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UNITED STATES INTERNATIONAL DEVELOPMENT COOPERATION AGENCY
AGENCY FOR INTERNATIONAL DEVELOPMENT
Washington, D. C. 20523

CARIBBEAN REGIONAL

PROJECT PAPER

HIGH IMPACT AGRICULTURAL MARKETING AND PRODUCTION

AID/LAC/P-290

Project Number:538-0140

AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT DATA SHEET

1. TRANSACTION CODE: A (A = Add, C = Change, D = Delete)

Amendment Number

DOCUMENT CODE: 3

2. COUNTRY/ENTITY: Caribbean Regional

3. PROJECT NUMBER: 538-0140

4. BUREAU/OFFICE: Latin America/Caribbean (LAC) 05

5. PROJECT TITLE (maximum 40 characters): High Impact Agr. Marketing & Production

6. PROJECT ASSISTANCE COMPLETION DATE (PACD): MM 07 DD 30 YY 91

7. ESTIMATED DATE OF OBLIGATION (Under 'B.' below, enter 1, 2, 3, or 4)

A. Initial FY 86 B. Quarter 2 C. Final FY 90

8. COSTS ($000 OR EQUIVALENT $1 =)

A. FUNDING SOURCE	FIRST FY 86 B. FX	C. L/C	D. Total	LIFE OF PROJECT E. FX	F. L/C	G. Total
AID Appropriated Total						
(Grant)	(4,700)	(1,200)	(5,900)	(32,000)	(8,000)	(40,000)
(Loan)	(-)	(-)	(-)	(-)	(-)	(-)
Other U.S. 1.						
Other U.S. 2.	-	750	750	-	5,750	5,750
Host Country						
Other Donor(s)	4,700	1,950	6,650	32,000	13,750	45,750
TOTALS						

9. SCHEDULE OF AID FUNDING ($000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	C. PRIMARY TECH. CODE 1. Grant	2. Loan	D. OBLIGATIONS TO DATE 1. Grant	2. Loan	E. AMOUNT APPROVED THIS ACTION 1. Grant	2. Loan	F. LIFE OF PROJECT 1. Grant	2. Loan
(1) DA	140	070		-0-	-0-	30,000*	-0-	40,000	-0-
(2)									
(3)									
(4)									
TOTALS				-0-	-0-	30,000*	-0-	40,000	-0-

10. SECONDARY TECHNICAL CODES (maximum 6 codes of 3 positions each)

11. SECONDARY PURPOSE CODE

12. SPECIAL CONCERNS CODES (maximum 7 codes of 4 positions each)

A. Code

B. Amount

13. PROJECT PURPOSE (maximum 480 characters)

To increase the contribution of the agricultural sector and agricultural enterprises to GDP by improving the investment environment, relieving development constraints to private capital inflows, and demonstrating attractive returns on capital at acceptable levels of investor risk.

14. SCHEDULED EVALUATIONS

Interim MM YY MM 06 YY 88 Final MM 10 YY 90

15. SOURCE/ORIGIN OF GOODS AND SERVICES

[X] 000 [ ] 941 [ ] Local [X] Other (Specify) and participating countries

16. AMENDMENTS/NATURE OF CHANGE PROPOSED (This is page 1 of a ____ page PP Amendment.)

*Initial authorization by the AA/LAC, remainder requested for authorization by Mission Director.

17. APPROVED BY

Signature: James S. Holtaway

Title: James S. Holtaway, Director

Date Signed: MM 02 DD 13 YY 86

18. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION

MM 07 DD 15 YY 86

AID 1330-4 (8-79)

UNITED STATES INTERNATIONAL DEVELOPMENT COOPERATION AGENCY
AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D.C. 20523

PROJECT AUTHORIZATION

Name of Country: Caribbean Regional

Name of Project: High Impact Agricultural Marketing and Production

Number of Project: 538-0140

1. Pursuant to Section 103 of the Foreign Assistance Act of 1961, as amended, I hereby authorize the High Impact Agricultural Marketing and Production Project for the Caribbean Region involving planned obligations of not to exceed Thirty Million United States Dollars (US$30,000,000) in grant funds ("Grant") over a five-year period from date of authorization, subject to the availability of funds in accordance with the AID OYB/allotment process, to help in financing foreign exchange and local currency costs for the Project. Subject to future amendment of this authorization, the planned obligations may be increased by an amount not to exceed 10 million United States Dollars (US$10,000,000) in grant funds. The planned life of the Project is five years from the date of initial obligation.

2. The Project ("Project") will furnish assistance to increase the contribution of the agricultural sector and agricultural enterprises to the economies of the countries participating in the project by improving the investment environment, relieving development constraints to private capital inflows, and demonstrating attractive returns on capital. The Project will include a Quick Response Activities (QRA) component, a major subproject activities component, and a Core contractor component which will provide design, coordination and management services.

3. No Project funds shall be obligated until the design for the QRA component is approved by AID/W.

4. The Project Agreements which may be negotiated and executed by the officer to whom such authority has been delegated in accordance with AID's regulations and delegations of authority, shall be subject to the following essential terms, conditions and covenants, together with such other terms and conditions as AID may deem appropriate.

a. Source and Origin of Commodities, Nationality of Services

i. Commodities financed by AID under the Grant shall have their source and origin in the United States or in the participating countries (Antigua, Dominica, Grenada, St. Kitts-Nevis, St. Lucia, St. Vincent and the Grenadines, Montserrat, Turks and Caicos Island, and Barbados), except as AID may otherwise agree in writing. Except for ocean shipping, the suppliers of commodities or services shall have the United States or the participating countries as their place of nationality, except as AID may otherwise agree in writing. Ocean shipping financed by AID under the Grant shall be financed only on flag vessels of the United States, except as AID may otherwise agree in writing.

b. Conditions precedent to First Disbursement Under Project Grant Agreements. Prior to the first disbursement under the Grant, or to the issuance by AID of documentation pursuant to which disbursement will be made, the Grantee will, except as the Parties may otherwise agree in writing, furnish to AID, in form and substance satisfactory to AID:

(i) An opinion of counsel acceptable to AID that the Agreement has been duly authorized and/or ratified by, and executed on behalf of, the Grantee, and that it constitutes a valid and legally binding obligation of the Grantee in accordance with all of its terms; and

(ii) A statement of the name of the person holding or acting as representative of the Grantee and of any additional representatives, together with a specimen signature of each person specified in such statement.

(c) Conditions Precedent to Disbursement for Quick Response Activity.

(i) Prior to the first disbursement under the Quick Response Activity Grant, or to the issuance by AID of documentation pursuant to which disbursement will be made the Grantee will furnish to AID, in form and substance satisfactory to AID, evidence that the Grantee has been duly organized under the laws of Barbados as an independent, non-profit Trust, and

(ii) Prior to the first disbursement of funds under the Quick Response Activity Grant for the contract for management services, or to the issuance by AID of documentation pursuant to which disbursement will be made, the Grantee will furnish to AID, in form and substance satisfactory to AID, an executed management services contract.

5. I hereby delegate authority to the Mission Director, RDO/C to approve and authorize amendment(s) to this Project Authorization in an amount not to exceed $10,000,000.

Assistant Administrator
Bureau for Latin America and
the Caribbean

July 15, 1986
Date

Clearances:
GC/LAC:GDavidson Date 5/16/86
LAC/DR:TBrown Date
LAC/DR:ILevy Date 5/16/86
LAC/CAR:JHeard Date 7/11/86

GC/LAC:MRiedy/gw 0361B/4-25-86

-1-

AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D.C. 20523

JUL 11 1986

ACTION MEMORANDUM TO THE ASSISTANT ADMINISTRATOR, LAC

FROM: LAC/DR, Terrence J. Brown

SUBJECT: High Impact Agricultural Marketing and Production Project (HIAMP), 538-0140

Proposed Action: You are requested to: (1) authorize a $30 million (grant) for the High Impact Agricultural Marketing and Production (HIAMP) Project, and (2) redelegate to the Mission Director, RDO/C, authority to approve additional funding up to a total of $40 million (grant) for the entire project. As indicated under Discussion, RDO/C will obtain AID/W concurrence prior to obligating any funds under the project.

Background: The CDSSs for the countries of the Eastern Caribbean assign an important role to increased agricultural output, exports and employment. RDO/C programs have strengthened agricultural research, extension, credit, and marketing institutions, and have had some limited success in improving the productivity of the sector through the provision of improved technology and services. Agriculture expansion in general remains seriously constrained by underdeveloped marketing systems and poor access to markets.

With this project RDO/C will support a set of market-led high-impact agricultural development initiatives in the Eastern Caribbean which represent an intensification and deepening of the Mission's approach to promoting rapid change in agricultural marketing and production.

Discussion: The purpose of the five-year, $40 million grant is to increase the contribution to GDP of the agricultural sector and agricultural enterprises by improving the investment environment, relieving development constraints to private capital inflows, and demonstrating attractive returns on capital at acceptable levels of investor risk.

There are three components to the HIAMP Project. The first is $12.85 million Quick Response Activity (QRA) to stimulate smaller-scale private agriculture enterprises to fill niches in foreign markets, and to prove the profitability of agricultural investments. The second is Major Subproject Activities ($12.5 million) to complete the restructuring of agriculture by direct

involvement in the major croplines and producer associations in the Eastern Caribbean. The third is a Core Contract ($10 million) to provide integrated design, coordination and management services. In addition, the project budget includes $750,000 for special studies and evaluations, and $3.9 million for contingencies. Subsequent to the review of the Project Paper, the Mission began preliminary negotiation of the core contract. It is estimated that the contract cost will be reduced by $2.6 million to a total of $7.4 million with the $2.6 million then available to supplement other elements of the project.

The initial $30 million authorization includes funds for the first two Major Subprojects, Regional Cocoa Rehabilitation and Development and Regional Mariculture Development. The design for the Cocoa Subproject was included in the PP and was approved at the DAEC review. The Mission Director was authorized to approve a PID and a PP Supplement for the Mariculture Subproject at the FY87/88 Action Plan Review. The Mission will include descriptions of additional Major Subprojects in yearly Action Plans. The Mission Director, RDO/C will be authorized to approve PP Supplements for those additional subprojects after Action Plan level concurrence, up to a total of $40 million LOP funding for the project.

As a result of the DAEC review, the following changes were made in the project design:

a. The PP proposed that under the Quick Response Activity (QRA), AID grant $12 million to the Caribbean Financial Services Corporation (CFSC), a for-profit private sector development bank. The grant would finance a Quick Response Fund (QRF), which CFSC, in turn, would use for: grants for technical assistance and training, and purchase of equity in for-profit agricultural production and marketing firms; and grants for capital goods, management, training, and technical assistance grants to not-for-profit entities. A grant of $850,000 to CFSC for administering the QRA was also proposed.

After considerable discussion, the DAEC concluded that the implementation arrangements for the QRA should be changed in such a way that CFSC would not stand to benefit financially from the use of the QRA funds. It was decided that the activity would be administered by a non-profit organization, which would be legally and financially separate from CFSC, and that any dealings between the new organization and CFSC would be on an arm's length basis. Any income accruing to the new

organization in addition to reflows, will also be used for reinvestment. Two options for the new organization were discussed at the review: a Trust, and a not-for-profit equity finance organization. It was agreed that Mission representatives would meet with LAC/DR and GC/LAC staff subsequent to the review and decide on the best form of organization given the project objectives and relevant legal considerations.

It was subsequently agreed that creation of a Trust was the better of the two options considered at the review. RDO/C contracted counsel in Barbados to prepare an analysis of the legal requirements for organizing a Trust in Barbados. RDO/C submitted a description of the Trust and the implementation arrangements for the QRA. Based on LAC and PPC Review (including a review of a number of related implementation documents), a review was held with the AA/LAC and Mission representatives on June 20, 1986. As a result of that meeting, a number of changes in the Trust and other elements of the project were discussed and agreed to by the Mission. The attached cable (Tab B) describes these changes and makes obligation of project funds contingent upon Mission compliance with the terms and conditions of the cable.

b. With respect to QRF assistance to for-profit firms, the PP proposed that: CFSC's equity investment be limited to 49% of a firm's net worth, TA and training grants would be in addition to and limited to half of CFSC's equity investment, and the firm agrees to repurchase CFSC's shares within five years. Thus, the maximum total AID financed contribution for a new venture would have been upwards of 60%. It was agreed that equity investments from the QRF will be used to facilitate further development of viable firms, not to make otherwise marginal ventures viable. The DAEC concluded that QRF assistance to for-profit firms (including funds intended for TA and training costs) will be limited to equity investments which cannot exceed 49% of total equity. It was agreed that this approximately 1:1, Venture:Trust ratio would be considered only under exceptional circumstances, and that the Trust would normally seek leverage of 3 or 4:1.

c. The PP proposed that funding for not-for profit subgrantees (e.g. cooperatives or growers' associations) be entirely grant financed. These organizations do not have share capital, for which a repurchase agreement could be required. The DAEC concluded that, except for non-income generating costs such as

TA and training, not-for-profit recipients should agree to repay the funds to the QRF. The Mission will take care to ensure that recurrent costs are not funded as TA. Tab B also contains instructions on this element of the QRF.

d. It was agreed that the Mission will cable a one or two page summary, for AID info only, of each QRF activity. The summary will contain: (a) the firm name, present and proposed productive business activities, identification of entrepreneurs and their nationality, date and place of organization or incorporation, and type of enterprise (unincorporated business, partnership, corporation, joint venture, other); (b) the debt/equity structure of the firm, additional entrepreneur/Trust contributions/share purchases proposed, and projected changes in the debt/equity structure; (c) the equity ratio firm/Trust, ratio of proposed additional entrepreneur/Trust contributions/share purchases, and the projected ratio if the project is approved; and, (d) a rationale of the ratio (entrepreneurs:Trust) approved.

e. Given the experimental and high-risk nature of the QRA, it was agreed that the Mission would obligate initially an amount not to exceed $6 million of the $12 million proposed for the QRF. Within one year from first disbursement under the QRA, an interim assessment of the QRA will be carried out and provided to AID/W. A second broader evaluation of the QRA will be completed prior to the obligation of funds for the QRA in excess of $6 million. This evaluation will be carried out by a independent contractor, not affiliated with the core contractor and will be designed by Mission and AID/W officers. On the basis of the evaluation, the Mission and AID/W will agree jointly on whether or not to obligate additional funds for the QRA.

f. The PP proposed that, under the cocoa subproject, an OPG be provided to a PVO which, in turn would sub-contract Hersheys for technical assistance. GC/LAC advised that an OPG is proper where AID grants funds to help a PVO carry out its own program, but a contract is more appropriate where the need is to carry out specific activities for an AID project. The Mission may contract with a consultant for the needed TA, or may contract with a PVO, which could then sub-contract for the TA envisaged in the PP.

project, including the

g. The Mission requested at the DAEC that the GC/LAC advise on the question of having AID's responsibility for procurement regulations cease at the purchase of equity under the QRF. GC advised that, the purchase of equity is an acceptable basis for disbursement of AID funds. Prior to approving the equity investment, the Mission, as part of its approval of any transactions, should satisfy itself that the investment is sound and prudent under the circumstances; but as long as the purpose of the contribution is the purchase of equity shares, that purpose is achieved and can be verified upon such purchase. No further "tracing" is required.

The PP requested a source/origin waiver to enable the Mission to purchase right-hand drive vehicles with project funds. However, a Blanket Waiver which covers the proposed purchases was approved by Jay Morris on March 7, 1986.

The changes made in the project design will be incorporated in to the final Project Paper; the instructions in Tab B on the QRA also will be included as an Annex.

After authorization of the project, LAC/DR will cable the text of this Action Memo to the Mission. That will formally confirm the understandings reached at and subsequent to the review, and advise that the vehicle waiver is no longer needed.

Recommendation: That you: (1) authorize a $30 million grant for the HIAMP project, and (2) redelegate to the Mission Director, RDO/C, authority to approve additional funding up to a total of $40 million grant for the entire project.

Approved _____

Disapproved _____

Date July 15, 1986

HIGH IMPACT AGRICULTURAL MARKETING AND PRODUCTION PROJECT
NO. 538-0140

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GLOSSARY OF ACRONYMS AND ABBREVIATIONS

ACRI	American Cocoa Research Institute.
APHIS/PPQ	Animal and Plant Health Inspection Service/Plant Protection and Quarantine, U.S. Department of Agriculture.
BDD	British Development Division.
CARDI	Caribbean Agricultural Research and Development Institute.
CAEP	Caribbean Agricultural Extension Project.
CATCO	Caribbean Agricultural Trading Company.
CATIE	Inter-American Institute of Agricultural Sciences, Turriallon, Costa Rica.
CDB	Caribbean Development Bank.
CDSS	Country Development Strategy Statement.
CFC	Caribbean Food Corporation.
CIDA	Canadian International Development Agency.
CIPC	Consortium for International Pest Control.
CMA	Chocolate Manufacturer's Association.
EA	Environmental Assessment.
ECCB	Eastern Caribbean Central Bank.
GCA	Grenada Cocoa Association.
GCC	Grenada Cocoa Corporation.
GCIB	Grenada Cocoa Industry Board.
EDF	European Development Fund.
GDP	Gross Domestic Product.
HIAMP	High Impact Agricultural Marketing and Production (Project).
PDAP	Investment Promotion and Export Development Project.
IIE	Initial Environmental Examination.
OECS	Organization of Eastern Caribbean States.
QRA	Quick Response Activities.
QRF	Quick Response Fund(s).
RDO/C	Regional Development Office/Caribbean.
RDSS	Regional Development Strategy Statement.
REMS/C	Regional Environmental Management Specialist for the Caribbean.
UWI	University of the West Indies.
WINBAN	Windward Islands Banana Growers Association.

I. SUMMARY AND RECOMMENDATIONS

A. Executive Summary

1. Rationale

a. Background

Agriculture has a rich history in the Eastern Caribbean. The region was an early site for development of plantation agriculture in tobacco, sugar cane, and sea island cotton, and later made a successful transition to cocoa, spices, coconuts and finally, bananas. However, the products and organization of production which sustained the islands' economies for many generations have not met the market realities of the last two decades. In the 1980's, agriculture continues to be the dominant sector in the region, but it is not propelling economic growth in the six OECS states. The sector accounts for 16 percent of regional GDP, employs 30 percent of the workforce, and is a major source of foreign exchange due mainly to exports of bananas, cocoa, sugar, nutmeg, and other traditional tropical products. But slow or negative growth over 1980-84 reflects the limitations inherent in small island economies, exacerbated by structural imbalances resulting from the demise of plantation agriculture. A transition to non-plantation, private sector-led agriculture is constrained by:

- Difficulties in achieving economies of scale for international markets which demand large volumes of consistently high quality produce delivered on a reliable schedule;
- Costly and often irregular sea and air transport services;
- Risk averse, shallow financial markets that are understandably dubious about the viability of agricultural investments.

b. Current Environment

i. The Strategy

Recognition of the need to demonstrate the validity of a market-driven strategy to risk averse producers, investors, financial institutions and governments in the Eastern Caribbean drives the design of HIAMP. The success of the HIAMP project will depend on its ability to show the advantages, including increased sector stability, of a more efficiently managed and diversified agricultural sector. HIAMP will demonstrate how the private sector can learn to structure a response to market opportunities. This includes how to manage the response in an extremely risk averse financial environment, provide stability for an industry with large cyclical price movements, sell to highly competitive and changing markets, and build capacity by selling to secondary buyers

while production evolves. Agriculture in the Eastern Caribbean must learn to be flexible in anticipating and meeting international market niches. That is only possible in circumstances which encourage private-sector investment in new agricultural technology, production, packaging and marketing. HIAMP will help bring those circumstances into existence.

ii. The Opportunities

There are a wide range of fresh produce items that are currently grown or could be grown in the Eastern Caribbean that have high consumer acceptability in North American and European markets. Nine major product groups which have distinct market potential can be readily identified:

- traditional Eastern Caribbean export commodities, such as bananas, cocoa, and spices;
- produce that has been traditionally grown in the region for which there is strong demand from Caribbean emigrants to North America and the U.K., for example, yams and other root crops, breadfruit, etc.;
- fresh produce items focused at 'non-Caribbean' ethnic market sectors, for example, to the Asian and Oriental communities in developed country markets;
- a rapidly expanding market for exotic, tropical fruits and vegetables demanded by indigenous North American and European consumers, for example, carambola, mangosteens, soursop, red bananas;
- tropical and warm temperate fruits that already have wide consumer acceptance in developed countries, for example, mangoes, and avocados;
- off-season (or "winter") vegetables that exploit market "windows" in the winter months, for example, bell peppers, eggplant, okra;
- tropical cut-flowers and ornamentals, for example, bird of paradise, anthuriums, ginger lilies;

- processed products that are already domestically-produced in the region, for example, dried sorrel, pepper sauce; and,

- mariculture products such as shrimp, crabs, crayfish, and algae.

The above are examples of niche markets. For Eastern Caribbean growers and traders to penetrate them successfully and satisfy the sophisticated requirements of developed country markets, there is a need to focus on specific niches, to maximize competitive and comparative advantages, and not to compete head-on with major low-cost producers that already are well-established in target markets for Caribbean produce.

iii. Current Activities

It should be noted that a number of efforts are already underway in the region to serve the market niches described above. These efforts, typically involving a single private entrepreneur or group of producers, represent a wide range of commodities and scale. It is exactly these kinds of efforts that HIAMP intends to assist to expand or replicate in the region. Examples of effective efforts in non-traditional exports include:

- export of ornamental plants and cut flowers, especially ginger lilies and anthuriums, from Barbados, Dominica, St. Lucia, and St. Vincent to the United States and the United Kingdom.

- export of tropical fruit and root crops from St. Vincent, St. Lucia, Grenada and Dominica to the United Kingdom; cucumbers from Antigua to the United States; grapefruit juice from Dominica to Florida; passion fruit from Dominica to Puerto Rico; tropical cherries from Barbados to Holland and Japan;

- export of sea island cotton from Barbados, Montserrat, Antigua and Nevis to Japan;

- export of shellfish from Barbuda and Guyana to Puerto Rico and the Eastern Caribbean islands; and,

- export of specialty crops such as; aloe vera from Dominica to the United States, essential oils from Dominica to the United Kingdom, Chinese vegetables from several islands to the ethnic markets in the United Kingdom, pepper sauce from the region to the United States, and minor spices from Grenada to the United States.

c. Relationship to AID Strategy

i. AID Strategy

The HIAMP project was designed to resolve the constraints to profitable agricultural production in the Eastern Caribbean. This design has resulted in a project which requires a private sector approach, depends on continuing policy dialogue, strengthens regional private financial institutions, and transfers modern agricultural technology to local agricultural producers. Through these mechanisms, HIAMP will support RDO/C's regional strategy by increasing the contribution of agriculture to gross domestic product, foreign exchange, and employment.

ii. RDO/C Cluster Approach

HIAMP is the centerpiece of RDO/C's cluster concept. The integration of projects into clusters is designed to provide more direct impact and rapid delivery of project assistance. In agriculture there are two components to the cluster: one, the multi-faceted HIAMP project which channels technical assistance and funding to commercially viable enterprises; and the other, projects designed to provide both continued assistance to regional institutions and services supportive of the long-term restructuring of agriculture in the region. The HIAMP Project will strengthen RDO/C's capacity to manage both components by placing advisors in the field to monitor implementation, thus freeing-up Mission personnel to focus on policy, linkages and overall effectiveness.

iii. Linkage with other Projects

There is a direct and supporting link between HIAMP and other RDO/C funded projects supporting agricultural development. Ongoing activities in research (CARDI) and extension outreach (CAEP) have assembled unusually good descriptive information on the productive resource base in all the islands. This enables a quick and reliable understanding of where desirable micro-climates exist for various crops, what pests or weeds are most prevalent, and especially important, what socio-cultural factors are important to the rural communities. CAEP and CARDI are therefore well placed to advise on constraints, and indeed, suggest opportunities to be pursued within high impact agriculture subprojects. Similarly, marketing projects (CATCO) provide a ready channel to initiate routine shipment of produce. CATCO is aggressively building trade volume and it is expected that HIAMP subprojects which are production oriented can work with CATCO as one channel through which to secure market niches for new product lines.

