Inc. to be the collaborating Institution.

A consortium of seven major public universities — Indiana University, the University of Illinois, the University of Iowa, Michigan State University, the University of Minnesota, the Ohio State University, and the University of Wisconsin — MUCIA was established in order to strengthen inter-university co-operation in the international sector, to pool resources for more effective technical assistance abroad, and to strengthen the international emphasis in teaching and research on the member campuses. MUCIA has at its disposal within its member universities the talents and skills represented by more than 100 colleges, nearly 650 academic departments, and 30,000 scholars and administrators.

The Consortium presently has eleven major projects involving elements of technical assistance overseas with a total dollar value of more than $20,000,000. The Consortium has ten full-time, long-term staff members in the field and a large number of short-term consultants supporting their efforts. Of the major field projects currently in place, four are of direct relevance to the Eastern Caribbean Agricultural Extension Project because they deal with elements of agricultural systems in other countries.

In Indonesia, for example, the Consortium has worked for ten years with the agricultural universities, assisting them to improve their capacity to train agriculturalists to meet local needs. The program has involved work with the Institut Pertanian Bogor and Gadja Mada University as well as with six provincial universities. MUCIA staff members have worked in agricultural extension, agricultural research, and vocational agriculture.

Similarly, in Nepal MUCIA staff members are working with the Institute of Agricultural and Animal Sciences at Rampur (a division of the national Tribhuvan University) to develop the Institute as a center for training high and middle level officials of the Ministry of Agriculture, and vocational agricultural teachers and supervisors. The project also addresses the planning and design of community level farming activities. Staff members are assisting students with formal courses of study and with demonstration activities.

In Somalia, MUCIA is working to develop the institutions and programs of agricultural research supported by UNDP/FAO. Long-term field specialists are working with the Ministry of Agriculture and with the Central Agricultural Research Station of Afgoi, as well as with three research substations in other parts of the country. A rotating group of short-term specialists is also

contributing to this project. Somali researchers are being assisted in both field trials and laboratory work on crop varieties, fertilizers, pesticides, herbicides, etc.

Finally, in Syria a group of short-term MUCIA consultants are collaborating with personnel from other universities and USDA to assist the Government of Syria in conducting an assessment of the agricultural sector which will in turn be used in that Government's next five-year development plan. One of the major responsibilities of the MUCIA group is to prepare a report describing and assessing staff and facilities involved in research, extension, and training activities in Syria. Needs in these areas will be identified and recommendations developed as to program modification, strengthening of staff, improvement of facilities and additional support assistance so as to meet government goals. Particular attention is being given to the establishment of effective working relationships among the public and private institutions involved in REE in Syria.

All of these programs grow naturally out of the skills developed by the staff in the five MUCIA institutions which are land-grant colleges for their respective states. The Title XII concept of US specialists sharing the knowledge gained in their own country with counterparts in other nations seems particularly relevant to a project such as this.

With the extensive faculty resource base from member universities and the broad project experience in development work, MUCIA is particularly well qualified to provide support and technical assistance to the University of the West Indies for this project and is expected to continue in the implementation phase as the Title XII counterpart institution.

E. ENVIRONMENTAL ANALYSIS

The goal of this project is to improve the quality of life of small farm families in the region through increased agricultural production. This goal is to be achieved by programmes designed to: 1) increase the effectiveness of the national extension systems in the nine territories served by the project; 2) increase the effectiveness of selected regional institutions which serve the national extension systems; and 3) involve women more actively and fully in extension policies and programmes.

Institutional development as envisaged in this project is expected to have a positive impact on the cultural and socio-economic environment of the project area. By increasing incomes from agriculture, the general well-being of small farm families should improve. The increased production should result in both increased quantity and quality of food available and improved nutrition of the population.

Successful execution of the project objectives is expected to result in adoption by small farmers of improved farming systems developed by CARDI and other research programs. In developing improved farming systems, CARDI will assess each proposed intervention with respect to its contribution to sustained use of the limited land and water resources that are available on the islands. The use of a herbicide to control weeds, for example, could have a negative environmental impact by reducing ground cover and permitting greater soil

erosion if this practice did not result in a corresponding increase in crop growth. In the on-going research projects, qualified researchers will carefully monitor potential environmental effects of recommended practices.

Pesticides to be incorporated into multiple cropping systems must first be approved by AID to insure that they are environmentally safe, under the conditions set forth in the CARDI project. On islands where CARDI is not involved (Barbados, Belize, St. Kitts), U.W.I. or the extension agencies will be required to secure prior AID authorization for use and procurement of specific pesticides from AID funds.

Through careful selection of improved practices, including use of pesticides, crop sequence selection, intercropping, fertilization according to soil test recommendations, and land use based on soil suitability, only positive effects on environmental quality are expected. Therefore, a negative determination has been recommended. (See Annex I)

V. IMPLEMENTATION ARRANGEMENTS

A. IMPLEMENTATION ARRANGEMENTS

This project will be implemented over a five-year period in eight territories of the Eastern Caribbean and Belize. Project activities will be divided into two distinct phases: 1) Planning and Program Development and 2) Program Implementation. Activities in Phase I are estimated to require approximately 24 months. It is anticipated that for some countries Phase II activities may begin earlier pending approval by AID of the National Extension Plans.

Phase I: Planning and Program Development

Day 1 Grant agreement signed by USAID and U.W.I. AID and U.W.I. begin to secure preliminary letters of agreement from territorial governments.

Day 30 Subcontract for technical assistance signed by U.W.I. and U.S. counterpart institution, conditional upon grant agreement between USAID and U.W.I.

Day 60 Team of U.W.I. project staff and appropriate staff of U.S. counterpart institution--including the projected Team Leader and a specialist on women in agriculture--meet to develop instrument for institutional analyses of national extension systems. Invitations go out to first RAECC* meeting.

Day 90 Project staff for all positions selected by U.W.I. and U.S. counterpart institution.

Day 120 Long-term U.S. and U.W.I. staff in the field.

Day 150 RAECC meets to finalize plans for analyses of extension systems; long-term project staff will participate along with three short-term consultants.

Agricultural communications specialist arrives for 3-month assignment to participate in RAECC and analyses of extension system and to plan for equipment and activities of the expanded U.W.I. agricultural information unit.

Day 160 to 365 Long- and short-term project staff visit territories to undertake institutional analyses of national extension systems and to develop extension improvement plans. In three territories, base line surveys will be carried out in conjunction with the institutional analysis.

Day 365 Project staff begin developing cooperative agreements with territories for implementation of extension improvement plans.

Day 400 National extension plans are finalized and government commitments secured for five countries.

Day 425 U.W.I. Project Director and U.S. Team Leader present finalized national plans to RDO/C. Work continues on development of the four additional national extension improvement plans.

Day 460 AID Washington approval of five national improvement plans. Phase II of project is authorized and implementation begins for five approved countries.

Day 520 Completion of base line survey and analyses in three territories.

Day 600 Project staff begin developing cooperative agreements with remaining territories.

Day 650 to 720 National extension improvement plans are approved by RDO/C, and implementation begins for remaining territories.

Phase II: Program Implementation

Project Director and U.S. Counterpart Team Leader develop detailed plan of work and training program for the first twelve months of Phase II.

Project staff begins implementation of national extension improvement plans, with emphasis on organizational and management issues.

Workshops on agricultural communication and mass media are held and new communication techniques will be introduced in territories.

Purchase of vehicles and commodities begins for territorial governments with cooperative agreements for implementation of national extension improvement plans.

First evaluation is held approximately six months after Phase II begins (second meeting of RAECC).

First degree- and diploma level candidates begin programs; second set of diploma candidates is identified.

Four subregional extension methods workshops and two regional youth workshops are held.

Year 3: Second evaluation meeting is held midway in Year 3 (third meeting of RAECC).

Implementation of national extension improvement plans continues, with on-going emphasis on training and delivery systems activities.

Project Director and U.S. counterpart Team Leader develop a detailed plan of work and training plan for rest of Year 3 and all of Year 4.

Second set of diploma-level candidates begin programs; third set is identified.

Workshops are held on women in development, farming systems, and a training and visit system.

Purchase of vehicles and commodities continues.

Year 4: Implementation of national extension improvement plans continues with emphasis on how the project is affecting small farmers.

Third set of diploma-level candidates begin programs; final set is identified.

Workshops are held on national extension programs and women in development.

Third evaluation meeting is held at the end of Year 4 (fourth meeting of RAECC).

Project Director and U.S. counterpart Team Leader develop detailed plan of work and training plan for Year 5.

Purchase of vehicles and commodities continues.

Year 5: Implemenation of national extension improvement plans continues, with emphasis on overall project design.

Final set of diploma-level scholars begin programs.

Two subregional training workshops are held.

Final evaluation is held at the end of Year 5.

Project Director and U.S. counterpart Team Leader prepare final project report.

B. PROGRAM EVALUATION PLAN

Evaluation procedures to be utilized by the project will serve to:

1. Determine whether the stated procedures of the project were applied; if not, what procedures were substituted and what were the bases for their substitution?

2. Determine whether the stated inputs were available and utilized. If not, what was basis for the lack of availability and/or utilization?

3. Determine whether the stated purposes and outputs of the project were achieved? Did either the purposes and/or outputs require modification? If so, what was the basis for changing purposes and/or outputs?

4. What impact has the project had on the region's small farmers? What changes can be observed in levels of economic and social well being? What operational set of generalizations can be drawn from the experience of the project that might be applied to the development of the extension service in other tropical areas?

5. In addition, the evaluation plan will serve to identify and recommend modifications on problematic aspects of the project design and the need for the re-assignment of resources, including long-and short-term personnel.

The sources of information to be utilized in undertaking the evaluation plans will include the following: the base line survey conducted by U.W.I. under contract to the CARDI multiple cropping systems research project; the institutional analysis to be undertaken as part of the present project; project reports and reviews conducted by the Regional Agricultural Extension Coordinating Committee (RAECC) and the joint annual review undertaken by USAID, U.W.I. and the Title XII counterpart institution.

Each evaluation will also review the detailed plan of work and revise and adjust the plan of work to take into account changing conditions, altered objectives and other unforseem circumstances.

All evaluations will be attended by representatives of the U.S. counterpart institution whose special concern will be an evaluation of the performance of staff assigned to the project. This process should include a self-evaluation by each long-term staff member. Results of these reviews will be shared with staff members superiors on their home campuses. Similar review of U.W.I. staff performance will be undertaken by representatives of the Faculty of Agriculture's project planning committee.

Evaluation 1 (To be conducted 18 months after the project agreement is signed by U.W.I. and USAID.)

This evaluation will be directed towards examining the national extension improvement plans and will be made by members of RAFCC supported by staff from U.W.I. and the U.S. counterpart institution. The evaluation will largely consist of examining the use that has been made of the institutional analysis in the formulation of the national extension improvement plans in the nine territories. But attention will also be given to whether the specifications of the national plans are being met as regards modifications in the organizational features of the various extension services (e.g., the introduction of and/or changes in plans of work, the structure and content of job specifications, etc.). Also at this point in the project, a review of the plan of work will enable the project's progress and shortcomings to be ascertained, will serve as a basis for designing the future work plan.

including a profile of future personnel needs (e.g., the U.S. Team Leader, long- and short-term personnel, etc.). (Estimated cost, $15,000).

Evaluation 2 (To be undertaken 30 months after the project agreement is signed.)

This evaluation phase will focus on the following activities:

To determine whether the changes proposed in the national extension improvement plans for the various levels of the extension personnel were applied by the national extension systems. An examination will be made of the types and intensity of training that have been introduced as well as the procedures and subject-matter content applied to training programs. In addition an assessment will be made of the delivery systems in use in each of the national plans of the nine territories to determine whether the expected methods for transmitting new agricultural information, the content of messages, etc. (as stated in each national plan) to small farmers have been introduced. These evaluations will be made by the RAECC supported by personnel from U.W.I. and the U.S. counterpart institution with expertise in extension personnel training and technology delivery systems. Also at this point in the project, the plan of work will be reviewed by representatives from AID, U.W.I. and the U.S. institution. This appraisal will permit the project's progress and shortcomings to be assessed and will serve as a basis for designing the next time interval including a profile of personnel needs for the future phases of the project (e.g., the U.S. Team Leader, long- and short-term personnel, etc.). (Estimated cost $20,000).

Evaluation 3 (To be undertaken 48 months after the project agreement is signed.)

This phase of the evaluation plan will examine the impact of the extension service on the small farmer as stipulated in each of the nine national extension improvement plans.

The appraisal will be based on a representative sample of small farmers who have been the clientele of the extension service and have had an opportunity to be exposed to modifications in the delivery system. This assessment of small farmers in each of the nine territories will consider the intensity of contact with the extension service, the levels of knowledge about new technology, the adoption, borrowing and drop-out rates, etc. There will be special emphasis placed on the effects the extension service is having on women farmers. The team performing this evaluation will include nominees from RAECC supported by social scientists and extension specialists from U.W.I. and the U.S. counterpart institutions. In addition, the plan of work covering the period from the previous evaluation will be reviewed by representatives of the implementing agencies. This assessment will indicate accomplishments and limitations in the work performance and will serve to guide the plan of work for the future phase of the project. (Estimated cost $35,000.)

Evaluation 4 (To be undertaken 60 months after the project agreement is signed.)

The accomplishments of the project will be examined with regard to its purposes and outputs as related to:

a) The organization and management of the national extension services;

b) the delivery systems of the national extension services;

c) the training of extension personnel;

d) the outreach capability of U.W.I.; and

e) changes and impact of the project on the small farm household.

In addition, consideration will be given to modifications in the technological level of the small farm and the knowledge, involvement and image of the extension service. Particular attention will be given to the effectiveness of the model for involving and integrating women into national extension departments. Inputs of the project will also be assessed with regard to their availability and appropriateness. The team undertaking this evaluation will include nominees from RAECC along with social scientists and administrators from U.W.I. and the U.S. institution. External consultants will also be used for these evaluations. (Estimated cost $50,000.)

C. TECHNICAL EVALUATIONS

To facilitate an unbiased review of the project's impact on the extension services and ultimately on the small farmer, two independent technical evaluations will be undertaken during the life of the project. The first technical evaluation will be initiated 30 months after the project agreement is signed and will coincide with the internal program evaluation scheduled to take place at that time. This technical evaluation should examine all project activities scheduled to take place during the first 30 months emphasizing 1) the operation of the RAECC, 2) progress towards implementing the national extension plans, 3) progress towards achieving the project's goals and

4) overall project management by A.I.D. and the cooperating institutions, UWI and the Title XII university. (Total cost: $40,000.)

The second technical evaluation will take place 60 months after the project agreement is signed. This evaluation should determine to what extent the project has succeeded in 1) developing within each local government the organizational structure and management techniques which facilitate an efficient and effective extension system; 2) designing delivery systems which facilitate the transfer of agricultural production and marketing techniques to the small farmer; 3) providing relevant training to extension agents, both public and private, in technical areas related to the needs of the small farmers; 4) establishing capacity within the UWI Faculty of Agriculture to maintain an effective outreach capability which backstops the local extension systems in areas of communication, extension techniques and agricultural production and marketing technologies; and 5) improving the economic and social well being of the small farm households in the participating countries. (Total cost: $60,000.)

D. SUMMARY FINANCIAL PLAN

Total cost of the project over a five year period will be $8,551,309 including 10 percent inflation factor compounded annually. (See following table.) AID will contribute approcimately $6,929,009, UWI approximately $612,000 and the participating countries will contribute approximately $1,010,000. AID's contribution will include assistance towards staff development and support for both participating countries and UWI, technical assistance to all project participants, long and short-term training for extension agents, commodities and equipment for UWI's Communication Faculty and participating countries' overall extension program and travel and transportation expenses for project personnel during the life of the project. UWI will contribute personnel from the Faculty of Agricultures' current staff, additional staff positions to increase their outreach capacities, office space in Trinidad, travel expenses from their recurrent budget and course development and research facilities. Host countries will partially support at least one staff addition, on the average, beginning in the third year of the project and take over funding of the position by the fifth year of the project. Host country contributions will also include partial funding of operating expenses for vehicles, office space for project personnel and training and scholarship expenses.

Requests for AID project financing will be divided in two distinct phases corresponding to 1) costs associated with designing and securing government commitments for national extension improvement plans and 2) costs associated with implementing the national extension plans and assisting UWI up-grade its capacity to backstop and support the national extension systems.

Phase II costs are preliminary estimates and subject to revision based upon completion of the detailed national extension plans.

EASTERN CARIBBEAN AGRICULTURAL EXTENSION PROJECT
Summary Financial Plan -
($ US)

	Phase I		Phase II*			
	Year 1	Year 2	Supplement*	Year 3	Year 4	Year 5
I. Salaries & Wages (including fringes)						
A. Long-Term Professional						
MUCIA	$ 142,506	$ 142,506		$ 142,506	$ 142,506	$ 142,506
U.W.I.	102,800	82,800		75,600	66,000	58,800
Governments	22,500	45,000		31,500	13,500	
B. Long-Term Non-Professional						
MUCIA	7,560	7,560		7,560	7,560	7,560
U.W.I.	48,600	48,600		48,600	48,600	48,600
Governments				15,000	15,000	10,000
C. Short-Term Professionals						
MUCIA	37,422		$ 37,422	37,422	37,422	37,422
TOTAL	$ 361,388	$ 326,466	$ 37,422	$ 358,188	$ 330,588	$ 304,988
II. Allowances	$ 77,030	$ 64,580	$ 1,260	$ 77,030	$ 57,680	$ 65,840
III. Travel and Transportation	$ 131,008	$ 101,241	$ 20,411	$ 119,118	$ 102,182	$ 118,835
IV. Equipment	$ 63,429	$ 15,560	$ 353,150	$ 136,456	$ 76,062	$ 54,202
V. Training			$ 300,500	$ 353,500	$ 225,500	$ 122,500
VI. Evaluation						
Program, MUCIA			$ 15,000	$ 20,000	$ 35,000	$ 50,000
AID, Technical				40,000		60,000
VII. Other Direct Costs						
U.W.I.	$ 4,000	$ 4,000		$ 4,000	$ 4,000	$ 4,000
MUCIA	4,000	4,000		4,000	4,000	4,000
TOTAL	$ 8,000	$ 8,000		$ 8,000	$ 8,000	$ 8,000
VIII. Indirect Costs						
U.W.I.	$ 39,812	$ 34,237	$ 24,921	$ 59,079	$ 48,268	$ 40,239
MUCIA	65,176	53,355	11,821	65,176	65,176	65,176
TOTAL	$ 104,983	$ 87,592	$ 36,742	$ 124,255	$ 113,444	$ 105,415
SUBTOTAL	$ 745,843	$ 603,439	$ 764,485	$1,238,947	$ 948,456	$ 839,680
IX. Inflation (10%)	$ 74,584	$ 126,722	$ 146,090	$ 409,430	$ 440,177	$ 543,156
TOTAL	$ 820,427	$ 730,161	$ 910,575	$1,646,377	$1,388,633	$1,432,836
						$5,188,850
						1,740,159
GRAND TOTAL						$6,929,009

*Implementation costs programmed for year two but subject to approval of Phase II.

AID, UWI and Host Country Contributions

Expansion of Development Capacity	AID	UWI	HC
UWI	335,000	333,000	- 0 -
Host Countries	152,500	- 0 -	355,000
Technical Assistance			
US Counterpart Institution Long-term	1,093,750	- 0 -	- 0 -
Short-term	187,110	- 0 -	- 0 -
UWI, Long-term	294,000	- 0 -	- 0 -
Training	1,002,000	- 0 -	255,000
Commodities/Equipment	698,859	26,200	109,500
Evaluation			
Program, MUCIA	120,000	- 0 -	- 0 -
Technical, AID	100,000		
Travel and Transportation	593,195	22,100	- 0 -
Indirect Costs	572,436	- 0 -	- 0 -
Other Direct Costs	40,000	65,000	- 0 -
SUBTOTALS	5,188,850	446,300	719,500
Plus Inflation	1,740,159	166,000	290,500
TOTALS	6,929,009	612,300	1,010,000

LIST OF ANNEXES

ANNEX A

PROJECT DESIGN SUMMARY - LOGICAL FRAMEWORK

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
1. GOALS			
A. To improve the economic and social well being of small farm households within the region through an increase in the value of agricultural production and generation of agricultural employment.	A1 Increase in real per capita income of small farm households.	National and regional published data on economic labor and income trends; pre and post-field observations.	National governments will treat agricultural production and employment in the small farm sector as high priority.
	A2 Increase in total agricultural employment.		That improved agricultural technology will be available and that small farm operations will be profitable.
	A3 Increased participation in the institutions that serve the agricultural sector.		That economic dependance on remittances will not impede the small farm household's motivation to engage in economic activity.
	A4 Improved level of living of the small farm household.		

II PROJECT PURPOSES:

A	To increase the effectiveness of national extension systems within the nine territories served by this project.	A1	All participating countries will have adopted and implemented policies and procedures which will increase the organizational and managerial capacity of the national extension system.	Field observations, periodic project reports.	Each national government will be willing to change policies and procedures within its extension system to facilitate the transfer and utilization of improved technology to small farm households.
		A2	All professional and sub-professional extension personnel will have completed the project-determined level of training for their positions.	U.W.I. and project training records.	
		A3	All extension personnel will employ the technical, professional and/or organizational skills learned in educational and training programmes.	Evaluation studies.	National extension systems will have made the necessary organizational changes to allow trainees to utilize the skills learned.
		A4	Each participating country will have selected and be implementing a delivery system appropriate to its needs and resources.	Periodic project reports and evaluation studies.	

B	Increased effectiveness of selected regional institutions which serve national extension systems.	B1	U.W.I. will have an expanded outreach capacity to serve the needs of national extension systems including a strengthened regional network for the flow of technical and extension information.	Project reports and evaluations.
		B2	One or more intermediate level agricultural training institutions will be strengthened to meet the special training needs of national extension systems in the smaller territories.	Project reports and evaluations.
		B3	U.W.I. CARDI and other organizations which develop improved technology will have worked out an appropriate division of labour in regards to the development of appropriate extension software for the region to minimize duplication of effort.	

C.	To involve more women actively and more fully in extension policies and programmes.	C1	A model(s) for involving and integrating women in extension activities will be developed and tested in several participating countries.	Field observations, project reports and evaluation studies.	National governments will be willing to participate fully in pilot projects to develop more effective delivery systems to reach female farmers and women in agriculture.
III	PROJECT OUTPUTS:				
A1	Institutional analysis of each national extension system.		Each national extension system will have been visited by a project team and an institutional analysis report prepared.	Project reports.	National governments will agree to participate in the initial observations.
A2	Development and implementation of a national extension plan for each territory in the project.		A national extension plan will be developed by a project team and national extension participants.	Project reports and reports from national extension systems.	National governments will adopt the subsequent national extension plan.
A3	Educational and training programmes to increase the competence of extension personnel in technical professional and organizational skills.		Participants entering and completing educational and training programmes. In-service courses and workshops offered.	U.W.I. training reports and evaluations.	
A4	Implementation of project follow-up procedures to reinforce the effective utilization of educational and training programmes by extension personnel.		Follow-up visits completed, regional agri-extension newsletters published and distributed.	Project reports and evaluation studies.	

A5 New/Improved delivery systems for each territory.	A delivery system, tailored to national needs and resources will be deployed in each territory.	Evaluation studies and field observations of diffusion processes.	
B1 Regional agricultural extension coordinating committee.	B1a RAECC will be organized and will meet at least annually, rotating among the small territories of the Eastern Caribbean.	Project reports; minutes of RAECC meetings.	
	B1b A continuing regional network of national extension systems.		
B2 An expanded outreach capacity for U.W.I.	B2a A strengthened linkage between U.W.I. and the national extension system by an expanded outreach staff		
	B2b Increased number of ad hoc training programs completed.	Project reports.	
	B2c A strengthened agricultural information unit to produce and distribute extension softward.		
B3 An increased and improved intermediate level training capacity to more adequately meet the training needs of extension personnel in the smaller territories.	B3 A selected school(s) of agriculture and/or U.W.I. will be able to train more students and will make necessary curriculum changes to increase the effectiveness of the training program.	Project reports, evaluation studies.	An intermediate school of agriculture can expand its facilities and change its curriculum and related educational activities; U.W.I will add a one-year diploma level training program.

B4 A tested model for involving and integrating women into national extension systems	B4 A model(s) will be developed and tested and adopted in several territories	Project reports and evaluation studies	See assumptions IIc.	