RDO/C's Small Enterprise Assistance Project (SEA) also provides areas for coordination and complementarity. RDO/C is channelling technical assistance and some credit to small and medium size enterprises. Private sector associations in individual islands are being

encouraged to set priorities for assistance to the productive sectors. It is envisioned that in the areas of agro-processing, agricultural support services and distribution, especially where businesses are small owner-operated enterprises, that technical assistance can be provided under SEA auspices, and financial assistance, including equity, through CFSC's HIAMP window. In the medium term it is expected that the combined assistance of SEA and HIAMP will expand the number of agribusiness clients for the commercial banks of the region.

iv. Regional Policy Issues

The HIAMP project will facilitate action on two policy concerns affecting agriculture. These are: the role of parastatal agencies; and the control/access to land. To a greater or lesser degree in all states of the region, parastatal agencies are directly engaged in the production, processing, or marketing of agricultural commodities. Likewise, most regional states own or control a significant proportion of agricultural lands. The fundamental concerns with each of these policy themes are: the extent to which private initiative/investment is constrained; and, the degree to which profitable private investment will alleviate governments' need to maintain links with production. RDO/C plans to specifically address each of these policy areas in the design and development of major subproject activities, and through the core contractor's agribusiness investment efforts. HIAMP will thereby assist in establishing alternative policies that are more conducive to private investment and simultaneously reduce the magnitude of recurrent cost borne by Governments.

2. Project Composition

There are three central components to HIAMP: a) Quick Response Activities (QRA) below $500,000 in RDO/C funding, to get smaller-scale private agriculture enterprises moving, filling niches in foreign and regional markets, and proving the profitability of agricutural investments; b) Major Subproject Activities to enable needed restructuring of key agricultural sub-sectors by direct involvement in the major crop lines and producer associations in the Eastern Caribbean; and c) a core contract to provide integrated design, coordination and management services. All of the HIAMP subactivities will be initiated in response to identified market opportunities.

a. Quick Response Activities

i. Illustrative Quick Response Activities

The following possibilities, investigated by the design team, are offered as examples of the small Quick Response Activities that HIAMP could support. The list is illustrative only of the opportunities which exist within the Eastern Caribbean today. It does not address the proposed division of equity/reimbursable grant funding needed, nor the relationship between private firms and grower associations which will be supported.

SUMMARY OF REPRESENTATIVE QRA'S BY COUNTRY

ACTIVITY	RECIPIENT	VENTURE CAPITAL	REIMBURSABLE GRANT FUNDING
ANTIGUA			
Winter Vegetables	Private	200,000	70,000
Pigeon Peas	Grower Assoc	-	130,000
Sea Island Cotton	Private	150,000	50,000
Pineapple	Private	120,000	60,000
Fish Export Marketing	Private	50,000	25,000
SUB-TOTAL		520,000	335,000
ST KITTS			
Sea Island Cotton	Nevis CP Assoc	-	125,000
Rabbits	Private	125,000	50,000
Dairy	Private	195,000	55,000
Shrimp Hatchery	Private	300,000	-
SUB-TOTAL		620,000	230,000
DOMINICA			
Floriculture	Grower Assoc	-	300,000
Fruit Processing	Private	149,000	15,000
Passion Fruit	Grower Assoc	-	150,000
Dom. Food Industries	Private	105,000	50,000
Cardamon	Private	170,000	30,000
SUB-TOTAL		424,000	545,000
ST. VINCENT			
Eggplant Export	Grower Assoc	-	85,000
Montreal Gardens	Private	170,000	80,000
Fruit Juice Material	Private	75,000	25,000
Tropical Fruit Export	Private	75,000	25,000
Vegetable Production	Private	410,000	90,000
Vegetable Pack/Storage	Government/lease	-	350,000
SUB-TOTAL		730,000	655,000
ST.LUCIA			
Anthurium Lilies	Private	100,000	35,000
Contract Vegetables	Private	100,000	50,000
SUB-TOTAL		200,000	85,000
GRENADA			
Anthurium Lilies	Private	190,000	35,000
Cocoa Pod Feed	Private	-	75,000
SUB-TOTAL		190,000	110,000
EC WIDE			
Carton Design and Manufacture (R&D)	CATCO	-	200,000
Oyster Seed Hatchery	Private	250,000	50,000
Mithrax Crabs (R&D)	Private	-	490,000
SUB-TOTAL		250,000	740,000
GRAND TOTAL		2,934,000	2,700,000
TOTAL QRA FUND POTENTIAL		$5,634,000	

There is a different set of opportunities not presented in this document -- those which are driven by the market needs of importing countries, which have not yet been initiated in the Eastern Caribbean. These, like the special seed oysters for the French market, are the result of special knowledge of international markets, combined with an understanding of the potential of the islands in the Eastern Caribbean. This deliberate search for new opportunities and linkage to productive capacity on the six islands is one of the driving forces behind HIAMP. The important subprojects which will be generated by this as yet unknown set of activities cannot be listed. It would be reasonable, however, to assume in the five years of HIAMP, that the generation of new opportunities exceeds the income potential of the expansion of existing activities. Thus, what we know today is likely to be a minor percentage of what will be discovered and put into place in the future.

ii. Potential Benefits of Quick Response Activities

Six quick response activities were selected to investigate the potential economic returns. They were selected to provide a representative spread of both geographical locations and types of activities that will be included in the QRA component. The examples comprise economic analysis of: cardamon production and marketing in Dominica; black pineapple production and marketing in Antigua; sea island cotton production and marketing in St. Kitts-Nevis; "winter vegetable" production and marketing in St. Vincent; and, passion fruit processing and marketing in Dominica.

Three measures of economic return to the QRA are presented, viz: a benefit cost ratio, whereby the Net Present Value (NPV) of benefits and costs (calculated at the social discount rate of 10 percent) are contrasted; an economic internal rate of return (IRR) for the six activities in aggregate; the NPV (at the social discount rate) of each activity has been contrasted with the totality of AID-funded QRA costs for each activity. In general and, certainly, in aggregate, the results of the economic analysis on the Quick Response Activities show very positive returns from project investments.

Activity	B/C	Economic IRR	New Present Value/AID Costs
Cardamon	1.61	N/A	3.85
Pineapple	2.43	N/A	10.45
Anthurium	1.21	N/A	1.51
Cotton	2.54	N/A	10.19
Vegetables	1.22	N/A	3.10
Passion Fruit	1.35	N/A	4.59
Average	1.73	56%	5.62

iii. Financing the Quick Response Activities

Each quick response activity will be financed through a combination of reimbursable grant and equity funds; no AID loan funds will be involved. During project design it was determined that although there is excess liquidity in the commercial banking sector in the region, there is minimal lending to the agriculture sector. There are three major reasons for this phenomenon: the perception that agricultural activities carry excessive risk; the dearth of high quality studies presented by borrowers to indicate the feasibility of their operations; and, the lack of bank staff capable and willing to analyze and supervise agricultural lending. For these reasons, HIAMP is structured to free up commercial loan funds by attacking the constraints to lending by providing: equity funds to improve the financial condition of HIAMP applicants; technical assistance to assist in the preparation of feasibility studies to meet financial institution requirements; and, project supervision to decrease risk and improve management.

The financial mix required for a quick response activity will be determined in a feasibility study which will include technical, environmental, administrative, and economic analysis and recommendations. Funding for each activity will come from three or more sources, the owner of the enterprise, the commercial banking sector, and AID. AID provided reimbursable grant and/or equity funds will be channeled through the Caribbean Financial Services Corporation (CFSC), a regional private development finance corporation. CFSC through a Trust arrangement will administer and monitor the Quick Response Activity reimbursable grant and equity financing windows. In so doing, they will enter into subagreements with investors which make them shareholders and board members for a specified period of time, after which their shares will be repurchased by the owner at current market value.

b. Major Project Fund

Four major subproject activities are part of the HIAMP design. The Cocoa Subproject will be authorized with this action and the Tropical Fruit, Leeward Islands Diversification, and Regional Mariculture Subprojects will be designed and authorized during FY 87 and FY 88. As indicated earlier, major subprojects are intended to address needs associated with restructuring key agricultural sub-sectors by direct involvement in major crop lines and producer associations.

i. The Cocoa Subproject

The cocoa industry is significant in Grenada, of growing importance in St. Lucia and holds good potential for St. Vincent and Dominica. There is an established market for cocoa from the Eastern Caribbean, with international buyers prepared to provide forward purchase contracts for "fine-flavor" cocoa. Yet returns to the islands' cocoa farmers have been low, with a resulting decapitalization of existing

assets and neglectful management of many of the cocoa stands. Buyers' interest in cocoa beans from the region has increased as African supplies constrict and more manufacturers include new, higher quality chocolate products in their market plans. Technology is available which will substantially increase production and lower costs per unit of output and land employed.

The Cocoa Subproject will address the management, technology and marketing requirements of the major cocoa producers, as well as the recipients of land under a divestiture "model farm program" in Grenada where cocoa is or will be established. The project will introduce new cultivars and techniques necessary to make the industry profitable enough to sustain increased private investment. RDO/C efforts will complement a larger contribution by CIDA, which will build institutional capacity within the proposed Cocoa Associations.

ii. The Tropical Fruit Subproject

The subproject will build upon the existing productive capacity of the Windward Islands for tropical fruit, a capacity generated primarily from a major tree stock distribution program of British foreign aid. Tree crop output is projected to increase sharply over the next five years; the output is exportable, but marketing arrangements remain unclear. There is a movement within the four Windward Islands to promote regional cooperation in exports of fresh produce. HIAMP will provide support to the privatization of marketing arrangements through encouragement to private growers' associations in each country and perhaps a regional association, should there be interest from producers, exporters and buyers. Special consideration will be given to promoting growth of private sector traders, privatization of marketing board functions, and external investment in joint ventures. The subproject, however, will be more than an exporter of existing production. It will also address the serious problems encountered in growing, picking, packing, and transportation of fresh produce that constrain export sales. The project will assist the associations to settle on standards, grades, priorities and labels, and then improve quality and quantities of those which are most valuable. In addition, the project will conduct experiments with alternate modes of air shipment for high-cost perishables, and introduce new tropical fruit and nut products which have known high-value markets in the United States and Europe.

iii. The Leeward Islands Diversification Subproject

Due to rainfall patterns, cocoa and tropical fruit are produced primarily on the four Windward Islands. The Crop Diversification Subproject seeks to improve agricultural production and profitability in the Leewards -- Antigua and St. Kitts-Nevis. There is an excellent opportunity for private sector investment in high-return row crops on land presently underutilized. This subproject will provide

technology, management and markets which will directly benefit growers on St. Kitts-Nevis and Antigua. The subproject will demonstrate the technology for the mechanization and commercialization of 1,000 acres of Sea Island Cotton or another exotic crop.

iv. The Regional Mariculture Subproject

No resource is more abundant in the Eastern Caribbean than clear, clean seas maintained by the sun at the consistent temperatures needed for exotic species mariculture. Project activities supported from Quick Response Funds will have had several years of operation by the time scheduled for the design of the Mariculture Subproject, allowing sufficient gestation period for the opportunities to be explored at smaller scales. Activities which are now ongoing and considered for HIAMP include a shrimp hatchery producing seed stock, oyster seedling production, Mithrax Crab production on two islands using algal turf technology, Marron Lobster outgrowing, sea moss production, fish hatcheries, and reef enhancement for mollusks such as conch.

c. Core Contractor

i. Responsibilities

The Core Contractor will be responsible for three components of the project. The team will: develop feasibility studies for Quick Response Activities and assist in monitoring these activities; manage a $300,000 fund to undertake small scale research and development activities; and, design the major sub-projects in Tropical Fruits, Leeward Islands Diversification and Regional Mariculture.

The Core Contractor's Barbados office will manage overall contractor responsibilities under HIAMP, with the Team Leader providing supervision and coordination for the activities of the Island Advisors. The marketing specialist will work directly with commodity producers and agroprocessors to secure market niches and to ensure that the products exported meet quality control standards. There will be significant accounting and administration requirements for the funds expended by the Core Contractor, aggregating all field accounting from the Island Advisors, preparing the final feasibility study submissions to CFSC, completing environmental examinations and assessment for RDO/C, meeting potential investors for briefings and establishing workplans and priorities for future direction of the project.

The Island Field Advisors will work with local entrepreneurs and outside investors to prepare feasibility studies (drawing upon specialized technical assistance if necessary from the Core Contractor's short-term TA funds), assist in obtaining equity and loan funding, monitor Quick Response Activities once implementation has begun, and assist with marketing arrangements for the agricultural output. They will also provide monitoring services on the pace and progress of implementation.

ii. Linkages Between the Core Contractor and PDAP

The responsibilities of the HIAMP Core Contractor team are complementary to the investor search operations begun under PDAP. In the development of QRA feasibility studies HIAMP advisors will work with PDAP advisors, particularly in the initial stages of investor search operations. While it is envisioned that many QRA projects will be largely with local agricultural enterprises, it is also expected that many export oriented activities would benefit from foreign parternships and joint ventures. PDAP's investor search operations will assist HIAMP advisors in narrowing the range of possible investors.

Although HIAMP and PDAP complement one another there are distinct differences between the two. PDAP largely works with the industrial sector, encouraging investment promotion and running an investor search operation. However, unlike HIAMP they do not design projects and assist in their implementation and monitoring. HIAMP advisors will be responsible for packaging complete agricultural projects inclusive of management, technical assistance and sources of funding. There is a division of labor between the agricultural project development efforts of HIAMP and the PDAP role as catalyst in investment decisionmaking.

d. Special Studies

The HIAMP project includes the flexibility to analyze the constraints to successful agricultural projects through studies which support investment efforts. Two such studies will investigate further financial efforts required to stimulate private lending to the agricultural sector, and, present methods for overcoming the regional transportation constraint.

i. Agricultural Credit Study

One of the objectives of HIAMP is to transform agricultural enterprises into bankable endeavors. To assure that project inputs have the maximum effect possible, further analysis of the lending environment will be required. If the current excess liquidity position of lending institutions changes, then the proposed study will examine the advisability of establishing a rediscount facility to promote lending. Even if lending institutions remain highly liquid, in the long term other measures may be necessary to change lending institutions' attitudes towards loans for agricultural purposes. For example, commercial banks will not discount receivables of agricultural enterprises, or provide pre-shipment or post-shipment financing due to the perishable nature of their commodities. The agricultural credit study would examine whether it would be advisable to establish such mechanisms to cover agricultural goods from the Eastern Caribbean countries.

ii. Transportation Study

The lack of adequate transportation facilities for inter-island shipments of fresh produce has constrained both intra- and extra-regional market development in the region. Specifically, inadequacies in the inter-island schooner services have ensured that a modern, fresh produce marketing sector has not emerged in intra-regional trade. Furthermore, the lack of specialized air freight services linking, in particular, St. Vincent, Dominca and Grenada with trans-shipment points in Barbados, St. Lucia, Antigua and Trinidad has served to suppress the development of extra-regional trade in fresh produce by air freight.

The objective of the transportation study will be to synthesize previous studies to: identify transportation problems that constrain intra and extra-regional exports of fresh produce from the Eastern Caribbean; and, design a project(s) to help remove such constraints and, thereby support the HIAMP project.

B. Summary Project Costs

The following table provides the cost of project components over the five-year LOP.

COMPONENT	LOP COST (USD 000's)	
Quick Response Funds		
Venture Capital	7000	
Reimbursable Grant/R&D	5000	
Trust Administration	850	
		12500
Major Subproject Fund		
Regional Cocoa	3000	
Tropical Fruits	6000	
Leewards Diversification	2000	
Mariculture	1500	
		12850
Core Contractor		10000
Special Studies & Evaluation		750
Contingency		3900
TOTAL		40000

C. Recommendation

This Project Paper recommends approval of the High Impact Agricultural Marketing and Production Project (HIAMP). Authorization is requested for a $30.0 million DA Grant and a redelegation of authority to the Director, RDO/C, is sought to authorize up to a total LOP funding (entire Project activity) of $40 million as three major subprojects identified in this PP are subsequently designed. The proposed obligation for FY86 is $5.9 million. The Project Assistance Completion Date (PACD) is scheduled to be April 30, 1991.

D. Summary Project Findings

This project is ready for implementation. Further knowledge, scheduled to be acquired during implementation, will allow subproject designs to be completed. The project is financially, economically, technically, administratively, institutionally and environmentally sound.

E. DAEC Concerns and Design Guidelines

The concerns and issues raised at the DAEC review of the Project Identification Document (PID) are included in full in Annex A, and summarized below as follows:

1. Policy Reform. The PP should include an analysis of policy constraints in the agricultural sector that could reasonably be addressed through project interventions and related policy reforms. In describing the activities to be undertaken in the project, the PP should discuss the policy environment affecting them, potential areas of conflict with regard to policy and how these will be addressed.

The HIAMP project is designed to produce rapid results in agricultural output in the Eastern Caribbean. Policy reform will be of direct concern as existing governments' policies limit the Project's achievement of its objectives. In the industrial sector, ably assisted and promoted by PDAP advisory staff, there is now in most countries an integrated set of fiscal incentives to attract both foreign and domestic investors in new productive enterprises. HIAMP field staff will follow the same model, working to bring a potential investment to a successful conclusion, noting the obstacles along the way, taking action with RDO/C to not only overcome the immediate difficulties, but ensure systematic solutions to policy reform.

There will be constraints which will not influence the small enterprises initially supported by HIAMP, but may affect expansion and growth. These potential limiting factors will be identified and explored during the design and feasibility study phase by the field staff of the Core Contractor and, through the Project Officer, carried to the Office of the Mission Economist, seeking a course of remedial action.

Depending upon the nature of the constraint, RDO/C may elect to work through the Public Management and Policy Planning Project, or through other project and/or program assistance to resolve the difficulty.

Policy concerns affecting agriculture that most need attention in the Eastern Caribbean involve two major themes: the role of parastatal agencies; and the control/access to land. To a greater or lesser degree in all states of the region, parastatal agencies are directly engaged in the production, processing, or marketing of agricultural commodities. Likewise, most regional states own or control a significant proportion of agricultural lands. The fundamental concern with each of these policy themes is the extent to which private initiative/investment is constrained. RDO/C plans to specifically address each of these policy areas in the design and development of major subproject activities, for the purpose of establishing alternative policies that are more conducive to private investment and simultaneously reduce the magnitude of recurrent cost borne by Governments.

Annex G addresses specific policy issues which will affect the growth of private initiatives in the agricultural sectors of the OECS states.

2. Project Implementation. The PP should describe the process for developing these activities and how the core contract will provide the level of technical assistance and support necessary to carry out these functions without unduly increasing the burden on the RDO/C staff.

In response to DAEC guidance RDO/C conducted a thorough analysis of the implementation arrangements necessary to ensure adequate management of project resources. Sections II.C.1 and VI.D.3 present a description of the revised and simplified process of activity identification, development, review and funding for the Quick Response Activities. In summary, all QRA funds will pass through the Caribbean Financial Services Corporation (CFSC) after activities are designed and vetted by the Core Contractor and approved by RDO/C. Technical assistance, training, accounting and management services will be included in each QRA. CFSC will be staffed and trained to oversee activity implementation and ensure AID regulations are upheld. The Core Contractor will monitor the implementation of all QRA's, matching progress against the plan prepared during the feasibility study, and signal when corrective action is needed. CFSC's equity fund manager or designee will be on the Board of every firm that receives an equity investment and attend quarterly board meetings, e.g., act as a responsible investor. Major subprojects will each have independent technical assistance, with progress toward designed objectives monitored by the HIAMP Core Contractor. These arrangements will allow the Mission Agricultural Development Office to set policy, monitor overall progress of the project, interact with government's to improve the policy environment, and provide corrective direction for subactivities.

3. Core Contract. The PP should describe the role of the Core Contractor in the implementation of typical activities under the smaller Quick Response Fund and larger major project fund, and care taken that the contractor is not put in a position of recommending the feasibility of a sub-project in which it will have a subsequent financial interest.

The RFP which was issued in November 1985 for procurement of Core Contractor services has specifically excluded any involvement of the Core Contractor in the implementation of major subprojects. The amendment to that RFP will not include sufficient person months of effort for the contractor to implement Quick Response Activities. These two restrictions should eliminate potential conflict of interest in the provision of technical assistance to components of HIAMP.

4. Grant versus Loan Financing. The PP should discuss the circumstances that would warrant an exception to the loan funding preference, and still qualify within the Guidelines On Terms Of Aid.

The HIAMP project has been designed to encourage private investment in non-traditional agriculture. In order to have an integrated and vertically organized set of subproject activities, funding is required for businesses to finance the levels of technical assistance, management, facilities, and training that non-marginal enterprises require. The design team examined the climate for loan funding and discovered that banks in the region were liquid and that additional loan funding was not required (see discussion in Section VI.B). Additionally, given the risk nature of the investments whereby 50% of investments might fail and the 50% which succeed may do so at high rates of return, it was felt that an equity fund which took into account risk and return was more appropriate.

In order to accomodate the Guidelines On Terms Of AID and the Agency's other private sector policy guidelines while still accomplishing the development objectives set forth in this project, two funding steps have been designed. A grant will be made from AID to a Trust which will be managed by Caribbean Financial Services Corporation (CFSC), a private development finance institution. This Trust will eventually revert to a not-for-profit development organization and will never contribute to the asset position of the shareholders of CFSC. The Trust will then take equity positions in profit-making ventures or make reimburseable grants available to organizations like cooperatives and growers' associations which cannot sell equity shares (see Section VI.B).

5. Parastatals. Project activities that utilize parastatals or state-owned enterprises should be conducted in accordance with AID's private enterprise development policy.

The Mission foresees no support to parastatals or state-owned enterprises except to directly promote privatization or lease to the private sector.

6. Project Paper Analyses. The DAEC approved development of a project proposal for up to dollars 40 million. However, the PP will need to justify the level of assistance proposed with a list of identified activities, detailed cost estimates of initial major sub-projects, and illustrative costs of other, smaller activities. There are doubts as to the agricultural potential of the islands of the Eastern Caribbean. Many factors, including high transportation costs, local climatic conditions, labor costs, lack of scale, and unrealistic exchange rates are believed to limit the agricultural potential. Therefore, the PP should discuss this issue thoroughly and demonstrate that the proposed sub-projects will clearly be economically and financially viable.

Agriculture has dominated the political and economic history of the East Caribbean States. With the exception of Antigua, agriculture is currently the single most important economic sub-sector in all the OECS regional states. Agriculture will continue to be the backbone of these economies in the foreseeable future. This is true because the major resource endowment of the region is in fact its agricultural land, populated by a labor force that is predominately engaged in agriculture. The issue is not the potential agricultural capacity of the region, because such a capacity is already established beyond doubt. Rather, the issue is how to direct this capacity to fit changing markets and emerging opportunities for a different mix of crops.

There are profitable opportunities in spite of the constraints to agricultural resurgence. Annex I presents the illustrative projects proposed as Quick Response Activities, and the Financial and Economic Annexes present a detailed analysis for six such QRA's, giving both financial and economic rates of return. Assuming only 50 percent of the QRAs are viable at the average return, the project's 16 (including TA) million dollar investment generates 45 million dollars when calculated over 10 years using a 15 percent discount rate. The cocoa major subproject shows attractive gains from new technology, inputs and professional management, while the two subprojects yet to be designed can be given indicative but highly positive returns. The overall economic analysis suggests that with the correct agricultural strategy, discussed in the following section, there are potentially attractive returns to private-sector agricultural development in the Eastern Caribbean. After reviewing the design team's field studies and details of actual export experience, RDO/C is now convinced the proposed level of funding is appropriate and justified.

The Project Rationale devotes considerable attention to the need to restructure agriculture in the Eastern Caribbean to allow the potential which exists to be exploited by private initiatives. Small scale interventions alone will not accomplish this demanding task. The strategy is to combine support to small profitable enterprises, which will build confidence in the possibility of agricultural growth and profit, with major subprojects which can influence more directly the policy environment. Together the confluence of the two approaches will restructure the agriculture sector.

F. Contributors to the Project Paper

The following individuals contributed to the development of this Project Paper:

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Participating Countries

The project design team traveled to the six principle countries participating in the project and interviewed:

The Ministers and Permanent Secretaries of Agriculture
Ministers and Permanent Secretaries of Trade
Directors and Officials of Planning Units
Chief Agriculture Officers
Chief Extension Officers
Ministry Technical Officers
Executive Directors of the Chambers of Commerce
Executive Directors of National Development Foundations
Selected Commercial Bank Managers
Farmers
Fishermen
Officials of Cooperative Associations
Officials of Grower's and Fishermen's Associations
The PDAP Advisors
Regional Organizations such as CATCO, CFSC, CDB
Officials of Industrial Development Corporations
Officials of Development Banks
CARDI Advisors
CAEP Advisors
CARDATS Advisors
Officials of Central Marketing Corporations
Importers and Exporters
Huckters Associations

II. PROJECT RATIONALE AND DESCRIPTION

A. Rationale

1. Background

Agriculture contributes $89.4 million to regional GDP (1984), about 16 percent of the island states' domestic economy. The sector employs 30 percent of the regional workforce providing 45,500 jobs. It is also a major source of foreign exchange due to exports of bananas, cocoa, nutmeg and other fruits and vegetables. Growth in the sector over 1980-84 has been stagnant in Antigua, St. Kitts-Nevis, and Dominica, slow in Grenada and St. Lucia, and better statistically, but fundamentally weak, in St. Vincent.

A complex combination of factors influence the current productivity and future growth potential of agriculture in the region. Constraints are not equally shared by all islands, but in general they are all affected by high operating costs due to low labor productivity, unevenly developed infrastructure and communications, weak management, little knowledge of non-traditional marketing links and channels, and excessive government involvement in most sectors of the economy. Land resources are limited in extent and soils subject to erosion due to the highly sloped topography. Lack of water is an important constraint to agriculture in Antigua and St.Kitts-Nevis. Very poor internal and external transport places high costs and risks on investments in Dominica. The agricultural landscapes of St. Lucia and St. Vincent are dominated by traditional crops -- coconuts and bananas. Almost the entire surface area of the better agricultural land in St. Kitts is covered with sugar cane. With no ability to expand area to achieve economies of scale these commodities have become a drag on the agricultural sector. Their huge sunk costs and importance to employment have swayed governments to make continuing public investments in ailing industries.

Growth potential in national markets is small, even with projected increases in the tourist trade. The chief intra-regional markets, Barbados, Trinidad and Tobago, the French islands and the U.S. Virgin Islands are unreliable. Barbados is becoming more protectionist as it attempts to diversify from sugar; and Trinidad is turning inward for its supply, imposing restrictive import quotas. The French and U.S. Virgin Islands have a highly seasonal demand pattern and these markets can be cut off by administrative actions very quickly.

There are structural problems with the Eastern Caribbean which result from a history of plantation economies and monopsony/monopoly marketing arrangements. In the past, the constraints associated with small island production were overcome by estate agriculture, the growing and selling of one crop - sugar, bananas, cocoa

- to one large colonial buyer. But times and markets have changed. The breakdown of plantation agriculture in the region has left in its wake a slow-footed, ponderous agricultural sector dependent upon external protected and traditional marketplaces or government buyers to subsidize its inefficiencies. There is little understanding of the demands made by the competitive international market. Few incentives exist for the producers of major commodity lines to seek out and adapt new technologies, develop more efficient management practices, or devise improved marketing strategies. Many estates have deteriorated with capital, leadership and ancillary services withdrawn from agriculture. Governments now own and operate many estates at high cost and low output. Smallholders are located predominantly on hillside lands producing for the small domestic markets and intra-regional trade. Much of this smallholder production is skewed in structure and operation towards the production of bananas for sale into a protected market in the U.K. This protected marketplace is under assault from more efficient producers, and over the next five to ten years, will likely disappear.

2. The Immediate Opportunities

Positive changes in agriculture are coming from two directions. First, a new generation of producers are emerging from pockets within the agriculture sector. They include agile private entrepreneurs growing and shipping non-traditional export crops. They are often small-in-scale, undercapitalized and with tenuous market linkages. The Design Team found a wide range of potential investments and 26 possibilities which showed particular promise, of which six were carefully analyzed for potential costs and returns. There are real opportunities and existing entrepreneurs capable of absorbing project assistance to make new investments in agriculture.

From the macro perspective, there are also opportunities for export growth. There is a wide range of fresh produce items that are currently grown or could be grown in the Eastern Caribbean that have high consumer acceptability in North American and European markets. Nine major product groups which have distinct market potential can be readily identified:

- traditional Eastern Caribbean export commodities, such as bananas, cocoa, and spices;
- produce that has been traditionally grown in the region for which there is strong demand from Caribbean emigrants to North America and the U.K., for example, yams and other root crops, breadfruit, etc.;
- fresh produce items focused at 'non-Caribbean' ethnic market sectors, for example, to the Asian and Oriental communities in developed country markets;

- a rapidly expanding market for exotic, tropical fruits and vegetables demanded by indigenous North American and European consumers, for example, carambola, mangosteens, soursop, red bananas;

- tropical and warm temperate fruits that already have wide consumer acceptance in developed countries, for example, mangoes and avocados;

- off-season (or "winter") vegetables that exploit market "windows" in the winter months, for example, bell peppers, eggplant, okra;

- tropical cut-flowers and ornamentals, for example, Bird of Paradise, Anthuriums;

- processed products that are already domestically-produced in the region, for example, dried sorrel, pepper sauce; and,

- mariculture products such as shrimp, crabs, crayfish, fin fish, molluscs, prawns, oysters, and algae.

The above are examples of niche markets. Annex F (Marketing Analysis), explores market opportunities for selected existing and potential Eastern Caribbean fresh produce items in more detail. Mangoes and, to a lesser extent, avocado which are already in production in the region have significant market opportunities in the U.K., continental Europe, and Canada (for example, mango imports into Europe have been increasing at a rate of 2,000 tons per annum in recent years). A wide range of tropical items that can be grown in the Eastern Caribbean are attractive, easily prepared, small in size, low in unit cost, and have enormous market potential in developed country markets. Markets are increasing in size, and are accessible to regional growers, for tropical flowers. Seed stock for shrimp and oyster production are, potentially, products that could capitalize on the warm weather and good water quality in the Eastern Caribbean, and penetrate specialized mariculture markets.

Changes in government attitudes provide the second opportunity for positive improvement in agriculture. There is growing conviction that the private sector can make a significant contribution to national economies. Public leadership has become increasingly disenchanted with state-run farms, marketing boards and market interventions. Leaders recognize that agriculture must undergo a transformation if it is to play a positive role in their nations' development.

Bringing these nascent opportunities to fruition is the challenge of HIAMP. The Project must be flexible enough to support

individual entrepreneurs who fill niches in international markets while assisting governments to withdraw from direct involvement in agriculture as the private sector assumes responsible leadership. Some HIAMP-supported enterprises will fail, others succeed beyond all expectation. RDO/C has designed a high-risk, high-return intervention which supports private development from both the bottom and the top of the agricultural sectors in the states of the Eastern Caribbean.

3. Project Strategy - A Market-Led Approach

AID support to diversification throughout the Caribbean and Central America into non-traditional crop lines (e.g., winter vegetables for the U.S. market) has further circumscribed options for the Eastern Caraibbean. The region cannot go head to head with larger countries in the production of mainstream vegetables and fruit destined for mass markets in North America. The Caribbean Basin mainland countries have larger land areas, longer experience, better support structures, higher labor productivity, and transport advantages for production of bulk commodities. Because of scale, they are also more likely to be able to pay the costs of meeting tough new inspection and phytosanitary requirements of the USDA.

To be able to enter international markets, the countries of the Eastern Caribbean must restructure their agriculture by changing the crops that they grow and the way that their agricultural economies operate. The key strategic ingredients for restructuring include the need to let markets drive the selection of crops to be grown and to permit the most efficient management to produce and sell the output.

Some traditional commodities have a continuing role in a restructured agriculture sector. Cocoa has major near-term and long-term benefits due to a special position in the market for "fine-flavor" Eastern Caribbean production; benefits which can be captured with better technology, management, and marketing strategies. Smallholder food crops native to the region have found export markets in the U.K., Canada and New York City, as the growing West Indian population seeks yams, eddoe, tannia, sweet potatos and other indigenous produce.

The design of HIAMP flows from the recognition of the need to demonstrate the validity of this market-driven strategy to risk averse producers, investors, financial institutions and governments in the Eastern Caribbean. There is the willingness on the part of all governments in the region to let the private sector fill specialized market niches. Thus, the Quick Response Activities proposed find universal support and approval from all elements of the agricultural community. However, when the mainstream of the agricultural economy is affected, as in the major subprojects proposed in HIAMP, governments have insisted on a role that, at a minimum, preserves their ability to avoid massive social or political disruption. The success of the HIAMP project will depend on its ability to show the advantages, including increased stability of the sector, of a more efficiently managed and diversified

agriculture. HIAMP will demonstrate how the private sector can learn to structure a response to market opportunities. This includes how to manage the response in an extremely risk averse financial environment, provide stability for an industry with large cyclical price movements, sell to highly competitive and changing markets, and build capacity by selling to secondary buyers while production evolves. Agriculture in the Eastern Caribbean must learn to be fast on its feet in anticipating and meeting international market niches. That is only possible in circumstances which encourage private-sector investment in new agricultural technology, production, packaging and marketing. HIAMP will help bring those circumstances into existence.

These requirements for a restructured agriculture translate into the needs for project components with:

- a prospective ability to identify market opportunities and entrepreneurs ready to invest in agriculture. The core contractor in HIAMP will fill this role.

- a mechanism to reduce the risk of "niche filling" in international markets by local organizations, corporations, joint ventures, and individuals. The financial and technical support to be provided through Quick Response Activities adresses this need.

- a mechanism to influence the way that major new initiatives in crop production and marketing are undertaken to foster the restructuring of national agricultural environments for private initiatives and commercial management. The Major Subprojects will fulfill this role.

4. Relationship to AID and RDO/C Strategy

HIAMP is an agricultural project with funds and technical assistance directed to and through the private sector. Of the eight Project Papers outlining similar initiatives in the Caribbean Basin and Central America examined during the design phase, HIAMP has less government involvement, and more direct support to and through the private sector than any other AID-supported project. HIAMP will promote RDO/C objectives. It will "foster economic self-reliance" and "strengthen the environments in which private economies flourish", by direct support to private sector initiatives in agriculture and by leveraging HIAMP assistance to encourage private sector investment. Annex G describes some of the restrictive investment environment which the project will attempt to change.

The project will also promote growth in GDP, a primary RDO/C regional objective, in measurable ways. First the project will promote expanded earnings of the enterprises directly supported under

HIAMP. Then, the region will reap the benefits attendant to the vitality of broader economic activity that will follow freeing agricultural production and export. HIAMP is designed to harness the energy and the initiative of the private sector to get agriculture moving, changing its shape and policies along the way.

HIAMP directly supports special concerns on Grenada for divestiture and policy reform through support to cocoa production on private model farms created from state lands. The project encourages private sector agricultural diversification on land now held for sugar production in the Leeward Islands. During the course of implementation, there will be opportunities for dialogue on 1) national agricultural investment policy, 2) land and water resource management, and 3) privatization of marketing functions. HIAMP will allow high-level policy discussions to move from the general to the particular, as specific impediments to new investment, export sales and domestic production are identified during project implementation.

HIAMP will complement and draw from previous and on-going support to institution building in agricultural research, extension, training, marketing, transportation, and lending projects, described in the Administrative Analysis (Annex P). There will also be synergism between HIAMP and the other programs in RDO/C's portfolio. Enterprise development and manufacturing programs directly interact with small agribusiness activities, calling for close coordination of priorities, funding channels and objectives. Programs in public sector management, fiscal reform, natural resource utilization and infrastructure will add to the ability of RDO/C to establish the policy dialogues needed to make HIAMP a success. Together, the major projects provide an interlocking approach to the circumstances which constrain development in the Eastern Caribbean. HIAMP will contribute to and benefit from the interaction with ongoing and planned RDO/C programs.

B. Project Objectives

The Goal of the project is the achievement of a growth-oriented sustainable, private sector-led agricultural production, marketing and export industry in the Eastern Caribbean.

The Purpose of the project is to increase the contribution of the agricultural sector and agricultural enterprises to GDP from $89 million in 1984 to a minimum of $152 million (in real terms) in 1995. This five percent annual compounded rate of growth will be achieved by spurring new agricultural investment in privately owned and managed commercial enterprises, to grow for and sell to export markets. The climate for investment in agriculture in the Eastern Caribbean will be improved, removing major constraints to development while building confidence in private capacity within the agricultural sector.

First-stage project success will be denominated in gains in the balance sheet and income statements of the private organizations which the project assists, directly translating to significantly increased gross domestic product (GDP). Fifty percent per year returns to equity investments in commercial agricultural enterprises are expected within the first three to five years. Second-stage success measures will be reflected in the policy changes which accompany local government's increasing confidence in private-sector management of basic agricultural production. The project's goal will be accomplished when there is a self-sustaining, growing, vital, private agricultural sector in the Eastern Caribbean.

C. Project Components

There are three central components to HIAMP: a) Quick Response Activities (QRA) below $500,000 in AID funding, to stimulate the movement of smaller-scale private agriculture enterprises to fill niches in foreign markets, and to prove the profitability of agricultural investments; b) Major Subproject Activities to complete the restructuring of agriculture by direct involvement in the major crop lines and producer associations in the Eastern Caribbean; and c) a Core Contract to provide integrated design, coordination and management services. Section III which follows, provides a breakout of the proposed funding for this 40 million dollar undertaking.

HIAMP is a modular project, designed as a framework which identifies and establishes productive enterprises in agriculture. Quick Response Activities will be funded as the best ideas come forward, are studied and presented to the RDO/C Trustee, the Caribbean Financial Services Development Corporation (CFSC). While 26 QRA opportunities have been identified in Annex I, actual submission of the activities will await the detailed operational designs (feasibility studies) completed by the Core Contractor, often in conjunction with an outside investor interested in an agricultural joint venture. The Cocoa Major Subproject Activity has been included in this Project Paper, but the design of Tropical Fruit (the Windwards) and Crop Diversification (the Leewards), and the Mariculture Subprojects will be the responsibility of the Core Contractor. The Core Contractor will provide market information and investor search services, operating both from Barbados and the United States, connecting subprojects to markets in North America, Europe and elsewhere where opportunities exist for Eastern Caribbean agricultural exports.

1. Quick Response Activities

a. The Process for QRA's

There are four steps in the process of implementing a Quick Response Activity: i) identification, feasibility study and operational plan, ii) review and approval, iii) funding, and iv) implementation and monitoring.

The Core Contractor will work with local and foreign potential investors to identify and explore investment opportunities. If necessary they will undertake a small test of packing, shipment, or marketing from funds contained within the Core Contract. Together, they will prepare a feasibility study with an operations plan describing how the enterprise would be organized and managed, the technology to be used, assistance and the markets to be penetrated. Estimations of costs and returns will be prepared for review by financial institutions. Analyses required by AID will be included, e.g., IIE's, procurement plans, etc.

The feasibility study, with its proposed financial plan, will go forward to the Project Review Committee, composed of the RDO/C Chief of the Office of Agriculture and Rural Development (ADO), the Team Leader for the Core Contractor, and the Project Manager for Caribbean Financial Services Corporation (CFSC), the intermediary financial institution which will dispense HIAMP funding for QRA activities. After committee review, the ADO will forward an Action Memorandum to the Director requesting approval to fund the subproject activity.

CFSC will disburse the funds required by the QRA activities, providing reimbursable grants and equity as approved by RDO/C. Details of the flow of funds, and CFSC's responsibilties are found in the Implementation Plan (Section IV) the Financial Analysis (Annex N), and the Administrative Analysis (Section VI D and Annex P).

The enterprise will implement the QRA with funds (equity and/or reimbursable grant) provided by the CFSC managed Trust. Provisions for management assistance, financial accounting services, technical assistance, commodity procurement, and construction (should any of the above be required) will have been detailed in the feasibility study, and will be activated by the management of the enterprise, with assistance from CFSC and the Core Contractor.

b. Specifying QRA Requirements

RDO/C will entrust to the Caribbean Financial Services Corporation funding for management, administration and oversight services to open two agricultural financial service windows -- a reimbursable grant fund and an equity investment fund. Through an RDO/C grant estimated at $12.0 million dollars, the CFSC managed Trust will: (i) take equity positions in for-profit agricultural enterprises; and, (ii) on-grant funds for technical assistance and training to for-profit enterprises, and capital goods, management, training and technical assistance to not-for-profit associations and cooperatives. The costs of feasibility studies and packaging of investment opportunities to be presented to CFSC will be borne from the Core Contract, and not charged to individual enterprises or paid by CFSC.

The CFSC managed Trust will take equity positions in agricultural enterprises strictly on the basis of financial criteria -- the expected rate of return compared to the risk of the investment. No combination of equity and reimbursable grant for an individual enterprise will exceed $500,000. No more than 49 percent of the equity will be held in any one enterprise by CFSC. Reimbursable grants for technical assistance, training or other non-capital goods will not exceed 50 percent of the equity contribution, but in no case will a combination of equity and reimbursable grant exceed 49% of the subproject resources. Details of the financial criteria to be used in selecting for-profit enterprises for funding are fully developed in Annex N.

The Quick Response window can also be approached by not-for-profit agricultural enterprises, such as producer cooperatives, with proposals for expansion, diversification or export funding support. Local cooperative and association regulations do not allow equity positions to be taken by a non-producer, causing Trust funding to be made in the form of a reimbursable grant. Approval of reimbursable grant funding requests will be made on the same financial criteria as used to evaluate for-profit enterprise proposals. The Trust will allow reimbursable grants to associations and/or cooperatives for the construction of physical facilities, as well as training, technical assistance and management support.

Potentially attractive QRA's totalling five million dollars in prospective activities were identified during the design phase. Judging from these opportunities, the average QRA may require from $120,000 to $150,000 in equity, making an enterprise's equity total near $300,000 (assuming the Trust takes a 49 percent equity position), with the potential for loan funding of approximately $200,000 (depending upon the nature of assets), making the average small activity approximately $500,000. But there is scope for much smaller projects, such as in floriculture, where $50,000 can begin a profitable export enterprise. Analysis of six potential agricultural and agribusiness activities shows that the benefit/cost ratio is 1.54 calculated on financial criteria using market (15 percent) interest rates. Assuming that 50 percent of the enterprises fail, the financial and economic analysis (Annexes N and O) show highly positive returns to financing the Quick Response Activities. Support to CFSC to employ professional financial specialists with agricultural experience, attendant supporting staff, accounting contracts and field supervisors, will total $.850 million dollars for the first five years of the project. Details of the continuation of the fund after the project terminates, and the management fee allowed to CFSC from profitable buyouts of equity positions within five years of the investment, are contained in Annex N.

2. Major Subproject Activities

Four major Subproject activities are scheduled for HIAMP. The Cocoa Subproject is ready to begin with the signing of the Project Paper and the satisfaction of conditions precedent by the

participating governments. The Tropical Fruit Subproject will be designed to build upon an existing production base in need of marketing arrangements to satisfy known demand for exports, while the Crop Diversification Subproject awaits definition with the Governments of Antigua and St. Kitts-Nevis, on policies of diversification and distribution of land presently held in sugar production. A Mariculture Subproject will follow from QRA support to ocean farming R&D, seeking commercial opportunities for exotic marine products from the Eastern Caribbean.

a. The Cocoa Subproject

The cocoa industry is significant in Grenada, of growing importance in St. Lucia and holds good potential for St. Vincent and Dominica. There is an established market for cocoa from the Eastern Caribbean, with international buyers prepared to provide forward purchase contracts for "fine-flavor" cocoa. Yet returns to islands' cocoa farmers have been low, with a resulting decapitalization of existing assets and neglectful management of many of the cocoa stands. Government takeover of the cocoa industry in Grenada led to deteriorating management of the cocoa farms in that country. Price declines from the record highs of the late 1970's have also exacerbated major structural inefficiencies in production and fermentation technologies, supporting services, farmer association management, and marketing. On other islands, the relatively small acreage in cocoa did not support the necessary industry services. Buyers' interest in cocoa beans from the region has increased as African supplies constrict and more manufacturers include new, higher quality chocolate products in their market plans. Technology is available which will substantially increase production and lower costs per unit of output and land employed. Specialists from the U.S. chocolate industry have contributed their time and knowledge to help design a program which would add $3.6 million per year to Grenada's foreign exchange by 1991.

HIAMP will address the management, technology and marketing requirements of the major cocoa producers in Grenada, those which account for 75 percent of all export production, as well as the recipients of land under a divestiture "model farm program" where cocoa is or will be established. The project will introduce new cultivars and techniques necessary to make the industry profitable enough to sustain increased private investment. RDO/C efforts will complement a larger contribution by CIDA, which will build institutional capacity within the proposed Grenada Cocoa Corporation to assist the large body of medium- and small-scale growers. Although marketing of fermented cocoa is restricted to the existing Grenada Cocoa Association, there is scope for private sector professional management and private sector services to support new cocoa technology.

In St. Lucia the project will work through the St. Lucia Agriculturalist's Association, originally established to foster growth in the cocoa industry, to introduce and demonstrate more intensive cocoa management practices. Since World's Finest Chocolate has

contracted with St. Lucia producers, guaranteeing a 25 percent premium over world spot market prices, these farmers have a strong incentive to employ new practices. In St. Vincent cocoa is being promoted in support of improved watershed management programs. The project will work with the Organization for Rural Development (ORD), private landholders, and producers. HIAMP will support stand rehabilitation efforts and plantings using the new higher yielding production techniques. A modest effort of demonstration and rehabilitation will be undertaken through the grower associations on Dominica.

Management of this three million dollar subregional subproject will be acquired through a contract with a Private Voluntary Organization (PVO) or firm which has experience and capability working in cocoa development projects. The contractor will subcontract with technical speciality services in cocoa production and research, as well as provide direct funding to the Grenada Cocoa Growers Association, the St. Lucia Agriculturalists Association, ORD on St. Vincent, and the Farmer's Association on Dominica for well-specified and agreed activities. HIAMP will ensure professional management of grant resources. Over time, the project will seek to encourage the establishment of commercial entities responsible for many aspects of the operations of the cocoa industry which would be owned, in part, by the cocoa producer's associations. Additional information on the cocoa subproject can be found in Annex J.

b. The Tropical Fruit Subproject

This subproject will be designed to Handbook III standards, and submitted by a team assembled by the Core Contractor to the RDO/C Mission Director for authorization within the first seven months of the implementation of HIAMP. The subproject will build upon the existing productive capacity of the Windward Islands for tropical fruit, a capacity generated primarily from a major tree stock distribution program of British foreign aid. Tree crop output is projected to increase sharply over the next five years; the output is exportable, but marketing arrangements remain unclear.

The natural resource base in the Eastern Caribbean provides a special advantage in the production of tropical fruit--Dominica, St. Vincent, St. Lucia and Grenada are especially well suited to grow many varieties of tropical exotic fruit which have high market value. HIAMP would seek marketing outlets for existing production, first from Canada and Europe without restrictive entry requirements, then build capacity and quality to allow shipment to the U.S. market. An ongoing USDA/USAID fruit fly trapping program on St. Vincent and Grenada offers the possibility that these islands will be declared "fruit fly free" zones, which would allow direct shipment of fresh fruits to the southern portion of the United States. It would create the only supply source for several tropical fruits, outside the small U.S. production of exotics, such as Passion Fruit, which are currently prohibited from entering the U.S. market in fresh form.

There is a movement within the four Windward Islands to promote regional cooperation in exports of fresh produce. HIAMP would provide support to the privatization of marketing arrangements through encouragement to private growers association in each country, and for the region should there be interest from producers, exporters and buyers. Special consideration would be given to promoting growth of private sector traders, privatization of marketing board functions, and external investment in joint ventures. But the subproject would be more than an exporter of existing production, there are serious problems in growing, picking, packing, and transportation of fresh produce that constrain export sales. The project would assist the associations to settle on standards, grades, priorities and labels, and then improve quality and quantities of those which are most valuable. In addition, the project would conduct experiments with alternative modes of air shipment for high-cost perishables, and introduce new tropical fruit and nut products which have known high-value markets in the United States and Europe. Annex K provides more details of the proposed six million dollar Tropical Fruit Subproject.

c. The Crop Diversification Subproject

Due to rainfall patterns, cocoa and tropical fruit are produced primarily on the four Windward Islands. The Crop Diversification Subproject seeks to improve agricultural production and profitability in the Leewards -- Antigua and St. Kitts-Nevis. There is an excellent opportunity for private sector investment in high-return row crops on land presently reserved for use by marginal return activities. This would provide technology, management and markets which would directly benefit growers on St. Kitts-Nevis and Antigua. The subproject would demonstrate the technology for the mechanization and commercialization of 1,000 acres of Sea Island Cotton or other exotic crop, with complementary row crops should irrigation be available during the summer growing season. Annex L provides the details of the proposed subproject, which is allocated two million dollars, and will be designed early in the second year of project operations by a team to be assembled by the Core Contractor.

d. The Mariculture Subproject

No resource is more abundant in the Eastern Caribbean than clear, clean seas maintained by the sun at the consistent temperatures needed for exotic species mariculture. Project activities supported from Quick Response Funds will have had one or more years of operation by the time scheduled for the design of the Mariculture Subproject. That should allow sufficient gestation period for the opportunities to be explored at smaller scales. Activities which are now ongoing and considered for HIAMP include a shrimp hatchery producing seed stock, oyster seedling production, Mithrax Crab production on two islands using algal turf technology, Marron Lobster outgrowing, sea moss production, fish hatcheries, and reef enhancement for mollusks such as

conch. This subproject, to be designed late in the second year of the project by a team assembled by the Core Contractor, has been allocated one and a half million dollars.

3. The Core Contractor

The Core Contractor will manage the diverse and modular activities of HIAMP, under the policy direction of the Agricultural and Rural Development Office (ADO) of RDO/C. The Request for Proposals for contractor services was published and distributed in November with a March submission date (revised to April). The Core Contract will provide five island advisors (to be phased in over the first two years), two Barbados-based specialists (the Team Leader and the marketing specialist), and home office support. The Administrative Analysis (Annex P) provides details of the activities and responsibilities of the Core Contractor, while the Implementation Plan (Section IV) outlines the time-phased actions needed to begin the project.