IV.	INPUTS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	LOP
A.	Salaries	361,388	363,888	358,188	330,588	304,888	1,718,940
B.	Allowances	77,030	57,680	85,190	57,680	65,840	343,420
C.	Travel and Transportation	131,008	100,976	140,194	102,182	118,835	593,195
D.	Equipment	199,219	232,920	136,456	76,062	54,202	698,859
E.	Training	25,000	275,500	353,500	225,500	122,500	1,002,000
F.	Evaluation	-	15,000	60,000	35,000	110,000	220,000
G.	Other Direct Costs	8,000	8,000	8,000	8,000	8,000	40,000
H.	Indirect Costs	107,596	121,438	124,543	113,444	105,415	572,436
	Subtotal	909,241	1,175,402	1,266,071	948,456	889,680	5,188,850
	Inflation (10%)	90,924	246,833	419,069	440,177	543,156	1,740,159
		1,000,165	1,422,235	1,685,140	1,388,633	1,432,836	6,929,009

ANNEX B

Financial Plan

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ANNEX B

I TRAINING COSTS

A. Summary of Training Costs

1.	2 year Diploma course in Agriculture (36 x $7000)	$252,000
2.	B.Sc Scholarships (4 x $30,000)	120,000
3.	M.Sc Scholarships (4 x $15,000)	60,000
4.	1 year Diploma course in Extension (36 x $7500)	270,000
5.	In-Service Training Courses	300,000
	TOTAL TRAINING COSTS	$1,002,000

B. Summary of Training costs by year of Project

		Yr.1	Yr.2	Yr.3	Yr.4	Yr.5	
1.	Diploma in Agriculture		63,000	126,000	63,000		
2.	B.Sc Scholars		30,000	30,000	30,000	30,000	
3.	M.Sc Scholars		15,000	30,000	15,000		
4.	Diploma in Extension		67,500	67,500	67,500	67,500	
5.	In-Service	25,000	100,000	100,000	50,000	25,000	
	TOTAL	25,000	275,500	353,500	225,500	122,500	$1,002,000

II. PLAN FOR COMMODITIES

A. Provision of Vehicles for National Extension System

1. Direct purchase of 18 vehicles for National Extension Systems @ $8,200	$148,000
2. Vehicle incentive program for field level extension personnel	50,000
3. Maintenance, insurance, parts, and fuel for vehicles assigned to outreach program	57,000
A. Total extimated costs of vehicles	255,000

B_1. Communications Equipment for National Extension Systems

a) Slide projector and screen (9 @ $450.00 each)	$ 4,050
b) Overhead projector (9 @ $550.00 each)	4,950
c) 35mm Camera (9 @ $250.00 each)	2,250
d) Manual typewriter (9 @ $200.00 each)	1,800
e) Instant camera (30 @ $65.00 each)	1,950
f) Portable tripod/flipchart/chalkboard/bulletin board (60 @ $200.00 each)	12,000
g) Manual operated duplicating machine (mimeograph) (9 @ $750.00 each)	6,750
h) Tape recorder for radio program (9 @ $250.00 each)	2,250
i) Shipping costs (10% of total cost)	3,600
J) 10% contingency	3,960
B_1. Total Estimated Cost	$43,560

B2. Communication and Office Equipment for Outreach Program and Office at three sites:

a)	Slide projector and screen (4 @ $450 each)	$1,800
b)	Overhead projector (4 @ $550 each)	2,200
c)	35mm camera (4 @ $250 each)	1,000
d)	Electric typewriters (4 @ $600 each)	2,400
e)	Duplicating (Mimeo) machines (2 @ $750 each)	1,500
f)	Stencil cutting machines (3 @ $2,500 each)	7,500
g)	Portable tape recorders (4 @ $250 each)	1,000
h)	Thermofax machine (transparencies) (1 @ $500)	500
i)	Tape dubbing machine (1 @ $7,500)	7,500
j)	Calculator (1 @ $125)	125
k)	Office desks (12 exec. @ $600 & 4 sec. @ $450 each)	9,000
l)	Desk chairs (16 @ $200 each)	3,200
m)	Office tables (12 @ $400 each)	3,200
n)	Filing cabinets (8 @ $250 each)	2,000
o)	Book shelves (10 @ $200 each)	2,000
p)	Air conditioners (12 @ $500 each)	6,000
q)	Rental on photocopyer (1 @ $150/month/60 months)	9,000
r)	Shipping (10% of commodities or $50,925)	$5,092
	Total estimated cost	65,017
	10% contingency	6,502
	Sub-Total	$71,519
	Rental of outreach offices in Windwards and Leewards (2 offices @ $400/month/56 months)	44,800
	10% Contingency	4,480
	Sub-Total	$49,280
	B. Total Equipment cost and Office Rental	$164,359

C_1. Office and Program Supplies for National Extension Systems

a) Communication supplies (film, stencils, mimeo paper, etc) (year 1:3,000, year 2:2,000, year 3:1,000, year 4:500, year 5:0x9) $58,500

b) Program costs for field demonstrations, field day, etc (year 1:1,500, year 2:3,00, year 3:6,000, year 4:3,00, year 5:1,500x9) 135,000

Sub-Total $193,500

C_2. Office and Program Supplies for Outreach

a) Agriculture Information Unit Communication Supplies (year 1:4,000, year 2: 8,000, year 3:12,000, year 4:8,000, year 5:4,000) $36,000

b) Office supplies for 4 offices $2,500/year/5years/4 offices 50,000

Sub-Total $86,000

C. Total Supplies $279,500

SUMMARY

A.	VEHICLES	$255,000
B.	EQUIPMENT	164,359
C.	PROGRAM SUPPLIES	279,500
	TOTAL COMMODITIES	$698,859

III. U.W.I. CONTRIBUTIONS

		YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	LOP
I.	Personnel						
	Windwards Extension (.5FTE)	10,000	10,000	10,000	10,000	10,000	50,000
	Leewards Extension	-	20,000	20,000	20,000	20,000	80,000
	Communications Specialist	-	-	7,200	16,800	24,000	48,000
	Ongoing Dept. of Extension	15,000	15,000	15,000	15,000	15,000	75,000
	Other College Personnel						
	Project Monitary Committee(.6FTE)	12,000	12,000	12,000	12,000	12,000	60,000
	Field Station Manager (.15FTE)	2,250	2,250	2,250	2,250	2,250	11,250
	Dean (.05FTE)	1,750	1,750	1,750	1,750	1,750	8,750
	Subtotal Personnel	41,000	61,000	68,200	77,800	85,000	333,000
II.	Office Space, Equipment & Programs						
	Project Office	6,000	6,000	6,000	6,000	6,000	30,000
	Furniture & Equipment	4,000	4,000	4,000	4,000	4,000	20,000
	Partial support for Regional Agricultural Service (bulletins etc.)	2,000	2,000	2,000	2,000	2,000	10,000
	Loan Service for National Extension Teaching Materials (films etc.)	1,000	1,000	1,000	1,000	1,000	5,000
	Subtotal	13,000	13,000	13,000	13,000	13,000	65,000
III.	Travel & Transportation	4,420	4,420	4,420	4,420	4,420	22,100
IV.	Training and Research						
	Development of Diploma Course	1,200	-	-	-	-	1,200
	Ongoing Research (assume two graduate students and one professor)	5,000	5,000	5,000	5,000	5,000	25,000
	Subtotal Training & Research	6,200	5,000	5,000	5,000	5,000	26,200
	Total	64,620	83,420	90,620	100,220	107,420	446,300
	Plus Inflation @ 10% a year	71,100	100,900	120,600	146,700	173,000	612,300

IV. U.W.I. STAFFING -- AID FUNDS*

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	LOP
Long-term Professional Technical Assistance						
Project Director	28,800	28,800	28,800	28,800	28,800	144,000
Project Associate, W	10,000	10,000	10,000	10,000	10,000	50,000
Project Associate, B	20,000	20,000	20,000	20,000	20,000	100,000
Subtotal	58,800	58,800	58,800	58,800	58,800	294,000
Expansion of Development Capacity						
Project Associate, L	20,000					20,000
Comm. Specialist	24,000	24,000	16,800	7,200		72,000
Subtotal	44,000	24,000	16,800	7,200		92,000
Long-term Nonprofessional						
Admin. Officer	19,200	19,200	19,200	19,200	19,200	96,000
Secretary	14,400	14,400	14,400	14,400	14,400	72,000
Outreach Office	15,000	15,000	15,000	15,000	15,000	75,000
Subtotal	48,600	48,600	48,600	48,600	48,600	243,000
Total AID Funds	151,400	131,400	124,200	114,600	107,400	629,000

*Excludes inflation.

V. HOST COUNTRY CONTRIBUTIONS

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	LOP
I. Personnel						
9 Extension Agents Seconded to project by AID	-	-	13,500	31,500	45,000	90,000
9 Extension Agents Assigned to project by Ministries*	35,000	35,000	35,000	35,000	35,000	175,000
Staff Support (halftime)	18,000	18,000	18,000	18,000	18,000	90,000
Personnel subtotal	53,000	53,000	66,500	84,500	98,000	355,000
II. Commodities						
Vehicle Expense ($1,000 hp/yr vehicle)	3,000	10,000	20,000	33,000	33,000	99,000
Office Space	1,500	1,000	1,000	1,000	1,000	5,500
Office Supplies	1,000	1,000	1,000	1,000	1,000	5,000
Commodities subtotal	5,500	12,000	22,000	35,000	35,000	109,500
III. Training						
Training Expenses	-	-	10,000	20,000	30,000	60,000
Scholarships (2/island/yr @ $2,500)	15,000	45,000	45,000	45,000	45,000	195,000
Training subtotal	15,000	45,000	55,000	65,000	75,000	255,000
Subtotal Host Countries	73,500	110,000	143,500	184,500	208,000	719,500
Plus Inflation (10%)	80,500	133,000	191,000	270,500	335,000	1,010,000 **

See attached notes

V. HOST COUNTRY CONTRIBUTIONS

Notes

* Assumes 5 fulltime and 4 halftime appointments.

** On the assumption that duty free importation of vehicles and household goods for long-term professional staff of the US counterpart institution can be arranged by UWI, no costs have been included in the budgets. If such arrangements cannot be made, funds for these items should be provided by amounts sufficient to pay all import duties and other taxes related to household goods and vehicles entering a country.

VI. HOST COUNTRY STAFFING

	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Extension Agents ($5,000 a year a person)	22,500	45,000	31,500	13,500		112,500
Paraprofessionals ($1,000 a year a person)			15,000	15,000	10,000	40,000
TOTAL	22,500	45,000	46,500	28,500	10,000	152,500

VII. MUCIA STAFFING -- AID FUNDS

	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Long-term Professionals						
Team Leader	39,600	39,600	39,600	39,600	39,600	198,000
Project Associate, Leewards	33,000	33,000	33,000	33,000	33,000	165,000
Project Associate, Belize	33,000	33,000	33,000	33,000	33,000	165,000
Campus Coordinator (25% FTE)	7,500	7,500	7,500	7,500	7,500	37,500
Workmen's compensation, retirement, health insurance	29,406	29,406	29,406	29,406	29,406	147,030
Subtotal	142,506	142,506	142,506	142,506	142,506	712,530
Short-term Professionals (45 person months @ $4,158 a month)	37,422	37,422	37,422	37,422	37,422	187,110
Long-term Nonprofessionals						
Secretary (50%) to Campus Coordinator (includes workmen's compensation, etc.)	7,560	7,560	7,560	7,560	7,560	37,800
Total	187,488	187,488	187,488	187,488	187,488	937,440

VIII. SUMMARY FINANCIAL PLAN*

MUCIA SEGMENT

	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Personnel						
A. Long-term Professional	142,506	142,506	142,506	142,506	142,506	712,530
B. Long-term nonprofessional	7,560	7,560	7,560	7,560	7,560	37,800
C. Short-term professionals	37,422	37,422	37,422	37,422	37,422	187,110
Subtotal	187,488	187,488	187,488	187,488	187,488	937,440
.Allowances	77,030	57,680	85,190	57,680	65,840	343,420
:. Travel & Transportation	56,548	62,202	99,714	62,202	77,454	358,120
Equipment	-	-	-	-	-	-
Training	-	-	-	-	-	-
.Evaluations		15,000	20,000	35,000	50,000	120,000
:.Other direct costs	4,000	4,000	4,000	4,000	4,000	20,000
II. Indirect costs	65,176	65,176	65,176	65,176	65,176	325,880
:al before inflation*	390,242	391,546	461,568	411,546	449,958	2,104,860
Inflation at 10%	39,024	82,224	152,779	190,998	274,703	739,728
Total	429,266	473,770	614,347	602,544	724,661	2,844,588

Total UWI - 3,934,551

Total MUCIA - 2,844,588

Total AID - 149,870

GRAND TOTAL - 6,929,009

*Inflation is added beginning in Year 1 because the constant dollar amounts were calculated based on salaries and other costs as published in the Spring of 1979.

IX. SUMMARY FINANCIAL PLAN

UWI SEGMENT

	Year 1	Year 2	Year 3	Year 4	Year 5	Total
I. Personnel						
A. Long-term professionals						
UWI	102,800	82,800	75,600	66,000	58,800	386,000
H.C.	22,500	45,000	31,500	13,500	-	112,500
B. Long-term nonprofessional						
UWI	48,600	48,600	48,600	48,600	48,600	243,000
H.C.	-	-	15,000	15,000	10,000	40,000
Subtotal	173,900	176,400	170,700	143,100	117,400	781,500
II. Allowances	-	-	-	-	-	-
III. Travel & Transportations	74,460	38,774	40,480	39,980	41,381	235,075
IV. Equipment	199,219	232,920	136,456	76,062	54,202	698,859
V. Training	25,000	275,500	353,500	225,500	122,500	1,002,000
VI. Evaluations	-	-	-	-	-	-
VII. Other direct costs	4,000	4,000	4,000	4,000	4,000	20,000
VIII. Indirect Costs	42,420	56,262	59,367	48,268	40,239	246,556
Total before inflation	518,999	783,856	764,503	536,910	379,722	2,983,990
IX. Inflation at 10%	51,900	164,609	253,050	249,179	231,823	950,561
Total	570,899	948,465	1,017,553	786,089	611,545	3,934,551

Total UWI	-	3,934,551
Total MUCIA	-	2,844,588
Total AID	-	149,870
GRAND TOTAL	-	6,929,009

X. MUCIA OVERHEAD

MUCIA has negotiated an Advance Understanding with the Office of Contract Management, AID Washington relative to MUCIA indirect costs. MUCIA's provisional rates for fiscal year 1979 - 80 are as follows:

On-campus	83.9% of salary + wage base
Off-campus	39.8% of salary + wage base

	Each Year*	Years	Total
Off-campus			
Base	135,300	5	676,500
%	39.8%		39.8%
Amount	53,849	5	269,245
On-campus			
Base	13,500	5	67,500
%	83.9%	5	83.9%
Amount	11,327	5	56,635
Total Overhead	65,176	5	325,880
Total salary and wage base	148,800	5	744,000
Fringe benefits	38,688	5	193,440
	187,488		937,440
Page 124 of PP			
Long-Term Professional	142,506	5	712,530
Long-Term Nonprofessional	7,560	5	37,800
Short-Term Professional	37,422	5	187,110
Total	187,488		937,440

*Excludes inflation

XI. U.W.I. OVERHEAD

	1	2	3	4	5	Total	Percent Applied	Overhead
I. Funds Which Pass Through UWI Accounts								
A. UWI Long-Term Professional/ Nonprofessional								
1. Salaries	151,400	131,400	124,200	114,600	107,400	629,000		
2. Direct costs	4,000	4,000	4,000	4,000	4,000	20,000		
Subtotal	155,400	135,400	128,200	118,600	111,400	649,000	20%	129,800
	(31,080)	(27,080)	(25,640)	(23,720)	(22,280)	(129,800)		
B. Host Country Long-Term Professional/ Nonprofessional Salaries	22,500	45,000	46,500	28,500	10,000	152,500	5%	7,625
	(1,125)	(2,250)	(2,325)	(1,425)	(500)	(7,625)		
C. Training								
1. UWI		112,500	127,500	112,500	97,500	450,000	10%	45,000
		(11,250)	(12,750)	(11,250)	(9,750)	(45,000)		
2. Other	25,000	163,000	226,000	113,000	25,000	552,000	5%	27,600
	(1,250)	(8,150)	(11,300)	(5,650)	(1,250)	(27,600)		
D. Travel and transportation	74,460	38,774	40,480	39,980	41,381	235,075	5%	11,754
	(3,723)	(1,939)	(2,024)	(1,999)	(2,069)	(11,754)		
II. Funds for which UWI must Account								
A. MUCIA Budget								
Salaries) Allowances) Travel and transportation) Evaluation) Other direct costs)	325,066	326,370	396,392	346,370	384,782	1,778,980	1%	17,789
	(3,250)	(3,264)	(3,964)	(3,463)	(3,848)	(17,789)		
B. Equipment	199,219	232,920	136,456	76,062	54,202	698,859	1%	6,988
	(1,992)	(2,329)	(1,346)	(761)	(542)	(6,988)		
Total base	801,645	1053,964	1,101,528	835,012	724,265	4,516,414		
Total Overhead	(42,420)	(56,262)	(59,367)	(48,268)	(40,239)	(246,556)		246,556

XII. ALTERATIONS FOR PHASE I

ANNEX B

Financial Plan
Alterations for Phase I

I. Training Costs

All training costs deleted from Years 1 and 2. Supplement for Phase II contains these funds. Years 3 through 5 unchanged.

II. Plan for Commodities

A. Vehicle costs for Years 1 and 2 deferred to supplement.

B_1 All items in this budget deferred to supplement or Years 3 through 5.

B_2 Items A, B, C, F, G, H, I and appropriate percent of shipping and contingency funds deferred to supplement or to Years 3 through 5. Items D, E, J, K, L, M, N, O, P, Q, R, have been retained in Year 1. Equipment authorization for office set-up necessary for development of national extension plans.

C_1 All items deferred to supplement or Years 3 through 5.

C_2 Office supplies to the amount of $5,000 retained for Years 1 and 2. All other items deferred to supplement or Years 3 through 5.

III. U.W.I. Contributions

No Changes

IV. U.W.I. Staffing - AID Funds

No Changes

V. Host Country Contributions

No Changes

VI. Host Country Staffing

No Changes

VII. MUCIA Staffing - AID Funds

Short-term professionals scheduled for Year 2 have been shifted to supplement for Phase II.

VIII. Summary Financial Plan (MUCIA Segment)

Short-term professionals and evaluation for Year 2 deferred to supplement. Indirect costs for Year 2 are adjusted downward to reflect drop in professional inputs. Balance of indirect costs for Year 2 transferred to supplement.

IX. Summary Financial Plan (UWI Segment)

Equipment and training levels are deferred to supplement, except for office equipment described in Budget II above. Indirect costs will be adjusted downward as appropriate to reflect lower level of activity.

ANNEX C

WOMEN IN AGRICULTURE IN THE EASTERN CARIBBEAN

A. Introduction

Women play a major economic role in agriculture in the Eastern Caribbean as farm operators, farmers, farm laborers, heads of farm households, and marketers of agricultural produce. Many of these women are the poorest of the poor. Despite their extensive participation in agriculture, they have not received technical assistance and support from government agricultural extension services commensurate with their participation in the agricultural sector.

This report attempts to describe and analyze the economic role of women in agricultural production and marketing, their place in the farm household and family, the extent of agricultural extension services provided women in agriculture, and the need to increase services in order to augment farm productivity and the well-being of farm households.

B. The Participation of Women in Agriculture

Women are major agricultural producers and agricultural marketers. Of the estimated 73,000 farmers on the eight Eastern Caribbean islands, most have holdings of less than 5 acres (AID, Caribbean Agricultural Planning, May 1979). While the proportion of the labor force employed in agriculture has apparently declined during the past decade, the proportion of women engaged in agriculture has evidently increased (see Table 1). In 1979 women in the agricultural labor force varied from about 30 percent (St. Vincent) to over 50 percent (Montserrat). Existing data indicate that women account for 17 percent of all farm managers, supervisors and farmers

and 35 percent.....

and 35 percent of all agricultural workers (AID, Caribbean Agricultural Planning). These statistics may well be underestimates, a topic to be discussed below. Women, thus, are managing and working on a large percentage of the small farms which are the special target of this project. The situation in Belize is quite different; women make up only 4 percent of the agricultural labor force.

Table 1

Participation of Women in the Agricultural Labor Force in the Eastern Caribbean (in percentages)

Country	1960*	1979**
Antigua	37%	50%
Barbados	41	40
Dominica	36	n.a.
Grenada	33	20
Montserrat	44	50+
St. Kitts/Nevis/Anguilla	38	45
St. Lucia	29	47***
St. Vincent	36	30

Sources

* Demographic Yearbook of the UN, 1964 as quoted in Caribbean Statistical Yearbook (San Juan, Puerto Rico: Caribbean Economic Development Corporation, Doc. 230. 3-1-67 E, 1967), pp. 58-62. These figures also include women in forestry, hunting and fishing. Their numbers are very low as these are male-dominated economic activities.

** Statements by CAOs at the Conference on Extension, UWI, St. Augustine, June 22, 1979.

*** Weir's Agricultural Consulting Services, Ltd., Small Farming Study in the Less Developed Member Countries of the Caribbean Development Bank, Vol. 1(b), p.53.

Women are also prominent in the distribution and retailing of locally grown food crops (AID, Caribbean Agricultural Planning) in the Eastern Caribbean. The crops are sold both on the island where produced and in inter-island trade. The economic returns to women for this type of activity are illustrated by the fact that many ship their produce to other islands by boat, while they themselves travel by commercial airliner (interview with CAO of St. Vincent, June 23, 1979, UWI, St. Augustine).

C. Household and Family Structure

The predominant role of women in agricultural production and marketing is partly related to household and family structure. Two long-sustained myths held by Westeners regarding family structure in the non-Western world, however, have decreased the potential for assisting poor women to increase their economic well-being and that of their children. One of these myths superimposes the Western notion that women function in nuclear or extended families as homemakers and as childbearers with the man as the sole or major means of economic support. The second myth is the notion that the family serves as a protective social welfare system for poor women, providing psychological and economic support to those experiencing adverse circumstances, such as widows, divorcees and single mothers. These myths focus upon the Western "ideal" of nuclear family structure and family obligations and neglect to consider that family structures differ and that changing economic and social circumstances (e.g., internal and international migration, urbanization, overpopulation, mechanization of agriculture)

especially in developing countries, have altered the pattern of relationships between men and women, particularly those at the lower end of the socio-economic spectrum.

In the Eastern Caribbean among those in the lower economic strata there is no single predominant form of family structure. Legal marriages, with husband and wife creating a nuclear family, coexist with common law marriages and "visiting relationships" in which consenual co-habitation occurs frequently, resulting in the birth of children. These "visiting relationships", whereby the father visits his children and their mother from time to time and perhaps provides some economic support, are common among poor households in the Eastern Caribbean (Yolanda Moses, Female Status, the Family and Male Dominance in a West Indian Community, 1976). In a study published in the 1960s it was reported that 80 percent of children on Dominica were born out of wedlock - to use Western terminology (P. Ramacharon-Crowley, "Creole Culture," in F. Ianni and E. Storey, eds., Cultural Relevance and Educational Issues, Little and Brown, 1973).

The number of female-headed households in the Eastern Caribbean is large and is evidently increasing. In a study of St. Lucia by the Caribbean Food and Nutrition Institute (The National Food and Nutrition Survey of St. Lucia), conducted in 1974, the median number of people in a household was five, although 30 percent of the households contained three or less persons and 30 percent contained seven or more persons. In 67 percent of the households surveyed a man was reported as the main provider, although he did not always live regularly in the

household. This percentage of de jure male-headed households has evidently declined. The chief agricultural officer of St. Lucia reported in June 1979 (Conference on Extension of Chief Agricultural Officers of the Eastern Caribbean, UWI, St. Augustine, June 22, 1979) that 50 percent of the households on St. Lucia are now female-headed.

The existence of "non-traditional" (in the Western sense) household units in the Caribbean has generated a plethora of conflicting theories by sociologists and anthropoligists. Some (M. J. and F. S. Herskovits, The Myth of the Negro Past, 1941 and Trinidad Village, 1946) argue the case for African origins and the persistence of African patterns in the matrifocal orientation and the high rates of "union" as distinct from "marital" status. Others (D. B. Matthews, Crisis in the West Indian Family, 1953 and T. S. Simey, Welfare and Planning in the West Indies, 1946) conceive of this family form as deriving in part from historical factors, such as the conditions of slavery, while still others (R. T. Smith, The Negro Family in British Guiana, 1956) see family structure as a correlate of contemporary economic and social conditions. Whatever has brought about these so-called "non-traditional" forms of family organization, they are pervasive among the poorer strata of the Eastern Caribbean islands.

1. The Need for Data on Women in Agriculture.

Complete data on the participation of women in agriculture are not available. Productive economic activities of women in general are not reflected in censuses or world statistical tables; on the other hand the data base for women as childbearers and childrearers is infinitely more satisfactory. The "non-traditional" nature of family

organization contributes to the misrepresentation of the precise role of women in agriculture in the Eastern Caribbean. Official statistics for women in agriculture and women as heads of farm households generally underrepresent and distort the participation of women. Women in many cases are de facto heads of households and farm managers due to the pattern of male migration to seek urban employment. While men remain the de jure head of household (at least to the census taker), they frequently are away for their working lives and return to live on the farm permanently only at the age of retirement. Even when the male resides daily in the household, the woman may be the principal farm operator, while the male works part time or full time at a non-agricultural job for wages.

Not only has the trend toward de facto female-headed households in the Eastern Caribbean been obscured by past macro-level data, but the practice continues in current studies. Need exists to obtain the amount of time the male is resident in the household, the division of agricultural tasks among household members, the percentage of income contributed by each and the sources of income used for food and child raising. The failure to disaggregate data by gender allows long-held myths about farm households to be perpetuated. The need for current, accurate data on the role of women in the farm household is pressing if optimum efficency is to be derived from technical assistance funds for agriculturally related projects.

2. Policy Implications

Policy is initimately related to data. As the AID paper on Caribbean Agricultural Planning points out, the usefulness and appropriateness of plans, policies and projects are a direct function of the quantity and quality of information. The lack of reliable and sufficient data on employment in agriculture and the division of farm and household tasks and income for the eight Eastern Caribbean islands and Belize is a serious constraint to planning for women in agriculture. Indeed, contemporary research suggests that women in developing countries, especially the rural poor, have become even further disadvantaged by certain policies of economic development and assistance. The delivery of technology to the wrong audience has upon occasion lowered the economic viability of rural women and resulted in gross inefficiencies. A classic example of the latter was the failure to include women farmers in a project aimed at soil conservation in Jamaica. The program occupied itself with men who generally cultivated tree crops, while ignoring women who were primarily responsible for ground crops (J. Blaut et. al. "A Study of Cultural Determinants of Soil Erosion and Conservation in the Blue Mountains of Jamaica," in Comitas and Lowenthal, eds, Work and Family; West Indian Perspectives, 1973). The result was further erosion.

Field observations in the Eastern Caribbean over the past four weeks (June 10 - July 10, 1979) suggest Western technical assistance specialists are quick to propose and island administrators are prone to request specialists in home economics whenever aid to women in agriculture is discussed. Confronted with health and nutrition problems,

including lack of vegetables in the diet, and faced with the paucity/glut cycle of crop production, experts suggest the provision of home economists to demonstrate home preservation of food to rural women. These suggestions by Western trained specialists, given current socio-physical conditions, are in many cases impractical. One example must suffice due to time. and space constraints. The Caribbean Food and Nutrition Institute study reported that most households on St. Lucia occupy a detached home (82%) which is owned (74%) and in which they have lived at least for the past five years (67%). Most households (63%) used wood or coconut shells and husks as cooking fuel and most kitchen fireplaces could accomodate only one (38%) or two (25%) cooking pots. Moreover, given the nature of family structure, women apparently need to generate cash income to pay for school uniforms, textbooks, etc. for their children. Selling home-grown vegetables, rather than consuming them, generates cash income. The delivery of technical assistance to rural women must keep in mind existing physical facilities and economic obligations. Programs should be designed to fit the incentive structure and the physical facilities available. If food processing is to be undertaken, it appears it should be organized on a cooperative basis, both because of lack of suitable home facilities and because such activities should generate cash income.