The Island Field Advisors will work with local entrepreneurs and outside investors to prepare feasibility studies (drawing upon specialized technical assistance if necessary from the Core Contractor's short-term TA funds), assist in obtaining equity and loan funding, monitor Quick Response Activities once implementation has begun, and assist with marketing arrangements for the agricultural output. They will also provide monitoring services on the pace and progress of implementation.

The Core Contractor's Barbados office will manage overall contractor responsibilities in HIAMP, with the Team Leader providing supervision and coordination for the activities of the Island Advisors. The marketing specialist will work directly with commodity producers and agroprocessors to secure market niches and to ensure that the products exported meet quality control standards. There will be significant accounting and administration requirements for the funds expended by the Core Contractor, aggregating all field accounting from the Island Advisors, preparing the final feasibility study submissions to CFSC, completing environmental examinations and assessment for RDO/C, meeting potential investors for briefings and transfer to the island with the most appropriate natural resource base for their particular interest, and establishing workplans and priorities for future direction of the project.

The Core Contractor will be required to maintain a capacity for rapid response to market, pricing, quality and quantity information on the U.S., Canadian, and European markets, when requested by the Barbados office. This information is assumed to be provided by the Contractor's modest home office staff. This office will also design and operate an investor search system to identify potential buyers, brokers, marketers and importers of goods which are or can be grown in the Eastern Caribbean. When investors have been identified who are interested, personal contact by a representative of the Core Contractor is the best

method of creating an atmosphere conducive to joint venture participation in the Eastern Caribbean. See the Technical Analysis in Section VI for a more detailed description of the proposed investor search model for HIAMP.

Finally, the Core Contractor will manage a $300,000 fund to undertake small-scale research and development activities for HIAMP. This would include limited tests of crop varieties, production practices, packaging, shipment, processing and test marketing products. The Core Contractor will design the three Major Subprojects to AID Handbook 3 standards.

The Core Contractor, with supporting staff on five islands, a Barbados office, U.S. support and a significant allocation of short-term design assistance for both QRA and major subprojects is estimated to require ten million dollars over a five-year period. These costs have been included in the economic analysis of HIAMP, which indicates positive returns with this level of TA. The best RDO/C judgment is that in the Eastern Caribbean, in the absence of professional Core Contractor services, there is little likelihood that the project would be successful.

III. COST ESTIMATE AND FINANCIAL PLAN

A. Component Cost Summary

Each major project component cost within HIAMP is estimated as follows:

Table 1
HIAMP COMPONENT COST SUMMARY

	(In U.S. dollars)
Quick Response Funds	12,000,000
Trust Administrative Expenses	850,000
Major Project Fund	12,500,000
Core Contractor	10,000,000
Special Studies and Evaluation	750,000
Contingency	3,900,000
TOTAL	40,000,000

B. Financial Plan

Table 2 estimates the level of expenditures by project year over the five year life of project. Project year rather than fiscal year was used so that adjustments could be easily made based upon when the project actually begins. Figures presented in the sections on major subprojects are based on fiscal year projections with the project life beginning in April 1986. Although projections have been adjusted so that they are internally consistent, it should be noted that they are different numbers. Fiscal year 1986, for example, includes only the period from April-September, while the project year shown in Table 2 covers April 1986-March 1987.

It is hypothesized that equity investments and reimbursable grant fund disbursements will increase steadily over time with the heaviest disbursement in year 4. Since it is unlikely that a significant return will be realized on the Trust's equity fund investments until year 5, it is proposed that AID cover most of the management and administrative costs associated with the reimbursable grant and equity funds until that time.

A total of $12.5 million has been allocated for the major subprojects that are expected to have a substantial impact on export earnings from agriculture, GNP and employment. The design of the cocoa subproject, including an analysis of costs on a fiscal year basis, is discussed in Annex J. This subproject is ready for implementation. The tropical fruit subproject is estimated to cost $6 million, with a proforma budget presented in Annex K. This subproject will be designed and begin implementation during the first year of the project. The Crop

Diversification project on the Leeward Islands, described in Annex L, and the Mariculture project, described in Annex M, both will be designed and begin implementation in year two.

Additional special studies and project evaluation activities are expected to require about $750,000. This line item includes an annual financial review and two audits of the project. (See Section VIII on project evaluation for further details). Two of the special studies, discussed in Section VIII, that have been identified to date are agricultural lending and transportation. Finally, a contingency of about 10 percent of total project funds has been reserved.

C. Total Contributions to the HIAMP Project

USAID funds will be used to leverage additional resources from private investors, cooperatives and groups, CFSC, other intermediary financial institutions and other donors. Conservative estimates indicate that HIAMP activities will generate an additional $22 million in investments from these sources -- causing the total value of project activities to be about $62 million.

Table 3 estimates the total investment that will enter HIAMP activities. Major contributions include:

- Equity Investment: Each subproject will require some contribution from the private entrepreneur, group association or cooperative involved. It is estimated that each dollar invested by the CFSC managed equity fund in a private, profit-making corporation will generate (at least) $.25 in new investment from private local or expatriate investors. Each dollar of reimbursable grant funds to a non-profit cooperative or association is expected to generate $.15 in new contributions from members. In addition CFSC will contribute 15 percent of its annual net profits to the Equity Fund. Given expected profits of US$3.5 million during the next five years, CFSC should contribute about US$525,000 over the first five years of the project.

- Loan Funds to Quick Response Activities: HIAMP grant and equity funds plus technical assistance should make it more attractive for private (including CFSC) and public financial institutions to lend to HIAMP subprojects. Each dollar from the equity fund is expected to generate the same amount of loan funds to Quick Response Projects -- about US$ 7 million over the first five years of the project.

- Administrative Expenses: Although USAID will pay for most of the Trust's administrative expenses associated with managing the reimbursable grant and equity funds, CFSC has

agreed to pay for an additional full-time secretary and the rental cost for added space. The value of this contribution is estimated at $100,000 over five years.

- Regional Cocoa: The design for the regional cocoa subproject estimates that private investors and cooperatives will invest $500 thousand and $250 thousand respectively. Intermediate Financial Institutions will provide about $1.25 million in loan funds, while the Canadian International Development Agency has pledged US$6.4 million for the rehabilitation of cocoa in Grenada.

- Tropical Fruits: The $6 million provided by USAID will be supplemented by $1 million and $250,000 in investment funds by private entrepreneurs and cooperatives. IFIs will contribute about $1 million in loan funds while the British Development Division has stated that it will provide about $250,000 in grant funds.

- Leeward Island Agricultural Diversification Project: This $2 million project will seek $500,000 in private investment, $100,000 from cooperatives and $500,000 in loan funds.

- Regional Mariculture Development: This $1.5 million project expects to generate about $500,000 from private investors.

Not included are contributions expected to be made by the International Bank for Reconstruction and Development (IBRD) and the European Development Fund (EDF). The IBRD, for example, has just begun a $10 million production and export development project in Grenada which may have important linkages to HIAMP. The EDF is providing technical assistance to the Caribbean Agricultural Trading Company (CATCO), and may provide financing to other institutions that will interact with the HIAMP project.

Table 2
SUMMARY OF PROJECT COSTS BY PROJECT COMPONENT AND EXPENSE CATEGORY
(IN US$000)

PROJECT COMPONENT/YEAR	ONE	TWO	THREE	FOUR	FIVE	TOTAL
1. Quick Response Funds						
a. Reimbursable Grant	500	1000	1250	1250	1000	5000
b. Venture Capital	300	1000	1500	2000	2200	7000
c. Trust Admin. Costs						
Manager	50	53	54	58	61	276
Project Ass't	0	35	37	38	41	151
Account./Procure	25	26	28	29	30	138
Account./Procure	25	26	28	29	30	138
Travel/Per Diem	10	15	15	15	15	70
Communications	2	2	2	2	2	10
Office Equipment	20	0	0	0	0	20
Supplies	5	5	6	6	6	28
Utilities	3	4	4	4	4	19
Sub-Total	940	2166	2924	3431	3389	12850
2. Major Project Fund						
a. Regional Cocoa	1096	709	556	436	203	3000
b. Tropical Fruits	300	2000	2000	1000	700	6000
c. Crop Divers.	0	300	1000	700	0	2000
d. Mariculture	0	250	500	500	250	1500
Sub-Total	1396	3259	4056	2636	1153	12500
3. Core Contractor	2200	2000	2000	2000	1300	10000
Sub-Total	2200	2000	2000	2000	1800	10000
4. Special Studies & Project Evaluation						
a. Ag. Credit	60	0	0	0	0	60
b. Transport	60	0	0	0	0	60
c. Financial Review	10	10	10	10	20	60
d. Other Studies	0	100	100	80	40	320
c. Evaluation	0	100	0	150	0	250
Sub-Total	130	210	110	240	60	750
Total	4666	7635	9090	8307	6402	36100
Contingency	0	0	1300	1300	1300	3900
GRAND TOTAL	4666	7635	10390	9607	7702	40000

Table 3
HIAMP FUNDING FROM ALL SOURCES a/

ACTIVITY	USAID	PRIVATE INVEST.	GROUPS/ COOPS	CFSC	IFI's	CIDA	BDD	TOTAL
Core Contractor	10000	0	0	0	0	0	0	10000
Reimbursable Grant	5000	0	0	0	0	0	0	5000
Equity	7000	1750	300	500	0	0	0	9550
Loan Funds(QRF)	0	0	0	0	7000	0	0	7000
Administration	850	0	0	100	0	0	0	950
Regional Cocoa	3000	500	250	0	1250	6390	0	11390
Tropical Fruits	6000	1000	250	0	1000	0	250	8500
Leeward Islands	2000	500	100	0	500	0	125	3225
Mariculture	1500	500	0	0	0	0	0	2000
Studies and Ev.	750	0	0	0	0	0	0	750
Contingency	3900	0	0	0	0	0	0	3900
TOTAL	40000	4250	900	600	9750	6390	375	62265

a/ With the exception of USAID funding, other sources are design team estimates and reflect no actual committments.

D. Methods of Implementation and Financing

Table 4
HIAMP FINANCING MECHANISMS

Activity	Method of Financing	Amount
1. Quick Response Fund		$12,850,000
a. Equity Shares b. Reimbursable Grant c. Administrative Expense	30 to 90 day advance to a not-for-profit implementing agency	
2. Major Projects		
a. Cocoa b. Other (To be designed)	FLRC to PVO or AID Direct/ HC reimbursable contracts	$ 3,000,000 9,500,000
3. Core Contractor	AID Direct Contract Cost Reimbursable plus fixed fee	$10,000,000
4. Other		
a. Special Studies b. Financial Reviews c. Evaluations	AID Direct Contract Cost Reimbursable plus fixed fee	$ 750,000
5. Contingency		$ 3,900,000
TOTAL		$40,000,000

The Quick Response Fund Activities will be implemented through a Trust mechanism where the Trustee has no surplus capital resources. The Mission therefore proposes to disburse funds on a 30 to 90 day advance system in conjunction with AID Handbook 13 implementing procedures. In the case of equity contributions, the implementing organization would estimate, based on feasibility studies submitted for approval, the number of equity shares which would be purchased within the upcoming 30 days. In the case of the reimbursable grant, the implementing organization would estimate their 90 day requirements for disbursements based upon the estimated needs of the subgrantee. Administrative expenses would also be reimbursed upon a 90 day revolving advance estimate.

The implementing organization, through its current AID loan funded project, has experience monitoring AID's financial and procurement requirements. Within the administrative expenses funded by this project, there are sufficient resources to finance two accounting/procurement officers to establish and maintain adequate procedures for: controlling and reporting on flows of funds, adhering to and recording compliance

with AID's procurement regulations, and, evaluating the financial statements of fund recipients. During the initial stages of implementation, the RDO/C Controller's Office and Project Development Division will assist the implementing institution to establish accounting and procurement guidelines which they can distribute to firms receiving equity/reimbursable grants, thereby facilitating compliance from the bottom up. See pages 42 and 43 for additional information. During the life of the project, funds have been budgeted for yearly financial audits of the implementing organization and the Quick Response Fund.

Of the major projects to be financed under HIAMP, only the Cocoa subproject has been designed to Handbook 3 standards. The Mission will contract for management services. If a PVO is contracted, financing will be through a Federal Reserve Letter of Credit. The agreement will stipulate supplemental financial reporting to the Mission in order to assure timely information to the Project Officer. The three remaining subprojects will be designed in Fiscal Years 1987 and 1988. If these projects utilize a PVO, the FLRC method of financing will be considered. However, if subproject design results in a contract with a profit-making enterprise, cost-reimbursement-plus-fixed- fee contracting will be utilized.

The core contract, valued at $10.0 million for five years, will be financed through an AID direct competitively negotiated cost-reimbursement-plus-fixed-fee contract. There is no one host country institution involved in the HIAMP project which precludes host country contracting procedures. Likewise, the special studies, financial reviews, and evaluations will be most appropriately AID direct cost-reimbursement-plus-fixed-fee contracts, essentially to assure the integrity of the evaluation and review process.

IV. IMPLEMENTATION PLAN

A. Implementation Analysis

HIAMP is a five-year project, with a PACD of April 30, 1991. The project is divided into three components, and the implementation schedule is similarly divided into those actions necessary within a particular component of the project. The first two to begin are the Quick Response Activities (QRA's) and the Regional Cocoa Rehabilitation and Development Subproject. The remaining three major subprojects will be designed on the timetable shown below.

1. Quick Response Activities

Quick Response Activity implementation requires two RDO/C actions: a) A grant to CFSC managed Trust to establish the agricultural financial services windows (reimbursable grant and equity) and the administrative unit which will manage those funds; and, b) Procurement and placement of technical assistance Island Advisors and Barbados Management, under the Core Contract.

a. Establishing an Agricultural Financial Services Window

CFSC has been an active participant in the project design, with the General Manager and representatives of the Board of Directors reviewing project concepts. Details of establishing the Trust, the operations of the financial windows, the required staff, the process for identification, interviews and hiring, have been agreed. Within 30 days of the approval of the Project Paper and satisfaction of conditions precedent, RDO/C will establisn a Trust with CFSC as manager. Within 90 days of the approval of the Project Paper, the window will be open, ready to receive proposals for equity and grant funding.

The conditions, terms and procedures for the use of the Trust have been established and accepted by CFSC. RDO/C will complete the legal documents and subject to the satisfaction of conditions precedent discussed in Section VII, subproject funding will be operational within 90 days of the approval of the Project Paper.

b. Staffing the Core Contractor Positions on the Islands and in Barbados

The procurement notification (RFP) for the Core Contractor has been published with a response date of April 4, 1986. The Mission intends to select the contractor and sign the contract in early May. The Core Contractor will have 45 days to mobilize the Barbados Team Leader and marketing specialist, and two of the Island Advisors. By July, the Core Contractor should be in-place, briefed, familiar with island resources, knowledgeable of the procedures required to access CFSC's financial windows and process Quick Response Activity Requests.

2. Regional Cocoa Rehabilitation and Development Subproject

This module is designed and ready to commence implementation. Management of project resources will be provided through a contract with a firm or a private voluntary organization which works with cocoa development and rehabilitation projects. Technical advisory resources will be procured through a subcontract with the Hershey Food Corporation, the only U.S. source of advanced cocoa production technology. Within 120 days of the approval of the Project Paper, the contract will have been let by RDO/C, with approval of the Hershey subcontract (following a sole source waiver) to follow within 30 days. In the interim 120 days, the Pan American Development Foundation under a previously funded Project (No. 538-0147) will begin subproject implementation. Detailed implementation schedules for the cocoa subproject are provided in Annex J.

3. Undesigned Major Subprojects

The Regional Tropical Fruit Subproject will be designed by the Core Contractor beginning 60 days after contract award, with implementation scheduled for January 1987. The Crop Diversification Subproject will be designed by the Core Contractor beginning in January 1987 and Project implementation is scheduled to begin in October 1987. The Mariculture Subproject will be designed by the Core Contractor beginning in August 1987 and Project implementation is scheduled for February 1988. Technical assistance, commodity support, equipment, training and management assistance will be detailed in the subproject design.

B. Procurement Plan

1. Commodities

Responsibility for commodity procurement will be handled in the following manner:

- The Core Contractor, will acquire all commodities needed for support to the Barbados and Island Advisors (vehicles, microcomputers, office equipment, etc.) as well as all commodities required for small-scale research and commercialization tests (agricultural seedstock/cultivars, packaging material, special implements/machines, etc.), subject to AID procurement regulations.

- The Caribbean Financial Services Corporation, will ensure that commodities procured by sub-recipients for QRA's are within the source and origin and competitive procurement regulations of AID. Further detail of how this procurement will be managed and supported is given in the section 3 below.

Table 5
HIAMP IMPLEMENTATION SCHEDULE

April 86	- Project Authorized by AID/Washington. - Proposals for Core Contract Evaluated. - RFP for Cocoa Contractor Advertized. - Cocoa Subproject Begins with Short-Term Assistance from PADF.
May 86	- Core Contractor Contracted. - QRA Trust Established.
June 86	- Proposals for Cocoa Contractor Received and Evaluated. - Core Contractor Mobilizes (2 Barbados, St. Lucia and Dominica). - QRA Processing Begins, QRA Windows Open in CFSC.
July 86	- Cocoa Contract Awarded - Subcontract with Hershey Food Corporation Negotiated.
August 86	- QRA Feasibility Studies and Proposals in Full Operation. - Design for the Tropical Fruit Subproject Begins.
Nov. 86	- Final Design of the Tropical Fruit Subproject Submitted for RDO/C Approval.
Jan. 87	- Design for the Crop Diversification Subproject Begins. - Tropical Fruit Subproject Begins. - St. Kitts-Nevis and Antigua Field Advisors Arrive.
July 87	- Final Design of the Crop Diversification Subproject Submitted for RDO/C Approval. - St. Vincent and Grenada Field Advisors Arrive.
Sept. 87	- Design for the Mariculture Subproject Begins.
Oct. 87	- Crop Diversification Subproject Begins.
Nov. 87	- Final Design of the Mariculture Subproject Submitted to RDO/C for Approval.
Feb. 88	- Mariculture Subproject Begins.
May 88	- Special Review of QRA Conducted.
June 88	- Mid-term Evaluation of Project Activities Completed.
July 88	- Obligate Second Tranche of QRA Funds.
Oct. 90	- Final Evaluation of Project Activities.
April 91	- PACD.

- The contractor for the Regional Cocoa Rehabilitation and Development Subproject, will procure all commodities specified under the subproject (vehicles, farm equipment, planting material, plant protection equipment), subject to AID procurement regulations.

- The management grantee or contractor for the Tropical Fruit, the Crop Diversification and the Mariculture Subprojects, will procure all commodities specified under those subprojects, subject to AID procurement regulations.

2. Technical Assistance

a. RDO/C

The following technical assistance procurements will be made by RDO/C:

- The Core Contractor, with 330 months of long-term and 60 months of short-term technical assistance to be contracted by RDO/C. These person months will be used to design the Quick Response Activities, and the remaining three Major Subprojects, as well as to provide coordination and management/monitoring for all HIAMP components. The Request for Proposals (RFP) was issued in November 1985. The Project Paper will be sent to interested bidders in February 1986. Proposals are due in April, with contracting to be completed in early May.

- The contractor for the Regional Cocoa Rehabilitation and Development Subproject, with 72 months of long-term and 85 months of short-term technical assistance to be negotiated by RDO/C. These person months will be used to oversee all AID inputs and procure all commodities required for the Cocoa Rehabilitation Subproject, as well as to integrate technical specialists from the Hershey Foods Corporation Subcontract into the project. The contractor will be selected by RDO/C from among those responding to an RFP to be publicized in April 1986. RDO/C will specify in the contract, that the organization must provide specified types and kinds of technical services in support of high-yielding and high-return cocoa farming. The only U.S. organization that can provide these services is believed to be the Hershey Foods Corporation, which will serve as a subcontractor. If this belief is confirmed, a sole source waiver will be considered.

- The management grantee or contractor for the Tropical Fruit, the Crop Diversification and the Mariculture Subprojects, will be described when those subprojects are designed.

3. Special Arrangements for CFSC Oversight of Procurement of Management, Technical Assistance, Commodity and Construction Services

The Caribbean Financial Services Corporation is presently staffed with a General Manager, a Loan Officer, and a Secretary. The opening of Agricultural Financial Services Windows will call for the addition of five staff members; two additional financial services professionals and three supporting staff, whose positions and responsibilities are detailed in Annex P. Two of the new staff additions will be Accounting/Procurement Officers, who will undergo special instruction from RDO/C to ensure that funds provided by the Trust conform to AID requirements. Enterprises will need to have some institutional capacity and know and conform with applicable directives if they are to contract directly with service suppliers following AID procurement and sourcing regulations.

Many enterprises which receive funds for technical assistance and commodity procurement will have the capacity to process their own procurement requirements, know the sources and be able to negotiate directly with the likely providers of services using Handbook 13, Section IU standards. CFSC will oversee this process, formally agree to the contracts presented by the enterprise, and pay the suppliers (if they are from dollar currency areas) after certification by the enterprise that services were received.

Those grower associations which will receive Trust funds, and which do not have the internal capacity to procure or account for funding according to AID regulations, will first be provided with a management grantee which will provide management, accounting and procurement services. This will be funded within their reimbursable grant from CFSC.

Those enterprises which do not have the capacity to obtain technical assistance will be helped by the Core Contractor to locate specialists with skills identified during the design. The Core Contractor's Island Advisors will call upon the Barbados Office to communicate with and identify appropriate technical assistance (which will not be furnished by the Core Contractor to prevent potential conflict of interest situations from arising). Should this not suffice, the Home Office of the Core Contractor will be asked to identify and negotiate with specialists meeting the skills and experience qualifications under time and services charges to the project. The specialist, once located, daily rate negotiated, approved by the client enterprise and CFSC, will be scheduled into the project by the Core Contractor.

4. Funding Flows and Financial and Accounting Requirements

RDO/C will ensure that funds advanced to CFSC cover not more than a 90 day operating period, based upon RDO/C prior approval of reimbursable grants and equity purchases to be made. Stock purchases by CFSC in an enterprise will complete the transaction, using the receipt for the stock purchases and the physical stock record as documentation to establish expenditure. Reimbursable grants from the Trust will be in the form of advances to the receiving enterprises, to be cleared with a return of appropriate accounting records from the enterprise or grower association to CFSC. In turn, CFSC will aggregate the expenditure reports and submit to RDO/C, Office of the Regional Controller, documentation on the funds expended accompanied by the request for an advance against the next tranch of forecast expenditures.

V. MONITORING PLAN

A. AID Responsibilities

The Agriculture and Rural Development Office (ARDO) of RDO/C will manage HIAMP. The Chief of the ARD Office (the ADO) will directly monitor the actions of the Core Contractor, and receive the feasibility reports prepared for Quick Response Activities. The ADO will chair a Project Review Committee comprised of AID, the Team Leader and the Project Manager at CFSC. If this committee finds a feasibility study to be complete and acceptable, the ADO will forward an Action Memorandum to the Mission Director requesting approval for funding. When a subproject is accepted for funding, the ADO will request CFSC disbursement procedures be set in motion.

The ADO will monitor actions of the Core Contractor through monthly activity reports, quarterly progress reports, forward work plans and field inspections of subprojects underway. The ADO will provide the Core Contractor with a set of procedures to be followed for the use of the small-scale research and commercialization fund of $300,000 contained within the Core Contract that will allow up to $2,500 to be expended by the Island Advisor against one activity which is titled, numbered, and included in each monthly report. The Core Contractor would be authorized to expend up to $10,000 for larger or multiple-island experiments. Requests for expenditure for small research and commercialization activities above a total of $10,000 per activity would come to the ADO for approval before funds were expended by the Core Contractor.

The ADO will monitor progress of the Quick Response Activities from monthly activity reports and quarterly progress reports submitted by CFSC. In addition, CFSC will submit once each year, a consolidated summary of the status of each equity investment based upon annual financial reports including financial statements for each enterprise or association supported from the QRF windows. The Core Contractor's Island Advisors will provide monthly (in the early phase) or quarterly (in later phases) monitoring reports on the QRA's, tracking progress against the plan prepared during the feasibility study. Corrective actions which require RDO/C attention (e.g., government import or export policies, health inspection revisions by USDA, emergency funding, etc.) will be brought to the attention of the ADO through the Core Contractor and through CFSC.

The ADO will monitor progress of the major subactivities through the monthly and quarterly reports submitted by the management grantees or contractors. In addition, the Core Contractor will submit quarterly monitoring reports based upon progress toward objectives identified during design.

The ADO will also process the Initial Environmental Examination (IEE) reports for each Quick Response Activity requiring AID/Washington sign-off. Preliminary IEE forms will be submitted to the ADO by the Core

Contractor as one component of the QRA feasibility study using the procedures outlined in Annex F. IEE's will then be forwarded to LAC/DR/EO for a review of environmental threshold decisions.

B. Core Contractor Responsibilities

The Core Contractor will submit an aggregated monthly activity report from each Island Advisor, the Barbados Management Office, and the activities of the market and investor search in the U.S. In addition, the Core Contractor will submit quarterly progress reports set against rolling forward plans which cover the next 12 calendar months in general, the next six months in more specific detail. The quarterly reports will indicate progress against the plans submitted, and revisions and new plans for the upcoming six months. In addition to the regular reporting requirements, the Core Contractor will also submit feasibility studies for all QRA's and monitoring reports for QRA and major subprojects under implementation.

The Core Contractor will maintain a data base on each island, in Barbados, and at the location where the market and investor search takes place, on hard-disk IBM-compatible microcomputers provided by the project. This will allow the interchange of disks to update information shared by all Core Contractor participants and RDO/C, where the Wang system will accept IBM-compatible disks. In addition, this system will allow exchange of information with other agricultural commercialization and marketing promotion institutions at the ADO's discretion. The data base will provide ready access to special information on project activities, such as all floriculture projects supported, the total amount spent in Grenada over the past 12 months, or the number of QRA activities completed and submitted, approved, rejected, under feasibility study, or rejected prior to submission, by country, subject matter, level of funding, year, etc. This will give the ADO the ability to draw on this data base for special reports which may be needed at irregular times during the year.

C. CFSC Responsibilities

CFSC will maintain records on an IBM-compatible hard-disk microcomputer with disks which are interchangeable with those in use by the Core Contractor. A data base will be established which will manage the accounting system for all CFSC finances, including individual activity accounts. CFSC will submit to the ADO quarterly reports of activities showing proposals received for processing, those approved, in process, and rejected, by enterprise name, level and type of funding, enterprise type, state, dates of receipt, acceptance, rejection, and other categories found useful as the project is implemented. In addition, CFSC will submit quarterly progress reports against plans made for the forward 12 months, with detailed actions to be taken and objectives to be achieved for the next quarter. CFSC will carefully analyze annual financial statements of each equity investment. The CFSC Project Manager, Project Officer, or nominee who will represent the

Trust's interests will sit on the Board of each recipient firm, attend Board Meetings and help set financial and operational policy. Once each year, CFSC will submit to RDO/C a summary report on the financial progress of each recipient of Quick Response Funds from either the grant or equity window, based upon an audited financial statement for the prior 12 months and a revised implementation timetable for the activity for the next 12 months. With its computerized data base, CFSC will be able to service special requests for information on the QRA component of HIAMP.

D. Management Grantees or Contractors for Major Subprojects

RDO/C will require regular reporting from management grantees or contractors for the four major subprojects involved in HIAMP. The requirements will follow those of the Core Contractor, short monthly activity reports, more detailed quarterly progress reports set against forward work plans which have been approved by the ADO. The Core Contractor working on the islands will provide a reality check on the reporting from the management contractors with quarterly monitoring reports against plans set forth for subproject implementation.

VI. SUMMARY ANALYSES

A. Technical Analysis

1. Marketing Analysis

a. Agricultural Export Trade Overview

Agricultural export earnings dominate the exports of the Eastern Caribbean countries except Antigua/Barbuda. Typically, one traditional crop provides the bulk of agricultural export earnings, viz. bananas in St. Lucia, St. Vincent and the Grenadines, and Dominica, and sugar in St. Kitts-Nevis; only in Grenada is there evidence of a more diversified export commodity mix (bananas, cocoa, nutmeg and other spices). Intra-regional and, to a lesser extent, extra-regional exports of non-traditional fresh produce items are confined to the four Windward Islands (Dominica, St. Vincent, St. Lucia, and Grenada). Their important intra-regional export markets are Guadeloupe (Dominica), Trinidad (St. Vincent), and Barbados (St. Lucia). Relatively small exports of fresh fish are shipped to Martinque and Guadeloupe from Antigua/Barbuda, St. Kitts-Nevis, St. Lucia, and St. Vincent and the Grenadines. Extra-regional markets of importance are the U.K., more recently, Canada and, to a lesser extent, the U.S., for traditional produce focused at ethnic market segments and tropical and 'off-season' produce for the wider indigenous market in developed countries.

b. Marketing Structure and Constraints

Markets for fresh produce in the Eastern Caribbean are small in size and relatively under-developed. There has been little or no development of a modern, organized wholesale trading sector. The small-scale huckster sector dominates this market area. The major characteristics of this traditional huckster trade are: low overhead and low volume shipped per huckster, high post-harvest losses reflecting inadequate infrastructure and trading facilities, and sale of poor quality produce at point of market which serves to constrain regional demand. In general, the regional market offers only limited opportunity for growth in exports from the Eastern Caribbean states, as a result of:

- efforts to increase self-sufficiency in the important importing countries of Trinidad, Barbados, and Guadeloupe;
- lack of secure access to these regional markets because of non-tariff barriers;
- historical competition from public sector agencies (national marketing boards) in the fresh produce sector;

- o inadequacies in regional marketing infrastructure (not least the dearth of reliable and purpose-designed intra-regional transportation facilities).

For 'non-traditional' export crops, there are only very few Eastern Caribbean growers and traders who ship produce to extra-regional markets on a sustained basis. Factors that have constrained regional market development are also major contributors to the lack of development of a vibrant extra-regional export marketing sector.

c. Extra-Regional Market Opportunities

There are a wide range of fresh produce items that are currently grown or could be grown in the Eastern Caribbean that have high consumer acceptability in North American and European markets. Eight major product groups which have distinct market potential have been identified in Section II.A.2. They are examples of niche markets. For Eastern Caribbean growers and traders to penetrate them successfully and satisfy the sophisticated requirements of developed country markets, there is a need to focus on specific niches, to maximise competitive and comparative advantages, and not to compete head-on with major low-cost producers that already are well-established in target markets for Caribbean produce. In Annex F, market opportunities for selected existing and potential Eastern Caribbean fresh produce items are explored in more detail. Mangoes and, to a lesser extent, avocado which are already in production in the region have significant market opportunities in the U.K., continental Europe, and Canada. A wide range of tropical items that can be grown in the Eastern Caribbean that are attractive, easily prepared, small in size, and low in unit cost (for example, lychees) have enormous market potential in developed country markets. Markets are increasing in size, and are accessible to regional growers, for tropical flowers (for example, Anthuriums to markets in London, New York City, Toronto, which have direct air contact with the Eastern Caribbean). A traditional export crop of Grenada, "fine flavored" cocoa has taste characteristics that differentiate it from "ordinary" cocoa commodity. Seed stock for shrimp and oyster production are, potentially, products that could capitalize on the warm weather and good water quality in the Eastern Caribbean, and penetrate specialized mariculture markets.

d. HIAMP Addressing Constraints to Market Development

The focus of HIAMP is squarely upon identifying buyers for agricultural exports which are or can be produced in the Eastern Caribbean, then, growing and selling the commodities (preferably as differentiated products) in international markets. The project is market oriented and calls on the initiative and resilience of the private sector to maximize returns to the Project; it is systems oriented i.e., it has the capacity to address constraints to development throughout the system, from market identification back to the organization of production. The project is pro-active, rather than re-active. Immediate needs of

investors can be addressed through the Quick Response Fund. Using a combination of the triad of Project inputs that are fundamental to encouraging and sustaining commercial success in the region - finance, technical assistance, and U.S. company joint-venture participation - the Project will attack key constraint areas such as lack of market knowledge, inadequacies in regional production, post-harvest and management experience and expertise, lack of access to fixed and working capital, and inadequacies in regional production and marketing infrastructure.

It is expected that the export market focus for products already grown in the Eastern Caribbean at the outset will be the U.K., Europe, and Canada, and, as export volume builds, and export experience is learned, markets in the U.S. will be identified and penetrated. This market sequence reflects inter alia: that the U.K. has been a traditional market for Caribbean produce; Canada has strong traditional trading links with the Eastern Caribbean; both air and sea freight links with the U.K. (and thereby, Europe) and Canada are well established; growers and traders in the region have only limited experience and have had difficulties in satisfying the phytosanitary requirements for U.S. market entry. When joint venture partners have established market linkages in the U.S., the move to U.S. market penetration will be accelerated.

It is not assumed that one umbrella marketing organization can solve all the major marketing problems in the region. Rather, the project has the flexibility to help build successful marketing firms, agencies, associations, etc., that suit the circumstances of particular supply countries while, concomitantly, reinforcing existing marketing initiatives. For example, CATCO could be encouraged to act as the export marketing arm of a HIAMP-supported tropical fruit grower association.

2. Quick Response Activities

a. Illustrative Quick Response Activities

Preliminary suggestions for 26 Quick Response Activities (QRA) under HIAMP were prepared from field investigation of what already exists in the Eastern Caribbean. With few exceptions, all identified, illustrative subprojects are underway, with growers, shippers and investors beginning activities. The Design Team catalogued the requirements to expand their operations significantly.

The following possibilities, investigated by the field team, are offered as examples of the small Quick Response Activities that HIAMP could support, with feasibility studies completed by the Core Contractor, and proposals presented to CFSC and RDO/C for review and approval. The division of the enterprises discussed below into private and grower associations was done based upon the existing organizational

structure. The division between equity and reimbursable grant funds was approximated by estimation of the needs of each private enterprise for technical assistance and training based on existing levels of skills and knowledge within the organization. The list is illustrative only of the opportunities which exist within the Eastern Caribbean today, and not the proposed division of equity/grant funding needed, or the relationship between private firms and grower associations which will be supported. HIAMP will provide incentives for many of the small grower associations or cooperatives to become part of a for-profit enterprise.

Table 6
SUMMARY OF REPRESENTATIVE QRA'S BY COUNTRY

US DOLLARS

ACTIVITY	RECIPIENT	VENTURE CAPITAL	REIMBURSABLE GRANT FUNDING
ANTIGUA			
Winter Vegetables	Private	200,000	70,000
Pigeon Peas	Grower Assoc	-	130,000
Sea Island Cotton	Private	150,000	50,000
Pineapple	Private	120,000	60,000
Fish Export Marketing	Private	50,000	25,000
SUB-TOTAL		520,000	335,000
ST. KITTS			
Sea Island Cotton	Nevis CP Assoc	-	125,000
Rabbits	Private	125,000	50,000
Dairy	Private	195,000	55,000
Shrimp Hatchery	Private	300,000	-
SUB-TOTAL		620,000	230,000
DOMINICA			
Floriculture	Grower Assoc	-	300,000
Fruit Processing	Private	149,000	15,000
Passion Fruit	Grower Assoc	-	150,000
Dom. Food Industries	Private	105,000	50,000
Cardamon	Private	170,000	30,000
SUB-TOTAL		424,000	545,000
ST. VINCENT			
Eggplant Export	Grower Assoc	-	85,000
Montreal Gardens	Private	170,000	80,000
Fruit Juice Material	Private	75,000	25,000
Tropical Fruit Export	Private	75,000	25,000
Vegetable Production	Private	410,000	90,000
Vegetable Pack/Storage	Government/lease	-	350,000
SUB-TOTAL		730,000	655,000

ACTIVITY	RECIPIENT	VENTURE CAPITAL	REIMBURSABLE GRANT FUNDING
ST. LUCIA			
Anthurium Lilies	Private	100,000	35,000
Contract Vegetables	Private	100,000	50,000
SUB-TOTAL		200,000	85,000
GRENADA			
Anthurium Lilies	Private	190,000	35,000
Cocoa Pod Feed	Private	-	75,000
SUB-TOTAL		190,000	110,000
EC WIDE			
Carton Design and Manufacture (R&D)	CATCO	-	200,000
Oyster Seed Hatchery	Private	250,000	50,000
Mithrax Crabs (R&D)	Private		490,000
SUB-TOTAL		250,000	740,000
GRAND TOTAL		2,934,000	2,700,000
TOTAL QRA FUND POTENTIAL		$ 5,634,000	

There is a different set of opportunities not presented in this document -- those which are driven by the market needs of importing countries, which have not yet been initiated in the Eastern Caribbean. These, like the special seed oysters for the French market, are the result of special knowledge of international markets, combined with an understanding of the potential of the islands in the Eastern Caribbean. This deliberate search for new opportunities and linkage to productive capacity on the six islands is one of the driving forces behind HIAMP. The important subprojects which will be generated by this as yet unknown set of activities cannot be listed. It would be reasonable, however, to assume in the five years of HIAMP, that the generation of new opportunities exceeds the income potential of the expansion of existing activities. Thus, what we know today is likely to be less than a minor percentage of what will be discovered and put into place in the future.

The fundamental issue is whether there is a reasonable place to begin -- small activities with attractive potentials to start HIAMP. We believe those opportunities are within the Eastern Caribbean, although not equally distributed. Water and prior commitments on land will limit what can be done in the Leeward Islands. Those islands with available flat land will have winter vegetable potential, while all the Windwards offer strong possibilities for floriculture and tree crop production.

b. The Enterprise Population of HIAMP

The design team concentrated on two types of agricultural enterprises -- those which exist now and those which might be put in place if changes in markets, management and technology are made. The earliest Project investments are likely to be in existing operations that seek to expand or diversify, and a few R&D efforts anticipated to grow into commercial activities over the life of the project. However, the designers made a conscious effort not to fully program all Quick Response Funds for two reasons. The first was to avoid jeopardizing the application of the primary criterion for initial investment -- would the investigator put his or her own money into an existing or restructured enterprise? With this filter many proposals and activities could be rejected out of hand. Some showed good potential for short-term return. Still others showed potential for return if business acumen or operational management were improved, better technical skills were in place, or the volume, quality or reliability of production were better matched with market requirements.

The second reason was that many good ideas surfaced which are not yet ready for implementation, but which may become enterprises under HIAMP if the right combination of markets, skills and capital comes together. Room for new ideas and entrepreneurs needs to be reserved. The purpose of a venture capital fund should be to finance the highest return investments available. No two month design effort is capable of covering even half the business opportunities that already exist, nor is it able to forecast the totality of production, processing, marketing or service ventures that will come forward.

An examination of the illustrative Quick Response Activities shows that the population of enterprises is far from homogeneous. It covers the gamut from fledgling groups that have good technical skills, energy and promise to well-established firms that are carefuly examining their options for a more diverisified use of their own capital resources. A few of the activities will require that a business or grower's group be established before the reimbursable grant and equity windows of the fund could be approached. Different types of assistance will be needed by each organization. Nearly all of them need better marketing plans and integration of market realities into their business operations. Many will need technological expertise that they cannot find or can ill afford. Most will require assistance in meeting the accounting and procurement regulations of AID. Perhaps half will need some form of management assistance, at least initially, to help meet the challenges of efficiently using new resources to meet their production and marketing objectives. Others will merely use HIAMP assistance from the Core Contractor as a catalyst to plan expansion, diversification or as an aid in the search for an advantageously positioned external investor or market.

It is envisaged that success in project implementation will lead to shifts in both the types of enterprises and the level of HIAMP assistance needed to get them started and operating. Individual agricultural ventures will improve their performance and seek both more and different services from commercial suppliers within and without the region. New marketplaces should be created for input suppliers, technical services, freight forwarders, agricultural machinery venders, maintenance services, engineering support, etc. Growth in agricultural business volume should create sufficient incentives for the service industry to grow. These services should be able to supplant some and, eventually, all HIAMP support to new agricultural enterprises.

c. The Institutional Mechanisms to be Used with QRA's

The following examples of various Quick Response Activities (QRA) will illustrate, within the floriculture industry, the type of organizations that will access Quick Response funds and technical assistance. The type of enterprise seeking funding might be a grower association, a joint venture company, or private commercial enterprise with local entrepreneurs. In certain areas of the region, the traditional method of organizing a new enterprise favors the association or cooperative approach. While within the same region and industry, but on a different island, the organizational approach will be based on private, for-profit firms, including joint ventures.

Regardless of the type of ownership structure encountered in the floriculture industry, all have a need to access capital which will be used for expansion, start-up operations, working capital, equipment and supplies, land acquisition, and planting material. The type of ownership of the firm seeking to acquire funding will determine whether or not it qualifies or is eligible to receive reimbursable grant funds or venture capital, or both. To illustrate how this would work, the following examples are used as models that can be applied in one form or another to all QRA's.

i. ST. LUCIA MODEL

TYPE OF ORGANIZATION: Private Sector Joint Venture.

The original owner has one acre under saran shade growing Heliconia and Anthurium. He has discussed joining with a U.S. investor to expand to 20 acres. Presently the enterprise is marketing regionally but intends to expand to the US market with the help of the new investor. His expansion costs are estimated at approximately EC 80,000/Acre. Included in the expansion cost is the purchase of hybrid Anthurium planting material for about EC 40,000/Acre. The enterprise would need access to venture capital for planting material, a packing shed and acreage expansion. Some reimbursable grant funding will be require for technical assistance for a short period of time. Funding: Venture Capital USD100,000; and, Reimbursable Grant USD35,000.

ii. GRENADA MODEL

TYPE OF ORGANIZATION: Private Company.

A private company plans to expand and diversify their business opportunities to the flower trade and flower-plant stock operations. The new enterprise will consist of two operations; tissue culture, and field growing of Anthurium. The company will plant eight acres of land and have a qualified technician to operate the tissue culture laboratory. The company is presently seeking a market outlet in the USA. This enterprise will require venture capital to start up operations in the tissue culture laboratory and the field. Additional funding would be necessary in the form of a reimbursable grant for half the technical assistance needed to get the diversification and expansion underway. Funding: Venture Capital USD190,000; and, Reimbursable Grant USD35,000.

iii. DOMINICA MODEL

TYPE OF ORGANIZATION: Grower Association/Cooperative.

A group of 80 to 100 growers has formed an association to market Anthurium to North America. They are producing flowers on a limited scale and have tested the market with modest shipments. To expand their activities they will require capital to build a small packing shed, buy packing material and use technical assistance to increase the efficiency and quality of their operations. Funding: Reimbursable Grant USD300,000.

3. Project Identification and Investor Search Models

a. Objectives of the Search

To take advantage of the natural and human resources of the Eastern Caribbean, HIAMP activities must compete with quality products at competitive prices delivered exactly when the market demands. While there are many competent producers among the island's agriculturalists, few have direct knowledge of and access to the high-value markets in North America and Europe. To directly address this systemic weakness, HIAMP intends to seek out investors capable of forming joint ventures, who bring technology, market access and capital to complement local capacities. HIAMP, through the Core Contractor's collaboration with PDAP's investor search capability, will identify, screen, and introduce local, North American and European investors to opportunities within the Eastern Caribbean, which will result in new investment in agricultural enterprises.

The Core Contractor's Island Advisors will become thoroughly familiar with actual and potential production possibilities on each island. They will identify which local producers are the most likely candidates for funding. The Island Advisors will determine which local producers or entepreneurs are interested in joint venture investments in agriculture.

The Marketing Advisor will work directly with commodity producers and agro-processors to find market niches and to provide clients with information on product specifications and the terms and conditions of specific buyers. The Marketing Advisor links producers with buyers.

The home office of the Core Contractor will assign a part-time agribusiness specialist to follow-up most likely investor/market prospects identified through collaboration with PDAP. The home office support person will also respond to field requests for information on quantity, quality, phytosanitary requirements, major suppliers and market windows for potential agricultural production from the Eastern Caribbean.

b. Investor Visits

The immediate results of screening of likely investors for projects in the Eastern Caribbean will be visits by potential investors to the most appropriate islands to assess potential sites, investigate project feasibility, evaluate the business climate and meet with interested local partners. The Core Contractor will make these arrangements. During one trip it might be adviseable for a potential investor to visit several islands and hold discussions with a number of potential joint venture candidates. While the initial search will use descriptive data, the final success to consumate commercial relationships between foreign and local investors will be dependent upon the personal contact between the principals involved, directly supported by the on-site involvement of the Core Contractor's staff.

c. Participation in Feasibility Studies

Whenever possible the interested foreign investors will be invited to participate in the design of the Quick Response Activities, including the financial analysis, market analysis and feasibility study packaging for review by RDO/C and CFSC. This participation will strengthen the commitment of the investment partners, and provide details on market access, quality of output required, transportation routes and health standards which might be difficult to acquire in the absence of the foreign buyer/importer/investor.

B. Financial Analysis

1. Overview of Agricultural Lending

During the past year, private commercial banks have complained of an excess of liquidity due to high minimum deposit rates (four percent) imposed by the Eastern Caribbean Central Bank and lack of what they consider to be bankable projects. Interest rates on longer-term deposits declined but lending rates remained stuck at high levels. Due to commercial banks' perception of the lack of sound investments, many currently maintain more than the reserve requirement with the ECCB -- earning zero interest.

The other major source of loan funds in the region -- the Caribbean Development Bank -- also has sufficient funds to meet most agricultural financing needs during the next few years. Additional sources of financing for agricultural projects include the Latin American Agribusiness Corporation, the Caribbean Food Corporation and the Caribbean Financial Services Corporation. All complain of lack of projects that meet their criteria. The $4.3 million CFSC discount facility established by AID under Project No. 538-0084 to discount loans to commercial banks has had no customers to date.

In June 1985, loans for agricultural production and agroprocessing represented only 3 and 2 percent (about US$ 20 million in total) of the value of all loans, respectively. Conversations with commercial bankers indicate that the overwhelming majority of agricultural loans were for traditional crops -- bananas, sugar, nutmeg and cocoa. Those agricultural loans disbursed by private banks invariably went to old trusted customers.

During 1970 - 84, the Caribbean Development Bank (CDB) only lent (directly and indirectly through the government-owned Development Finance Corporations) about US$25.0 million for agricultural production activities in the six HIAMP-assisted countries. In 1984, CDB loans to all member nations in agriculture, forestry and fishing totalled about $1.7 million -- $1.1 million of which went to a fishing venture in Trinidad and Tobago. AID has provided $12.5 million to the CDB through the Integrated Agricultural Development project and an additional $6.5 million to the Regional Agribusiness Development project. The first project had to be extended three times due to slow disbursements; finally RDO/C deobligated the remaining $2 million. The second credit line has only provided one loan to a privately-owned firm. The project has a completion date of March 31, 1986 and RDO/C plans to deobligate about $500,000.

2. Constraints to Agricultural Lending and HIAMP Strategy

The low lending activity to agriculture is not a result of the unavailability of loan funds, but rather the inability of agricultural projects to meet the criteria established by lending

institutions. Conversations with bankers indicate that three main factors constrain lending to agriculture:

- o the perception that agricultural activities carry excessive risk; (e.g. do not meet 200-300 percent collateral requirements, do not have a strong equity base to shoulder additional financing, individual unknown to bank, etc.);
- o the dearth of high quality studies presented by borrowers to indicate the feasibility of the operation; and
- o the lack of bank staff capable of analyzing agricultural loans and willing to supervise such activities.

Table 6 summarizes how the HIAMP project intends to help remove the constraints that have limited agricultural lending in the past.

Table 7
CONSTRAINTS TO AGRICULTURAL LENDING AND HIAMP STRATEGY

Major Constraint	HIAMP Strategy
1. Lack of sufficient acceptable collateral to cover the loan.	1. Quick Response Reimbursable Grant & Equity Funds will improve the financial condition of HIAMP loan applicants.
2. Insufficient investment capital (assets) to leverage the loan.	
3. Lack of high-quality feasibility studies.	2. Core contractor will prepare feasibility studies to meet IFI needs.
4. Lack of commercial bank capacity to analyze and supervise ag. loans.	3. Core contractor and CFSC will supervise loan recipients that receive HIAMP funding.

It is assumed that these measures will be sufficient to promote lending to HIAMP-assisted projects. Experience learned and studies conducted during the first two years of project implementation will determine whether these are necessary but not sufficient conditions.

3. Caribbean Financial Services Corporation

The Caribbean Financial Services Corporation (CFSC) was incorporated in Barbados in July 1983. Under its charter it may conduct

banking operations, including off-shore banking, but may not accept deposits. As of October 1985, the Corporation had issued 26,500 shares for cash subscriptions of $2,650,000.

During the initial years of operation, CFSC has adopted a conservative lending posture to build a substantial loan loss reserve and sound reputation. Thus, subloans must meet standard loan criteria: adequate collateral, sufficient cash flow to cover debt servicing requirements and knowledge of the loan applicant's character.

Upon its incorporation, USAID extended a US$12 million loan supplemented by a $400,000 grant to cover technical assistance and evaluation expenses. As of December 31, 1985, CFSC's loan committments to 22 companies totaled $5.3 million of which US$3.5 million had been disbursed. Loan size ranged from US$25,000 to 400,000. CFSC has diversified its portfolio in terms of sector and geographic area. Almost all loans have been to help existing operations expand their plants or purchase equipment. CFSC has avoided loans for agricultural production due to (1) their high-risk nature and (2) the lack of an agricultural credit specialist capable of analyzing such loan requests on CFSC's staff.