The need for recognition of the productive role of women in agriculture on the part of Island administrators is apparent from the summary of the June 1979 Conference of CAOs (see Annex D). Only once are women mentioned. While some prejudice may exist (as remarked upon in a study of western Kenya to be discussed below),

the major difficulty from field observations in the Eastern Caribbean appears to be one of awareness. Stereotypes are deeply ingrained. Some leaders in the Eastern Caribbean call for "special strategies" for the integration of women in development to be adopted by governments and agencies which seek to enhance prosperity and well-being in the region. These special strategies focus upon data collection, especially the disaggregation of statistics by sex, education and information to sensitize officials to the problems of women farmers, and new approaches and more funding for the integration of women into economic projects. Unless these issues are raised and treated women will continue to be the "invisible" factor left out of development. (P. Antrobus, "Women in Development. A Caribbean Perspective", UWI Extension Newsletter, Vol. 10, NO. 2, June 1979). One special strategy for increasing the productivity of women in agriculture would be to increase the awareness of male policy makers and extension agents that this under-or misutilization of female productive capacity is counter-productive to achievement of overall economic goals and is reflected in the delivery of technical services to women in agriculture.

D. Agricultural Extension Services and Women

Agricultural extension services concern women in at least two basic ways. First, women farmers and farm operators are clients or potential clients of agricultural extension services. In this respect delivery of services is involved. Second, women serve as agricultural extension officers. This function involves training and personnel policies. In both cases women are underrepresented in terms of the percentage of practicing women farmers and farm operators and the

number of young women who could profitably be utilized in agricultural extension agencies.

Research elsewhere indicates that agricultural extension services are differentially distributed to men and women. A distinct preference towards men exists. Paradoxically, this bias occurs in areas where women do much of the agricultural work. In a study of western Kenya, for example, where 40 percent of the small scale farms (average 2½ acres) studied were female managed, visits from extension agents and opportunities for training and loan acquisition were significantly lower for female managed farms than for farms jointly managed by a man and his wife. (K. Staudt, "Women Farmers Inequities in Agricultural Service", Rural Africana, No. 21, Winter 1975-76)

Moreover, certain untested assumptions are made concerning agricultural services to women farmers. First, a general observation of agricultural extension services in most countries is that the more successful farmers tend to receive more attention from extension agents than the less successful. This generalization was not true for women farmers in the western Kenya study. Rather, female farm managers, irrespective of their success in farming, received fewer visits from extension agents than jointly man/wife managed farms. Second, the assumption that women are less willing or able to adopt innovations (new crops and husbandry practices) was not borne out by the Kenya study. Successful women farmers (those substantially above the subsistence level with cash incomes and relatively substantial homes) received agricultural extension services at exactly the same rate as jointly managed farms in the lowest economic success category. In the western Kenya study almost a third of the women farmers who were "early adopters" of new

crop had no advice or support from agricultural extension officers, whereas only 3 percent of farms with a man present were neglected in this manner. Third, women farm managers experienced a persistent bias not only in the delivery of agricultural extension services, but the bias increased in intensity as the value of the service increased, irrespective of whether they had high economic success or were early adopters of agricultural innovations.

Some of the differential delivery of agricultural extension services to men and women may be explained by gender-based communications patterns. While some prejudical attitudes were expressed by male agricultural extension agents in the western Kenya study, women were avoided apparently because of cultural patterns whereby men communicate with men and women with women. For example, in the western Kenya study more than 90 percent of women farmers belonged to associations (e.g., church groups, mutual-aid societies) where agricultural information was exchanged. In contrast men attended weekly meetings at which government announcements advice, and demonstrations. Women rarely attended these meetings because of custom and lack of time. In households where a man is present, women farmers benefited from the customary communication network among men. The fragmentary data collected as a result of interviews on St. Lucia during the UWI/MUCIA four-day visit in June 1979 (see Annex K) indicate that a similar gender-based communication pattern may exist in the Eastern Caribbean.

Although women exchange agricultural information in womens' association networks, as technology improves this network will become obsolete unless expert help is infused. From interviews obtained

with male and female agricultural extension officers on St. Lucia (see Annex X), it appears that women agricultural extension agents visited female farmers more frequently than did male agricultural extension agents. Thus, another model or special strategy for increasing technical assistance to women in agriculture might be to increase the number of trained female agricultural extension agents.

E. Conclusions

Until better base line data are collected on the role of women in the farm household and in agricultural production and marketing, we will have little, if any, basis for evaluating changes in the economic success of farm women or small farmers in general or the effectiveness of technical assistance in contributing to their well-being. The tendency to collect macro data on women's reproductive and child bearing and rearing functions underrepresents and distorts their economic participation. The influence of Western traditions in defining family organization and household composition leads to the omission of crucial questions on survey and census questionnaires, thereby misrepresenting the actual patterns of family and household structure.

The lack of adequate data together with Western-based assumptions about the "ideal" family and about the "proper" economic role for women results in economic development assistance activities and policies frequently unrelated to reality in LDC's. The tendency is to prescribe home economics related services for women on the assumption that a male will provide economic support, when in actuality women and their children apparently carry on substantial portions of productive agricultural work within the farm household. These

predispositions ask women and children to alter and increase their consumption patterns in the name of improved health and nutrition while holding constant their capacity for increased agricultural productivity upon which health and nutrition are dependent. While both increased nutrition and increased production are necessary to improve the well-being of the rural household, they frequently cannot be achieved simultaneously.

While women are a substantial part of the agricultural sector, they are not integrated into the development service network. This is a serious economic waste in that women may be more likely to remain on the farm and to engage in farm work full time, while men may tend to seek outside employment and frequently retire to the farm only when old. Unless women farmers and farm operators receive more technical help in crop production, they will fall behind others in productive efficency and the economy as a whole will suffer. The Eastern Caribbean is a region where this cannot be allowed to happen if government and donor agency targets for increased food production are to be met.

ANNEX D

UWI/AID Regional Agricultural Extension Workshop

University of the West Indies (UWI)

St, Augustine

June 15-16, 1979

SUMMARY OF GROUP REPORT

Present:

Spence, J., Prof. Chairman	- Dean, Faculty of Agriculture, UWI Trinidad
Archibald, K.	- Department of Livestock Sci., UWI Trinidad
Claar, J.	- MUCIA, Cooperative Extension Service, University of Illinois
Cumberbatch, E.	- United States Peace Corps, Barbados
Davidson, W. Principal,	- Guyana School of Agriculture
Desir, A.	- WINBAN, St. Lucia
Dore, W.	- NACO, St.Kitts/Nevis
Ellenbogen, B. (Team Leader)	- MUCIA, Department of Rural Sociology, University of Minnesota
George, C.	- CARDI, St. Lucia
Henderson, T. Director,	- Department of Agricultural Extension, UWI St. Augustine, Trinidad
Henry, F. Director,	- Department of Agricultural
Henry, S. Deputy Director	- CARDATS, Grenada
Henry, V.C.R. Director	- CARDATS
Joseph, C.Deputy Chief Agricultural Officer	- Grenada
Kellogg, E.	- MUCIA, Department of Agricultural Economics, University of Illinois
King, T. International Development Officer	- U.S. Agency for International Development/ Barbados
Martin, K.Chief Agricultural Officer	- St.Kitts/Nevis
Marvin, P.	- MUCIA, Department of Agricultural Education University of Minnesota
Matthew, C. Chief Agricultural Officer	- St. Lucia
Michael, F. Extension Officer	- Montserrat
Ramdeen, P. Rep. Principal,	- ECIAF, Trinidad
Sayers, J. Representing	- JSA, Jamaica
Schulte, E.	- MUCIA, Department of Soil Science, University of Wisconsin
Swanson, B.	- MUCIA, Department of Agricultural Education, University of Minnesota

Walter, C. - CARDI, Antigua
Williams, C. Chief Ag.Officer - St. Vincent
Yates, B. - MUCIA, Department of Educational Policy, University of Illinois

The participants divided into four groups representing: 1) the Leeward islands, 2) the Windward islands, 3) training institutions and 4) support organizations. These groups discussed the needs of Extension over the next five years with respect to: a) training, b) techology transfer systems, c) institutional support and d) organizational planning. The island groups discussed all four topics; the training organizations concentrated on training problems; and the support organizations covered institutional support and organizational planning. Each group reported their deliberations in a plenary session beginning at 2:50 p.m.

A complete transcript of the group reports and ensuing discussion is available from the Office of the Dean, Faculty of Agriculture, University of the West Indies, (UWI) St. Augustine, TRINIDAD.

Training Institutions

Participants:

W. Davidson
P. Marvin
P. Ramdeen
J. Sayers

Mr. Ramdeen, reporting for the group, summarized the four areas discussed: 1) entrance qualifications, 2) curriculum offerings, 3) post graduation, and 4) constraints to successful education.

In regard to entry qualifications other considerations besides academic were thought to be important. Noting a serious discipline problem in all three institutes, selection of candidates on the basis of maturity, including work experience, was considered desirable. Student agricultural organizations could also help the discipline problem. There needs to be a change in attitudes toward agriculture at the primary and secondary school level also.

All three training institutes had good curricula in the physical and biological sciences. The need to emphasize English language, rural and community development and on agri-business approach to agriculture was noted. The need for post-graduate internships was pointed out.

It was felt that the institutes should evaluate the success of their training programs by studying the success of their students. Placement of graduates was a problem owing to a lack of or unclear job descriptions. In some cases, graduates performed poorly because they were placed in jobs they were not well equipped to handle.

Among the constraints to successful education were lack of audio-visual equipment, laboratories, libraries, and adequately trained staff in some areas. There were no facilities in any institute for providing training in the production of radio programs. It was felt that some staff of the institutes should be given specialized training in extension methods, mass communication, etc.;

the training institutes could mount in-service training programs for their graduates, possibly in summer.

In the discussion period that followed, Dr. Henderson pointed to the need to give students practical experience in the use of audio-visual equipment so that these hardware items will not be foreign to them when they go out into the field. In reply, Mr. Ramdeen noted the lack of training of teachers in this area. The lack of equipment to demonstrate audio-visual techniques or for student practice was mentioned by Mr. Sayers.

In reply to a question from Mr. Henry regarding the capacity of the training institutions to take in extra students, Mr. Davidson indicated that there would be ample room for the additional trainees envisaged in the PID. He reiterated the need to provide "professional advancement" courses for the teachers.

The chairman raised the question of the effective use of standard English versus the ability to communicate effectively with the community in which one is working, which may require the use of the local dialect. Mr. Sayers pointed out that while we need to be able to communicate effectively with the farmer, we should still have a good command of the official language to maintain a certain esteem in the eyes of the farmer.

Discussion moved to student maturity and whether selection of students with prior work experience would eliminate some potentially good young students. Mr. Ramdeen pointed out that many young students seek admission to ECIAF because, once admitted, they are in government service and are paid a salary, they then go on to higher degrees or work in other sectors rather than return to the Ministry. Mr. Sayers felt that on-the-job experience prior to entry into the schools of agriculture aided discipline by giving the students a degree of maturity and better motivation for study.

The shortage of trained teachers of agriculture in secondary schools and the attitude of secondary school teachers toward agriculture was discussed. According to Mr. Michael: "If we consider that a number of students

> who are pursuing agriculture are coming in against a background of association with other students who think they are not really entering into a profession that they are acquiring a degree, but somehow an agricultural degree does not make them a professional in the same sense that a degree or experience in engineering would make an engineer a professional. And it is possibly part of the old story of 'Give a dog a bad name and he will wear it'. Many students who come to pursue agriculture do not really think they are becoming professionals in the sense of many other disciplines, and as a result of this they think maybe there is no real professional standard to protect. Their perception in the society is such that they are not bracketed among others who pursue other studies."

The attitude of secondary teachers toward agriculture and the influence they have on students was reiterated by Mr. Sayers.

Leeward Islands

Participants:

J. Claar
W. Dore
F. Henry
K. Martin
F. Michael
E. Schulte

The deliberations of the Leeward islands group were reported by Mr. Michael. In respect to training, there was a "tremedous need for trained personnel at the diploma level and the degree level." It was suggested that a 50% increase in the number of scholarships (indicated in the PID) would get the project going

faster. To assist with technical advice, generalists with competence in a wide variety of crops would be more useful, in the short run, than specialists. Technical back-up training would be very helpful.

In regard to technology transfer systems:

"We discussed this at considerable length but our discussion can be put in a nutshell by saying we think that each island should have an information unit. It is our feeling that the information unit must be made an integral part of the extension system and particularly the extension supervisory system such that the individual who is responsible for the general supervision of extension staff should be the key person in this information unit."

In some cases, the existing units providing agricultural information were not part of the Extension division.

Discussion of institutional support centered around the information unit and mobility of extension workers. Sophisticated audio-visual equipment is not required in the short-term. A small unit set up with typing and duplication facilities, at least one tape recorder, a still camera, movie projector and a slide projector would be adequate. On some islands, batteries to operate video tape equipment would permit TV stations to assist in producing programs so that purchase of elaborate equipment by the information unit would not be necessary.

It was felt that Extension divisions should have at least two four-wheel-drive vehicles assigned specifically for their use. Also, many extension programs: "are hampered by the lack of simple implements and small machinery. In particular, knapsack sprayers, fumigation equipment, mist blowers and general crop protection equipment. We felt this to be a very vital area since many of the extension agents are, in fact, hoping to impart improved

> crop production techniques without being able to demonstrate the effectiveness of many of the techniques. It is all well and good to be able to tell a farmer, 'if you had your own knapsack you would be able to spray on a more timely basis', and yet not able to take a knapsack at that given point in time, spray the particular crop and show the farmer the effects. So, we felt that where provision could be made to have small equipment provided specially for demonstration use, detailed consideration should be given to these."

In regard to extension organization and planning, there is a need to insure that whatever is proposed "dovetails smoothly with the department's line of organization and responsibility." It is vital that persons directly involved in extension work be responsible to the Chief Agricultural Officer. Extension personnel assigned to this project should be freed from regulatory functions. Other personnel can retain the regulatory services. The need for short training courses to upgrade the extension officers was stressed.

Mr. Kellogg raised the question as to how the territory extension services could link with institutions providing agricultural technology. In reply, Mr. Michael answered that technical information from these agencies should be funneled through the information unit for assessment and possible application. He did not see any conflict with the Chief Agricultural Officer if both the information unit and extension division were under his supervision.

Dr. V.C.R. Henry asked how the Extension staff might be increased since many are involved in regulatory work. According to Mr. F. Henry, this would not be a problem in Antigua because the posts are already on the books. It is just a matter of finding qualified personnel to fill them.

In response to a question from Mr. Ellenbogen regarding the proportion of the extension officer's time spent in regulatory activities, Mr. Henry estimated 20 to 50% for Antigua. In Montserrat, many of the regulatory functions have been removed from the Extension service; yet, farmers still look to the Extension Officer for immediate arbitration in land disputes and livestock damage cases. Mr. Matthew pointed out the problem of releasing Extension Officers from regulatory functions and still having enough staff from somewhere else to perform those services. The Minister of Finance will need to be convinced, somehow, that the Extension activity paid for is being accomplished.

The problem of the image of the Extension Officer in the eyes of the farmer clientele was discussed. Some functions, such as supervision of credit, arranging tractor services and giving technical advice should enhance this image, whereas, activities like settling disputes and foreclosing rents would be destructive.

In reply to a question from Mr. Ellenbogen, Mr. Henry stated that the group did not consider the need for new types of Extension positions to accommodate changing needs in rural areas. The need for an integrated plan of rural development was mentioned.

Windward Islands

Participants:

C. Joseph
C. Matthews
C. Williams
B. Ellenbogen
B. Yates

Mr. C. Joseph summarized the deliberations of the Windward Islands group. With respect to training, St. Lucia needs more qualified staff at the Union School of Agriculture to do justice to the agricultural community. Specialists in agricultural extension methodology are needed at this school. Informal in-

service training of the equivalent of about one month would be very useful for the Extension service. For formal training, staff are sent mainly to ECIAF and UWI. It is recommended that eight persons per year be trained over the next five years to provide adequate staffing in Extension. In addition, two B.Sc graduates and two post graduates are needed per year for five years.

Assistance is needed to provide training for farmers "so that the farmers would be better equipped to receive whatever the Extension Officer has to put over to him". Specialized training of diploma and B.Sc graduates is needed in fields such as farm management, plant protection, communications, etc.

In Grenada, the Grenada Farm Training Center provides a good starting point for Extension workers. An equivalent of one month's in-service training per year is needed for extension workers. There are a number of persons presently employed who are not qualified to undergo the diploma course at either ECIAF or GSA but need to be trained at the certificate level at GSA. Grenada's Extension service would require four persons trained per year at the diploma level, six at the B.Sc level and two post-graduates for the next five years. Some farmer training is provided in weekend courses. The Grenada Farm Training Center can accommodate 50 students per year, but finances are a problem.

The St. Vincent Technical College does not adequately provide for the needs of Extension. Entrance requirements are low. The college needs to be up-graded. About one month of in-service training for Extension Officers per year is needed. Over the next five years St. Vincent would like to have four diploma graduates, five B.Sc graduates, three post-graduates and one graduate in animal health per year.

In regard to technology, St. Lucia expressed a need for a weekly newspaper column and radio time to convey agricultural concepts and programs. A graphic arts specialist is needed to prepare leaflets for farmers. In Grenada a communication specialist is needed, as well as financial assistance for getting worthwhile information to the farmer. St. Vincent also needs a communication specialist, particularly one skilled in radio programming, and back-up services from UWI in technology transfer techniques.

To support Extension, each island represented expressed the need for four-wheel-drive vehicles to reach their clientele: St. Lucia five, Grenada six, and an unspecified number in St. Vincent. St. Lucia and St. Vincent require housing in the districts for their Extension Officers. St. Lucia needs an Extension office complete with office equipment, and St. Vincent requires space for an information unit. Grenada expressed a need for tractors and implements.

St. Lucia recognized the need for professional assistance in organizational planning. Particularly, help is needed in getting research information to the farmer and farmer needs conveyed back through the system. Assistance in marketing was seen as another need, especially in regard to market intelligence and economic data. St. Vincent and Grenada did not appear to recognize any particular needs for organizational planning assistance.

Initiating the discussion period, Mr. Matthew noted that St. Lucia's request for staff training was for the whole of agriculture, not Extension alone. With new development projects "springing from nowhere", trained people are needed or "these projects which cost more than millions go down the drain".

Mr. Williams, commenting on entry qualifications for St. Vincent Technical College, noted that the College requires only three G.C.E. "O" level subjects; whereas, five are required to get into the Ministry of Agriculture.

Support Organizations

Participants:

E. Cumberbatch
A. Desir
V. Henry
C. George
E. Kellogg
T. King
C. Walters

The support organizations were represented by Dr.V.C.R. Henry. It was thought that "all the institutions represented would be able to provide an increasing volume of information and specific data of value in each of the territories to be served. It was also thought that both CARDATS and WINBAN should develop their programs for some time longer without modification in order that their activities could be evaluated critically and their contribution to extension assessed. Despite all this, however, WINBAN, CARDATS and CARDI represent important sources of expertise which will continue to be available throughout the life of any new project and which can be drawn on by all the national extension services in the region."

The need for adequate transportation for Extension workers was emphasized. The problem with equipping Extension personnel with vehicles was discussed. It appears that governments "are not convinced that it is financially feasible to assist and encourage agricultural Extension officers in procuring cars by any special techniques." The provision of transport, whether through motor pools or adequate vehicle allowances, was seen as a problem for individual governments, with assistance from projects such as the present to add leverage. Pickup trucks and vans would be more useful than cars to Extension officers because these would be able to haul equipment and passengers. Mobile communication units and kitchens would be "useful additions for teaching in any progressive Extension service."

The group reaffirmed the need for audio-visual equipment as mentioned by previous groups. They did not see any particular difficulty in the ways their organizations presently are linked to the Extension services nor in the structure of the Extension services as they affected the support institutions. Two problems faced by supporting institutions were: 1) there are not clear channels of communication and authority between the government Extension services and the institutions, and 2) there is frequently suspicion and doubt in the minds of local Extension personnel of the foreign advisors and so-called experts. These can only be overcome by each unit understanding the position and action of the others; and this, in turn, can only be achieved if relaxed communication between the two organizations can be reached.

A need for in-service training in both the conceptual and planning and implementation phases of projects designed to assist agricultural Extension was expressed. The importance of involving all persons connected with the project was emphasized.

Initiating discussion, Prof. Spence asked what the reaction of the island Extension services would be to provision of other types of transport than four-wheel-drive vehicles, such as mopeds or yamaha motor bikes. Mr. Henry pointed out the danger involved with motor cycles. He suggested the possibility of a low-interest loan financed by USAID for procurement of vehicles by Extension officers. Mr. Dore remarked that NACO has decided to cut its costs for four-wheel-drive vehicles by 50%, replacing them possibly by four-legged animals and by motor cycles of a small make like the Yamaha. Mr. Williams mentioned that St. Vincent has obtained some motor cycles recently and that a number of officers have indicated their willingness to procure them.

Mr. Matthew, commenting on the proposal to provide Extension advisors in this project, stated that they wanted "people who are coming to St. Lucia to work. We don't want people to give advice; we have enough of that already."

He added that it would be difficult to match scholarship funds 50% and wondered if some other organization could help out or whether full scholarships could be provided. He also suggested that vehicle maintenance and operation would amount to about $7,000 EC annually.

Mr. King proposed that vehicles would be provided as a grant under the condition that funds be set aside by the governments to replace the vehicles at the end of the project or when worn out. He asked for reactions to such a suggestion. Mr. Matthews agreed with the concept in principle but noted the problem of inflation, whereby the purchasing power is soon cut in half.

Mr. Henry noted that definite stipulations concerning vehicle replacement should be made; otherwise, there will be no funds available when it comes time to replace vehicles.

Mr. Matthews questioned whether the project had been okayed by the governments concerned. Prof. Spence and Mr. King outlined the stages of projec development and indicated that we are currently in the process of determining whether there actually will be a project and what form it should take. We are now attempting to obtain expert input from the CAOs and others. The next step will be to ascertain the reaction of the various governments and participating institutions.

Mr. Ellenbogen expressed thanks to the CAOs, representatives of the training schools and representatives of the support organizations "for sharing with us your ideas and your aspirations in an atmosphere of congeniality". Prof. Spence added that "for us it has been a particularly worthwhile exercise and very rewarding; and I hope that we can get some machinery... to maintain this contact as quickly as possible".

Mr. Dore expressed a desire for annual meetings of this sort during the life of the project "where we can get together and discuss what has happened

and review our situations".

Prof. Spence thanked the ladies for their typing, Mr. Kind for the background work and all who participated.

The seminar ended at 5:02 p.m.

UWI/AID REGIONAL AGRICULTURAL EXTENSION WORKSHOP

U.W.I., ST. AUGUSTINE
JUNE 15 - JUNE 16, 1979

FRIDAY (JUNE 15)

9.00 - 10.30 SESSION I — Chairman - J. Spence

INTRODUCTION - Chairman

BACKGROUND: - Purpose of Workshop: Introduction of the Project: Caribbean Agricultural Extension; feedback from regional CAOs and relevant other support of the project. - T. Henderson

WHY USAID SUPPORT: - Regional development, linkages to other AID projects - Donald Boyd

MUCIA - THE COLLABORATING US UNIVERSITY — The organisation of MUCIA, the proposed extension project-objectives, some possible project areas. - Bert Ellenbogen

DISCUSSION

10.45 - 12.00 SESSION II — Chairman - T. Henderson

Feedback from CAOs or their representatives. The Extension situation and the present related needs of the various territories:

Leeward Islands - Antigua
Montserrat
St. Kitts

Windward Islands - Dominica
Grenada
St. Lucia
St. Vincent

1.30 - 3.00 SESSION III — Chairman - Tom King

(a) The role of support organisations in regional agricultural extension.
(b) How these organisations see themselves relating to the proposed project.

Organisations: CARDATS, CARDI, PEACE CORPS, WINBAN, U.W.I.

3.15 - 4.30 SESSION IV — Chairman - Jack Claar

The role of Intermediate Level Training Schools in meeting the regional agricultural extension manpower needs:

ECIAF, GSA, JSA

SATURDAY (JUNE 16)

9.00 - 12.00 SESSION V — Chairman - K. Archibald

WORKSHOP GROUPS

1. Leewards and Belize (Topics: A,B,C,D)
2. Windwards and Barbados (Topics: A,B,C,D)
3. Training Institutions (A)
4. Support Organisations (C,D)

TOPIC AREAS The needs of Extension over the next five years with respect to:

A. Training
B. Technology transfer systems
C. Institutional support (including communication aids, both hardware and software)
D. Organisational planning, structure, linkage.

1.30 - 3.00 SESSION VI — Chairman - J. Spence

PLENARY SESSION : Group reports by recorders
DISCUSSION
CLOSE

TABLE 3 MAJOR CROP AND LIVESTOCK ACTIVITIES BY TERRITORIES

ANTIGUA	Cotton, sweet potatoes, sugar cane, pineapple, tomatoes, pumpkins, cucumbers, yams, carrots, and large and small livestock.
BARBADOS	Number of vegetables, root crops, livestock.
BELIZE	Red kidney beans, corn, rice, vegetables, livestock.
DOMINICA	Bananas, citrus, plantains, dasheen, tannia, yams, cocoa, coconuts.
Grenada	Nutmeg, bananas, cocoa, coconut, limes, root crops, vegetables, livestock.
MONTSERRAT	Sweet potatoes, onions, limes, mangoes, cotton dasheen, pepers, yams, carrots, bananas, livestock.
ST. KITTS/NEVIS	Sweet potatoes, cotton, livestock.
ST. LUCIA	Bananas, livestock, ginger, root crops, large number of others.
ST. VINCENT	Bananas, ginger, yams, carrots, arrowroot, sweet potatoes.

Several of these crops are typically grown on each farm.

They also need to have speciality support since in-depth knowledge of numerous diseases and cultural practices for several activities is impossible. Horticultural and livestock training would be very important in the environment as outlined.