CFSC also has not made any equity or convertible debt financing arrangements, consistent with its risk minimization strategy. Commercial banks have not used CFSC's $4.3 million discount facility to date and are not expected to increase their demand in the near future.

CFSC, through a Trust arrangement, will be in charge of administering and monitoring the two Quick Response Fund windows: the Reimbursable Grant Fund and the Equity Fund. The core contractor will be responsible for preparing the feasibility study and supporting documents required to approve the disbursement of reimbursable grant and/or equity funds. A Project Review Committee consisting of the RDO/C HIAMP project manager, the core contractor and CFSC's QRF manager, will discuss the merits of these projects and financing plans. Final approval for QRF projects can only be given by the RDO/C Mission Director. Upon receipt of written approval from RDO/C, CFSC will then make arrangements for the disbursement of funds. In cases in which organizations receiving reimbursable grant funds lack the capacity to contract for needed services, those services will be built into their requirements as set forth in the feasibility study.

Equity investments will be made directly by CFSC after RDO/C and CFSC approval. A fair valuation of shares based upon audited financial statements will be completed prior to RDO/C approval. CFSC will be responsible for ensuring that all necessary legal documents have been filed prior to making any investments. The CFSC/QRF project manager or project officer will become a member of each firm's Board of Directors with meetings scheduled on a quarterly basis. In selected cases, CFSC may wish to designate another individual with expertise in the firm's line of business to represent the CFSC managed Trust's interests on the

Board. CFSC will analyze the financial status of each investment based upon audited annual financial statements. This analysis should present a financial review of the operation (analyze cash flow, balance sheet and income statements), compare actual performance to projections (noting major reasons for discrepancies), and present detailed plans for the forthcoming year's operations. An analysis of the effect of the firm on net additions in value added, employment and foreign exchange earnings would also be included.

4. Criteria for QRF Subprojects

a. Eligible Subsectors

Equity and reimbursable grant fund recipients must be involved in agricultural production and/or agribusiness activities whose output will be sold primarily to export markets. Import substitution activities can only receive funding if a detailed economic analysis (using shadow prices and eliminating transfer payments, subsidies, and tariffs) demonstrates that import-substitution is preferable to imports. (see Annex N for further information on criteria)

b. Type of Enterprise and Use of Funds

Equity Funds: Only private, for-profit firms would be eligible to receive QRF equity investments. Such investments may be used for any appropriate business activity.

Reimbursable Grant Funds: Profit-making firms (sole proprietorships, partnerships, limited liability corporations) could use reimbursable grant funds for technical assistance and limited commercial research and development activities in cases where substantial profits are expected to be earned within two years of the R&D activity. Non-profit organizations (cooperatives, associations, farmers groups, etc.) and government institutions will be able to use reimbursable grant funds for technical assistance activities, to purchase inputs for export agriculture, to develop land, to construct processing, packing, storage facilities and infrastructure, to conduct marketing tests and to cover transport charges.

c. Equity Investment or Grant Size Range

The minimum equity fund contribution is $20,000; no minimum reimbursable grant size will be imposed. The combination of reimbursable grant and equity funds cannot exceed US$500,000 per recipient and the total reimbursable grant/equity combination cannot exceed 49 percent of the subproject investment from all sources. Each reimbursable grant to a non-profit institution can only cover 49 percent of the total investment cost. Profit-making firms cannot receive reimbursable grant funds without an equity investment. The Trust may own no more than 49 percent of outstanding shares.

d. Administrative Criteria

The feasibility study must examine the management requirements of the proposed venture and verify that they can be met by current management or propose another means to ensure capable management, such as hiring an outside manager.

e. Financial Criteria

Both reimbursable grant and equity investments must pass the same set of financial criteria to receive funding. Each feasibility study will include a financial history of the client firm including, a balance sheet, income statement, and source and uses of funds statement. Each feasiblity study will also include a proforma cash flow analysis, balance sheets and income statements for the first five years of subproject operations (longer in the case of tree crops). A sensitivity analysis should be presented which covers both "worst", "best" and "most likely" cases. All projects should have at least a 15 percent financial internal rate of return. Additional financial criteria are discussed in Annex N.

5. Conditions Governing Equity Fund

a. Determination of Share Price

A fair share price shall be determined by a USAID-approved accounting firm, with the approval of the company's Board of Directors. The price will be based upon the company's book value plus the revaluation of real-estate at current market prices.

b. Distribution of Earnings

The shareholders of the firm receiving equity funds must agree not to distribute any earnings throughout the time that CFSC holds stock. Net profits should be sufficient, when possible, to enable retained earnings to increase the value of the stock price by at least 15 percent per annum.

c. Issuance of New Stock

Additional stock may be issued by the equity fund recipient firm only with the concurrence of CFSC and a majority of shareholders. CFSC shall not unreasonably withhold such concurrence when a fair price has been set.

d. Buy-Back Provision

The shareholders' agreement under the CFSC managed Trust will specify that shareholders are required to repurchase CFSC stock within five years of original purchase. In cases in which shareholders cannot afford to repurchase stock, the Trust will be allowed

to sell to any buyer. The Board of Directors of the invested firm must agree not to attempt to block attempts to sell shares to interested parties. In cases in which no third parties wishing to pay a fair price for shares exists, then the Trust has the option of converting the value of its equity into debt held by the firm. This third option should only be pursued as a last resort. Since firms may not hold Treasury stock in the participating HIAMP countries, the firm will lend funds derived from operations so that shareholders may purchase the outstanding stock. Legal action will be taken in cases in which shareholders refuse to repurchase shares, no third party buyers wish to purchase stock at a fair price and the firm refuses to convert the Trust equity into debt.

Exceptions to the five year rule include those activities that require longer periods of time to yield positive returns (e.g. tree crops). The buy-back period should be specified in legal documents governing each equity investment.

In exceptional cases in which the firm's profitability is jeopardized by policies set by existing shareholders or the performance of owner/management, the CFSC managed Trust shall have the option of purchasing shares to receive majority control of the firm. The Trust will be expected to sell its participation within two years of receiving majority control.

e. Use of Reflows

The full amount of income earned through equity investments and through grant repayments will return to the Trust. After project completion when USAID funding for administrative expenses ends, CFSC will be authorized to deduct a fixed management fee from the income accruing to the Trust. This fee will be negotiated in year 4 of the project, after a viability experience has been acquired. The Trust will continue, perpetually, utilizing the above conditions and return subsequent generations of reflows to the fund for investment in agricultural production and agribusiness enterprises, following sound business practices.

Thus, if the Trust makes an investment in year one and sells it in year five, all income generated through the sale must return to the fund. However, income generated through the sale of investments that were placed in year two and sold at the end of year six would have a management expense incurred during year six (calculated using the value of liquidated assets as a base) subtracted. The remainder would return to the fund.

6. Financial Analysis of Selected QRF Subprojects

Six cases of potential QRF activities were prepared to analyze their anticipated financial profitability and economic benefits. Conservative assumptions on market price, quantity and

quality produced, labor, marketing and management costs were used. Imported goods were valued at border prices; no taxes were included as costs since these firms were expected to receive tax-free status for the first years of production. Only costs actually paid by the firm were included; thus, core contractor management support, feasibility study preparation and part of the audit expenses were not included. All information on additional assumptions governing these cases may be found in the Economic Analysis, Section VI.C.

Results show that, on average, the firms had a high benefit/cost of 1.54 using a 15 percent discount rate. The high return yielded by these projects is commiserate with the high risk that they bear. These high rates of return indicate that potentially good investment opportunities are not being fulfilled. Several factors may explain why: lack of marketing connections and experience, technical production knowledge and financing. However, the most critical, all-encompassing factor is the scarcity of good management. Returns to good management are extremely high, while returns to average management are low or negative.

C. Economic Analysis

1. Introduction

In this economic analysis of HIAMP, the social profitability (or economic return) of the Project is investigated. Costs not borne by the entrepreneur (e.g. feasibility study costs, core contractor management supervision, government investment in certain infrastructural items, etc.) are included in the calculation of Project returns, whereas they are not in standard financial analysis. Further, certain cost items (e.g. wage costs, imported raw material costs) have been valued at their opportunity costs (using shadow prices) rather than at 'posted prices'. The results of the analysis are presented below: first, for the Quick Response Activity component of HIAMP, and; secondly, for the Major Subproject component of the Project.

2. Quick Response Activities

Six 'activities' were selected to investigate the potential economic returns to the Project region of their implementation. The six were selected to provide a representative spread of both geographical locations and types of activities that will be included in the QRA component. The examples comprise economic analysis of: cardamon production and marketing in Dominica; black pineapple production and marketing in St. Lucia; sea island cotton production and marketing in St. Kitts-Nevis; "winter vegetable" production and marketing in St. Vincent; passion fruit processing and marketing in Dominica. A description of the activity types and details of the individual economic analyses of each activity are presented in Annex O, Economic Analysis.

Three measures of economic return to the QRA are presented, viz: a benefit cost ratio, whereby the Net Present Value of benefits and costs (calculated at the social discount rate of 10 percent) are contrasted; an economic internal rate of return (IRR) for the six activities in aggregate; the NPV (at the social discount rate) of each activity has been contrasted with the totality of AID-funded QRA costs for each activity. In general and, certainly, on aggregate, the results of the economic analysis on the Quick Response Activities show very positive returns from Project investments. The economic rate of return for the QRA is a high 0.56, assuming that the six subprojects analyzed are representative, and giving them equal weights. However, given the high risk nature of the activities involved, we have applied several sensitivity tests. If only half of the QRA subprojects work on average, the internal rate of return drops to 0.31 and this is perhaps a more realistic gauge of the QRA's likely economic return. (As another sensitivity test, one may assume that all QRA subprojects work except for those with the highest returns: cotton and cardamon. In that event, the internal rate of return is 0.43).

a. Benefit/Cost Ratio at the Social Discount Rate

Activity	B/C
Cardamon	1.61
Pineapple	2.43
Anthurium	1.21
Cotton	2.54
Vegetables	1.22
Passion Fruit	1.35
Average	1.73

b. Economic IRR

To generate an economic IRR for the six QRA's, certain assumptions were changed to ensure that the six activities incurred a net cost in their first year (see Annex O for details). On aggregate, the economic internal rate of return on the six example activities is 56 percent.

c. NPV (Social Discount Rate)/Aid-funded Costs

Activity	NPV/AID Costs
Cardamon	3.85
Pineapple	10.45
Anthurium	1.51
Cotton	10.19
Vegetable	3.10
Passion Fruit	4.59
Average	5.62

3. Major Subprojects

The Economic Analysis for the Cocoa subproject is self-contained in Annex J. Economic Analyses of the three remaining major subprojects of HIAMP, Regional Tropical Fruit, Leeward Islands Diversification, and Regional Mariculture, will be designed as part of the Core Contractor's duties in the early stages of HIAMP implementation. At the design stage, a sub-project financial rate of return of 15 percent and an economic (social) rate of return of 10 percent will be stipulated as criteria for subproject acceptability and approval. As the regional tropical fruits subproject will focus upon improving production practices and generating market opportunties for existing production which, at present, are not being exploited (i.e, substantial short- and medium-term returns are projected to emanate from this sub-project), the projected returns are expected to be way in excess of the threshold financial and economic rates of return stipulated in project approval criteria. Similarly, the Leeward Islands Diversification subproject will have sea island cotton production and marketing as a central crop diversification feature, and returns to this activity (given the relatively very high and firm contract price for the cotton) are projected to ensure an economic rate of return well in excess of the project criteria threshold level.

D. Administrative Analysis

RDO/C has embarked on a reorganization of its programmic efforts in the region, structuring the assistance of the Mission into four program clusters. This integration of projects into clusters is designed to provide more direct impact and rapid delivery of project assistance. In agriculture, there are two components to the cluster, one the multi-faceted HIAMP project which channels technical assistance and funding to commercially viable enterprises; and the other continued support to regional institutions and support services which provide the back-up support to long-term restructuring of agriculture in the region.

HIAMP is the centerpiece of the cluster concept. HIAMP is designed to have a sustained impact on the methods of production, types of crops grown, market direction and type of capital invested in agriculture in the region. HIAMP is structured to provide all of the islands of the OECS countries with the technical and financial resources needed to achieve this impact. That is, it has become increasingly apparent to RDO/C that what is needed are resident on-site advisors, well versed in the constraints of each individual island, capable of putting together bankable projects, and monitoring their successful implementation. The project is complex, as all RDO/C regional projects are, given the number of islands, and various organizations involved. Nevertheless, it is the design team's considered opinion that the following project management structure and functions provide the optimal form for both on-island economic impact and overall RDO/C guidance and policy direction.

1. The Design, Coordination and Management Contractor

a. Organizational Structure of the HIAMP Core Contractor Operations

The Design Coordination and Management Contractor (DCMC) will station a resident core team of Team Leader and Market Advisor in Barbados and up to five resident Field Advisors in the OECS countries. The core team will be supplemented by short-term technical specialists in project design and feasibility, crop production, mariculture, and marketing.

In numerous discussions with host country governments, agencies and the agricultural private sector in OECS countries, it has become apparent to RDO/C that what is needed is more hands-on experience and direct relations with agribusiness advisors who have access to information on markets, prices, technology and prospective investors. It is also clear that a sustained activity in this area is needed to build up expertise and institutionalize these important connections. At the same time, however, it is also recognized that the OECS countries do not need another private sector regional organization; but rather, they need personnel to assist them in putting together bankable projects, securing market niches; and learning the procedures for accessing of investors, investment opportunities and markets. These need to be internalized by persons and agencies indigenous to the region. At the end of the project it is expected that HIAMP personnel will have assisted producers to develop better production and post-harvest technology practices and to secure market niches, and local institutions and agents will be better integrated into market information networks. Better businessmen, not new institutions will be what HIAMP leaves as a legacy.

b. Project Management

i. Core Contractor Responsibilities

The contractor will provide the international expertise and organization needed to identify and assist foreign private investment and joint ventures in agriculture, and to assist local investors and agencies in accessing markets and finding needed technical information and assistance. The Contractor will operate at three levels: U.S. base backstopping; Regional Coordination office for project management; on island project identification, technical assistance and project monitoring. The responsibilities and management of the three levels differ but complement one another, and are essential in order to achieve maximum impact on agricultural diversification in the Eastern Caribbean.

ii. U.S. Operations

The home office of the Core Contractor will provide both support activities for the core team in the field as well as

facilitate the essential linkages to markets, brokers, information systems and potential investors in the U.S. This is not expected to be an elaborate operation (approximately 30% of 1 professional's time), but rather compatible with other services such as ECSEDA and PDAP.

iii. Regional Office

The Core Contractor will establish a regional office in Barbados comprised of a Team Leader who will be the project manager and a Marketing Advisor. Support staff hired locally will also be provided. Barbados was chosen as the regional base for the project in order that the Team Leader could liaise on a day to day basis with RDO/C, particularly with the ARDO office and with other RDO/C project activities which complement HIAMP, such as the Small Enterprise Assistance Project with CAIC and PDAP. Additionally, the Core Team will liaise with other donors, such as BDD and CIDA which have their regional offices in Barbados, as well as with other crucial organizations and agencies (CATCO, CDB).

iv. Team Leader Responsibilities

The Team Leader is the Project Manager for all HIAMP activities. This person will be responsible for direct supervision of the Core Contract Team under the Project. He/she will be fully responsible for all contractor members, both long-term and short-term, and will provide guidance and overall direction to the Team.

This means that the team leader will assign priorities and set targets for the core contractor operations. He/she will be responsible for directing resources in a timely and efficient way. The team leader will spearhead the dynamics of Quick Response Activities and be responsible for the overall team's efforts, ensuring high standards of performance of team members and the submission of objectively conceived sub-project proposals. Specific responsibilities of the Team Leader are stated in Annex P.

v. Marketing Advisor Responsibilities

A full-time Marketing Advisor will be posted to Barbados and will be supervised by the Team Leader. The Marketing Advisor will be expected to travel frequently throughout the Eastern Caribbean and occasionally to North America, the U.K. and Europe to develop potential marketing links.

The marketing advisor's role is to work directly with commodity producers and agroprocessors in securing market niches and to ensure that the products exported meet quality control and volume standards. The advisor will be expected to work with projects at both the design and implementation stages. In effect, the advisor will operate as the marketing supervisor for sub-projects in their early stages passing on technical expertise to sub-recipients. Specific responsibilities of the Marketing Advisor are stated in Annex P.

vi. Field Advisors Responsibilities

Field advisors will be responsible for designing, implementing, coordinating and monitoring HIAMP activities in specific individual countries. These advisors will operate in their assigned countries within the existing bilateral agreement between AID and the Host Government. Field Advisors will operate as AID in-the-field. Specific responsibilities of Field Advisors are stated in Annex P.

2. Caribbean Financial Services Corporation

The Caribbean Financial Services Corporation (CFSC) was incorporated and established in accordance with legislation enacted in Barbados in July 1983. Under its charter it may conduct banking operations, including off-shore banking, but may not accept deposits. The thirty-two shareholders of this privately-held corporation include international financial institutions. As of October 1985, the corporation had issued 26,500 shares for cash subscriptions of $2,650,000.

a. Organization

CFSC operates as a privately owned, for profit development bank with a Board of Directors and a management unit made up of the Managing Director, one Loan Officer and a Secretary. As it is a young organization, both legal counsel and accounting services are contracted when needed. The Board of Directors is composed of nine shareholders chosen on the basis of their business qualifications, and the Managing Director of CFSC who sits as a regular member. From its inception the Board has been active in the management of the operations of the organization including development of management structure and policy guidelines, as well as approval of all loans and post review of credit committee decisions.

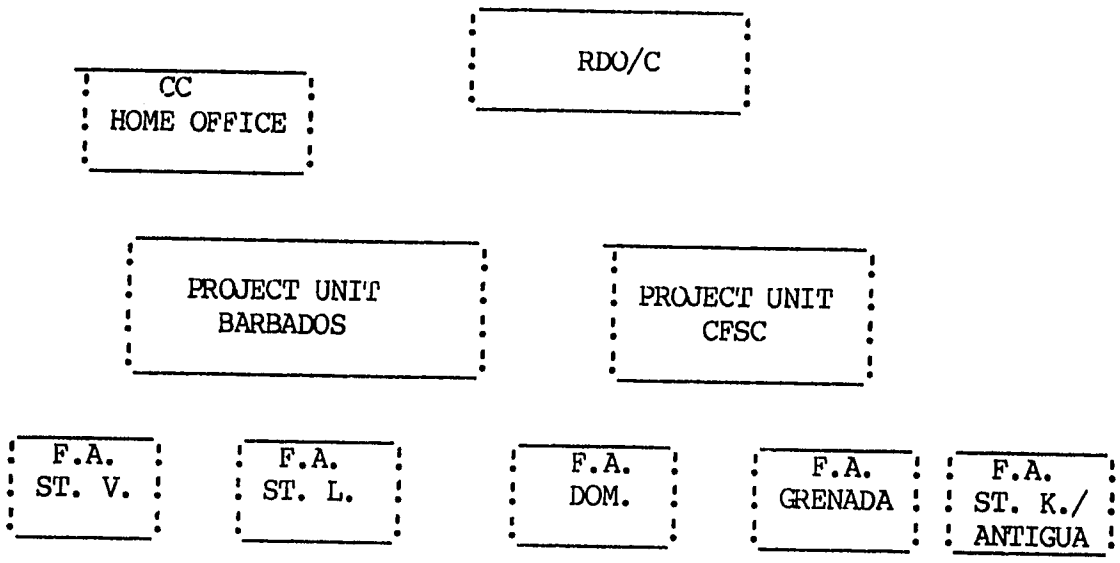
The Managing Director is the Chief Executive Officer of CFSC and reports directly to the Board of Directors. In addition to being a full member of the Board, the Managing Director has the primary responsibility for the development of the corporation and the management of its loan portfolio. Management of the discounting function, membership on the loan committee and development of financial services, and operational and personnel policies fall under his portfolio.

The loan committee has senior responsibility for all credit decisions made within CFSC. Presently, there are only two management officials with the expertise to sit on this committee, so three Board members also serve on a rotating basis. It is envisioned that as CFSC expands, other senior staff members will serve on the loan committee, and the number of Board members may be reduced.

b. Financial Status

Upon its incorporation, USAID extended a US$12 million loan supplemented by a $400,000 grant to cover technical assistance and

Figure 1
HIAMP PROJECT STRUCTURE



evaluation expenses. Following a favorable evaluation of CFSC's performance and credit demand analysis conducted in June 1985, USAID increased its loan funds to $17,335,000. The completion date of this project is December 31, 1989. At present, the USAID loan and shareholder capital provide the sole source of CFSC loan funds. CFSC expects its fiscal year-end portfolio in March 1986 to be about US$4.5 - 5.0 million and a net income of US$90,000 - $100,000. Future projections are for net profits of $246,000, $475,000 and $664,000 for the next three years.

In terms of CFSC's ability to manage the financial requirements of this project, the establishment of a special project unit with personnel skills in a number of areas: investments, accounting, contracting and procurement, should facilitate quick disbursement as well as provide institution building skills to CFSC well beyond the life of the Project. In particular, the hiring of accountant and procurement officers should enable CFSC to set up routine systems to facilitate the institution's ability to conform to AID regulations and reporting requirements.

c. Rationale for Selecting CFSC

The design team investigated several possible institutions to serve as the home for the two Quick Response Funds. RDO/C sought a regional private sector institution with a portfolio in

the field of development finance. CFSC's Board of Directors and management, are committed to becoming an important source of development finance in the region. Its Caribbean management and Board of Directors are extremely knowledgeable about investment opportunities in the region. Since Board members are drawn from all the HIAMP territories they can provide an important check on the references of prospective clients -- a critical role they now play in CFSC's loan approval process. CFSC management is enthusiastic about the project, familiar with AID regulations and procedures since it has received prior AID funding, and has agreed to contribute 15 percent of its annual profits to the equity fund.

d. Role of CFSC in HIAMP

CFSC, through a Trust arrangement, will be in charge of administering and monitoring the two Quick Response Fund windows of the project: The Reimbursable Grant Fund and the Equity Fund. A staff member of CFSC will sit on the Quick Response Activity Review Committee with RDO/C and the Core Contractor and determine sub-projects to be funded.

Upon receipt of written approval from RDO/C, CFSC will then make arrangements for the disbursement of funds. The procurement officer of CFSC will be responsible for monitoring sub-recipient's compliance with AID requirements on procurement and ensuring that appropriate documentation is provided for expenditures submitted for reimbursement.

In addition to disbursement and monitoring functions, CFSC has a major role to play in the ultimate success of sub-projects. As Manager of equity shares, a CFSC representative will become a member of each firm's Board of Directors and attend meetings on a quarterly basis. It is expected that the project manager and project officer will play active roles as Directors. CFSC will also analyze the financial status of each investment based upon audited financial statements. These provisions are expected to provide firms with additional guidance in management, financial planning and policy objectives thus raising the standard of management of many agribusiness firms in the region.

e. Management

CFSC is currently managed by a two person staff consisting of the Managing Director, one Loan Officer and one Secretary. A recent evalution considered this staffing arrangement as "lean but well suited to the job of running a private development finance institution, especially given the active role played by Board Members in setting credit policy and participating in credit review. Marketing and credit analysis responsibilities are shared between the Managing Director and Loan Officer. Communication between the Board and management is considered to be open, efficient and constructive".

The experience and capability of CFSC staff are positively noted throughout the region. Both the Managing Director and the Loan Officer are experienced managers and very knowledgeable of the financial institutions and personnel in the region and can draw on a wide network of experts when making credit and policy decisions.

f. CFSC Staff Requirements

CFSC must hire additional staff to manage the QRF activities efficiently. Their current two person professional staff is not adequate to meet project needs. Discussions between CFSC, RDO/C and the Design Team have resulted in a decision to create a Project Management Unit in CFSC which will be comprised of the following persons: a Quick Response Fund Manager, Quick Response Fund Project Officer; and, two QRF accountants/procurement officers and a secretary. (See Annex P for details of responsibilities).

The addition of this project unit and personnel to CFSC for the purpose of implementation, is not only viewed by the Design Team as essential to the project; but also as a very positive institution building step for CFSC which will significantly expand the organization's ability to meet both financial and technical needs of private sector enterprises in the region.

3. Subproject Activity Cycle Procedures

The primary role of the Field Advisors is to put together viable market oriented private sector led agricultural activities which will be funded with assistance from the Quick Response Fund. It is the responsibility of Field Advisors to fully assess the needs requirements of prospective projects for their sucessful implementation. Feasibility studies, thus, must also provide a needs assessment and identification of all the resources available to address constraints. This complete package is sent via the HIAMP Regional Office to an RDO/C Quick Response Activities (QRA) project review committee comprised of RDO/C, CFSC and the Core Contractor office in Barbados. Once approved, with whatever modifications, the sub-project is sent to CFSC, as Trustee, for approval and disbursement.

CFSC will then monitor the sub-recipients to ensure that all AID requirements are being met in the contracting and procurement process. When it is the opinion of the Field Advisors and the QRA review committee that business managers are necessary to carry out AID implementation requrements, CFSC will work with these sub-recipient business managers to ensure proper contracting and procurement. In this role, CFSC assures compliance with AID's rules and regulations.

The Field Advisors will be expected to monitor implementation activities, and alert CFSC and RDO/C when problems arise; as well as, where possible, to assist in overcoming them.

In terms of monitoring sub-recipients, it must be remembered that under HIAMP there will be quite a range of activities and a spectrum of sub-recipients ranging from large agribusinesses with modern accounting systems to flegdling cooperatives and associations. Oversight and monitoring activities will vary depending on the type of sub-recipient. See Figure 2 for an explanation of the design and implementation cycle.

The services of the core contractor, with Field Advisors in five islands in the Eastern Caribbean, will allow for a greater impact on agricultural diversification efforts both in individual islands and in the sub-region. It will also facilitate better dialogue and communication between USAID and local and regional agricultural offices and the indigenous agricultural private sector. The mechanism of the Field Advisors, in particular, will provide for better monitoring of sub-projects as well as facilitate the design of a greater number of activities on each island. The core contractor, in effect, is RDO/C's surrogate in the islands of the Eastern Caribbean. ARDO staff will have overall responsibility for the project. The holistic perspective of the ARDO staff will enable them to provide the regional HIAMP office with guidance and direction. ARDO staff will continuously monitor HIAMP activities from policy perspectives and assess how these activities are fitting into RDO/C overall objectives as outlined in the CDSS and Annual Action Plan.

4. HIAMP Coordination with Regional Organizations

Formal affiliations exist between and among a number of regional organizations concerned with agricultural markets and investment technology in the Eastern Caribbean. To some of these organizations, Eastern Caribbean governments pay annual subventions to support research and development in agriculture in the region. Many of these organizations are engaged in activities that will directly impinge on HIAMP.

i. CARDI, CAEP and National Extension Services

RDO/C has been fostering the establishment of strong linkages between CARDI's research and development efforts and national agricultural policy and planning through the Caribbean Agricultural Extension Project (CAEP). CAEP encourages the establishment of linkages between CARDI and national extension agencies and regional and extra-regional linkages between regional institutions and R&D centers such as the Midwest Universities Consortium for International Activities Inc. (MUCIA). Under CAEP the institution building framework for the effective linkages between government policy, agricultural planning and the technical inputs to farmers have been set up. At the national level, committees for agricultural R&D, extension, and overall agriculture planning involving ministry officials, farmers and CARDI have been established. A primary thrust of these projects is to help establish closer links between research and extension at both the national and

regional levels and to transfer technology to individual farmers. Therefore, it will be important for both the Core Team of HIAMP in Barbados, as well as for the Field Advisors of HIAMP in the individual islands, to develop good working relationships with CARDI and CAEP national R&D committees to ensure that complementarity exists and that HIAMP is not viewed as duplicating existing efforts. In fact, the opportunity presents itself of utilizing the extension systems to transfer high impact agricultural technology to small farmers. This is the holistic aspect of the cluster portfolio in operation. CARDI and CAEP ideally provide a systems framework for high impact agriculture.

ii. ECSEDA and the Regional Export Agency

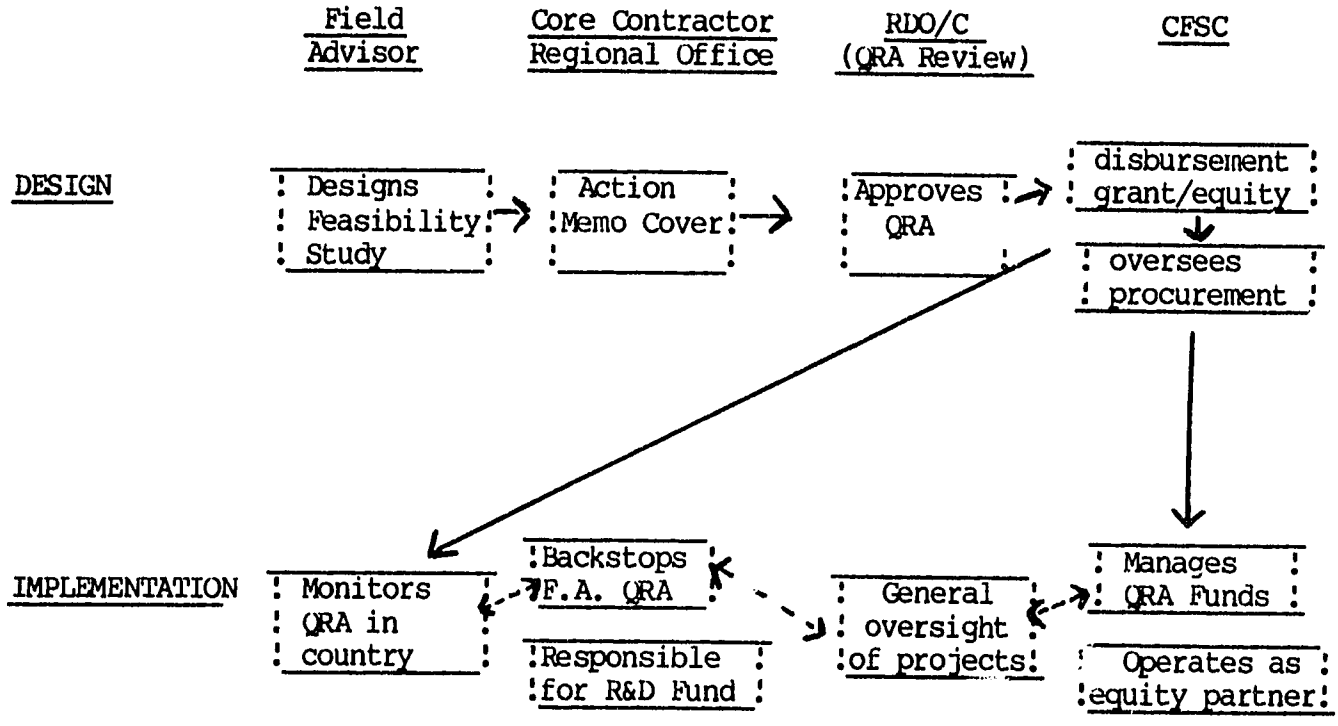
Approved at the Seventh Meeting of the Economic Affairs Committee of the OECS in November 1985 was a proposal for the establishment of an Eastern Caribbean States Export Development Agency, (ECSEDA) which is being funded by the EEC at EC$8m over the next five years. Located in the Commonwealth of Dominica, the agency is being designed to operate as an Export Agency for the seven OECS states, who cannot afford to fund such an effort on an individual island basis. The agency will contract with trade correspondents located in North America, U.K. and European markets who will be remunerated on the basis of work commissioned. It is intended to use specialists in particular product groups and agricultural commodities and agro-processed products are included. (See Annex P for detailed description of ECSEDA).

The development of ECSEDA at this time dovetails very well with the objectives behind the creation of HIAMP. As HIAMP advisors will operate as facilitators, putting together discrete sub-projects in a multiplicity of activities, an agency such as ESCEDA is highly complementary. HIAMP should come to depend on agencies such as ESCEDA and other data bases to access markets for specific Quick Response Fund Activities. ECSEDA's trade correspondents can provide necessary information on possible buyers, market situations and potential restrictions. ECSEDA potentially can be very useful in facilitating the movement of HIAMP products, while HIAMP sub-project activities can provide test markets which may open niches for the entire sub-region.

This agency is conceptualized as bringing together the heads of all the individual CARICOM export agencies as well as CAIC, CDB and the CARICOM Secretariat to provide a public/private sector thrust to export production and marketing. It is viewed as providing overall policy direction to the various CARICOM Task Forces and to provide a more cost effective approach to aggressive export promotion and lobbying for West Indian commodities in Europe, U.S. and Canada. One of the Task Forces is Agriculture and Agri-business. To the extent that the Regional Export Agency becomes functional during HIAMP, the Core Contractor will need to keep informed of developments which may positively assist HIAMP sub-project activities.

Figure 2

QRA Cycle



Procedural Lines

Monitoring Mechanism

iii. Caribbean Food Corporation

In 1975 the Conference of Heads of the Caribbean Community adopted a Regional Food Plan which had been mandated by four MDC governments. The Plan has been elaborated on over the years, and been the subject of intense debate. Many economic issues have bedevilled its implementation by member countries. The Caribbean Food Corporation, (CFC), headquartered in Trinidad, was designed as the implementation mechanism for the Regional Food Plan. CFC has the responsibility for conceptualization of regional programs and projects; projects which are deemed more technically feasible and/or cost effective on a group or regional basis. The Regional Food Plan assigned production, processing and marketing activities to the CFC and its trading subsidiary the Caribbean Agricultural Trading Company (CATCO). CFC is a corporation of the CARICOM community and is open to all members of CARICOM.

CFC's interest in taking equity positions in commercial projects which involve the private sector, and its role as primary shareholder in CATCO mean that RDO/C and HIAMP personnel will need to keep informed as CFC is another actor in the region willing to take equity positions. Whereas CFSC's financial interests will be more compatible with commodity associations, farmers' groups and individual entrepreneurs; CFC is, perhaps, more interested in playing a role in financing sub-regional projects such as tree crop projects from the Windwards -- i.e. mangoes, breadfruit or cocoa, or in cutflowers and ornamentals. CFC provides another resource which HIAMP personnel may tap when considering various combinations of financing for feasible projects.

iv. CATCO

The Caribbean Agricultural Trading Company (CATCO) is a mixed public/private stock corporation with 51% of its stock held by the Caribbean Food Corporation (CFC)and 49% by six major private sector firms. CATCO was established in 1981 by the CFC and is headquartered in Barbados. The regional character of CATCO is reflected in both the shareholdings by CFC, which represent all CARICOM members, and in the distribution of shares to various private companies in the Caribbean. As a potentially commercially viable trading company, CATCO's goal is to expand the trade of agricultural and agro-industrial commodities produced in the Caribbean. CATCO's mandate is to effect key changes in the structure of the intra- and extra-regional trading of fresh produce. It is intended to remove critical constraints to the marketing of fresh produce, promote and develop new marketable products produced in the region, stimulate private sector involvement in agriculture, and attack some of the externalities which constrain broad-based agricultural development in the Eastern Caribbean. As such, it is a key institutional and operational resource for the projects conceived under HIAMP.

RDO/C is financing a $1.4 million project which provides CATCO with $1.25 million in loans for working capital in its trading operations. To become a commercially viable trading company CATCO needs a sufficient trade to cover minimal operating costs; a consistently reliable volume trade. HIAMP sub-project activities which are production oriented, will be integrated projects which can provide the reliable operations CATCO needs to open market niches. Risk factors are high; but with equity positions possible through the Trust, RDO/C expects that selected commodities can be produced under HIAMP and marketed by CATCO. Such a scenario would begin to restructure Eastern Caribbean agricultural sectors and stimulate further private sector investment in agriculture.

V. USAID IPED Project

The PDAP/IPED Project was conceived by RDO/C as a tool for stimulating private sector development and CBI implementation in the Region. The goals of the project were to generate some 15,000 jobs in agriculture, agribusiness, manufacturing, tourism and service activities, largely through encouraging foreign investment. As well, extra regional exports in both traditional and non-traditional products were to be expanded at a rate sufficient to exceed the deterioration in terms of trade. Institution building components were also in the project with the goal of improving the capability of public and private institutions, such as Industrial Development Corporations, in investor and market search operations, employment generation and policy issues. In practice PDAP has been successful as a catalyst for light industry foreign investment, facilitating OECS investor search operations, as well as directing local producers away from protectionist Caribbean markets toward the rewards of sub-contracting with U.S. firms under 807 provisions.

PDAP advisors have had responsibility for assisting in project identification, design, structure, presentation and implementation. They assist with contract negotiations and other inputs, including assistance in planning and managing industrial infrastructure. PDAP advisors also act as an information service for local and foreign investors. However, unlike HIAMP advisors, they do not have capital behind them to fund projects which are considered feasible; nor do they provide much short-term technical assistance under the project. The PDAP thrust in most countries is industrial; whereas HIAMP, on the other hand, will work principally with the indigenous agricultural private sector to develop export oriented sub-projects. Under HIAMP, a complete package, which includes technical assistance and financing, will be designed, implemented and monitored. A key component will be on-going technical assistance to producers, transferring technology in production, post-harvesting and marketing which will transform agriculture in the West Indies.

The concepts of HIAMP and PDAP are complementary yet distinctive, based on the differing needs of the client groups they are created to serve. PDAP has evolved as an important catalyst and facilitator of the industrial sector, particularly for the foreign investor, and increasingly for local industrialists. PDAP's transfer of skills and institution building are directed towards building the expertise of national Industrial Development Corporations and local manufacturers in investor search and investment promotion operations.

HIAMP, on the other hand, will work principally with the indigenous agricultural private sector to develop export oriented sub-projects. A complete package, which includes technical assistance and financing, will be designed, implemented and monitored. A key component will be on-going technical assistance to producers, transferring technology in production, post-harvesting and marketing which will transform agriculture in the West Indies.

The PDAP and HIAMP advisors will complement each other, particularly in areas where there is scope for joint ventures and foreign investment, specifically in agro-processing operations. In fact, HIAMP advisors will depend on the PDAP system for initial investor search to narrow the range of prospective clients. Following this initial screening HIAMP advisors will perform follow-through activities and development of feasibility studies. There is scope for deepening assistance and more effectively improving capabilities in both agriculture and industry with a division of labor. RDO/C and Coopers and Lybrand are presently working out the division of labor and coordination mechanisms between the two projects.

5. HIAMP and Host Country Issues

In designing this project, the Design Team and RDO/C were cognisant of the importance of Host Country receptivity to, and desire for, involvement in project design. Every island was visited and extensive discussions occured with Prime Ministers, Ministers of Agriculture and Trade, Permanent Secretaries, Chief Agricultural Officers, Chiefs of Technical Divisions, Extension Agents, as well as individual farmers, and private sector local and regional organizations. In general, there was enthusiasm for the design idea of placing USAID surrogates in-country to work directly with the local private sector and host country governments. Consensus was that on-site advisors not only would become more familiar with indigenous opportunities and constraints, but that their proximity would have greater impact on economic change.

Overall, host country receptivity to HIAMP was apparent. But, to ensure host country commitment to HIAMP it will be necessary to follow up on the initial dialogue on overall project design, with more in-depth discussions on HIAMP strategy and objectives and how they mesh with host countries development plans and other donor projects. Further discussion with them, should elucidate, in a collaborative manner, the

best choice for resident advisors. Perhaps the necessity of close collaboration with PDAP advisors and investor search operations makes Industrial Development Corporations, or other entities where institutionalized, highly suitable. These entities also usually have good facilities, communications and adequate office space, and provide support services which the advisors will need. Some countries, such as Antigua, do not have such entities; in these instances it may be necessary to simply counterpart personnel to responsible senior technical agricultural officers and encourage them to find suitable office space in a private sector agency.

Problems can arise in project implementation due to host country bureaucratic procedures. It is essential that the Regional HIAMP Office and Field Advisor develop a good, early rapport with host country personnel to avoid these problems. It must also be clear to host country governments and the contractors that RDO/C will be monitoring all sub-project activity and has ultimate responsibility for the project and thus both parties have recourse to the Mission in cases where disputes or disagreements arise.

E. Social Soundness Analysis

1. Socio-Cultural Context

Agriculture in the Eastern Caribbean is extremely intricate. The farmer, however has a good comprehension of his/her ecosystem and each farming system is geared towards the preservation of this complex ecosystem of steep mountain slopes, loose soils, small streams and variable rainfall. The farming systems which have thus evolved are a combination of extensive plantation agriculture in which the better coastal lands have been planted to cash crops, and the highly intensive small farm agriculture in which polyculture and short term crops are the rule. These agricultural systems are intricate webs where crop production is not a simple function of plantation versus subsistence farming but of a complex ecosystem of differing soil types, rainfall patterns and tenurial arrangements. And this complexity is being further heightened by the general decline in plantation agriculture, a decline caused by the fluctuating international market coupled with the labor stortages in agriculture.

a. Types of Farm Groups

Data gathered from a number of sources and censuses provide information on classification of types of farming groups in the Eastern Caribbean. Primary indicators used are: number of acres the farmer occupies; cost of farm production; production of income derived from the sale of farm produce; the importance of agricultural income to the total income.

On this basis there are four major types of farm groups in the Eastern Caribbean: non-commercial -- having no sale of produce; semi-commercial -- having part of the family income from agricultural sales; family commercial -- obtaining larger proportion of family income from the sale of farm produce; commercial -- solely commercial enterprise; may be limited liability company; employs significant non-family labor.

b. Size of Holdings and Tenure Issues

Reviewing the data that has already been collected, there are four general tenurial classifications which are applicable throughout the region. These are:

i. family land,
ii. freehold,
iii. annual lease, and
iv. share cropping.

Although evidence is inconclusive for the entire region, the tenurial arrangements which occur most frequently -- at least in the Wind[illegible]d Islands -- are that of family land followed by freehold land. The [illegible] ownership of land by farmers in the Windward Islands is very signif[illegible]t because there appears to be a definite relationship between typ[illegible] of crops grown and land ownership. Where rights to the land are permanent, after the initial land clearing, the farmer is more likely to plant it to permanent crops. These permanent crops are then intercropped with secondary crops and other shade tolerant crops which are important subsistence food items in the local diet. Among these secondary crops the farmer may then plant a wide variety of vegetable crops either in combination or in separate parcels.

In the case of the Leeward Islands, because most of the land is under state control (Antigua, St. Kitts) or in large private estate ownership (Montserrat), tenure tends to be of the annual lease type; there is hardly any freehold or family land. It is not surprising then that farming systems in these countries tend to emphasize short term crops, usually aroids and vegetables. If there are any tree crops planted then they are usually semiperennials (i.e. bananas and certain fruit trees) rather than perennials.

c. Women in Agriculture

Studies indicate that there are sex related differences in agriculture between men and women. In several countries -- Barbados, Antigua, St. Kitts-Nevis, -- women form the backbone of the daily paid agricultural work force; but in these islands women form a much lower percentage of own account farmers. Dominica and Nevis have high rates of own account farmers who are women, with the rest of the Windwards falling in between. Few women are large scale commercial farmers. In general, women's role in agricultural production is primarily geared toward

traditional food items for local consumption. This does not mean that women are not engaged in cultivating export cash crops; but rather that the constraints which all farmers in the Eastern Caribbean face seem to be magnified in the case of women farmers. For example, research indicates that resources available to women farmers are more limited than those to men; women have greater problems securing long and short term credit, title to land for collateral purposes, access to farm labor, and receive less attention historically from extension services and private agencies. Additional constraints facing women farmers result from their being heads of household with little supplementary income from family members who are largely dependent children. Women's multiple work roles in agriculture, child care and home maintenance also inhibit a movement to more commercially oriented agricultural activites.

2. Participant and Beneficiary Populations

a. Farmer and Fishermen's Associations

Farmer's organizations, whether statutory bodies, growers associations or cooperatives, have been in existance in the region since the 1940's. Indications are that they are probably responsible for 70-80% of agricultural marketing, particularly for export, in each country. Historically, most of these organizations were formed by small and medium sized growers to pool their resources and needs for inputs to gain economies of scale in an era where individually they were at the mercies of major commercial houses. Additionally, they had no access to commercial banks for either short or long term lending, nor did they have the political clout of the dominant plantation sector. As a result, farmers have a deep attachment to these organizations and view them as their own, despite differing degrees of government involvement. There are four types of farmer/fishermen's associations in the Eastern Caribbean:

- -- statutory bodies
- -- grower's associations
- -- cooperatives
- -- developmental organizations

Statutory bodies have the largest membership base. In Grenada, for example, it is estimated that over 7,000 of the 9,000 farmers are members of statutory bodies. This pattern is replicated throughout the region, whenever agricultural statutory bodies exist. It is important to understand that statutory bodies are governed by boards with the majority of members elected by producers and a minority, generally three, nominated by government. The other associations -- growers associations, cooperatives, and developmental organizations are overwhelmingly private organizations. Growers associations, in fact, are private companies registered under the companies act, limited by guarantee and having no share capital.

The agricultural cooperative sector throughout the region is small, with two exceptions, Nevis and Dominica. On Nevis, the majority of farmers are organizing into small marketing and supply cooperatives, and there is one fisheries cooperative. Dominica has approximately 26 agricultural and fisheries cooperatives involving some 4,000 - 5,000 individuals. In fact, Dominica has one of the highest numbers of cooperatives per capita in the world. Where marketing and supply cooperatives exist, members are often involved in small-scale irrigation farming of vegetables and root crops on an intensive basis. They tend to be more market-oriented than other farmers, and willing to accept wholesale prices, which will be an important advantage in terms of linkage to HIAMP activities.

Whatever the type of farmer organization, lack of membership involvement and education is a major weakness. Farmer members have a strong attachment to these organizations, which they perceive as "theirs", and deeply resent any interference by government. This is particularly true of the statutory bodies, many of which grew out of smallholder dissatisfaction with export crop marketing being controlled by either expatriate business houses or the colonial government.

i. Role of Government

The degree of government participation differs between countries and organizations. A general rule seems to be the more dominant the organization in the export earnings of a country, the greater the degree of government involvement. None of the farmers organizations in the region, with the exception of the St. Vincent Arrowroot Association, is effectively under government control. Certainly none can be defined as parastatals. Government would in fact argue that all are private sector bodies, because producers have the controlling voice. Producers feel strongly that they are their organizations. They are all a peculiar legacy of the British colonial past, found in all commonwealth countries.

Statutory bodies and cooperatives have been most susceptible to government intrusion in the past. The ordinances governing the statutory bodies and cooperative law in each country have clauses permitting government intervention when their affairs are mismanaged. These clauses have provided convenient excuses for government intrusion, particularly in Grenada, through the nomination of all the Board members of the organization involved.

ii. Linkages with HIAMP

HIAMP is intended to promote investor-led agriculture export in the region to increase foreign exchange earnings and GDP. The linkage between the farmer organizations and HIAMP can be found in the specific crop lines which are or will be grown for export. In some instances, farmer members are already involved in the production of crops targetted by HIAMP, e.g. cocoa, winter vegetables and

floriculture. In these cases the organizations provide a convenient framework through which to introduce new production techniques, extension and marketing services to farmers.

b. IDC's and Other Government Bodies

HIAMP is a private sector led project and will focus primary attention on farmers and companies engaged in agriculture and agro-processing in OECS countries. HIAMP will, however, work with those public sector agencies involved in promoting and facilitating agricultural and agro-industrial development.

During project design there was thorough discussion with large numbers of persons involved in investment promotion as well as with technical personnel in government ministries and with regional organizations such as OECS/ECSEDA, CATCO, CARDI and CAEP with which HIAMP expects to work. As discussed in the Administrative Analysis formal coordination mechanisms will be established during implementation of the Project.

c. Commercial Entities and Individual Companies

The project design team spoke with a cross section of farmers, processors and company managers in every participant country during the design stage. These discussions are really follow-on discussions to numerous visits by RDO/C staff and evaluators of existing projects which have built up a knowledge base of the constraints of the agricultural sector and the measures needed to address these constraints. The opinions expressed by these individuals and companies have been molded into both overall project design and into major sub-project activities. The methodology being designed for use by the Core Contractor, particularly by the Island Field Advisors, in monitoring and evaluating sub-project activities on a regular basis, by persons on-site, should facilitate continuous participation by the agricultural private sector throughout the life of the project.

3. Social Impact

This project is expected to have significant impact on both the overall economy of the sub-region and individual states as well as on the agricultural sector and individuals and companies operating in the sector. The project proceeds on a number of fronts: policy, markets, technology, production, credit -- and thus impact will be widespread and hopefully, deep. HIAMP is being designed to provide a major increase in agricultural exports from the OECS countries. Correctly implemented, given the importance of agriculture, the project will provide a powerful impetus to economic resusitation of the Eastern Caribbean.

Policy: Policy issues will arise throughout the life of the project. It is expected that a source of leverage for changing policy directions, with long-term impact, will be the successful implementation of interventions, such as the privatization of a Marketing Board, or the divestiture of government holdings of a particular estate and the introduction of new export crop lines. Liaison by Field Advisors and Core Team members with National and regional agricultural planning and R&D committees, with export promotion agencies, and commodity associations will provide important fora for policy issues.