Marketing problems are important determinants of crop choice and level of production. Market outlets include small-scale merchants, public marketing boards, and producer associations with some farmer direct sales in urban market areas. In certain territories marketing boards are competing with merchants for purchase of farmer production. Since marketing boards usually buy at certain locations and private merchants go to the farm gate, extension service information on prices and transport costs would help the farmer and market operate more effectively.

TABLE 1 DISTRIBUTION OF NUMBER OF FARMERS AND LAND AREA BY FARM SIZE CATEGORY

Farm Size Category	Barbados % of Farms	Barbados %of Area	Dominica %of Farms	Dominica % of Area	St. Lucia % of Farms	St. Lucia % of Area	St. Vincent % of Farms	St. Vincent %of Area	Montserrat %of Farms	Montserrat % of Area	St. Kitts/Nevis %of Farms	St. Kitts/Nevis %of Area	Belize %of Farms	Belize %of Area
0.01-9.99	98	13	88.6	22.8	92.4	24	96.8	35.3	96.2	7.3.	98.5	48.1	46	2.4
10.00-99.9	0.8	4.1	10.0	21.7	7.0	23.6	2.8	11.1	3.2	14.1	1.0	10.7	47.7	22.3
100.00-above	1.2	82.9	1.4	55.5	0.6	52.4	0.4	58.6	0.8	58.6	0.5	42.2	6.3	75.3

TABLE 2 LAND TENURE PATTERNS TENURE CATEGORY % OF FARMS

TERRITORY	OWNED	RENTED	MIXED	OTHER
Barbados	69.6	25.3	2.8	2.3
Belize		not available		
Dominica	76.3	16.0	6.7	1.0
Grenada		not available		
St. Lucia	72.5	23.0	4.5	-
Antigua		not available		
Montserrat	47.7	22,5	29.8	-
St Kitts/Nevis	50.0	27.0	11.3	11.7

Labour use on the farms in all the territories accounted for most of the inputs into crop or livestock production. It is interesting to note that hired labour is used frequently by many small farmers although the level of useage is not clear. This implies that extension activities directed at farmers should help them extend husbandry techniques to hired labour particularly in planting and harvesting operations.

Evidence on actual credit use by farmers is not available for large numbers, but some data are available on contracts farmers made with credit institutions. In Antigua about 30 percent of farmers included in a survey had dealings with some credit agency while in Dominica a slightly higher percentage had. For Montserrat and St Vincent less than 10 percent reported contact with credit agencies. With larger amounts of credit being made available extension workers could perform a useful service in credit use and access education as well as communicating farmer problems back to credit institutions.

FARM ACTIVITIES

The variety of crop and livestock activity on individual small farms is wide. Table 2 gives an indication of this variety by territory. The implication from this information on the variety of farm activities on typical small farms is the need for general knowledge of several crop and livestock activities by extension workers.

In the Windwards there is probably little resistance to fertilizer and chemical use in principle and some understanding of their usefulness seems to be present. Demonstration plots on different crops showing results and appropriate application rates may be adequate. In the Leewards and Belize more basic education and information may be required.

It is expected that research by CARDI and the Faculty of Agriculture, UWI, will lead to more precise fertilizer, lime and pesticide recommendations than heretofore available. The surest way to instill a lack of confidence in extension programmes is to give bad recommendations. Ideally, fertilizer recommendations will be based on reliable soil tests calibrated for the soil conditions of each territory.

Demonstrationn plots showing fertilizer response on different crops, application rates and methods of application are valuable extension tools. If soil testing services are available, soil testing clinics in which the correct procedure for taking soil samples is demonstrated may be necessary. When lab results are obtained, a follow-up meeting would be needed to explain the results and fertilizer recommendations.

Small farms in all the territories had little capacity to store commodities. If storage is important, extension programmes therefore would need to be oriented toward importance of storage and appropriate ways to build low cost storage before making recommendations regarding commodity storage.

Machinery use by small farmers outside of simple tools is very limited in all the territories. Farmers in St. Lucia and Barbados have some crop sprayers, plows, harrows, and tillers. Tractor services are available for rent in the Leeward Islands and Belize, but there are problems with getting the services when required. To avoid market gluts during peak harvest periods, it will become necessary to encourage farmers to stagger planting dates according to some prearranged schedule. This will make tractor scheduling even more crucial but, if done in an orderly fashion, could put the system on a more routinized basis. If farmers knew that the tractor would be in their area during a certain time period, they could plan field operations accordingly. Recommendations by extension workers oriented to machinery use may have to deal initially with organisation of the services, and with organising farmers' demands for those services. However, as machinery use increases and/or farm size increases, extension programmes may need to be implemented on operation and maintenance of equipment. Special workshops for tractor drivers on proper setting and adjustment of implements, preventive maintenance, minor repairs, tractor tune-up, etc., should be useful.

The use of fertilizers and chemicals on bananas in the Windwards appears to be widespread. Some data indicate moderate useage on other crops as well. The use of these modern inputs in the Leewards and Belize appears to be more limited. Extension activities will need to be oriented differently in these situations.

Evidence also exists that indicates these smaller areas are divided into more than one parcel. Small fragmented land areas also (1) limit the type of mechanization alternatives that are appropriate, (2) complicate building of certain kinds of infrastructure (irrigation) that covers large areas, (3) increase problems of disease and pest control over larger areas and (4) complicate implementing uniform cropping pattern planning for provision of government services. Farm densities of this type do facilitate extension workers in contacting farmers within specified time periods.

The land tenure pattern varies among territories as shown in Table 2. In Barbados and the Windwards, individual ownership predominates, with 70-75 percent of the holdings in this category. In the Leewards and probably Belize rental arrangements are more important. Antigua's land is mostly held by the government and rented to small farmers. The high degree of tenancy makes it necessary for extension workers to understand the arrangements in terms of decision making power, cost and return sharing, and length of tenure contracts. In some cases, the landlords may need to be included in extension activities oriented to improved practices (which may be more costly), crop or livestock changes and capital improvements like soil conservation, drainage or irrigation development.

RESOURCES ON THE FARM

Electricity availability as a power source for tools and farm activities varies by territory as follows:

Country	Percent of rural households with electricity
Grenada	less than 35%
Dominica	47%
St. Vincent	52%
Montserrat	69%

The land size holdings characteristic of small farmers is briefly mentioned in the overview and given in table I to this Annex. The pattern is extremely bi-modal in terms of number of farmers and area accounted for by various size classes (see table I at end of this annex). The less than 10 acre farms account for the largest percent of farmers (88-98%), while the 100 acre and over farms account for the greatest land area (42-83%). In no case except Belize does the farm size category of 10-100 acres account for more of the farmers or more of the land area than the less than 10 acre farmer. This "middle commercial" farm size which constitutes an important size category in many developing countries, has not as yet developed to a prominent category in the islands. In Belize the medium and large farms do account for the majority of numbers of farmers as well as of land area. By focusing on small farmers, this project will be oriented to the preponderance of farm households. These small holdings will require that high valued production be carried out if farmers are to depend on farm income growth to support higher levels of living.

A

The high percentage of women engaged in farming(from 30 percent in St. Vincent to over 50 percent in Montserrat) and the nature of family organization affect the allocation of tasks and the generation and distribution of income within the farm household. In the Eastern Caribbean there is no single predominant form of family organisation among those at the bottom end of the economic structure. Legal marriages co-exist with common law marriges. "Visiting relationships", whereby the father visits his children and their mother from time to time and perhaps provides economic support, are not uncommon among poor rural households. Little data is available for most of the countries included in this project concerning the amount of time the male is resident in the household, the division of agricultural tasks among household members, the percentage of income contributed by each member, nor the sources of income used for household necessities, such as food and shelter, and the clothing and schooling of children.

In Dominica, Antigua and Montserrat gross cash farm incomes of EC $1000 or less are reported by 60-75 percent of small farmers surveyed. St. Vincent data indicate about 50% of small farmers surveyed said they had less than EC $1000 gross cash farm income. However, off-farm income appeared to be less important in St. Vincent and Dominica as compared to Grenada, Antigua and Montserrat. Belize data collected in 1974/75 on 20 milpas farmers indicated an average gross farm income of EC $1,300. In this case, off-farm income was not

considered but was probably not important. As will be mentioned later, cash expenses related to producing these gross farm incomes are probably relatively small, probably not more than 20%.

If non-farm income sources, food produced and consumed and remittances were 60-70 percent of the gross cash farm income, the total rural family incomes of most households would be less than EC $1,500-2,500. The recent CARDI survey in Dominica of 120 randomly selected small farmers indicated an average household income of EC $2,738. From these totals, farm cash expenses and living expenses of 5-7 persons would have to be subtracted to reveal income that might be used for investments of various types. In general, this indicates that farm households in these territories have limited ability to invest in even moderate capital items for farm activity investment.

The age structure of small farmers shown in various data is reflected in literacy rates of 65-85 percent which is probably lower than for the populations as a whole. St. Lucia is an exception where only 37 percent of rural heads of households had completed at least 5 years of education. The economic consequences of this relate to the ability of farmers to keep budgets of farm activities as well as gather economic information from written media. It appears that extension activities that use printed means of communications can be understood by farmers and that literacy is not a major constraint to farmers keeping some records.

From information available, it is clear off-farm income is crucial to the small farmer household. Small farmer surveys in Antigua, Gronada and Montserrat revealed 48-60% of farm households had incomes from off-farm sources. This percentage as well as the level of income from off-farm sources may have been underestimated. Data from St. Vincent and Dominica indicate off-farm income may be less important in those territories. Data are unavailable as to whether men or women or both engage in off-farm work.

Extension activities in this context must serve rural household members who may not work on the farm or be in their homes during usual government working hours. This has ramifications on appropriate places for extension workers to live, mobility to travel for evening meetings, and types of methods used to educate farmers. With labour commitments off the farm, certain household members may not be inclined to increase labour commitments to farming without confidence that the practices will yield substantial profit. This opportunity cost of labour in agriculture will vary among farms and territories but is important to extension strategy.

Income levels of farm households are difficult to measure in the best of circumstances. In situations found in most of these territories with numerous household members working on and off farms and remittances being received, accurate data are extremely difficult to obtain. For extension purposes, incomes levels are important to better understand farmers' risk situations, investment capacity, enterprise profitability and alternative income sources.

ANNEX E

Annex - ECONOMIC SITUATION OF SMALL FARMERS IN THE EASTERN CARIBBEAN: IMPLICATIONS FOR EXTENSION

Extension activities directed to small farmers must consider, among other things, the economic situation of these farmers and associated households. A complete consistent set of data for the territories to be involved in this project does not exist. What does exist are summaries of unrelated individual studies, these studies in particular areas, and information being organised from the CARDI survey. The most used sources for this annex are: Clarence Zuvekas, working documents from the Bureau for Latin America and Caribbean, AID; C.C. Borland's 1975 M S thesis in Ag. Econ. at U.W.I. on food production in Belize; unpublished data from the CARDI survey of 120 farmers each on St. Vincent, St. Lucia and Dominica; and Annex C, Women in Agriculture in the Eastern Caribbean. Since much of this data is difficult to combine, the use of tables will be limited in this annex. Rather, general impressions and conclusions gained from reviewing the data will be given.

INCOME AND LITERACY

Data available on farm income is sketchy in terms of covering all territories, specifying net rather than gross farm income, including value of food produced and consumed on the farm, and accurately reflecting non-farm incomes (off-farm local work and remittances from work in other areas).

ANNEX F

THE INSTITUTIONAL ANALYSIS AND

THE NATIONAL EXTENSION PLAN

It is inherent in the project that the various territories involved desire assistance from UWI and a U.S. counterpart institution in strengthening their extension programs for small farmers. The institutional analysis of individual national extension systems is a means to study the situation, and to allow UWI and their U.S. counterparts to make inputs into the national extension plan which will be completed by the cooperating country.

Institutional Analysis

The institutional analysis will require as the first step, the collection of data and information concerning: a) the organization, b) the delivery system and the clientele served, c) the personnel methods, and d) the linkages with related agencies.

A) Effective organization requires a clear chain of command that is understood by all. Does extension system have a table of organization that provides for decision making at the effective and efficient level? The analysis should determine:

1) types of decisions that are made at each level;
2) the time required to obtain a decision on budget or action that is out of the jurisdiction of each position;
3) the constraints of organization as felt by individuals at each level of the organization;
4) program planning, development and approval; and
5) the current budget allocation, including the authority to spend money.

A second major organizational consideration is effective supervision. The current system to identify responsibility and inaugurate correctional procedures if performance does not meet the responsibility should be examined. A third consideration deals with organizational ability to assign resources to extension activities in relation to the non-extension duties.

B) The delivery system will be anlayzed in the following areas:

1) office space — amount and quality for effective extension delivery;

2) location of personnel within the territory as it affects accessability;

3) the adequacy of transport;

4) the availability of demonstration sites and equipment for setting up demonstrations;

5) a profile of the small farmers contacted by various methods, i.e., personal contact, group meetings, media, etc;

6) audio-visual equipment.

C) Personnel analysis will include:

1) number of extension personnel in relation to the public to be served;

2) level of formal training;

3) experience as it affects ability to perform as an extension worker;

4) attitude to personnel toward their work;

5) use of evaluation and counseling procedures;

6) orientation and in-service education programs.

D) The linkages with the agriculture and credit agencies are factors which greatly affect the extension performance. The analysis will identify the agencies and how they relate to the extension mission. Items will include:

1) lending agencies and the requirements of small farmers to qualify for credit;

2) information or instruction received from research sources for recommendation to small farmers;

3) the amount and type of instructional assistance given by extension personnel.

The National Extension Plan

A. Conceptual Framework and Undergirding Philosophy

This statement should address the general job description or role to be played by the extension service within the government of the country in agricultural development. It should deal with the overall expectations and priorities for extension work. One area of special concern is whether the various tasks assigned are mutually reinforcing or in conflict with one another. National goals for agriculture and specific goals for individual crops should be noted.

B. Specific Objectives for the Extension Service

These objectives should be as specific as possible and provide a basis for evaluation. For example, one objective that seems inherent in the program is: "To increase the production and incomes of small farmers through a well rounded educational program oriented to farm management, production and marketing."

A number of sub-objectives might be set up to deal with specific goals, e.g., increasing income, production, demonstrations, meetings, etc.

C) Guidelines in Developing the System.

1) The plan should contain a clear set of objectives for the extension service by which it will be measured.

2) The plan should outline the tasks to be assigned to the extension service taking special care to avoid conflicting tasks that might reduce overall effectiveness. e.g., An enforcer of government regulations VS being an adviser on management and technical agriculture.

3) The plan should set out an organizational structure that has as few hierarchcal levels as possible.

a) The organization should provide for a Division of the Agriculture Extension or Advisory Service that would be given authority commensurate with the responsibilities assigned.

b) The Division of the Agriculture Extension or Advisory Service should probably report to the Chief Agriculture Officer. The Extension Service would present an annual plan of work for approbal by the CAO.

c) The program of work would consitute the basis for action under which the Division of the Agriculture Extension or Advisory Service would proceed. A budget to carry out the plan should be placed under the Director's authority.

d) An annual report should be made to the CAO documenting the work of the service ans any problems limiting effectiveness.

e) The organization should provide for decisions being made at the lowest level in the organization as is consistent with performance. This would provide much latitude and authority to the front line officers as possible since travel and communications are difficult.

f) Job descriptions should be developed for each position stating such things as office location, conditions of employment, limits to authority, and the process and criteria for evaluation.

g) An annual program of work and report should be required from each extension professional.

h) The organizational sturcture should build in advice from representatives of the clientele on the work plan of the front line officers and provide for direct evaluation from the clientele to supervisors.

i) Supervision should be provided to orient and guide new personnel, monitor work throughout the year in light of the agreed upon plan of work, and offer guidance and counsel. An annual evaluation should be held with each employee to discuss performance and improvements needed.

4. Delivery system (including clientele served)

a) The target clientele should be spelled out in the charge to extension so as to include any special problems in delivery such as women farmers. This aspect is especially important on the three islands where paraprofessionals are to be employed for intensive work.

b) The plans to correct weaknesses identified in the institutional analysis in space, equipment (including equipment for demcnstrations), transportation, etc., either from the project or other source should be outlined.

c) The plans should provide a detailed procedure for using different methods for different parts of the educational tasks — radio to create awareness, demonstrations to show new techniques, meetings to teach, motivate, and get feedback, etc. Great reliance seems to be placed on the individual visit. The effectiveness of such contacts could be increased by use of the methods.

5. Personnel

a) The level of training and experience required for each position in the system should be spelled out.

b) Incumbents in all positions should be reviewed in light of the project objectives and a decision made whether the incumbent meets acceptable criteria, whether addeded training provides a solution, or whether the individual should be reassigned.

c) Specific training needs should be outlined indicating whether they should be territory specific or regional in character.

d) A plan to upgrade and maintain personnel through formal training using project scholarships should be developed including criteria for and method of selection of personnel for training.

6) Linkages

Extension cannot work in isolation from many other organizations This national extension plan will serve as a memorandum agreement through which each cooperating country ties into regional systems of research and training. This is a basic and critical linkage for a successful extension service. The plan should

entify other institutions and organizations and the linkage
isting or needed, for example, marketing agencies, credit
urces, government supply services, etc.

ANNEX G

ORGANISATION AND DELIVERY SYSTEM

One result of this project should be to further develop a mutually supporting, closely linked set of institutions to lead and in every way improve the production and incomes of small farmers, including women, in the cooperating territories. In this connection efficiency calls for regional activity to the extent possible. By mutual support it is intended that there should be a friendly atmosphere of cooperation that recognizes the stake that each of the basic units has in each other. For example, extension cannot succeed without responsive adaptive research; research depends on feedback from the field; and both the extension and research functions require appropriately trained manpower. Hence these critical aspects of a successful agricultural venture must view themselves as reinforcing parts of a whole and not as isolated or competitive functions.

The development of such a climate will take constant attention because spaces are great, the units exist in different institutional frameworks and the competition for dollars is keen.

The principal units on which the project should focus in seeking to establish such a mutually supportive framework include CARDI, U.W.I., the cooperating training schools, WINBAN and other commodity-specific organizations, and the governments of the various cooperating territories.

U.W.I. AND CARDI

It is essential that close, harmonious working relations exist between these two regional institutions. It is suggested that a Joint Training and Publications Committee be set up between the two organizations to develop an annual training plan and to develop guidelines for publishing all kinds of instructional aids that involve CARDI research. These guidelines should include a procedure for release of research information and the setting out of acceptable credit lines, etc. While U.W.I. and CARDI are both involved in research and have mandates to help the territories upgrade their existing extension personnel a basis for emphasis does suggest itself. CARDI has personnel located about the islands and has the most extensive problem-oriented staff. Technical backstopping of the territories when emergencies arise will naturally fall heavily on the CARDI personnel. Too, CARDI seems to have the staff to fill a great many of the slots in the training of extension personnel in technical subject matter and tech-pacs.

U.W.I. on the other hand has experience and staff for the development and management of a well-rounded training programme—the teaching of extension methods and communications and the capacity, when augmented by the project, to provide publications, visual aids and mass media support in addition to subject matter expertise from its faculty.

This critical relationship should not be left to chance and the Joint Committee might want to consider some sort of memorandum of understanding as a basis for continued mutual working relationships. Each unit should have much to gain from cooperation and the likelihood of success will be much enhanced by addressing the matter early in a systematic way. Although research, training and the development of institutional materials (including radio tapes) can and should be heavily regional in scope, extension work with farmers is a function of the government of each territory.

EXTENSION, PHILOSOPHY, ORGANIZATION AND THE DELIVERY SYSTEM

The extension approach in use is a vestige of the past and is geared to the delivery of service functions in an authoritarian framework. In order to meet the goals of the project, the weakness in the extension services that have been generally recognized and articulated by leaders in the region should be addressed.

The institutional analysis of rational extension systems that is projected needs to deal with the capacity of the present organization to achieve the projected objectives and the changes needed. A National Planning Committee of project staff and personnel of the countries involved would be a good approach to assure relevance and local input. Its consideration should include any special efforts and evaluative devices needed to insure equitable services to women farmers. The project should operate under the CAO of each territory in order to integrate it with the total agricultural system. However, consideration should be given to setting up an Agricultural Extension Advisory Unit and splitting the present staff into a new Advisory Unit and into a Services Unit. Apparently some of the existing fornt line officers were brought into the system primarily to perform a service role and have little training or background for the roles that are envisioned by this project.

It may be possible to streamline the present organization. The number of hierachical levels in the extension service should be kept to a minimum and with better transportation and fewer functions to perform it might be possible to reduce them. This would help provide a more direct contact with the farmer. There may also be organizational problems as to the reporting line and the authority of the Director of Agriculture as it relates to the political structure. The educational function demands some isolation from politics.

It might be better to cover only part of a territory with personnel who appear to be likely prospects for success, and who do not have conflicting roles, than to embrace all of the existing personnel with their current assignments. Since the image of extension appears low, it may be important to come in with a new image at the time the project is launched.

In addition to the organizational problems a great many administrative management needs are also urgent. Although the degree of need varies on the different islands, these management needs involve the development of a programme of work procedures and work plans, reports, accountability requirements and the deployment of staff. Supervision is very inadequate and because of the limited training of many existing extension personnel it is especially important. The work performance requirements to which extension officers are held appears to be very indefinite. Thus job descriptions, output expectations, instructional methods including teaching demonstrations and evaluation techniques need to be included as the institutional reviews are made.

It will be important that a good understanding be reached with each cooperating government as to an appropriate organizational and management plan. Staff assistance could then be offered in moving toward them by the Leeward and Windward programme leaders.

A document should be developed on each island following the institutional review laying out the structure of the revised extension service, how it will be administered, supported and evaluated, then the administrative management devices can be set in. A conceptual framework to consider in locking at the organization and structure of each territorial extension service follows.

PHILOSOPHICAL AND OPERATIONAL ANALYSIS

An extension program must obviously start where the people are in their development and with the agricultural situation as it exists at a given point in time. It must be borne in mind that small farmers generally have little background with which to produce for an export market and quite a few are illiterate. Therefore, in order to produce and market the quality products which will be required the farmer has much to learn. Too, the situation is dynamic and the capacity to shift products rapidly and select planting dates that are dictated by the market must exist. Farmers use information from extension and make changes only when they see that a change fits in with their objectives and attitudes, e.g., risk aversion. Hence change is voluntary and information must be presented in the farmers' frame of reference.

The need then is for an out of school educational program for farmers who operate in a voluntary decision-making framework. The educational program must be oriented to the real problems of small farmers and materials and instructional techniques must be chosen which can communicate and motivate. If one accepts these concepts then it follows that the basic objective of the extension service must be one that brings about change through human development. Though the immediate goal may be to bring about changes in techniques, increased production, etc., these changes only take place through farmers who are free to act or not to act. Education in turn is enhanced in such a setting when a situation of trust and confidence exists. That is when the learner accepts the competence of the teacher and feels sure that the teacher has no hidden agendas, that, in fact, the teacher has only the learner's best interest in mind. In this situation the farmer does not hold back information because of fear of side effects and an open trusting climate exists. This freedom from side effects and the opportunity to work on knowledge transer is the advantage of a structure such as the one CARDATS is using. The question is whether a similar farm-management-oriented assignment can be developed for extension personnel within the regular government service.

Another condition for success involves good communication with the learner, in this case the farmer on his or her terms. The extension officer to do this must , to employ a figure of speech, "get inside the farmer's head".

Otherwise he or she may fail to deal with the critical factors that limit change in the farmer's mind. One approach to this problem is to involve the farmer in helping to determine what is important and what the priorities should be in the extension officer's program of work. In this way, the extension officers can have some assurance that they are, in fact, starting where the farmers are in their concerns and perceptions and dealing with the relevant issues.

Another problem area involves motivation and evaluation of the extension officer. Because the extension officers may be frequently isolated and on their own, without day-to-day supervision, certain hazards are inherent in the work situation. Poor work habits can develop, reports can be falsified with little fear of being found out, and approaches may be chosen that make least demands on the extension personnel even though they are not likely to be the most effective. While it is not meant to suggest that these situations are in any sense universal, they apparently are of concern in the territories involved and merit special treatment. Closer supervision, setting of more specific output requirements that can be checked, and pay incentives are all among the things that can be done to address these problems. But one that is especially useful in the extension setting is to involve representatives served in the evaluation of the extension officers. If built in from the

beginning, and if it is done in a non-threatening manner on a regular basis, evaluation by the clientele can be a very constructive activity which will be appreciated by the better extension officers. These evaluations should be made directly to the supervisor and should not identify the individual making the evaluation. Finally, training must be commensurate with expectations of the extension officer and pay and promotions must encourage performance. These are all problem areas which must be addressed in the institutional analysis. Especially, training of the extension officers does not now seem to be commensurate with expectations of them. It is understood that upgrading extension personnel through in-service education is a major purpose of the project, but it is important that only persons with the background and potential for productivity be in the extension service posts under the new project. This is most important, especially since extension does not presently enjoy a strong reputation.

ANNEX H

STATUTORY CHECKLIST

A. GENERAL CRITERIA FOR PROJECT

1.	FY 79 App. Act Unnumbered; FAA Sec. 653 (b); Sec. 634A. (a) Describe how Committees on Appropriations of Senate and House have been or will be notified concerning the project; (b) is assistance within (Operational Year Budget) country or international organization allocation reported to Congress (or not more than $1 million over that figure)?	**A Congressional Notification is being prepared. Notification will be accomplished before the project is authorized.**
2.	FAA Sec. 611 (a) (1). Prior to obligation in excess of $100,000, will there be (a) engineering, financial, and other plans necessary to carry out the assistance and (b) a reasonably firm estimate of the cost to the U.S. of the assistance?	**Yes.**
3.	FAA Sec. 611 (a) (2). If further legislative action is required within recipient country, what is basis for reasonable expectation that such action will be completed in time to permit orderly accomplishment of purpose of the assistance?	**None is required.**
4.	FAA Sec. 611 (b); FY 79 App. Sec. 101. If for water or water-related land resources construction, has project met the standards and criteria as per the Principles and Standards for Planning Water and Related Land Resources dated October 25, 1973?	**Not Applicable.**
5.	FAA Sec. 611 (e). If project is capital assistance (e.g., construction), and all U.S. assistance for it will exceed $1 million, has Mission Director certified and Regional Assistance Administrator taken into consideration the country's capability effectively to maintain and utilize the project?	**Not Applicable.**

6.	FAA Sec. 209. Is project susceptible of execution as part of regional or multilateral project? If so why is project not so executed? Information and conclusion whether assistance will encourage regional development programs.	**This is a regional project.**
7.	FAA Sec. 601 (a). Information and conclusions whether project will encourage efforts of the country to: (a) increase the flow of international trade; (b) foster private initiative and competition; (c) encourage development and use of cooperatives, credit unions, and savings and loan associations; (d) discourage monopolistic practics; (d) improve technical efficiency of industry, agriculture and commerce; and (f) strengthen free labor unions.	**This project will increase the efficiency of national extension services to transmit to the small farmer adopted and proven technology which will assist in increasing production. The increased production will in part increase international trade from the region and encourage overall development of the agricultural sector.**
8.	FAA Sec. 601 (b). Information and conclusion on how project will encourage U.S. private trade and investment abroad and encourage private U.S.participation in foreign assistance programs (including use of private trade channels and the services of U.S. private enterprise).	**Project funded procurement will involve substantial U.S. goods and services.**
9.	FAA Sec. 612 (b) Sec. 636 (h). Describe steps taken to assure that, to the maximum extent possible, the country is contributing local currencies to meet the cost of contractual and other services, and foreign currencies owned by the U.S. are utilized to meet the cost of contractual and other services.	**Contributions to the project are being made by the host countries.**
10.	FAA Sec. 612 (d). Does the U.S. own excess foreign currency of the country and, if so, what arrangements have been made for its release?	**No.**
11.	FAA Sec. 601 (e). Will the project utilize competitive selection procedures for the awarding of contracts, except where applicable procurement rules allow otherwise?	**Yes.**

12. FY 79 App. Act Sec. 608. If assistance is for the production of any commodity for export, is the commodity likely to be in surplus on world markets at the time the resulting productive capacity becomes operative, and is such assistance likely to cause substantial injury to U.S. producers of the same, similar or competing commodity?

Not Applicable.

B. FUNDING CRITERIA FOR PROJECT

1. Development Assistance Project Criteria

a. FAA Sec. 102 (b); 111, 113; 281 a.

Extent to which activity will (a) effectively involve the poor in development, by extending access to economy at local level, increasing labor-intensive production and the use of appropriate technology, spreading investment out from cities to small towns and rural areas, and insuring wide participation of the poor in the benefits of development on a sustained basis, using the appropriate U.S. institutions; (b) help develop cooperatives, especially by technical assistance, to assist rural and urban poor to help themselves toward better life, and otherwise encourage democratic private and local governmental institutions; (c) support the self-help efforts of developing countries; (d) promote the participation of women in the national economies of developing countries and the improvement of women's status; and (e) utilize and encourage regional cooperation by developing countries?

Project is specifically designed to increase small farmer incomes by improving extension and delivery systems to provide the farmer with adapted farming systems, increased awareness and knowledge on availability of production credit and input supplies and expanded market availabilit: Project support to expand UWI's outreach capacity wil encourage increased regiona cooperation. One of project's purpose is to increase women's participation in agricultural development in the region.

b. FAA Sec. 103, 103A, 104, 105, 106, 107.

Is assistance being made available: (include only applicable paragraph which corresponds to source of funds used. If more than one fund source is used for project, include relevant paragraph for each fund source.)

(1) (103) for agriculture, rural development or nutrition; if so, extent to which activity is specifically designed to increase productivity and income of rural poor; (103A) is for agricultural research, is full account taken of needs of small farmers;

Primary purpose of project is to develop capability in national extension service to transfer to the small farmer farming systems wh.. will lead to increased productivity and increased family income.

(2) (104) for population planning under sec. 104 (b) or health under sec. 104 (c); if so, extent to which activity emphasizes low-cost integrated delivery systems for health,

nutrition and family planning for the poorest people, with particular attention to the needs of mothers and young children, using paramedical and auxiliary medical personnel, clinics and health posts, commercial distribution systems and other modes of community research.

(3) (105) for education, public administration, or human resources development; if so, extent to which activity strengthens nonformal education, makes formal education more relevant, especially for rural families and urban poor, or strengthens management capability of institutions enabling the poor to participate in development;

(4) (106) for technical assistance, energy, research, reconstruction, and selected development problems; if so, extent activity is:

(i) technical cooperation and development, especially with U.S. private and voluntary, or regional and international development, organizations;

(ii) to help alleviate energy problems;

(iii) research into, and evaluation of, economic development processes and techniques;

(iv) reconstruction after natural or manmade disaster;

(v) for special development problem, and to enable proper utilization of earlier U.S. infrastructure, etc., assistance;

(vi) for programs of urban development, especially small labor-intensive enterprises, marketing systems, and financial or other institutions to help urban poor participate in economic and social development.

c. (107) Is appropriate effort placed on use of appropriate technology?

d. FAA Sec. 110 (a). Will the recipient country provide at least 25% of the cost of the program, project, or activity with respect to which the assistance is to be furnished (or has the latter cost-sharing requirement been waived for a "relatively least-developed" country)?

Not Applicable. This is a regional project.

e. FAA Sec. 110 (b). Will grant capital assistance be disbursed for project over more than 3 years? If so, has justification satisfactory to Congress been made, and efforts for other financing, or is the recipient country "relatively least developed"?	No.
f. FAA Sec. 281 (b). Describe extent to which program recognizes the particular needs, desires, and capacities of the people of the country; utilizes the country's intellectual resources to encourage institutional development; and supports civil education and training in skills required for effective participation in governmental and political processes essential to self-government.	First project activity will be to develop, in collaboration with officials and technicians of each participating country, National Agricultural Extension Improvement Plans to be implemented during the life of the project. Plans will include designs to develop capacity at local level to increase effectiveness of agricultural extension services. Project also assists regional institution increase its capacity to backstop national extension systems.
g. FAA Sec. 122 (b). Does the activity give reasonable promise of contributing to the development of economic resources or to the increase of productive capacities and self-sustaining economic growth?	Yes
2. Development Assistance Project Criteria (Loans Only)	
a. FAA Sec. 122 (b). Information and conclusion on capacity of the country to repay the loan, including reasonableness of repayment prospects.	Not Applicable.
b. FAA Sec. 620 (d). If assistance is for any productive enterprise which will compete in the U.S. with U.S. enterprise, is there an agreement by the recipient country to prevent export to the U.S. of more than 20% of the enterprise's annual production during the life of the loan?	
3. Project Criteria Solely for Economic Support Fund	Not Applicable.
a. FAA Sec. 531 (a). Will this assistance support promote economic or political stability? To the extent possible, does it reflect the policy directions of section 102?	
b. FAA Sec. 533. Will assistance under this chapter be used for military, or paramilitary activities?	

ANNEX I

DEPARTMENT OF STATE
AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D.C. 20523

LAC/DR-IEE-79-6

ASSISTANT ADMINISTRATOR

ENVIRONMENTAL THRESHOLD DECISION

Location : Caribbean Regional

Project Title : Improved Agricultural Extension, 538-0017

Funding : FY '79 - $2.7 million

Life of Project: Five Years

Mission Recommendation:

Based on the Initial Environmental Examination, the Mission has concluded that the project will not have a significant effect on the human environment and therefore recommends a Negative Determination.

The Latin America and the Caribbean Bureau's Development Assistance Executive Committee has reviewed the Initial Environmental Examination for this project and concurs in the Mission's recommendation for a Negative Determination.

AA/LAC Decision:

Pursuant to the authority vested in the Assistant Administrator for Latin America and the Caribbean under Title 22, Part 216.4a, Environmental Procedures, and based upon the above recommendation, I hereby determine that the proposed project is not an action which will have a significant effect on the human environment, and therefore, is not an action for which an Environmental Impact Statement or an Environmental Assessment will be required.

Edward W Coy
Assistant Administrator for
Latin America and the Caribbean

Dec. 14, 1978
Date

Clearances:
DAEC Chairman: MBrown

Nature, Scope and Magnitude of Environmental Impacts

A. Description of the Project

This project focuses on increasing the technical capabilities of the region's agricultural extension services. This effort will enable the extension services to more effectively assist small farmers increase their incomes from agriculture. A more detailed project description is found in the body of the paper. The four areas in which this project will concentrate are: 1) training extension agents in agronomic skills designed for small farm production, 2) training extension agents in effective technology transfer techniques, 3) reorganizing and/or restructuring extension agencies to increase their efficiency and 4) supplying extension agencies in the region with transportation and communication equipment. The process of training extension agents will include participant training with local farmers. The services offered by extension agents to small farmers will be enhanced through improved techniques, increased mobility, and improved management.

Improved agronomic techniques for small farm agriculture which will be incorporated into this project will be developed by the CARDI project. Under this project, farming techniques will be monitored and applied by qualified researchers.

Environmentally related questions will be carefully considered. The criteria to be used in evaluating the farming systems being developed include: (1) will the system enhance the well-being of the small farmer by increasing his income, his nutritional productivity and his labor utilization and (2) will the system permit the sustained and appropriately managed use of limited resources.

To ensure that they are environmentally safe, pest management systems and pesticides incorporated into cropping systems being developed by CARDI will first be approved by AID under the conditions set forth in that project. The extension project contemplates project activities in countries where the CARDI/AID project is not located (St. Kitts, Barbados and Belize). Therefore, UWI or the extension agencies will be required to secure prior authorization from AID before AID monies will be used for procurement or use or both of a specific pesticide on these islands. For these evaluations, $20,000 has been included in the budget over the life of the extension project.

B. Identification and Evaluation of Environmental Impacts

The long term effects of the project will see small farmers adapting new farming techniques so some impact can be expected on the environment. However, through careful supervision, design and selection of the improved cropping systems under the CARDI/AID research project. and the additional monitoring of pesticides only positive impacts to the environment are anticipated.

C. Recommendation of Environmental Action

A negative determination is recommended for this project.

Impact Areas and Sub-areas 1/	Impact Identification and Evaluation 2/
A. LAND USE	
1. Changing the character of the land through:	
a. Increasing the population	N
b. Extracting natural resources	N
c. Land clearing	
d. Changing soil character	
2. Altering natural defenses	N
3. Foreclosing important uses	N
4. Jeopardizing man or his works	N
5. Other factors	
B. WATER QUALITY	
1. Physical state of water	N
2. Chemical and biological states	N
3. Ecological balance	N
4. Other factors	

1/ See Explanatory Notes for this form.

2/ Definition of symbols:

N - No environmental impact
L - Little environmental impact
M - Moderate environmental impact
H - High environmental impact
U - Unknown environmental impact

C. ATMOSPHERIC

1. Air additives ---------- N
2. Air pollution ---------- N
3. Noise pollution ---------- N
4. Other factors

_____ _____

_____ _____

D. NATURAL RESOURCES

1. Diversion, altered use of water ---------- N
2. Irreversible, inefficient commitments ---------- N
3. Other factors

_____ _____

_____ _____

E. CULTURAL

1. Altering physical symbols ---------- N
2. Dilution of cultural traditions ---------- N
3. Other factors

_____ _____

_____ _____

F. SOCIOECONOMIC

1. Changes in economic/employment patterns ---------- L
2. Changes in population ---------- N
3. Changes in cultural patterns ---------- L
4. Other factors

_____ _____

_____ _____

G. HEALTH

1. Changing a natural environment ——— N
2. Eliminating an ecosystem element ——— N
3. Other factors

———
———

H. GENERAL

1. International impacts ——— N
2. Controversial impacts ——— N
3. Larger program impacts ——— N
4. Other factors

———
———

I. OTHER POSSIBLE IMPACTS (not listed above)

——— N
———
———

INITIAL ENVIRONMENTAL EXAMINATION (IEE)

Project Location:	Caribbean Regional
Project Title:	Improved Agricultural Extension
Funding (Fiscal Year and Amount):	FY 79 $2.7 million
Life of Project:	Five Years
IEE Prepared by:	T.H.King, IDI/Agricultural Economist
Date:	November 20, 1978
Recommended:	A Negative Determination

Concurrence: William B. Wheeler, AID Representative — 11/27/78 Date

Assistant Administrator's Decision: AA/LAC

Approval of Environmental Action Recommended — Date

Disapproval of Environmental Action Recommended — Date

ANNEX J

Some Agronomic Fundamentals for the Training of the Extension Officers.

An extension system, no matter how well organized and how well trained its officers are in extension methodology, can be no better than the information and technology it has available to extend. This project will lean heavily upon CARDI, the U.W.I. Faculty of Agriculture and other tropical research organizations to come up with the technology needed to improve small-farm multiple cropping systems. It will be the responsibility of national extension officers to deliver this technology to the farmers in terms they can understand and be willing to adopt.

It is important, therefore, that the extension officers not only learn techniques of education and technology transfer but also have a minimum level of competence in farming practices. It is the intent of this Annex to suggest areas in which extension officers could profit from additional training, either because they were never exposed to the information or, through lack of application, these aspects have atrophied.

A. Diagnosing Crop Problems

When crops do not yield as well as expected, the conscientious extension officer will attempt to ascertain the reason. Observant officers will spot abnormal fields or abnormal plants within fields. In many cases, the cause of the abnormal growth can easily be identified, but in other cases it cannot. Through a careful examination of the unhealthy plants and soil conditions, the nature of the problem can usually be pinpointed.

In more difficult cases, specialist assistance may be required. Most plant growth problems are related to one or more of the following causes: moisture stress, poor aeration (excess soil moisture or poor drainage), insects, disease, nutrition or mechanical injury. The extension agent must begin to isolate the cause by a systematic examination of the plant and its environment.

1. Moisture stress. Plants undergoing moisture stress will undergo wilting, and this condition is easily recognised. However, the cause of the moisture deficit may not be so apparent. Check rainfall history and the moisture content of the soil. A clayey soil may hold enough moisture for 10 days or more, whereas moisture in a sandy soil may not last more than three or four days. Less obvious causes of moisture stress include shallow soil, compacted soil, damaged root system, diseases and abnormally high rates of evapotranspiration. The amount of available water a soil can hold depends not only on the texture of the soil but on the depth of the soil. One foot of soil above bedrock will hold half as much available water as two feet of soil. If the soil is compacted or contains hardpans that restrict root development, the plant will not be able to utilize all of the available water present. Similarly, if the root system is damaged by insects, disease or rodents, the actual soil volume explored by the roots will be reduced, resulting in less water available. The root system of the plants should be examined, therefore. Healthy roots are white; diseased roots are brownish. Nematodes, particularly, are a serious problem causing restricted root development in many crops. A good discussion of nematodes is given by Brathwaite (1977).[1]

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1. Brathwaite, C.W.D. 1977. What is a nematode? Extn. Bull. No. 29 (April, 1977). Dept. of Agric. Extn., U.W.I., Trinidad.

2. Aeration.- Too much water can be as harmful to crops as too little. When the soil pores are filled with water, air is excluded. Plant roots obtain energy needed to take up nutrients through the process of respiration, and this process requires oxygen. If the soil remains too wet for extended periods, therefore, nutrient uptake is reduced. Another effect of excess soil moisture is the reduction of nitrogen in the form of nitrate to gaseous forms which are lost to the atmosphere. Some elements, notably manganese and iron, are more soluble in waterlogged soils. If the soil is also acid, toxic levels of these elements can accumulate. Good drainage, therefore, is essential in areas of high rainfall. This is the principal reason for constructing beds and ridges for crop production. Naturally well-drained coarse-textured soils can be excessively well-drained. If these soils also have a high pH, deficiences of iron and manganese can result.

3. Insects and disease. Insects and plant diseases are serious problems in the tropics, as every farmer knows. Fields must be visited regularly, and control measures must be available to control outbreaks of economic proportions before they become disasters. Communication among extension officers, both within and between islands, concerning the occurrence of these pests is extremely useful in coping with problems. "Forewarned is forearmed". Extension officers should be taught basic principles of entomology and plant pathology. They should know how to calculate pesticide dosage rates and how to calibrate and operate spraying equipment. (See section B below.) They should also have some training in toxicology and the hazards of working with certain pesticides.

When a particular insect or disease cannot be identified, temporary control measures should be taken while specimens of the insect or disease are being identified by an entomologist or plant pathologist. National extension offices should have color charts showing the major insect and disease pests, along with appropriate control measures. Some pesticide companies have such charts available.

4. Plant nutrition. Plants require 16 elements for normal growth and reproduction: carbon, hydrogen, oxygen, nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, zinc, boron, molybdenum and chlorine. The first three form the main structural components and make up 90 to 95% of the dry weight of plants. They seldom limit plant growth. The remaining 13 elements are obtained by plants from the soil and are taken in through the roots. Plants can absorb nutrients in small amounts through the leaves, but this is not the normal mode of assimilation. In tropical soils particularly, nitrogen and phosphorus, followed by potassium, most frequently limit crop growth. Deficiencies of nutrients to plants depend not only on the amount present in available form in the soil but also on aeration, soil pH or acidity, concentrations of other elements, and the demands of the crop.

Nutrient deficiencies limit crop yields. Most nutrients exhibit characteristic deficiency symptoms in different crops which an experienced extension officer can identify. Each national extension office should have color charts or slide sets showing typical deficiency symptoms in the major crops to be grown. Some of these are available from research

organizations specialising in specific crops. Some are available also from fertilizer companies (e.g. Potash/Phosphate Inst., Atlanta, GA., The Fertilizer Institute, Washington, D.C.; The Sulfur Institute; U.S.Borax Co.).

In attempting to identify the nutrient deficiency symptoms, it is helpful to note the position or the plant where the symptoms first appear. Deficiency symptoms of nitrogen, phosphorus, potassium and magnesium typically show up on the older, lower leaves first. This is because these elements are relatively mobile in plants and tend to be translocated to the active growing point when the soil is deficient. Calcium, iron, manganese, copper, zinc and boron are immobile elements not readily translocated in the plants. Deficiency symptoms of these elements are found in the newer leaves. Sulfur and molybdenum deficiency symptoms are not localized or the location varies with plant species. These elements are semi-mobile. Chlorine is a mobile element but, owing to its presence in the atmosphere as a "universal contaminant" and plants' relatively small requirement for this element, it is never deficient under field conditions.

Nutrient deficiency symptoms usually show up as a form of yellowing, marginal or interveinal chlorosis or necrosis. It is important to be able to distinguish these symptoms from those caused by insects, disease or mechanical injury. Also, toxic levels of elements can produce abnormalities such as leaf burn and distortion. Vein-clearing, a condition where the leaf veins lack chlorophyll, is usually a symptom of disease rather than nutrient deficiency. To confuse the picture further there is injury caused by herbicides, which may resemble certain nutrient deficiences.

Once a deficiency symptom is identified, it is equally important to ascertain the reason for the deficiency. Some possibilities are:

a) deficiency of the element in the soil;
b) restricted root zone due to soil compaction, hardpans or depth to bedrock;
c) nematodes or other soil insects have reduced the root system;
d) moisture stress;
e) excess moisture;
f) high crop requirement;
g) high soil pH (iron, manganese, boron, sulfur, copper, zinc, phosphorus);
h) low soil pH (phosphorus, calcium, magnesium, nitrogen, molybdenym).

When a deficiency symptom cannot be identified in the field, it may be necessary to request a chemical analysis of the plant tissue and/or soil from the Central Analytical Laboratory, CARDI. The extension agent must follow the laboratory's instructions carefully with respect to sample collection, preparation and mailing.

B. Calibration of Sprayers.

Application of pesticides and, in some cases micronutrients, to plants or soils requires: 1) careful calculation of the dosage rate for the area to be covered; and 2) calibration of the sprayer to give the desired rate. 1. Calculation of dosage rate When dosage rates are given in terms of kg of active ingredient per hectare, divide that rate by the fraction of active ingredient per acre. Next determine the amount of area to be covered, in hectares, and multiply.

Example. An officer wishes to spray a demonstration plot measuring 10m by 25m with atrazine (50% wettable powder) at a rate of 2 kg of actual ingredient per hectare. How much atrazine will be required?

Solution:

$$\frac{2 \text{ kg/ha}}{0.50} \times \frac{250\text{m}^2\text{/plot}}{10{,}000\text{m}^2\text{/ha}} = 0.10 \text{ kg/plot}$$

2. Calibration of sprayers. The amount of spray delivered per area will depend on the pressure in the sprayer, nozzle design and height and ground speed. To calibrate a sprayer, put in a known amount of water and pump it up or apply pressure as in normal operation.
Walking at normal speed, spray a known area. Measure the amount of water remaining in the sprayer and, by difference, find the amount sprayed on the known area. The required dosage can than be mixed with the appropriate amount of water to give the required rate of material.

Example. A sprayer delivers 2000 ml of water over an area of 100m^2. In the example above, how much water should be used to spray a 10m by 25m plot with atrazine?

Solution $2000\text{ml} \times \frac{250\text{m}^2}{100\text{m}^2} = 5000\text{ml}.$

Mix 100g of atrazine with 5000 ml of water and spray on the 10m by 25m plot.

C Demonstration Plots.

Demonstration plots are an exteemely useful tool for introducing new

/technology.....

technology to farmers. They serve as a focal point for field days and farmer meetings. Demonstration plots should be kept as simple as possible. They should deal with a single topic such as varietal differences, time of planting, plant spacing, weed control, insect control, methods of fertilizer application, response to nitrogen, etc. In selecting a site, consider such things as accessibility, drainage, soil conditions, protection from livestock, etc. If fertilizer use is to be demonstrated, it is important to know the likelihood of obtaining a response to fertilizer at that site. Since the demonstration plot will be shown to farmers, it is important to control as many variables as possible other than the one being demonstrated. If control of weeds in tomatoes is to be demonstrated, for example, apply the necessary fertilizer, select the best adapted variety, control insects and diseases by timely spraying and stake the plants correctly. The farmers will not only observe the effects of weed control but will notice other recommendations put into practice as well.

D. Tips on Irrigation.

The frequency of irrigation depends on the amount of water applied, rainfall received and water consumption by the crop (plus weeds). Owing to almost continuous wind and high temperature, potential evapotranspiration is very high in the islands of the Caribbean (up to 1.25 cm/day). By estimating the available moisture percentage of the soil, effective rooting depth of the crop and the rate of evapotranspiration, one can calculate the amount of time between irrigations or the amount of water to apply.

As an example, assume that the field moisture capacity(FMC)[1] is 18% by volume, the permanent wilting percentage (PWP)[2] is 9% by volume, rooting depth is 75 cm, and the average rate of evapotranspiration is 1.15cm/day. Available water will be:

$$AW = FMC - PWP$$

$$= 18\% - 9\% = 9\%.$$

Expressed in cm, the amount of available water in the root zone when the soil is at FMC will be 9% of 75 cm. or 6.75 cm, If the evapotranspiration rate is 1.15 cm/day, PWP will be reached in 6.75 cm/1.15cm/day = 5.86 days. In practice, crop growth is reduced before the permanent wilting point is.....

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[1] FMC -- the amount of water remaining in a previously saturated soil after the excess has drained and downward movement is negligible.

[2] PWP -- the amount of water remaining in the soil when the basal leaves of plants growing in the soil undergo wilting, from which they do not recover when placed in a saturated atmosphere.

is reached, so one should irrigate to FMC every three or four days on this soil. At each irrigation, the amount of water to be applied is the amount of water lost by evapotranspiration less than is received in natural rainfall.

It is better to apply enough water to wet the entire root zone to FMC at regular intervals than to sprinkle the surface lightly every day. Shallow irrigation encourages shallow rooting.

In areas of restricted rainfall where salinity is a problem, excess water must be applied to reach accumulated salts through the soil profile. Drainage systems must be provided to carry away the leached salts.

ANNEX K

FIELD TRIP TO ST. LUCIA BY UWI/MUCIA TEAM, JUNE 19 - 22, 1979

INTRODUCTION

On June 19, 1979, the UWI/MUCIA team arrived in St. Lucia for a four-day observation of the agriculture situation in general and specifically the agricultural extension system and its support elements.

The team consisted of Barbara Yates, Earl Kellogg and Paul Marvin of the MUCIA team and P.I. Gomes of U.W.I./St. Augustine. They were immediately contacted by the CAO Mr. Cyril Matthew, who arranged an itinerary that provided maximum opportunity to become acquainted with the agricultural extension directo and his staff. They provided transportation and arrangements to contact and visit with extension personnel at all levels as well as Marketing Board representatives, WINBAN staff, and bank officials and others.

The excellent cooperation from the CAO and agriculture associates in the field gave the team every opportunity possible for the short visit, to understand the agricultural extension division and the problems faced by it and the farmer constituents.

TOPIC SCHEDULE FOR ST. LUCIA TRIP

Barbara Yates, Paul Marvin, Earl Kellogg, P.I. Gomes

Tuesday, June 19 through Friday, June 22, 1979

Tuesday Afternoon

- Discussion With Chief Agricultural Officer and Director of Extension
- St. Lucia Model Farms Ltd.
- Agricultural Statistics Unit
- Union School

Wednesday

- Cooperative Department
- Local Extension Workers
- St. Lucia Marketing Board
- Central Planning Unit
- U.W.I. (Barbados) Extramural Center
- WINBAN

Thursday

- Agricultural and Industrial Bank
- Poultry Cooperative
- Women Farmer
- Extension Officers - Northern District

Friday

- Discussions With CAO and Director of Extension
- Extension Office in Southwest District
- CARDATS Vegetable Farmer Area
- Southern Extension District Office

St. Lucia Model Farm Ltd.

The team discussed a developing project called the Model Farm Program. It is operated by a company entitled St. Lucia Model Farms Ltd. which is owned by the St. Lucia Government, Geest Company and the Commonwealth Development Corporation. It is a scheme supposedly to sell banana producing land from the Geest plantation to small farmers. Dr. Sessings is director of the project and presented the information regarding accomplishments and plans to the group.

The Geest Company felt their image of plantation banana production was vulnerable so they decided to sell about 1500 acres to small holders in about five-acre plots; the land is divided almost evenly between low level land and high land banana areas. The St. Lucia Model Farms Ltd. will see that each five-acre plot is in full production before that land is sold to farmers.

Farmers will be allowed to buy five acres with a house, roads and electricity. The European Development Fund will finance infrastructure work to change the large plantation into individual small farms. The total cost of the five acres with facilities will be

approximately $50,000 EC. They pay $10,000 for the land, $15,000 - $20,000 for the house and $19,000 for the fixed irrigation system. They must pay $2,500 down and borrow the remaining $47,500 at about ten percent interest per year from the Agricultural and Industrial Bank. The total loan is to be paid off in 12 years.

Farmers are required to grow bananas in the low lands. They can grow other crop as long as they do not compete with bananas. Limes, avocados, mangoes and coconuts are possible allowable crops for the high lands. Common services provided for the tree crops include herbicide and insecticide spraying and irrigation applications. Farmers will pay a fee for these services.

The criteria for selecting farmers have not been developed but probable items will include farming ability, youth and previous occupations. Workers on the estate will be given priority. The selection committee will include representatives of the Ministry of Agriculture, the Model Farms Ltd., and the Bank. Application and interview will be the procedure for determining farmers. The program will be advertised in the newspaper, on the radio and through the extension service.

Total numbers will be 129 farmers on the low land and 63 in the hills. The project will employ a project manager (Dr. Sessons), a land development officer, and two agriculturalists.

Projected yields of 8 - 11 tons/acre with net incomes of $10,000 - $15,000 on a five-acre farm are projected. The project is scheduled to be fully operational in five to six years.

The Ministry extension service will have little responsibility in the project except in possible food crop extension work. Problems of clarity of title, subsequent sale of the land, and freedom of cropping choices appear to be unsettled. A socio-economic survey is being done by the Planning Department on the workers who might want to buy the land. This study was not mentioned by the project manager in his detailed presentation to the group. Consequently, one wonders whether the study results will be used by the corporation in their selection process.

Agricultural Statistics Unit

The Agricultural statistics unit in the Ministry of Agriculture was established by a $114,721 EC grant from the British Development Division. At present, there is an agricultural statistics officer (a mathematical statistician from U.W.I.) and two assistants (neither trained). They are located in the Union School area. More of the information collected is taken from records of banks, grower associations, marketing board and export firms. Some field surveys are done.

The officer in charge indicated that extension workers were to be used as enumerators although he realized their job description did not include this kind of activity.

The agricultural statistics officer will be going to Canterbury University in the U.K. to take a three-month course in agricultural

statistics through a BDD grant program. He did not know of the CARDI survey work nor of the Agricultural Planning Project efforts. His main concerns were lack of training for field officers, lack of equipment and shortage of personnel. A copy of the BDD project paper was obtained.

Union Cadet Agricultural School

Union Cadet School is located next to the 140 acre research farm with about four acres assigned to the school itself.

The present intake is approximately 20 - 25 students per year with boarding space for 30 students but with some commitment; present enrollment is 50 students of which eight are female.

Mr. Northridge has recently arrived from England to revise the curriculum and develop plans for a three-year program. The CAD would like to increase enrollment to 30 - 40 men and 10 women. By the process of elimination, the third year would be five to seven selected students who would qualify for a diploma.

The present curriculum lacks in many ways but particularly in effective "hands-on" experience. Hopefully, the revised curriculum will be an improvement and include special instruction in extension methods. The Extension Department fills all of the entry level positions with Union Cadet graduates.

The facilities are very crowded. The research director and the school principal share very limited office space and the classrooms will not be adequate for the planned expansion.

The library at Union Station is housed in a single large room. About 50' of shelf space has been constructed. Books, periodicals and bulletins are just now in the process of being cataloged and organized by a Peace Corps volunteer. The cataloging of materials will be done by hand since Library of Congress or other printed card systems are felt to be too expensive.

The present staff includes a Principal and two Peace Corps workers: one being the librarian and the other the staff mechanic and mechanized agriculture instructor.

Reports from several recent graduates indicate that in the past before the newly appointed principal, all lectures were given by personnel from the Ministry who performed these responsibilities without additional pay. Due to the pressure of other duties on occasion students went for weeks without instruction.

Cooperatives

The cooperative department is located in the Ministry of Social Affairs. Teresa Romulus of that department explained that discussions had been held concerning the proper location since both the Ministry of Education and the Ministry of Agriculture have considerable involvement with cooperatives. In earlier times the cooperative department was involved chiefly with Credit Union.

There are two agriculture cooperatives. One is a poultry cooperative in Bathonneau which began in 1970. The objective of this cooperative was to purchase baby chicks, feed and equipment and have the producers sell the finished birds back to the cooperative to be processed and marketed. This project originated from some adult classes of a Peace Corps worker.

The Poultry cooperative has been beset with many problems since its beginning:

a) Inflation has been great and feed costs have gone up appreciably. The cooperative became badly indebted to a feed company in England.

b) Bringing in baby chicks from Barbados with lack of experience in this process caused some death loss.

c) Without refrigeration and transport getting the dressed bird to the super-market in grade "A" condition was difficult.

d) The manager had been to G.A.S. but was woefully lacking in experience and training to manage the whole operation.

e) Unfortunately some corruption of employees occurred in the first year and funds were misused.

Interest of the members has declined until only about 15 - 20 cooperators are actively raising birds and unless some real efficiencies can be initiated the future is grim. At present broilers can be imported for $1.90 to $2.00 EC compared with the cooperative cost of $2.69. The only other cooperative the team was able to identify was a farmers' society at Vieux Fort which engaged in collective buying and selling.

Training needs associated with the cooperative were expressed as those dealing with management of cooperatives and instruction in the philosophy and practice of cooperatives. The Ministry of Education has assigned one person to develop instructional programs and material for the secondary comprehensive schools.

Batonneau Poultry and Agricultural Cooperative Society Ltd.

The organization of cooperative societies for producers, borrowers, and consumers formally involves the Ministry of Social Affairs, although the Ministry of Agriculture and its Extension Division are involved with individual cooperative members.

We interviewed the officer responsible for cooperatives in the Ministry of Social Affairs. She had worked with cooperatives on St. Lucia for ten years. We also visited the Poultry cooperative processing plant at Batonneau and interviewed the manager and observed the farm of one of the larger poultry producers near the plant.

The poultry cooperative, the only commercial producer of poultry on St. Lucia, was begun in 1970 by a group of women attending an adult education class in handicrafts. Feeling they wanted to engage in a business with higher returns than handicrafts, they established the cooperative with technical aid from a Peace Corps volunteer and financial assistance from the government. The cooperative supplies members with feed and chicks. Producers then sell back broilers to the cooperative which prepares them for sale in supermarkets in Castries, the capital. About 600 birds a day are processed. All

those interviewed state the poultry cooperative has been constantly beset by production, marketing and management difficulties. Production problems center upon the high cost of imported feed and the lack of technical assistance for problems of poultry disease and husbandry. Producers have become heavily indebted to feed companies - most of the feed is imported primarily from Barbados but also from the U.S. Problems with care of the birds begin with the chicks. Since there is no hatchery on St. Lucia, the chicks are imported in an unprotected manner such that the mortality rate is high. Moreover, the departure of the PCV, who had inoculated the birds and prescribed medicines, increased the mortality rate of birds even further. The cooperative is desperately in need of technical assistance in husbandry. The ideal situation for the cooperative, according to the cooperative officer from the Ministry of Social Affairs would be an agricultural extension officer, trained in poultry, to be attached to the cooperative or at least an agricultural extension officer who would take on the cooperative as a special task.

Marketing difficulties center upon the processing facilities and transportation. Due to the lack of cold storage (or a blast freezer) at the processing plant, birds must be prepared and marketed the same day. Moreover, because of the high cost of feed and other production inputs and management problems fresh domestic chicken must be sold at a higher price ($2.00 EC/pound), than frozen imported chicken ($2.69 EC per pound). Therefore special product identification is necessary

for the whole birds. They cannot be cut into pieces and sold separately and unidentified by the supermarket.

Management problems concern both the producers and the management of the processing plant. Producers do not understand fully the implications of poultry as a business. Because of lack of education concerning social principles and objectives of the cooperative movement, producers sell some of their broilers on the local market rather than to the cooperative, if they can receive a higher price, thereby decreasing the marketing ability of the latter. The management of the processing plant suffers from lack of transport and cold storage facilities.

These problems of production, marketing and management have severely affected participation in the poultry cooperative. While there are 123 members, only about a dozen are active producers.

St. Lucia Marketing Board

The St. Lucia Marketing Board was reorganized in 1977 after severe earlier problems of not being able to sell products purchased from farmers. Consequently, the relationship between farmers and the Marketing Board (MB) is still a problem and one of the constraints to developing volume handling of products.

Import substitution is the strategy for working mainly with food crops although mangoes and other tree crop products are handled.

A minimum price is guaranteed with bonuses given if surpluses exist because of higher than anticipated selling prices.

The MB is striving to get farmers to sell their commodities at the farm gate rather than going to cities. It was indicated that the MB offered the same price to farmers they would get in the town markets although this was not consistent with extension worker's observation and the fact that farmers still continue to sell in town. To increase their volume, the MB has meetings with farmers with extension personnel and Agricultural Bank employees present. Radio talks and the agricultural extension service information staff are also used to inform farmers of MB activities.

The physical handling involves two trucks following north and south area routes twice a week. Farmers are expected to bring their commodities to the road for pick up. This means only farmers who can easily carry produce to the road are served. The produce is graded and loaded to be hauled to the city for subsequent sale to wholesalers, hotels or export firms.

Major problems and constraints exist that limit the MB favorable impact on farmers.

1. Lack of trucks to make more frequent pick up.
2. Severe price and quality competition with imported food products. For example, imported fryer chicken can be bought by retail grocery stores for $2.00 EC per lb. while local produced fryers cost $2.69 EC per lb.

3. Quality standards are lacking and in general farmers do not either get paid for better quality produce or do not know how to obtain higher quality.
4. Major problems exist with seasonality and hence wastage of vegetable and certain tree crops. Preservation methods, variety option and food processing techniques are badly needed for reducing enormous waste.
5. The MB has little ability to forecast world market trends and react to favorable situations.
6. Their personnel are untrained at almost all levels.

Central Planning Unit

The Central Planning Unit (CPU) works in the Prime Minister's office and does economic, physical and environmental planning. The economic section receives all of the applications for aid from the government ministries. They also are willing to design project proposals, analyzed economic returns, and prepare necessary documents if the Ministries request their help.

The Agriculture sector plan for 1977 - 82 was produced but not formally adopted. Most of the targets have been moved back to a 1979 - 84 time frame.

Several projects related to agriculture are now being operated or will be initiated shortly.

The following were mentioned:

1. WINBAN (see subsequent section).
2. Coconut rehabilitation scheme which is oriented to increasing output, reducing rat damage, giving incentives for replanting and improving the copra factory. There are ten extension slots in the project which has a EC $1.9 million budget.
3. Cocoa project to be funded by the BDD for US$626,000 for the first phase. The target is to increase cocoa production by 100 - 360 tons/year over six years by increasing area and yield and improving processing.
4. Field crop production project being considered with the Marketing Board. There are problems getting enough extension assistance in this project. Major thrusts would be improvement of markets, space, warehousing facilities, etc.
5. Tree crop development BDD funded - to be developed.
6. Commercial livestock estate - EDF funded for EC $3.5 million. Imported cattle to be crossed with local cattle at the main livestock farm where ministry persons will be attached to be trained. They will each then operate a branch farm for farmer training.
7. Fisheries project to be funded from Canada up to US$1.5 million to improve boats, equipment, processing facilities and knowledge about fish resources.

8. Forestry training project funded by Canada at EC $2.6 million. Off island forestry management training.

9. Land and water use unit at Union School EDF funded at EC $2000,000. Other smaller projects were also discussed.

Several projects have extension components and personnel financed for a few years. How they will all be absorbed after the projects are terminated is a question.

This CPU ought to be considered in the Agricultural Planning project.

University Centre

The Department of Extramural Studies of U.W.I., Barbados, supports a University Centre on St. Lucia administered by an Extramural Resident Tutor. This new facility involves several offices and two lecture/ classrooms available for use by educational and community groups.

A management seminar for middle-scale farmers has already been scheduled. The classrooms are very new and modern and could possibly be used for in-service training of extension personnel if appropriate.

The current Resident Tutor has recently also been appointed by government Chairperson of the National Advisory Committee on Youth Employment. This Committee will advise on youth groups (e.g. 4-H clubs, Young Farmers Clubs) and the employment situation of youths ages 15 - 19.

U.W.I. Extramural Department - St. Lucia

The facilities maintained at Castries consist of an office managed by Claudia Johnson and a secretary. The programs range very widely in persons they serve and according to staff available for the instruction. On the occasion of our visit there was a course being conducted for road construction engineers.

A series of lectures dealing with "The Care and Preservation of a Small Island" included population, plant life, forests, marine life and others are scheduled for the year as an ongoing program.

The department is responsible for securing the staff and making logistical arrangements. In addition to arranging short courses and workshops nearly all of the books and printed material from U.W.I. can be made available through the department. The department disseminates information by radio and a series of their own publications. Some material is prepared especially for schools.

WINBAN

WINBAN is the central coordinating body for the Banana Growers Association in Dominica, St. Lucia, St. Vincent and Grenada. It performs marketing functions, represents these countries at meetings, bulk purchases material and does research and development work.

The extension wing was conceptualized as a Grower Action Program to extend proper banana growing technology to large numbers of farmers. Farmers were first brought to the station and given 60 plants each.

An extension worker worked with each farmer to see that proper cropping practices were used with these plants. Farmers were expected to adopt these practices on the rest of their land. Then, several farmers were taken to each of these farmers' fields to observe and the process would multiply adopters rapidly. No evaluation has been made on the effectiveness of the scheme but certain evidence suggests it has been moderately effective. The U.K. government has financed an extension system which operates on the member island. This will be completed in 1982. There is an extension officer in WINBAN who directs the activities of four island banana development officers. Under each of these are area supervisors who direct the work of local extension agents. Grenada has 15 local agents, St. Lucia has 30, Dominica has 30 and St. Vincent has 15. These ninety extension workers are to be absorbed in 1983 by the respective governments. These persons are trained thoroughly in bananas but do not necessarily have other agricultural training. WINBAN is interested in increasing the level of training these people have.

The communication section of WINBAN has good facilities and is active in extension communication activities. Weekly radio programs, slide shows for farmers, leaflets and newspaper columns are produced.

The Ministry and WINBAN extension systems seem to have a good relationship. There are certain facilities and equipment that can be shared especially in communications.

WINBAN has been having problems with financing since recent setbacks in banana production and the problems in Grenada. They do have an intercropping project which might be a good source of technical help for local ministry extension persons. They work with pigeon peas, cowpeas, groundnuts and other crops on the central farm and on two outreach stations.

WINBAN can also serve the Ministry extension services through soil tests and insecticide analysis for farmers. Close attention to utilizing WINBAN facilities, equipment and knowledge would be wise for the Ministry.

Agricultural and Industrial Bank (AIB)

The problems of the AIB, started in 1978, are three-fold; education of farmers about the availability and usefulness of credit, the constraints to credit acquisition such as inheritance and land tenure arrangements and the attitude of farmers toward repayment of loans.

Farmers, according to the Director of the AIB, do not understand the possibilities of credit to increase their productivity and hence their income. Therefore, the credit available is underutilized. He suggests further educational and informational campaigns to obtain more clients (2,500 at present). In most of the Extension Division offices visited, we noted AIB posters encouraging obtaining credit through the AIB.

Constraints to credit center around inheritance and tenure arrangements in relation to collateral and on farmer attitudes toward borrowing.

The main concern to the small farmer to borrow and the bank to lend centered about the issue of security. The small farmer fears subsequent foreclosure by the bank on his land if he cannot repay the loan, particularly if due to bad weather and other uncontrollable acts of nature. The bank demands collateral in the form of legal ownership of land or a substantial private dwelling (e.g., cinder block rather than wooden slats). Such requirements pose a problem to at least 40 percent of those who apply for loans. Many farmers have no clear title to land because of inheritance patterns. Land is divided usually equally among children. Since most small farmers die intestate, the recording of such inheritances does not occur. While procedures exist to establish legal ownership of land despite the lack of wills, lawyer fees are not paid by the AIB. These costs, together with family misunderstanding and the inability of any one son to accumulate sufficient funds to purchase the shares of relatives leads to hundreds of acres of land lying fallow or discouragement in seeking credit to increase productivity. Other constraints to acquisition of credit include the limitation of crops eligible for loans and the designation of marketing outlets. The AIB limits the farmer to crops that can be more easily marketed (e.g., bananas, coconuts, poultry) and requires that they be marketed through established and regulated outlets (e.g., the commodity associations for bananas and coconuts and the Marketing Board).

Finally, farmers tended to view AIB loans as "gifts" from the government. Farmers do not come voluntarily to the AIB to repay

installments; rather bank officials must visit the farmer. Frequently farmers move their wooden dwellings within 24 hours and become difficult to locate. This task of collection is administratively cumbersome and expensive.

Agricultural and Industrial Bank - Thursday, June 21, 1979

The bank is currently dealing with about 500 borrowers. There are two sources of money with two different types of loan - The APC and The FIC.

a. APC (Agricultural Product Credit) is available on short-term basis from three to five years with a maximum of $6,750.00 EC to farmers with 25 acres or less who derive more than 50 percent of their income from farming. Interest rate is 12 percent. The source of funding is USAID and as such restricts loans for tobacco or soybean production. Loans are made only on crops with a ready market which can be readily disposed of with a consignment to amortize the loan, i.e., bananas, copra and poultry. Of the 12 percent interest rate 4 percent is held in reserve to cover delinquencies. Since the agency has been in operation only two years, no record of failures has been established.

b. FIC (Farmer Improvement Credit) is funded by BCB. Minimum loan is for $3,000 with no fixed upper limit and up to ten years to repay. The two types of loans are divided about equally between the 500 farmer patrons. The problems are identified as:

b. 1. Farmers are not willing to borrow because the collateral required causes some fear and reluctance especially in the recent dry years.

2. The land tenure system is one of equal division to all heirs and many people have migrated having a share of the inheritance. This makes for many absentee owners and when heirs try to get little which is required for a loan the lawyer's fees and delay become real problems.

Women in Agriculture on St. Lucia

According to the CAO fifty percent of households on St. Lucia are female-headed. The precise composition of female-headed households is unclear. Some extension staff interviewed indicated such households include a male who worked in town but returned daily to the home and contributed financially to the household. Others reported that no male was present in some cases because of migration from the island, in other cases because of serial unions. It is important that the institutional analysis help clarify patterns of farm household compositions. Due to the large number of female-headed households, women farm operators receive less attention from the Extension field staff than do male farmers. For example, in the northern district out of 600 farm visits in the past year, the district extension supervisor estimates only about 10 percent were female farm operators. Female extension assistants in the northern district, however, reported that of their visits to farms, approximately a quarter were visits to female farm operators.

This difference between farm contacts by male and female extension agents suggests that communication networks are probably gender related; men find it more comfortable to talk with men and women with women. These apparent communication patterns reinforce the need to increase the number of female extension workers if increased extension services are to be provided to more female farm operators thereby to increase agricultural productivity.

St. Lucia has been a leader among the eight islands in recruiting women into the extension services.

Since 1972 women have served in the extension service on St. Lucia. Their first assignments were in laboratories or the central office. In 1978 the first female agricultural field officers were appointed by the CAC because of the large number of female-headed households. Currently three women serve as agricultural assistants, two with the northern district and one seconded to the Coconut Rehabilitation program. Their duties are the same as male agricultural assistants. Like their male counterparts, the women were trained in the two-year program at Union Station.

The commodity schemes (the Coconut Rehabilitation program) also have appointed women agricultural extension officers; WINBAN 6 (out of 30) and the Coconut Rehabilitation program one (seconded from the Agricultural Extension Division of the Ministry of Agriculture).

Women extension officers have also been sent out of the country to the intermediate agricultural training schools on Jamaica (JSA) and Trinidad (ECIAF) and to the Faculty of Agriculture at the University of the West Indies at St. Augustine, Trinidad. Women have also been admitted to the agricultural school at Union Station since the early 1979's. Eight out of the present student body of 50 are female according to the school's director. The CAO reported that the Ministry of Agriculture hopes in the near future to increase enrollment to 30 - 40 men and 10 women.

Extension Service Physical Facilities

The extension service on St. Lucia is concerned with three kinds of physical facilities. The central office in the capital (Castries), office space in the five regional districts, and housing for senior agricultural officers and agricultural assistance within each of the five districts.

Central offices in Castries are housed in the Ministry of Agriculture, which occupies an old wooden building in need of repair, poorly ventilated and illuminated with little space for offices for storage of papers and extension materials. The contrast between this antiquated facility and the new building housing WINBAN is striking. The latter building was modern, airconditioned and with extensive specialized work spaces for laboratories, media development (a studio for graphic arts, a dark room for photography and a printshop) and office and secretarial space.

We visited four of the five regional district offices. The district office for the northern region at Batonneau was a rented room in a small "community development" complex which included the village post office, a meeting room and other village offices. The extension division space was a room 6'x6' around with one two-drawer filing cabinet, a small table and six chairs. The other three regional offices (central, southwest and south) visited were more adequate in space consisting of two rooms each; the smaller one the office of the senior agricultural assistant and the second and larger a general reception area, usually with a conference table, and bookcases displaying extension leaflets and booklets. These latter were neatly stacked, but not displayed in a manner to attract the reader. While space appeared adequate in the Central, Southwest and South district offices, they lack the "aura" of information centers. Assistance is needed in the proper display of agricultural information so that it is enticing and easily available to the farmer client.

The third area of concern for physical facilities to expedite the work of extension officers concerns housing. The policy of the Extension Division is to have extension officers reside in the district which they serve. In this way they become part of the rural community and can, therefore, exert leadership in community affairs as residents as well as civil servants. In fact, however, most extension agents reside in or near Castries because of lack of suitable housing in their districts. The Ministry of Communications and Works is responsible

for constructing and maintaining government housing. They, however, construct only the shell of the building. The civil servant must supply all furnishings, including refrigerator and stove; he/she also must pay a monthly rent of $120 EC. Any maintenance costs above $100 EC require the action of the Ministry of Communications and Works.

This inter-ministry arrangement caused several difficulties for the Extension Division to implement its policy of having agents live in their district. First, the Ministry of Communications and Works has been unable to continue regular inspections of government housing and has been slow to respond to requests for repairs. Consequently, many of the Extension Division houses (about six or seven) have fallen into disrepair and are unoccupied. Second, young extension officers (the majority of district personnel) cannot finance their own furnishings or are not yet ready to settle down. Efforts have been made to secure second hand furniture from houses formerly occupied by expatriate personnel, but the results have not been adequate.

Miscellaneous

The Agricultural Officer for Extension reported that 50 percent of the coconut crop was lost annually due to rats nesting in the trees causing coconuts to drop prematurely as well as damaging the nuts on the tree.

Copra is dried on the islands in small kilns located in rural areas. The copra is also processed on the island into oil, margarine

and soap. The factory now operates under capacity due to insufficient coconut production. Consequently, soap, oil and margarine are imported at a cost of several million dollars (EC) in 1979, according to the Director of Agricultural Extension. If damage by rats and other pests could be controlled, domestic production could be substituted for the imported commodities.

Response to Questionnaire of Field Visit

(Q.8) Staff level	Formal Education	Salary Scale (approx.)
Administrative/supervisory	B.Sc. & M.Sc.	$1,200 (EC) per month
Technical Specialists	" "	" " "
Extension Officers		
(Sr. Ag. Asst.)	ECIAF/JSA diploma	$725 (EC)
(Ag. Asst.)	Union & JSA/ECIAF	$525 (EC)
(Temp. Staff)	Union	$400 (EC)
(Ag. Apprentice)	Untrained	$250 (EC)

The Agricultural Information Unit

Staff: The unit has a permanent establishment of an Agricultural Information Officer (A.I.O.) at the level of a Senior Agricultural Assistant along with an Agricultural Assistant. The A.I.O. position is now filled by someone in an acting capacity. The substantive holder of the position is away completing a course at the Institute of Mass Communication, U.W.I., Mona, and is expected to return shortly. The A.I.O. (Ag.) and A.A. with whom we had discussions had received training to the diploma level at ECIAF and J.S.A., respectively. The A.I.O. (Ag.) had participated in a short course on the use of radio in agricultural

extension. This had been of considerable benefit and what was learned was being put to use in the Unit through the production of radio programmes for "Agriculture Today" and "Tips for Farmers". There was considerable talent and the potential for upgrading the talent of the two agricultural assistants seemed highly favourable. The Head of the Extension Division indicated even on the return of the Information Officer from his training, it was likely that the Unit would remain staffed with three (3) persons.

During the last year of interviews, features and news items had been aired via Radio St. Lucia. A small radio survey to determine effectiveness of radio programmes had been conducted but the response was very low. It was proposed that the survey would be redone after the importance of the exercise had been emphasized to the extension officers, who were to be involved in conducting the survey (See Annual Report 1978). One suspects that while the Unit recognizes the importance of attempting to monitor effectiveness of its radio programmes, the kind of expertise required for such an exercise was in short supply.

The St. Lucian Farmer Magazine/Newsletter is prepared and distributed by the Unit about five times in the year. Delays in submission of articles by officers seemed to limit the regularity with which the magazine appeared. The use of a cartoon had been introduced and it was felt that both format, layout and content had scope for improvement.

The CAO identified the purchasing of space in the local newspapers for a weekly column as highly desirable. Shortage of funds seemed to prevent the Ministry's access to such newspaper space.

The two staff members of the Unit indicated that an adequate means to transport communications equipment such as a projector, screen, tape recorder and speakers for a specific occasion was unavailable. Not only in terms of size but the kind of all-purpose vehicle suitable for any part of the territory, might be of considerable benefit if it were to become available.

The obtaining of small items of equipment such as a tape recorder for outdoor recording and tapes were also considered desirable. The Unit possesses considerable potential and the present staff seemed quite versatile and competent. It would seem very worthwhile that attention be given in the project to upgrading their skills and resources.

Summary of Needs as Expressed by Government

In addition to the assistance expressed in the PID, the CAO stated the needs of St. Lucia's agricultural extension service as follows:

A. Communications

1. Radio time.

2. Newspaper space.

3. Audio-visual aids - a person with graphic arts skill to prepare visuals for illiterate farmers. The person would be trained in-service and absorbed by the Ministry as an agricultural assistant at the end of the project.

B. Backup to Extension

1. An agricultural extension officer specializing in extension methods who would do in-service training and also lecture at the government school at Union Station.

2. Short-term technical assistant for marketing and economics to set up a system of monitoring prices.

3. Office furniture for district offices.

C. Training (out of country)

1. Expansion of the two-week program at UWI for field staff to four weeks.

2. Eight additional persons per year to be sent to JSA or ECIAF over the next five years for a total of 40 at the diploma level.

3. Two persons per year for the next five years for a total of ten at the degree level.

4. Two to post-graduate training over the next five years.

5. Eight per year to short-term (e.g., six months) non-degree specialized training in irrigation, plant protection, farm management, etc.

D. Additional space at Union Station for the Agricultural Statistics Unit.

Conclusions

From observations over a limited time, discussions with colleagues and persons from St. Lucia, and reading the following are tentative conclusions about the problems faced by farmers and the extension service in St. Lucia.

Farmer Problems

1. Marketing of output.

   a. wide swing in seasonal prices received

   b. lack of ability to process perishable commodities for sale during shortage time

   c. lack of access to markets and pick up points

2. High cost of inputs, such as livestock feed, fertilizer, insecticides, herbicides.

3. Lack of training and hence confidence of young extension workers meeting with experienced farmers. This means the senior district officer is required to talk with farmers referred by the local workers.

4. Proliferation of special agricultural projects with extension components and a lack of coordination with the regular extension service.

5. Need to absorb the above mentioned extension workers into the Ministry as the projects phase out.

6. Lack of ability to present a professional image because of:

   a. lack of adequate housing in the area being served.

   b. inadequate functional office facilities for the national HQ and some district HQ.

7. Transport mobility for some local extension officers.

8. Lack of sufficient delivery of services to women farmers.

9. Lack of information service facilities.

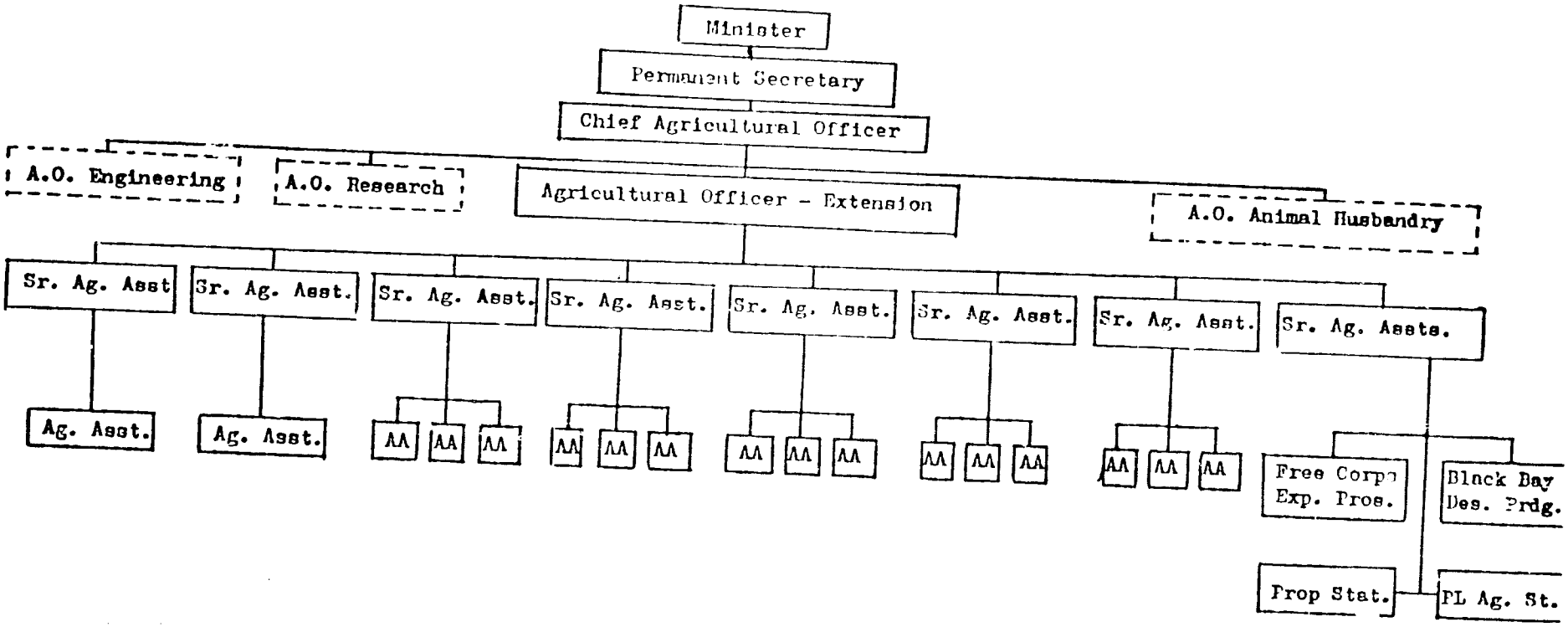
10. Access to reliable technology for small farmers.

11. Increased in-service training.

12. Lack of subject matter specialists.

THE EXTENSION DIVISION, MINISTRY OF AGRICULTURE, ST. LUCIA

ORGANIZATION CHART



The visiting team found all contacts to be cooperative, open and eager to discuss problems. Some persons had discussed similar matters several times with other visitors. All take and no give by visiting groups may be viewed in the future with growing weariness by St. Lucian officials.

In general, the extension service in St. Lucia has sound leadership and well planned activities. The esprit de corps is good and the ability to utilize effectively certain assistance was judged to be excellent.

Questionnaire Information Obtained from St.. Lucia
June 19 - 24, 1979.

1. About half the time of local extension workers is spent in working with farmers, the other half of their time is spent on conducting surveys for a variety of agriculture-related groups (e.g. CARDI, Ministry of Agriculture), administrative duties, subsidies.

2. a. Limiting the role of the extension agent to education and technical transfer is considered desirable by the Ministry of Agriculture but difficult if not impossible to implement at this time due to the use of staff for surveys and other duties and the lack of sufficient technical training of lower-level staff.

b. The CAO and Agricultural Officer for Extension are directly involved in policy making relative to extension program. Obviously the Permanent Secretary and the Ministry of Agriculture are involved in budget review and other matters.

c. The annual extension programs are developed by the CAO. Then the A.O. with the assistance of senior agricultural assistants develops a program based on the guidelines.

d. The plan of work is developed between the senior agricultural assistants and their agricultural assistants.

3. Local groups at the moment are not directly involved in directing the work of district extension personnel. There is potential for such involvement as witnessed by attempts made to interest local farmers in the sponsorship of 4-H clubs, Young Farmers, etc.

4.. The Ministry of Agriculture as well as the extension agents themselves desire district extension personnel to reside in the community which they serve; lack of availability of Government housing precludes implementation of this policy. The amenities expected would be a house in good repair with basic utilities (electricity, water and indoor plumbing).

5. Clients are involved to a very informal and limited degree in the evaluation of local extension agents.

6. District extension personnel are subject to an annual review of their performance based on criteria mutually understood (e.g. technical knowledge, attitude toward work). It is unclear how professional staff (degree holders) are assessed.
Younger, lower level staff indicate their salary levels are equitable relative to other similarly trained persons. However, older, experienced senior extension personnel on occasion have been offered substantially higher salaries by private industry and commodity associations.

7.

8.

9. There appear to be enough graduates from Union, JSA and ECIAF to fill slots in the Ministry. However, the level and quality of training presently offered at Union is not sufficiently high to meet extension needs.

10. The primary extension method is the farm visit. Some demonstration and tours are used in connection with certain types of instruction. More group instruction could be effectively used.

11. No special problems were expressed in terms of delivery of services to women farmers. However, the percentage of farm visits to women farmers varied with the sex of the respondent. Male extension officers reported about 10% of visits were to women farmers while female extension officers reported approximately 25% of their farm visits were to women farmers.

12. Policy makers felt resources should be increased for all farmers. They did however, note that they wished to recruit and train more women extension officers. The duties of the current women extension officers were similar to those of the men.

1 . There is almost no accurate data on the net cash earnings of small farmers from farming activities. A crude average reported by several persons was $5,000 EC annually. The net income would vary with the farm activity (banana, coconuts, vegetables, root crops, livestock).

14. Management, credit and marketing are all serious problems for the small farmer and could more usefully be covered by extension activities.

15. For technical assistance the extension service utilizes the U.W.I. Extension Newsletter, CARDI, WINBAN. CARDI, however, is just beginning to produce research results. Limited assistance is available with some difficulty. The relevance of material is unknown.

16. CARDI and U.W.I. hold meeting with extension personnel and operate through the CAO.

17. Few local farmers organizations appear to be used to educate farmers. The degree of the extension agent's relationship with these groups needs further exploration.

18. None.

19. $7,000 E.C. for landrover.

20. The Division of Agricultural Engineering is responsible for maintenance of all Ministry of Agriculture vehicles.

ANNEX L

REVIEW OF VISIT TO MONTSERRAT, JUNE 20-21, 1979

by
K. Archibald, J.Claar, T. King and
E. Schulte

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Montserrat was visited by the above team. They arrived at 5.50 p.m on June 20 and departed from Antigua at 5.40 p.m. on June 21. After spending the morning with CARDI personnel in Antigua, they returned to Trinidad at 2.00 p.m. on June 22. The team appreciated greatly the many courtesies extended by the Agriculture Department; every effort was made to provide the team with full information. A questionnaire was used to study the situation in order to gather a base of consistent data. The results are given below:

TABLE I FINAL REPORT JUNE 20 - 21, 1979

JUNE 20

5.15 p.m.	Arrived in Montserrat

JUNE 21

9.30 - 10.30 a.m	Jamie Kumar - CARDATS U.N. Volunteer.
10.30-12.15 p.m.	Tony Maloney - Livestock Officer and Acting Director of Agriculture.
	Franklyn Michael - nominated as Extension Officer
	Lunch Coconut Hill Hotel.
	Kumar, Bob Gibson (Peace Corp) Sam Parasram (CARDI)
2.15 - 3.15 p.m	F.A.L. Margetson, Minister of Agriculture, Trade, Lands and Housing.
3.45	Airport.

INFORMATION OBTAINED DURING THE VISIT TO MONTSERRAT JUNE 20-21, 1979

1. What proportion of the local extension workers time is spent on:

Agricultural officers perform multiple functions such as farm visits, range services, spraying, credit, plant materials.

2. Policy makers' view of extension roles.

a. What is the possibility of limiting the role of local extension officers to education and technical transfer?

The multiplicity in roles was recognized and a land development authority was set up but has not developed too far. They were willing to consider such.

b. Who is involved in policy making relative to extension?

The Permanent Secretary and Director of Agriculture make recommendations which require Cabinet action.

c. What are the program planning procedures for Extension?

A group has been working on developmental directions for Agriculture. No formal program of work process was observed.

d. Is there a plan of work developed for local Extension officer?

No formal plan of work is developed.

3. Is any local group involved with directing the program of work of the local Extension agent?

No.

a. What is the potential for involving local groups in program planning?

Farmers are quite old and not too interested in organization or in looking to the future. It would be difficult. Church groups might be a vehicle.

4. Should the local Extension officer be located in his operational district or in the central office? What amenities would this office demand in order to insure placement of competent Extension officers in the districts?

Agricultural officers should be in the district, and two of the four did live there now. One district has no facilities.

5. Are the clientele served effectively involved in evaluation of local extension workers?

No formal way. Dissatisfied people complain.

6. What types of criteria are applied to Extension personnel in regard to salary increases and promotions?

Tenure and education are the chief criteria. Performance is of lesser importance.

a. Are Extension personnel on a competitive scale with similarly trained positions in government and industry?

Keeping Extension personnel is a problem. Rapid shifting from zone to zone. Team did not get a feel for the salaries as this was not listed as a constraint.

7. What is your Extension department's organizational chart for Extension?

Minister

Permanent Secretary

Director of Agriculture

Deputy Agricultural Officer

Extension Officer

Superintendent

Assistant Superintendent

Agricultural Assistant Officers (4)

8. What is the minimum level of formal education required for the Extension staff?

2 B.S 2 S.R. people untrained and four trainees. It is intended that the Agriculture Assistant be diploma people. Sometimes because of personnel shortage untrained personnel go all of the way in Extension. There is a trend towards putting B.S. people in top posts.

9. Are there enough graduates from agricultural schools to meet your need for new and replacement extension staff?

Islands normally only employ from that island. Five are out for training. Though needs are small, they need constant attention.

10. What are the primary extension methods used?

The agricultural officers work mostly on a person-to-person basis. They do have weekly radio programs, one weekly newspaper article and some leaflets. They do have an occasional agricultural show which they would like to make annual.

11. Do you feel that your Extension Service has served women farmers effectively?

-Women receive the same help as others, and they do not discriminate. They do not have women extension officers as they do not apply. In many cases women do most of the work on farms. No efforts are made to encourage or discourage women from applying for extension employment.

12. Do policy makers feel that more resources need to be devoted to delivery of services, recruitment and training of women Extension officers?

They do not feel that special efforts were needed. Women just have not applied for extension officer positions.

13. For small farmers, what is the range of net incomes received from farm activities?

Multiple cropping is the principal cropping system.

What are net income ranges for these activities?

No definite information. General view was that the economics of different crops and inputs needs to be demonstrated.

14. What economic probles might be most usefully covered by Extension activities: Farm management, marketing, credit use, and access, others.

Farm management is the chief need, but the market must be considered in every case.

15. Where does the Extension service go for technical assistance to help solve problems that arise in the field?

Look to the U.W.I. and CARDI. A resident CARDI person is being installed on the island. This sould provide a channel. While work has been done it has not generally been made available and utilized.

16. How do you think extension can link most effectively with CARDI and the U.W.I. Faculty of Agriculture?

It is recognized that CARDI and U.W.I. must coordinate very closely in the training area. High expectations are being formed by the government.

17. Do local organizations of cultivators exist that are oriented to education or to crop or livestock improvement?

The history of farm organizations has not been very successful.

18. In lieu of four-wheel-drive vehicles, what other vehicles would be useful?

The motorcycle is not considered functional. If less than four-wheel-drive vehicles, much walking would be required. Trucks or high clearance cars would get to most areas - not to all of the fields. The district Extension Officers need vehicles.

19. What is your estimate of annual operating costs for four-wheel-drive vehicles?

Estimates were difficult to get. One estimate indicated $2500. (E.C. dollars) would be conservative. He would assign vehicles to officers.

20. What resources do you have to service and repair vehicles obtained from this project and for their eventual replacement?

The maintenance would be taken care of by the department.

CARDATS CARIBBEAN AGRICULTURAL RESEARCH DEVELOPMENT AND TECHNICAL SERVICE

The CARDATS representative, Jamie Kumar, took the team to the CARDATS site. This year CARDATS advised the farmers about how to produce the most crops as the farmers planned the system. Next season they will also enter into planting decisions. Marketing has been difficult and CARDI has had to help locate external markets. CARDATS currently works with 12 farmers. It is basically an extension type whole farm-to-market approach. It is important that the Extension Service, CARDI and CARDATS coordinate information closely so that recommendations are consistant

CARDI

Sam Parasram of CARDI was visiting Montserrat and went to lunch with the team. Mr. Parasram was asked to discuss CARDI's development role and how he saw it relating to U.W.I. and the nations. He stated that CARDI was a wholesaler of information, and that the extension program would need to be conducted by the various islands themselves. He saw CARDI as basically adaptive research although they were expected to prepare material in usable package form and to help train extension personnel in its use. U.W.I. also clearly has a significant role in training even though the center of gravity may be different. Hence, the necessity for close working relations between CARDI and U.W.I. in training and in publishing materials for Extension use is clear.

The idea of a joint CARDI-U.W.I. Training and Extension Aid Committee was discussed as a means of doing a joint plan of work for training, marketing, assignments of the training team and agreeing upon respective credit to be given and other such details.

GENERAL

The visit by the team to Montserrat was informative. Officials were generous with their time and information. From an agricultural point of view, the low population of Montserrat and the perishable nature of fruit and vegetable production means that the island must look to the export market as an outlet for most of its products. There is no joint program at the moment, and the profitability of crops and the certainity of markets need to be much better developed. Because of these and other factors, agriculture has not moved very well. The approach has been to

attempt to push a commodity. Frequently, by the time farmers have produced the crop the situation has changed. There is considerable open land, but the annual leasing policy does not encourage improvements and may encourage poor land use.

Thus, much needs to be done before Extension can be expected to be very effective. However, the existence of CARDI and CARDATS on the island looks well for the future and people are hoping that a basic plan for production in Montserrat can be established. Other projects are in various stages, such as a corn production plan. The outcome of these programs is critical to Extension.

The extension system has not been strong. Training is badly needed; supervision is inadequate. Agricultural officers are asked to perform a variety of functions, some of which are conflicting, transportation and housing are difficult to acquire, and there is need for much improved program planning and reporting. A well coordinated agressive approach will be necessary if small farmers on Montserrat are to achieve their potential soon. Improving the Extension service can help, but success is needed in other areas to show the way and to pinpoint markets. Better planning of harvest dates, knowledge of the amount of commodity to be anticipated, techniques to keep perishables out of market gluts all need to be worked on. Livestock may also offer considerable opportunities because of the existence of grazing areas, especially if corn could be produced on the island. The farmers in Montserrat are mostly older people. Young people have not seen agriculture as offering the opportunities that they desire. Agricultural education in schools, fairs, and expanded radio programs were all seen by the Minister as significant ways to improve the situation.

ANNEX M

REVIEW OF VISIT TO ANTIGUA, JUNE 19-22 1979.

K. Archibald, J. Claar, T. King and E. Schulte

Antigua was visited by a team of four persons from the project paper team: Jack Claar, Emmett Shulte, Tom King (USAID) and Keith Archibald, (U.W.I.). The team arrived at 11:00 A.M. Tuesday, June 19, and departed for Montserrat at 4.45 p.m. June 20. They returned to Antigua at 7.45 p.m. June 21 and departed for Trinidad at 2.00 p.m. June 22. Persons and places visited are given in Table I.

To learn details of the functioning of the Extension Service, different agricultural officers were interviewed, using a set of prepared questions so that similar information would be obtained from the three islands to be visited (Antigua, Montserrat and St. Lucia). The results of these interviews and questions asked are given below:

1. What proportion of the local extension worker's time is spent on : a) work with farmers, b) administrative duties, c) subsidies, etc.?

Each extension officer is required to perform a number of services not directly related to technology transfer. These services include: a) registration of cotton growers; b) handling the leasing of government lands, including notifying tenants of arrears in rent; c) making recommendations for loans; d) requesting services of the machinery pool. The front line extension officer (Agric. Asst. grade 3,4) spends three to four days in the field per week. Approximately one-fourth of his time is spent travelling (on foot) to and from the field; the remaining time is spent with farmers. Of the time spent with farmers, roughly one-fourth involves obtaining various service and three-fourths is used in an advisory capacity.

Thus, the extension worker spends about 12 to 15 hours per week advising farmers, 3 to 6 hours obtaining services, 5 to 7 hours walking and 21 to 28 hours in the office.

2. POLICY MAKERS' VIEW OF EXTENSION ROLES:

a. What is the possibility of limiting the role of local extension officers to education and technical transfer?

The conflicting roles of the extension officer were well recognized, and a willingness to rectify the situation insofar as possible was expressed. One remedy would be to relegate service functions to older, untrained personnel, many of whom were brought into Extension when the Ministry of Agriculture and Supply was primarily a service oriented unit. This, however, would create staff shortages until additional personnel could be trained to replace those employed in service functions.

b. Who is involved in policy making relative to Extension?

The Cabinet is responsible for articulation of general agricultural policy. The Permanent Secretary of the Ministry of Agriculture and Supply is responsible for execution of this policy. The Director of Agriculture is not involved directly except in special projects.

- c. What are the programme planning procedures for Extension?

There appears to be no organized planning system. Each agricultural project is planned on an ad hoc basis.

d. Is there a plan of work developed for local Extension Officers?

There is no systematic plan of work. There are some vague seasonal expectations.

3. Is any local group involved with directing the programme of work of the local Extension agent?

Farmer associations are not well organized. The most effective organizations are probably church groups, but no attempt has been made to involve such groups in programme planning. (Before local groups become involved, there needs to be more involvement in agricultural development).

4. Should local Extension officers be located in their operational district or in the central office?

All persons contacted felt that the local Extension officer should live in his operational district if at all possible.

a. What amenities would this officer demand in order to insure placement of competent extension officers in the districts?

Housing and transportantion would have to be provided. The quality of housing was not specified, but, presumably running water and electricity would be minimum requirements. In Antigua four new houses would be required. Four existing government houses would be repaired and put into service. The cost of repair was not indicated.

5. Are the clientele served effectively involved in evaluation of local Extension workers?

There is no formal evaluation of local Extension workers. The principal means of evaluation appears to be the number of complaints received in the central office. These complaints deal mostly with service aspects rather than advisory functions of the local Extension workers.

6. What types of criteria are applied to Extension personnel in regard to salary increase and promotions?

Extension personnel salaries are competitive with other comparable positions in the civil service. Salary increases and promotions are based on education and/or experience. Owing to a shortage of trained staff, some are promoted on the basis of work experience with only a diploma.

7. What is your Extension department's organizational chart?

See Figure I.

8. What is the minimum level of formal education required for a) administrative/supervisory officers, b) technical specialists, c) extension officers and d) village workers?

Administrative and supervisory officers should hold a B.Sc. degree, as a minimum. Owing to a shortage of trained personnel, however, none of the present staff have such degrees. The levels from agricultural assistant grade 3 (AA3) on up have diplomas in agriculture. New diploma holders start at AA3. With management experience they can advance to AA2. With more experience they can advance to AA1. It is possible as project managers. Without a diploma, rangers can advance to AA4.

9. Are there enough graduates from agricultural schools to meet your needs for new and replacement extension staff?

More graduates at both the diploma and B.Sc. level are needed. Not enough persons are in training owing to poor qualifications at the secondary school level. A steady stream of trainees is needed, owing to dropouts and losses to other agencies.

10. What are the primary extension methods used? Are there other methods Extension workers should be using? If so, what are they? To what extent are demonstration plots used at the local level?

Personal contact is the principal extension method employed Radio programmes are mainly used for general information about agriculture. The potential for use of radio appears to be high and should be expanded. Demonstration plots are not widely used, owing to a lack of funds for that purpose.

11. Do you feel that your Extension service has served women effectively? What percent of farm visits are made to women farmers?

Most women farmers are part-time farmers. Therefore, they are not as accessible on the farm as men. No distinction in purpose is made between visiting men and women farmers, however. Recently a woman was recognized as "Farmer of the Year". There are presently more women cadets than men. The former have better qualifications from secondary school.

12. Do policy makers feel that more resources need to be devoted to: a) delivery of services to women, b) recruitment and training of women officers? What are the duties of current women Extension officers?

There was no need felt to emphasize contact with women farmers. Extension officers do not go out of their way to contact women farmers. Similarly, they do not purposely avoid such contacts. There is simply no distinction made between men and women farmers. One woman at the Eastern Caribbean Institute for Agriculture and Forestry (ECIAF) is due to graduate this year, another in 1980. One woman with a B.Sc. degree has been seconded to Extension from the Ministry of Agriculture and Supply. She serves as a part-time secretary to the Acting Extension Officer, part-time as a general secretary and part time as a statistician.

13. For small farmers, what are the farm activities and the net income ranges for these activities?

No information was available on net incomes of small farmers. Owing to market fluctations, net incomes fluctate widely. Multiple cropping is the predominant system, but the average in different crops was not ascertained.

14. What economic problems might be most usefully covered by extension activities?

Farm management and marketing were most frequently mentioned as problems requiring attention.

15. Where does the Extension service go for technical assistance to help solve problems that arise in the field? Is assistance readily available?

The Extension service seeks assistance from Department of Agriculture, CARDI and U.W.I. Pertinent assistance is frequently a problem. Research from U.W.I. is not sufficiently oriented to practical local problems. High hopes are held for CARDI once it becomes established.

16. How do you think Extension can link most effectively with CARDI and the U.W.I. Faculty of Agriculture?

There will need to be considerable cooperation between CARDI and U.W.I. to come up with viable packages of useful technical information. U.W.I. is seen as the connecting link between CARDI and the national Extension services. There will be a need for CARDI to train U.W.I. Extension personnel in the technical aspects of the applied research, and U.W.I. will need to train national Extension personnel in techniques of communication and organisation. CARDI and U.W.I. will need to cooperate in developing audio-visual materials and bulletins.

17. Do local organisations of cultivators exist that are oriented to education or to crop or livestock improvement? What is the Extension Officer's relation to them?

Local associations, if they exist, are poorly organised. The government seems to be the main organising force. Church organisations might be more effective if used.

18. In lieu of four wheel drive vehicles, what other vehicles would be useful? (e.g. motorcycle, moped, bicycle)

A high-clearance vehicle is needed on secondary roads. A pick-up of the crew cab type would permit the carrying of passengers and equipment. A four-wheel-drive vehicle would be needed to reach farms not served by roads. There was some concern expressed that local extension officers might become "windshield" Extension officers by becoming too dependent on a four-wheel-drive vehicle. A high clearance two-wheel-drive pickup or van would get the officer close enough to most farms that he would not need to spend an inordinate amount of time walking. Motorcycles are considered dangerous and have low status.

19. What is your estimate of annual operating costs for four-wheel-drive vehicles?

It was estimated that the vehicle would be driven about 750 miles per month (9,000mi/yr) At 18 miles per gallon(Imp.) of petrol and petrol costing $3.90/gal., the cost for petrol would be $1950 EC. To that, one would need to add about $ 500 EC for insurance, $400 EC for tyres and an annually increasing amount for repairs and routine maintenance. An average annual operating cost of $4000 EC is a reasonable guesstimate.

20. What resources do you have to service and repair vehicles obtained from the project and for their eventual replacement?

The Ministry could meet maintenance and operating costs. Replacement would have to come from a special vote, but this is seen as a possibility. High service rates charged by the Ministry of Agriculture and Survey workshop were noted.

GENERAL OBSERVATIONS

In order for extension to function effectively in serving the needs of small farmers, the Ministry of Agriculture and Supply should be reorganised. As presently constituted(Figure I) the Director of Agriculture has a very limited role in extension planning and he does not relate to the whole of agricultre. All divisions must report to the Permanent Secretary, who has limited training in agriculture. There is poor linkage, therefore, between extension and other agricultural organisations.

Other constraints to an effective educational and technology transfer system in the national extension service include:

1. Multiplicity of duties unrelated to the primary extension role.
2. Shortage of trained manpower.
3. Inadequate housing in the field.
4. Lack of transportation and
5. Lack of educational and demonstrational materials.

There appears to be no clear direction or goals for the Extension service.

There is a definite lack of projects with clearly demonstrated economic benefits which Extension can promote. There are and have been several projects on the drawing boards that would be useful to this project, but nothing is available that clearly demonstrates economic feasibility. Projects are initated that are not carried to fruition(e.g. corn-sorghum scheme). This appears to result either from inadequate planning or a breakdown of this system before results are obtained. Greater persistence and dedication to make the system go may be needed. It is not surprising, then, that we have an ineffective Extension service. It will remain ineffective until these obstacles are removed and a will to succeed permeates the Service. The project as designed must give attention to all these constraints and provide impetus for creating a fresh image of Extension.

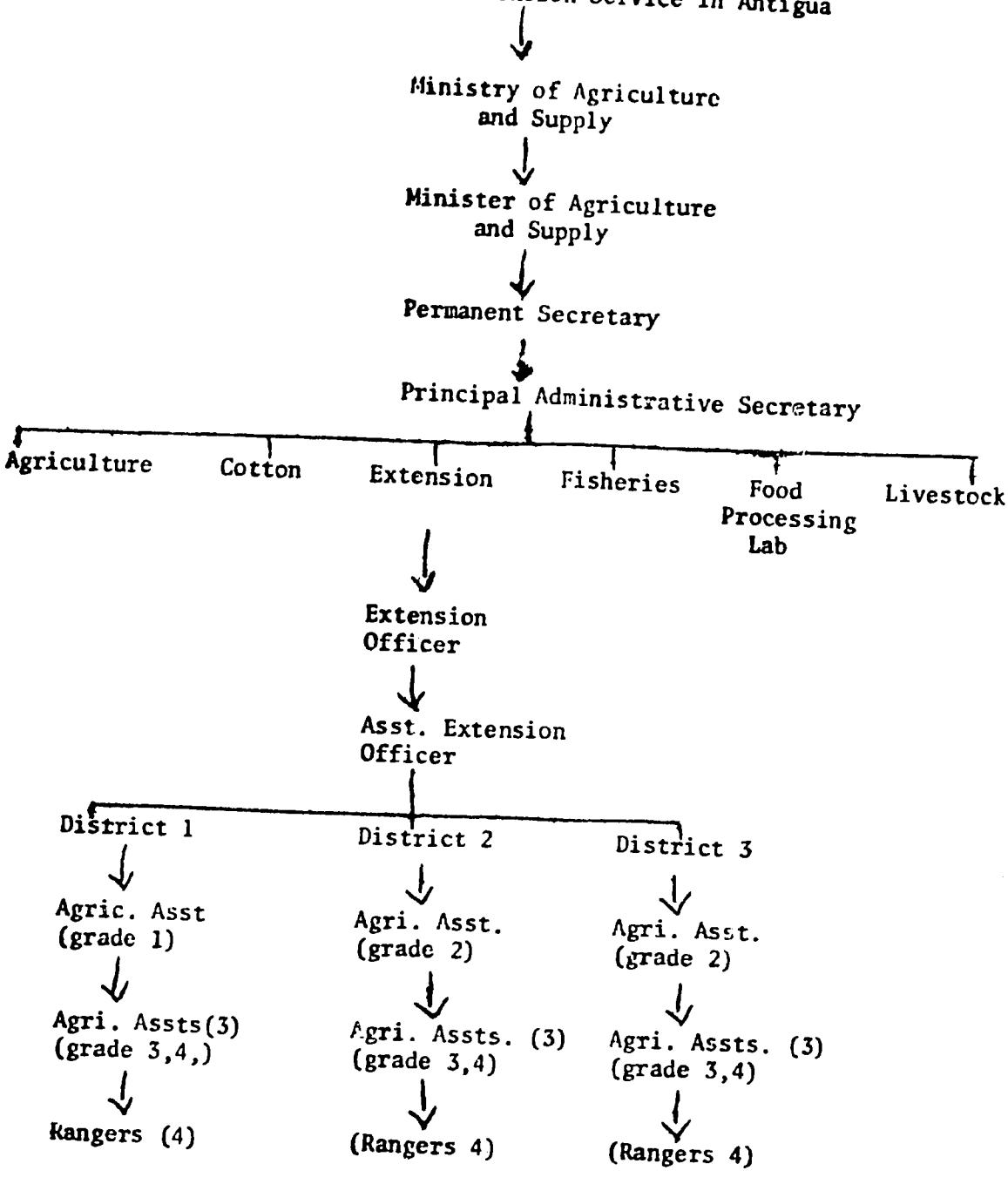
There is a critical need to develop a means of transferring research, wherever generated, into the Extension resources. Immediate sources of technological information are the research sections of the Ministry of Agriculture, CARDI and CARDATS. Research from the Faculty of Agriculture, U.W.I.,CATIE and the international research centres must be incorporated whenever appropriate. High expectations are held for CARDI in this regard. There must be careful consideration as to how to transfer technology from all of these sources into forms that can be communicated to the small farmer for his benefit.

Marketing is another critical component of the small farm multiple cropping system. There must be close links between Extension, Agriculture and the Marketing Corporation. The Marketing Corporation should develop regional and broader connections, and there must be efficient communication between all parties concerned. The establishment of farmers' commodity groups might need to become a part of Extension's charge.

TABLE I PERSONS AND PLACES VISITED IN ANTIGUA

DATE	PERSON OR PLACE
19-6-79	Mr. D. Michael, Permanent Secretary, Ministry of Agriculture and Supply.
19-7-79	Dr. C. Walter, CARDI representative for the Leeward Islands.
20-6-79	Mr. F. Henry, Director of Agriculture Ministry of Agriculture and Supply.
20-6-79	Miss Betty Metcalfe, BDD Horticulturalist, Ministry of Agriculture and Supply.
21-6-79	Mr. V. Barclay, CARDI project, Antigua.
21-6-79	Crab Hill Experiment Station, CARDI and Ministry of Agriculture and Supply.

Figure I Organisation of the Extension Service in Antigua



ANNEX N

THE UNIVERSITY OF THE WEST INDIES

DEPARTMENT OF AGRICULTURAL EXTENSION

Development Projections for the Period 1976 - 1981

Introduction

During the period 1976 - 1981 in addition to maintaining at increased tempo its on-campus academic functions the Department proposes to devote increased attention to agricultural and rural development efforts geared primarily towards increasing the efficiency and living standards of small farmers in the Caribbean. Since the University of the West Indies is not empowered to work directly with farmers of the region, this responsibility devolving on the field staff of territorial ministries of agriculture, the working strategy will involve development of skilled staff for those ministries and working with and through them for the creation of an efficient small farming sector.

The Department's programme will be considered under three major headings:

A. Staff Development
B. Rural Development Research and Related Projects
C. Development Support Communication.

A. STAFF DEVELOPMENT

1. Undergraduate Training

The majority of U.W.I. agriculture graduates are absorbed in the regional ministries of agriculture and are mainly engaged in extension related activities. The introduction of agricultural extension courses in the U.W.I. B.Sc. (Agri.) undergraduate programme in the last decade has started to meet a great need. The

content of these courses and their usefulness to working graduates will be closely monitored to indicate possible areas of change or the need to introduce new electives.

2. Post Graduate Training

The Department recently introduced in its postgraduate training programme a collaborative scheme with some North American Universities under which M.Sc. (Agricultural Extension) candidates of U.W.I. first pursue course work in Trinidad, proceed to a cooperating North American University for at least one semester to pursue further cours work, and return to the Caribbean to carry out their graduate research project and complete requirements for the M.Sc. degree. So far, seven U.W.I. M.Sc. candidates have gone through this programme. They each attended one of the following Universities:

Cornell University, N.Y
University of Wisconsin, Madison
University of Florida, Gainesville
University of Guelph, Ontario

Other North American Universities have indicated an interest in participating in this programme.

The quality of graduate produced under this programme has been very satisfactory, and it is considered overwhelmingly necessary that over the next five years the scheme be continued. The major factor limiting its continuation is the lack of funds. It is proposed to seek Fellowship funds to permit experienced graduates, particularly those from the LDC's, to pursue the U.W.I. M.Sc. (Agric. Extension) training programme which includes study both at U.W.I. and at a North American University.

The research projects of these postgraduate students are selected with a view to finding answers to practical problems facing field workers in their islands. The programme can thus make a direct contribution to the development of the small farming sector in the Caribbean.

3. In-Service Staff Training

(a) Annual Short Courses.

The Department has for the past ten years been conducting annual inservice training workshops for agricultural extension workers mainly from the Leeward and Windward Islands. In addition the Department organises agriculture subject matter short courses for agricultural field staff and other rural workers.

A recent manpower survey in the LDC's advocated the continuation of the joint annual inservice short courses and the introduction of individual-island annual short courses.

Important areas of training needs to be met through these short courses have been identified. It is proposed that funds be sought to continue the holding of annual joint in-service short courses for Leeward and Windward Islands extension officers and to initiate special one-week courses in each island.

(b) Rural Training Centres

In order to accomplish one of the Faculty's objectives of being involved in and contributing more directly to the rural development of the countries which contribute to the University, and in particular the less developed countries, it is proposed that rural training centres be established by the Faculty in the Leeward and Windward Islands. These centres would be used for providing on the spot training for practising farmers and their families, extension workers and supporting field staff, and other rural development workers. The Department of Agricultural Extension would assume responsibility for coordinating and administering the programmes of the centres.

The objective of these centres would be to provide short intensive training courses in subject matter areas of felt need in the rural areas of the Leeward and Windward Islands. Examples of areas in which training would be provided are:-

(a) Post-harvest handling, storage and packing of agricultural produce,

(b) Maintenance of agricultural and marine engines,

(c) Improved techniques of farming, fishing, animal husbandry and forestry, and

(d) Natural products utilisation.

It is also envisaged that these centres be used by other University Faculties (e.g. Engineering) and development agencies for training rural folk in areas identified as critical for integrated development of the rural sector of the islands.

It is proposed that three rural training centres be established, one each in Montserrat, Dominica and St. Vincent. The requirements for each centre would be -

(i) One Faculty of Agriculture staff member (professional) to be at the centre.

(ii) Supporting staff at the Centre and at home base (i.e. at St. Augustine).

(iii) Office and training room facilities.

(iv) Adjoining land area for demonstration purposes.

(v) Possibly facilities for accommodating and feeding twenty (20) people if the courses are to be residential. (It is advisable that they are.)

(vi) Agricultural and marine equipment as seen necessary for training purposes.

No difficulty is anticipated in obtaining from the governments concerned the land area required under (iv) above.

4. Home Economics

An IADB Special Committee on the Feasibility of Expansion and/or Duplication of the Faculty of Agriculture reported in January 1972 as follows:

"..... Despite the gradual development and expansion of the Faculty of Agriculture, no provision has been made for advanced training in home economics ..... The creation of new attitudes in

in the home is an essential part of agricultural change and development. It is within the context of this situation and the need for extension activities directed to the improvement of family living as well as to the agricultural systems practised by farm families that the Committee believes teaching, research and extension activities in home economics can best be developed within the Faculty of Agriculture."

The Committee therefore "recommended that a Department of Home Economics be established in the Faculty of Agriculture to meet the needs of the Caribbean region for well-trained, qualified home economists."

A Human Resources Study in Nutrition, Dietetics and Home Economics in the Caribbean Region commissioned by WHO in 1973, recommended on the basis of a regional survey that "the University of the West Indies give immediate and favourable consideration to the establishment of a degree course in nutrition, dietetics and home economics to train professionals in these fields."

In recognition of the immense developmental role which can be played by a Home Economics Department, of the multiplier effect to be achieved through home economics extension and agricultural extension working in complement, and in support of the recommendations of both the IADB Special Committee and the WHO Human Resources Study team the Department through the Faculty of Agriculture proposes to seek funds for the establishment within the Faculty of a Department of Home Economics at St. Augustine.

5. Extension Manual

To provide necessary support for the proposed short courses for agricultural extension and related workers, an Extension Manual will be prepared to serve as a working reference for extension workers of the region.

B. RURAL DEVELOPMENT RESEARCH AND RELATED PROJECTS

1. The Windward Islands Extension Communication Research Project.

Among the longterm research objectives of the Department are the isolation of factors greatly influencing the acceptance/non-acceptance of agricultural innovations by Caribbean farmers, and experimental evaluation of the impact of different means of communication and extension education approaches (technology transfer systems) on the diffusion of improved practices.

A current activity of the Department, viz. the Windward Islands Extension Communication Research Project is now nearing the completion of its Phase I, which sought to determine the major constraints to the adoption and diffusion of improved practices by banana growers in the four Windward Islands. The Phase I survey has identified several major physical, socio-cultural, economic, communication and organisation constraints to the adoption by banana growers of recommended practices. Recommendations of Phase I of the project are already being implemented by banana organisations in the Windward Islands.

In the follow-up Phase II of this project it is proposed to test experimentally the comparative effectiveness of selected technology transfer systems in accomplishing widespread acceptance and practise of technological recommendations by Windward Islands banana growers. It is proposed to seek funding for three years to undertake Phase II of the Windward Island Extension Communication Research Project.

2. Acono-Maracas Rural Development Project.

The Faculty of Agriculture in 1975 adopted a policy for its greater practical involvement in the rural development of the region. A decision was taken to carry out as a start in implementing this policy, a pilot rural development project in Trinidad. A joint Faculty of Agriculture/Faculty of Engineering Committee appointed for the purpose selected the Acono-Maracas area as the project site. The Faculty of Agriculture appointed the Department of Agricultural

Extension to coordinate and manage the project on its behalf.

As an experimental approach at integrated rural development, the project is concerned with all aspects of life in the Acono community. It will require a truly inter-disciplinary approach, involving mainly inputs of staff from all departments in the Faculty of Agriculture along with other inputs from Engineering, Social Science and Education.

Notwithstanding the importance of an integrated and inter-disciplinary approach, the basic thrust of the project will be explicitly centred on the common needs and interests of the community in raising its standard of living through improvement of agricultural production.

The project should have a time span of at least five years, if its effects and the conclusions to be drawn from them are to be meaningful.

Phase I of the project envisages a comprehensive base-line survey to serve as a knowledge base from which the relevant programmes can be planned. Information has so far been collected on the agronomic situation in the area, as well as on socio-economic and infrastructural conditions.

In addition to part-time contributions from staff of the various cooperating Faculties (Agriculture, Engineering, Education, Social Sciences) the following full-time staff plus supportive services will be needed on the project:

One (1) Project Officer

One (1) graduate Research Assistant

3. U.W.I./MUCIA Small Farmer Development Project.

The U.W.I. Faculty of Agriculture and the MUCIA Universities (Illinois, Indiana, Michigan State, Minnesota, Ohio State, Purdue and Wisconsin) have held lengthy discussions and have agreed to collaborate on a joint project entitled "Accelerating Development

among Small Farm Communities in the West Indies: Institution-building and Research."

This project is planned to span ten years, with a review and fullscale evaluation by the end of the fifth year. U.W.I. and MUCIA personnel, with the Department of Agricultural Extension on behalf of the Faculty of Agriculture initiating the discussions and formulating project plans, have developed a project proposal for submission to funding agencies to solicit their support.

Briefly, the objectives of the project are

(a) To design and implement alternative delivery systems for the transfer and development of technology appropriate to the local cultural setting.

(b) To improve training programmes for lay leaders, technical staff and extension personnel.

(c) To design and undertake operational research related to traning programmes and the technology delivery systems.

(d) To establish a programme of training in rural development for upper-division undergraduates at U.W.I.

(e) To increase the opportunities for post-graduate training in the Caribbean and at MUCIA Universities for candidates who have an interest in pursuing teaching, research and administrative roles in the extension service and in governmental agencies concerned with rural development.

(f) To develop linkages between the U,W.I. and the MUCIA universities that will facilitate the exchange of faculty as well as information and knowledge related to rural development.

The project will be multi-disciplinary, and involve staff from Agriculture, Education, Engineering and Social Sciences of MUCIA

Universities and U.W.I. It is proposed initially to select two pilot project sites, one in Trinidad and the other in one of the Leeward/ Windward Islands. In addition to contributions by U.W.I. and MUCIA Universities staff there will be need to recruit six research fellows plus technical and secretarial assistants, as well as make provisions for necessary research materials and capital items.

Detailed estimates of requirements and costs are to be included in the final project proposal.

4. Caribbean Agriculture: Country Profile Series

There is great need by government planning agencies, students of agricultural development, international technical aid and funding agencies for simple, well substantiated documents on the state of agriculture in the region. It is proposed that the Department of Agricultural Extension initiate the preparation and publication of a series of bulletins on the profile of agriculture in the Caribbean, dealing in particular with the Leeward and Windward Islands.

These bulletins, each dealing with one territory, would provide background data on the agronomic and other agriculture related conditions, as well as supply information on the existing constraints (e.g. physical, technical, social and cultural) to agricultural and rural development in the particular territory. In addition, an attempt would be made to identify potential rural development projects.

The requirements for undertaking such a project are two research fellows for three years in the first instance with provision for inter i lead travel and the printing of the bulletins.

C. DEVELOPMENT SUPPORT COMMUNICATION

In spite of the widespread ownership of radios in the region, the existence of radio stations in all and of television stations in several of the territories of the Caribbean, and the relatively high literacy rate of the population, little effective use is made

of the media in providing support for agricultural and rural development programmes. The Department of Agricultural Extension has to date assisted by publishing and distributing throughout the region a quarterly newsletter and a series of agriculture subject-matter bulletins. These efforts are however inadequate.

During the five-year period it is proposed that the Department seeks funding to permit the following:

1. The taping of informational and educational programmes for distribution to local radio stations for broadcast.
2. Video-taping of educational programmes supportive of agricultural development for distribution to local (viz. Caribbean) television stations.
3. The production of short single-topic films.
4. The development of colour slide series and filmstrips with accompanying audio-tapes and written scripts, particularly for use by extension workers in the LDC's.
5. The preparation, publication and distribution of a wide range of illustrated extension bulletins and pamphlets, including those for use in youth programmes.

To initiate work on the production of such development support communication systems funds will be sought to provide the following:

One (1) audio-visual specialist
One (1) specialist in rural youth programmes
Two (2) additional technical assistants
Fellowship aid for overseas training of currently employed technical assistants.
Provision of materials and equipment.

Department of Agricultural Extension
U.W.I.
St. Augustine
October 8, 1976.

ANNEX O

CARIBBEAN AGRICULTURAL RESEARCH AND DEVELOPMENT INSTITUTE
UNIVERSITY CAMPUS - ST. AUGUSTINE - TRINIDAD, W. I.

Cables: "CARDINST"
Port-of-Spain
Telephone: 662-5511

Our Reference: CT3/2

1979-07-31

AUG - 7 197

ACTION ... DGP Stott
DUE DATE ... 8/15/79
ACTION TAKEN
... NAN
DATE Aug. 9, 1979
SIGNATURE ... GD

Mr. William B. Wheeler
US AID
P.O. Box 302
Bridgetown
BARBADOS

Dear Mr. Wheeler,

I would like to officially confirm that CARDI supports fully the UWI/USAID Eastern Caribbean Agricultural Extension Project, which USAID is funding and which will be carried out by the U.W.I.. Both U.W.I. and your Agency can be assured of our cooperation and collaboration in ensuring the success of this worthwhile and much needed Project.

Yours very truly,

J.A. Bergasse
Executive Director

c.c. Prof. J.A. Spence

ANNEX P - DAEC GUIDANCE CABLE

OFFICIAL COPY

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E.O. 12065065: N/A

TAGS:

SUBJECT: IMPROVED AGRICULTURAL EXTENSION

1. DAEC REVIEWED THE SUBJECT PID ON DECEMBER 8, 1978 AND APPROVED THE BASIC ACTIVITIES PROPOSED USING A TITLE XII COLLABORATIVE APPROACH IN PROJECT DESIGN AND IMPLEMENTATION.

2. STRATEGY: THE PP SHOULD IDENTIFY THE VARIOUS CONSTRAINTS TO AGRICULTURAL DEVELOPMENT IN THE EASTERN CARIBBEAN (E.G. CREDIT, RESEARCH, PLANNING AND EXTENSION) AND OUTLINE THE MISSION'S STRATEGY FOR ADDRESSING THESE CONSTRAINTS. IT SHOULD ALSO DESCRIBE HOW THIS PROJECT WILL CONTRIBUTE TO THAT STRATEGY, AND BE LINKED TO AND BUILD UPON OTHER REGIONAL AND SUBREGIONAL AGRICULTURAL SUPPORT ACTIVITIES (E.G. CARDI AND CARDATS).

3. COMMITMENTS: CONCERN WAS EXPRESSED REGARDING LDC AND UWI COMMITMENT TO AGRICULTURAL EXTENSION AND TO THIS PROJECT. IN ADDRESSING THIS CONCERN, THE PP SHOULD (A) DESCRIBE PRESENT AND PAST INVOLVEMENT OF LDCS AND UWI IN AGRICULTURAL EXTENSION RELATED ACTIVITIES AND (B) DETAIL LDCS AND UWI BUDGET SUPPORT TO THE PROJECT TO DEMONSTRATE THEIR INTEREST AND COMMITMENT. IN ADDITION, THE PP SHOULD DESCRIBE WHAT ACTIONS THE MISSION HAS TAKEN TO ENSURE THAT THE LDCS AND UWI WILL BE ABLE TO INCREASE THEIR FINANCIAL COMMITMENTS TO THIS PROJECT IN ORDER TO JUSTIFY CONTINUED AID SUPPORT.

4. PROJECT DESIGN:

--A. TRAINING. THE PP SHOULD ANALYZE EXISTING AND FUTURE PERSONNEL REQUIREMENTS FOR TRAINED AGRICULTURAL EXTENSION AGENTS AND THE INSTITUTIONAL CAPABILITIES OF THE LOCAL TRAINING INSTITUTIONS IN THE REGION TO CARRY OUT THE PROPOSED TRAINING ACTIVITIES.

--B. INFORMATION AND DELIVERY METHODS. THE DAEC DISCUSSED THE AVAILABILITY OF INFORMATION FOR USE BY AGRICULTURAL EXTENSION AGENTS IN THE REGION AS WELL AS THE METHODS ENVISIONED FOR DELIVERING THIS INFORMATION TO THE SMALL FARMER. IN LIGHT OF THIS, THE PP SHOULD EXAMINE (A) THE SOURCE OF AGRICULTURAL INFORMATION TO BE UTILIZED BY THE AGENTS UNDER THE PROJECT, (B) THE APPROPRIATENESS OF INFORMATION TO BE DISSEMINATED TO THE SMALL FARMERS, AND (C) THE USE OF ALTERNATIVE METHODOLOGIES (E.G., RADIO, PAMPHLETS, POSTERS, ETC.) FOR DELIVERING AGRICULTURAL INFORMATION TO ENSURE THAT THE MOST EFFECTIVE MIX OF DELIVERY METHODOLOGIES WILL BE UTILIZED.

5. INSTITUTIONAL FRAMEWORK: THE ROLE OF THE MINISTRIES OF AGRICULTURE (MOA) WAS DISCUSSED AT THE DAEC WITH RESPECT TO THEIR SUPPORT AND INVOLVEMENT WITH PUBLIC AND PRIVATE EXTENSION SERVICES. THE ROLE AND RESPONSIBILITIES OF EXTENSION AGENTS WERE ALSO DISCUSSED WITH PARTICULAR ATTENTION PAID TO THE VARIOUS IMPEDIMENTS WITHIN THE EXTENSION SERVICES WHICH HAVE PLACED LIMITATIONS ON AGENTS' ABILITIES TO EFFECTIVELY CARRY OUT EXTENSION WORK (E.G., FROZEN PROMOTIONS AND SELLING OF HUNTING AND FISHING PERMITS). THE PP SHOULD (A) DESCRIBE PAST AND PRESENT MOA SUPPORT TO AND INVOLVEMENT WITH EXISTING EXTENSION SERVICES, BOTH PUBLIC AND PRIVATE, (B) ANALYZE THE CURRENT ROLE/FUNCTIONS OF EXTENSION AGENTS IN AGRICULTURAL EXTENSION, AND (C) INDICATE WHAT ACTIONS MOA WILL TAKE TO ELIMINATE OR SUBSTANTIALLY REDUCE IMPEDIMENTS TO EFFECTIVE AGRICULTURAL EXTENSION PROGRAMS.

6. OTHER DONORS: THE PP SHOULD DESCRIBE OTHER DONOR PROGRAMS AND PROJECTS IN THIS AREA AND SHOW HOW THIS PROJECT IS EXPECTED TO COMPLIMENT AND BE LINKED TO THESE ACTIVITIES.

7. COMMODITIES: THE MISSION SHOULD EXAMINE THE NEED FOR RELATIVELY EXPENSIVE RIGHT HAND DRIVE VEHICLES FOR USE BY EXTENSION AGENTS AND EXPLORE THE POSSIBILITY OF PROVIDING A MORE APPROPRIATE MIX OF VEHICLES (E.G., TWO AND FOUR WHEEL DRIVE VEHICLES, SIX-UP TRUCKS, MOTOR BIKES AND/OR BICYCLES) TO ENSURE THAT THE MOST COST EFFICIENT PACKAGE IS DEVELOPED.

8. BELIZE: GIVEN THE DISTANCE AND LIMITED TIES BETWEEN EASTERN CARIBBEAN COUNTRIES AND BELIZE, THE LATTER'S ORIENTATION TO THE UNITED KINGDOM, AND THE LACK OF AFFILIATION BETWEEN BELIZE AND THE UWI, CONCERN WAS EXPRESSED REGARDING HOW TO MOST APPROPRIATELY INCLUDE BELIZE IN THE PROJECT. THE PP SHOULD ANALYZE THE APPROPRIATENESS OF INCLUDING BELIZE IN THE PROJECT KEEPING IN MIND THE BUREAU POLICY OF FOSTERING REGIONALISM. THE MISSION MAY WISH TO CONSIDER INCLUDING BELIZE IN SPECIFIC ACTIVITIES WITHIN THE PROJECT WHERE LINKAGES BETWEEN BELIZE AND UWI CAN BE EFFECTIVELY DEVELOPED. VANCE

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