Credit: RDO/C believes that the major constraints to credit lie less with actual capital available in the region, and more with the ability of the private sector to access that credit. Over and over RDO/C staff and consultants have heard commercial banks stress lack of solid feasibility studies as impediments to successful loan applications. Often this is viewed as more important than collateral.

HIAMP proposes to free up much of the capital available in the region by assisting investors and agro-entrepreneurs in putting together bankable projects. This process will have spin-offs throughout the economy. It should begin to change the credit climate of individual countries. Provision of capital for reimbursable grant funding and equity through the CFSC managed Trust will also not only strengthen the financial climate of the region, but will also provide CFSC with important skills in assessing viable agro related projects. This effect will also be manifested at the national level with commercial banks who will come to recognize bankable agricultural projects; a skill most admit they presently lack.

Technology: Access to sources of information on technological aspects of production, post-harvest, packaging, shipping, markets etc. is an important component of this project. Transfer of technology is key to creating a modern, competitive agricultural sector in the West Indies and the establishment of stable agricultural private enterprises in the Eastern Caribbean.

Markets: The shift to new crop lines, new market niches and access to continually changing market factors is also a major thrust of HIAMP with important long-term benefits to the region. Through the mechanism of the Regional Office and Field Advisors, better knowledge of markets, access to market intelligence systems and data bases and important contacts with both regional and extra-regional institutions and agencies will be passed on both to country counterparts and to individual entrepreneurs. Hopefully, this type of information network will be replicated both by regional organizations and by individual country agencies at the end of the project.

Spread effects will be facilitated by good coordination and working relationships with regional and national organizations such as PDAP, CARDI, CATCO, CAEP, ECSEDA and national extension systems. The importance of this is understood and will be part of the responsibilities of the Regional Office and Field Advisors.

4. Equity Issues

There are a number of concerns which will have to be addressed in terms of questions of equity; that is those involving the relationship of different groups to production and marketing activities, land access and use rights, and community impact. The Mission Social and Institutional Analyst will work with the Core Contractor in the design of the first subprojects to provide a mechanism for ensuring that equity and social acceptance issues are included in the feasibility studies.

F. Environmental Analysis

1. Overall Project Environmental Analysis

The IEE contained in the PID recommended a negative determination for the DCMC (LOP $10 million) and the Quick Response Activities (LOP$12 million). It also provided for the preparation of individual IEE's for each of the Major Sub-Projects (LOP $13 million). No environmental issues were raised in the DAEC review.

Environmental analysis performed by the REMS/C supported the negative determination for the DCMC and the Quick Response Activities in project design and marketing which will have no adverse environmental impact. For QRA and Major Sub-Project commercial research and development, production, and processing activities, individual IIE's will be prepared by the core contractor and submitted to AID for approval. It is anticipated that the following issues may surface during the preparation and submission of project documents and environmental reports:

- Experimental use of pesticides and fertilizers;
- Pesticide procurement and use of restricted chemicals by farmers;
- Land use, soil and water conservation technologies;
- Land clearing of secondary forests on steep slopes resulting from incentives to grow new crop varieties and fruit tree crops;
- Land use controls and implementation of watershed legislation to protect steep slopes in major production area;
- Introduction of exotic species to new habitats and subsequent effects on biological diversity of these areas.

Also a review of preliminary projects identified by the PP Team provides a further elaboration of the issues and problems to be addressed during the course of project environmental analyses (Table 1).

The framework for analysis of potential project effects on the environment will include:

a. Strict adherence to AID Reg. 16, Environmental Procedures, with regard to documentation and applicability of regulations to all projects;

b. Use of a set of operational guidelines for project environmental analyses and submission of reports to AID/W, which was prepared by the Regional Environmental Management Specialist (REMS) for the Regional Development Office/Caribbean (Annex E).

c. Monitoring of core contractor's compliance to the above procedures (a) and (b) by RDO/C staff with support from the REMS on an as-needed basis.

The Core Contractor will prepare all environmental reports in compliance with AID regulations and submit such reports at the appropriate time during the project cycle; for example, the IEE is submitted with the Quick Response Fund proposal, or with a Major Projects PID. These reports (IEE's/EA's) will be reviewed both by the Chief ADO and the Mission Environmental Officer. Concurrence by the Mission Director with all recommendations, particularly for environmental protection measures proposed as impact mitigation actions, will be obtained prior to submission to the AID/Washington, Chief Environmental Officer.

In situations where a Negative Determination is approved, the project can be authorized assuming all remedial measures suggested are to be implemented, and other non-environmental matters are in compliance. Where a Positive Determination has been recommended and approved, an EA will be conducted prior to project authorization.

It is the Core Contractor's responsibility to ensure that the best professional technical assistance is applied to these environmental analyses. In support of this requirement, the resources of centrally-funded AID programs outline in the Guidelines found in Annex E can be requested in addition to any core contractor in-house capabilities, or if AID deems necessary, the application of an outside opinion on any particular issue. This may arise in the case of the procurement and use of pesticides, wherein ST/AGR frequently prefers to have EA's conducted under the auspices of their Pest Management Project.

2. Cocoa Subproject Threshold Decision

An IEE, which covers the Regional Cocoa Rehabilitation and Management Project (LOP $3 million), is included in Annex F.

A negative determination is recommended for the Regional Cocoa Rehabilitation and Development Project. Overall, the project should have predominantly positive effect on the biological, human, and physical environments of project activities. The reasons for this recommendation are summarized below.

a. The project will work with a crop that has significant potential to reduce erosion problems in the hillside environments in which it will be produced. Successful implementation of the project should provide an incentive to extension of cocoa production in pure crop and intercropped agroforestry settings with substantial positive effects on soil and water conservation and quality. Project work on sloped land will utilize banana's as temporary shade while permanent shade tree plantings develop. Soil coverage should be good during the early years of planting, and cocoa provides a basis for a permanent tree-crop based agriculture that is more in accordance with good land use practice on sloped lands.

b. A major thrust of the project will be to reduce the current high, costly and potentially unsound use of pesticides in preventative spraying programs. The project will undertake intensive training and follow up of major cocoa grower's in Integrated Pest Management practices including pest scouting, hot spot rather than total stand spraying practices, and pesticide handling and disposal safety. With the assistance of CIPC, farmers and field staff will undergo training for certification as pesticide applicators following EPA guidelines and recommendations.

c. The project will engage in the procurement and use of pesticides only for purposes of research and limited field evaluation purposes under the supervision of project personnel, thus qualifying for the exceptions to pesticide procedures as cited in Regulation 216.3(b)(2)(iii).

d. Where applicable and technically sound, cocoa production as an understory crop beneath coconuts in St. Lucia and St. Vincent will be promoted, increasing the biological diversity on monocropped estates, as well as economic return.

e. Farmers will be trained in husbandry techniques aimed at increasing the density of trees per acre and the effective application of fertilizers to avoid losses through runoff. While these practices are aimed primarily at improving productivity, they will provide ancillary environmental benefits through earlier and denser canopy cover and reduced non-point source contamination of streams.

f. Extensive consideration was given during project design to phytosanitary requirements needed for the introduction of higher yielding hybrid varieties of cocoa. Direct contacts were made with

USDA's APHIS/PPQ in Washington; the USDA cocoa quarantine station Sub-tropical Research Station in Florida; the Mayaguez, Puerto Rico USDA/ACRI cocoa field station, CATIE in Turrialba, Costa Rica; the Barbados Plant Quarantine Facility; the Cocoa Research Unit at the University of the West Indies in Trinidad; and the FAO Regional Plant Protection Officer in Trinidad. The project will sponsor the establishment of a regional cocoa plant material protocol for cocoa seeds, seedlings and vegetative material.

Table 8

REVIEW OF PRELIMINARY LIST OF QUICK RESPONSE PROJECTS FOR POTENTIAL ENVIRONMENTAL IMPACTS

Activity/Location	Issues/Impacts	Discussion
Oyster seed hatchery/ unspecified location	Exotic species introductions	Mangrove oyster (C. rhizophora) potentially affected; may eliminate indigenous species from ecosystems if introduced species escapes; may cause dislocations to local fishermen who now depend on mangrove oyster.
Fish export marketing/ Antigua	Over-exploitation of coastal finfish and shell-fish resources	Lobster and conch are under intense over-exploitative pressures; stocks are having trouble recovering because of lack of recruitment; fishermen response is myoptic, tending to exploit new areas rather than manage existing grounds, or switch to new species of finfish, or go belly-up; English-speaking islands fisheries laws are not respected by French-speaking islands, resulting in local resource conflicts; e.g., Government of St. Lucia intends to increase patrol boats monitoring of who fishes and what is taken; closed seasons are in effect in many islands. For project, mitigative measures would include submission and approval of fisheries management plan by venture firm to government fisheries unit.
Cotton research/Antigua (Sea Island Cotton for Export)	Pesticide use/procurement and potential for abuse and environmental contamination on such a small island	Residues could get into food chains, underground aquifers, or leach into such places from solid waste dumps where pesticide containers are improperly disposed of; fish kills; crop dusting required by aircraft with great losses (60-90%) into adjacent areas; methods used to eradicate wild cotton in order to eliminate pink boll worm may involve inappropriate and extensive use of pesticides.
All generic projects involving vegetables/ fruit trees/rice on many islands	- Pesticide use and abuse - Soil conservation or lack of it - New land clearing, resulting in further deforestation and deterioration of water-sheds	Many prime agricultural lands are under state control (coconut, bananas, sugarcane) but have not been transferred to small holders, who are still subsistence farming hill-sides; the project's objectives are to move people from marginal lands to more productive areas; dissemination of new technology, development of better markets may stimulate greater use of hillsides once prime flatlands are taken; soil erosion is a problem on all the islands; St. Vincent appears to be one of the few countries applying soil conservation measures on any scale; once these projects begin to be successful, it will be hard to control land use, unless better controls are in place, including watershed legislation, squatter control, and use of land capability systems.

VII. NEGOTIATING STATUS, CONDITIONS PRECEDENT, COVENANTS AND WAIVERS

A. Negotiating Status

RDO/C has discussed implementation of the Quick Response Fund with the Caribbean Financial Services Corporation's Board of Directors and they have heartily endorsed the concept. They see the equity fund as the necessary stimulus for agricultural investment in the region. They view CFSC's participation in the process as a twofold advantage; (1) it permits their organization to act as a development finance institution without the risk of being pulled under by risky investments, and, (2) it postures investors to be able to one day approach CFSC's loan window. Because of their favorable attitude, RDO/C has been able to negotiate a CFSC counterpart equity fund, conditions of future reflows, and a comprehensive administrative burden (Details in Annex N). Final variations of these negotiated items will be incorporated into the Trust agreement to be signed in May 1986.

B. Conditions Precedent

1. Conditions Precedent to First Disbursement for Quick Response Activities. Prior to the first disbursement under the Trust, or to the issuance by AID of documentation pursuant to which disbursement will be made for Quick Response Activities, the Trustee will, except as the Parties may otherwise agree in writing, furnish to AID, in form and substance satisfactory to AID,:

a. An opinion of counsel acceptable to AID that the Trust Agreement has been duly authorized and/or ratified by, and executed on behalf of, the Trustee, and that it constitutes a valid and legally binding obligation of the Trustee in accordance with all of its terms; and,

b. A statement of the name of the person holding or acting as representative of the Trustee and of any additional representatives, together with a specimen signature of each person specified in such statement.

2. Conditions Precedent to First Disbursement for Major Subproject Grants. Prior to the first disbursement under the Grant, or to the issuance by AID of documentation pursuant to which disbursement will be made for Major Subprojects, the Grantee will, except as the Parties may otherwise agree in writing, furnish to AID, in form and substance satisfactory to AID,:

a. An opinion of counsel acceptable to AID that the Agreement has been duly authorized and/or ratified by, and executed on behalf of, the Grantee, and that it constitutes a valid and legally binding obligation of the Grantee in accordance with all of its terms; and,

b. A statement of the name of the person holding or acting as representative of the Grantee and of any additional representatives, together with a specimen signature of each person specified in such statement.

3. Disbursement for a Particular Major Subproject Activity. Prior to any disbursement or to the issuance by AID of documentation pursuant to which disbursement will be made for any particular major subproject activity under the project, the Grantee will, except as the Parties may otherwise agree in writing, furnish to AID in form and substance satisfactory to AID:

a. Evidence that the Grantee has capable existing management or has contracted or otherwise made arrangements to secure management to organize and implement activities properly, including the ability to procure goods and services according to AID regulations; and,

b. Enter into an agreement with AID prescribing all applicable terms and conditions for carrying out the activity.

4. Any Disbursement for Quick Response Fund Equity or Reimbursable Grant-Financed Activity. Prior to any disbursement or to the issuance by AID of documentation pursuant to which disbursement will be made for any Quick Response Fund reimbursable grant or equity-financed activity, the Trustee will, except as the Parties may otherwise agree in writing, furnish to AID in form and substance satisfactory to AID evidence that CFSC is conducting a recruitment search to fill the positions of Project Manager and procurement officer/accountant.

C. Special Covenants

AID intends to negotiate the substance of the covenants into its Trust Agreement with the Caribbean Financial Services Corporation. Since a measure of flexibility is desired, these are not included in the draft Project Authorization.

The Caribbean Financial Services Corporation shall covenant to:

1. Except as AID may otherwise agree in writing, contribute 15 percent of annual profits from its loan operations to an Equity Fund and furnish any necessary office space for the Quick Response Fund activities;

2. Except as A.I.D. may otherwise agree in writing, request prior AID approval of the appointment of the Quick Response Fund Project Manager and any subsequent changes in the Project Manager;

3. Except as AID may otherwise agree in writing, request AID prior approval of each of its subgrants and equity investments;

4. (i) Except as AID may otherwise agree in writing, limit the total amount of grant and equity investment per venture to $500,000; (ii) ensure that grant funds to non-profit organizations do not exceed 49 percent of total investment costs; (iii) ensure that profit-making organizations do not receive reimbursable grant funds without a CFSC equity investment and (iv) limit total funds to profit-making firms to 49 percent of the investment amount;

5. (i) Except as AID may otherwise agree in writing, ensure that each entity receiving reimbursable grant funds has the management capacity to contract for needed goods and services in accordance with AID regulations; and (ii) ensure that management requirements and AID regulations will be adhered to in an agreement between CFSC and all subgrant recipients including equity investment recipients;

6. Except as AID may otherwise agree in writing, "Present" quarterly reports to AID which specify the name of entities receiving reimbursable grant and/or equity funds throughout the life of the project. Such reports should include information on the type of activity; amount of assistance; and comments on their financial performance, status of activities, problems encountered and any other appropriate monitoring information;

7. Except as AID may otherwise agree in writing, "Limit" the maximum total amount of investment in any enterprise to no more than 49 percent of the enterprise's equity base at the time of investment. In exceptional cases in which the firm's profitability is jeopardized by policies set by existing shareholders or the performance of owner/management, CFSC shall have the option of purchasing shares to receive majority control of the firm. CFSC will be expected to sell its participation within two years of receiving majority control;

8. Except as AID may otherwise agree in writing, "Ensure" that a CFSC representative attends quarterly Board of Directors' meetings held by each firm receiving equity funds from the Trust;

9. Except as AID may otherwise agree in writing, "Conduct" an in-depth analysis of each firm receiving equity funds on an annual basis;

10. Except as AID may otherwise agree in writing, "Sell" each investment within five years; and,

11. Except as AID may otherwise agree in writing, "Return" all income earned through sales of equity investments or repayment of grants during project years one through five to the equity fund. After project completion when USAID funding for administrative expenses ends, CFSC will return all income earned from the sale of equity investments and repayment of grants to the Equity Fund after subtracting a management fee to be set mutually by AID and CFSC in year four of the project. CFSC shall continue to return subsequent generations of reflows to the equity fund for investment in agricultural enterprises, following sound investment practices.

D. Special Provisions Governing CFSC Investments

(The tenor of the following provisions will be required to be negotiated into each equity investment. Since AID has the right of prior approval of each such investment, their inclusion in an effective form will be assured. They are not included as specific conditions precedent or covenants because it is deemed desirable to leave a degree of flexibility in their negotiation. In view of this, none have been included in the draft authorization).

1. A fair share price shall be determined by an AID-approved accounting firm based upon the company's book value plus the revaluation of real estate at prevailing market prices;

2. No earnings shall be distributed during the time that the Trust holds stock in the firm. Net profits should be sufficient, when possible, to enable retained earnings to increase the value of the stock price by at least 15 percent per annum;

3. Additional stock will be issued by the equity fund recipient firm only with the concurrence of CFSC and a majority of shareholders. CFSC shall not unreasonably withhold such concurrence when a fair price has been set; and,

4. Shareholders shall agree to repurchase the Trust stock within five years of original purchase. In exceptional cases in which shareholders do not have the financial means to repurchase the shares, the Trust may sell to any interested buyers. Shareholders and the Board of Directors of the firm shall agree not to attempt to block attempts to sell shares to interested parties. (Exceptions to the five year rule include those activities that require longer periods of time to yield positive returns (e.g. tree crops). The buy-back period should be specified in legal documents governing each equity investment).

E. Waivers

(Waivers, if approved, shall be included in the Project Authorization).

1. Vehicles

A waiver is requested of source/origin requirements (AID Code 000) and of the provision of Section 636(i) of The Foreign Assistance Act of 1961, as amended, to permit contractor procurement of seven vehicles from AID Code 935 countries -- five four-wheel drive jeeps, one station wagon and one passenger vehicle. These vehicles will be used by the seven core contractor advisers (two in Barbados; five in the Leeward and Windward Islands) in performance of their duties. The five field officers will require sturdy four-wheel drive vehicles to

provide ongoing technical assistance to agricultural enterprises often located in rough terrain. The two additional vehicles are for the core contractor advisers located in Barbados. The station wagon will help to transport small quantities of produce samples and potential foreign investors interested in HIAMP projects. The passenger vehicle is needed to enable the other adviser to carry out project responsibilities.

A waiver is requested because service facilities and spare parts for U.S.-made vehicles are not available on these islands and the use of left-hand drive vehicles has proven to be hazardous. Maximum cost for each four wheel drive is $14,000 and for the two remaining vehicles is $10,000 each, for a total waiver amount of $90,000.

In approving such a waiver, AID must find that "certain circumstances" exist. The circumstances include:

(a) The inability of U.S. manufacturers to provide the necessary vehicles, e.g., right-hand drive vehicles; and,

(b) Present or projected lack of service facilities and supply of spare parts for U.S.-made vehicles.

In addition, AID Handbook 11, Chapter 3, Section 2.6.1.3 provides that a source/origin waiver may be approved when "the commodity is not available from countries or areas included in the authorized geographic code". Thus, it is recommended that: (1) a waiver of Section 636(i) of the FAA and (2) a source/origin waiver to permit procurement of the required vehicles from AID Geographic Code 935 (Special Free World) be approved.

2. Ocean Shipping

Funds provided from the HIAMP Project may be utilized to finance shipments of perishable produce from the Eastern Caribbean to export markets. This may occur as the result of a contractor test marketing a product or from a subproject recipient's use of equity funds. A U.S. flag carrier recently has begun regularly scheduled services to the Leeward and Windward Islands via Puerto Rico. However, in the case of shipment of agricultural perishable goods these U.S. shipping facilities, schedules and routes are not adequate to satisfy HIAMP subproject needs. These include:

- currently available minimum shipment size of 20 foot containers: during early production stages, most HIAMP subprojects will not be able to fill a full container;

- weekly service: some HIAMP subprojects will require at least twice-weekly services;

- lack of transshipment connections and arrangements to European destinations: HIAMP subprojects require direct service to European destinations.

Quick Response Fund recipients, and producers under Major Project Activities, will use existing ocean shipping for the movement of commodities during the Project. In doing so, the Project must be able to respond to the needs of the private sector shippers, to assure prompt movement to highly competitive, demanding markets to improve burdensome waiver requirements on such shippers prior to shipment which will seriously impair achievement of project objectives of perishable commodities.

A review of shipping in the Eastern Caribbean indicates that while U.S. flag carriers now provide regular service in the region, the shipping requirements of these elements of project, i.e. relatively small volume, highly perishable, sporadic shipping patterns, lead to the necessity for the limited shipping waiver. Hence, shippers of perishables would be able to ship on Code 935 vessels and receive AID's financing for such shipments without first obtaining a waiver. Under this procedure, AID would require subproject recipients or project grantees to require shippers of perishables to certify that they had tried to locate timely U.S. flag shipping for the perishables. This would correspond to shipping waiver procedures currently in effect in the Eastern Caribbean in other AID projects but would fix the emphasis on what, in an activity involving intensive participation of the private sector, is practicable and necessary to achieve the Project purposes.

AID financing of shipping costs under the circumstances described above on AID Geographic Code 935 carriers is requested under the Project. Given the limited shipping service described above, the interests of the U.S. are best served by permitting financing of transportation services on ocean vessels under flag registry of Code 935 countries.

A determination of non-availability of U.S. flag services for this Project is requested as part of the Project Authorization package.

All other Project financed shipping would be subject to U.S. flag shipping requirements.

VIII. EVALUATION AND SPECIAL STUDIES

A. Project Evaluation

This five year project will have two evaluations, a special review of the Quick Response Fund, and annual financial reviews (audits). The first evaluation will commence at an appropriate time after the end of year two and will be completed not later than the end of year three. The second will be conducted towards the end of the project six months before the PACD. A special review will be conducted to measure performance of the Quick Response Fund. This review must be conducted and reviewed by AID/W prior to obligation of the second tranche of funds for Quick Response Activities.

Both evaluations will be integral initial steps towards an overall assessment of RDO/C's Agricultural Sector program. Both evaluations will, therefore, attempt to analyze HIAMP's impact at the micro and macro levels and the efficacy of its role within the context of the entire program. They will seek to determine how effectively HIAMP has linked and interacted in synergy with AID regional and bilateral initiatives to validate a market driven strategy for agricultural development in the Eastern Caribbean.

Within six months after assuming duties, the Core Contractor will be expected to complete the collection of base line data and design an appropriate methodology for measuring project impact. The methodology is to be approved by RDO/C.

The first evaluation will be conducted within the framework of an impact evaluation methodology subject to modifications based on the core contractor's evaluation design and the base line data collected. Apart from the wider program focus mentioned above, it will also examine: (a) the adequacy and efficiency of implementation arrangements, including the performance of the core contractor, CFSC management and any other contractors; (b) the timeliness of the disbursement of project inputs; (c) the progress made towards achieving project outputs; and (d) the extent to which HIAMP has helped to elicit loans from private and public lending institutions. It will be expected to recommend whatever modifications are necessary to (a) assure HIAMP's meaningful contribution to the achievement of the Mission's overall program and sector goals and objectives and (b) to improve project implementation. The level of effort for this evaluation is expected to take six person-months and would require an evaluation team comprised of consultants with specialities in agriculture, agricultural economics, macro economics, agribusiness development, financial analysis, agricultural credit, agricultural marketing and evaluation.

The final evaluation will be a full impact evaluation. It will not only assess HIAMP's contrbution to the Mission's program but also its impact on the individual performances of selected enterprises and on the agricultural GDP of each country. It will also assess the performance of

the contractors, the effectiveness of CFSC's management, the viability of the equity fund and CFSC's capacity to perform a future similar role. This evaluation should also inform the Mission about appropriate follow-on activities.

The level of effort anticipated for this evaluation is four person-months of a team including expertise in macro economics, financial analysis, agribusiness development, evaluation, cocoa development, tropical fruits, mariculture and any other required specialities.

B. Special Studies

1. Overview

The special studies undertaken during the HIAMP project will examine technical issues identified by project implementators and beneficiaries that are important to achieving project objectives.

The design team identified two topics that merit further in-depth analysis to assist successful project implementation: an analysis of means to stimulate lending to agricultural enterprises and an examination of transportation facilities. Additional studies are expected to be identified during the first three years of project implementation.

2. Agricultural Credit Study

The HIAMP project has adopted a strategy of responding to concerns of intermediary financial institutions in the hope that this will induce lending. Additional study is required to analyze the past performance, current practice and capacity of intermediary financial institutions to conduct agricultural lending operations. If the current excess liquidity position of lending institutions changes due to policy changes currently being discussed at the ECCB, then the study would have to examine the adviseability of establishing a rediscount facility to promote lending.

Even if IFIs remain highly liquid, in the long term other measures may be necessary to change lending institutions' attitudes towards loans for agricultural purposes. For example, commercial banks will not discount receivables of agricultural enterprises, or provide pre-shipment or post-shipment financing due to the perishable nature of their commodities. The Central Bank of Barbados has established a pre-shipment guarantee and post-shipment insurance scheme for manufactured goods that has induced banks to lend. The agricultural credit study should examine whether it would be advisable to establish such mechanisms to cover agricultural goods from the Eastern Caribbean countries.

The first step would be to examine the performance of similar schemes existing in other nations, including the guarantee scheme offered by the U.S. Export-Import Bank. Documents evaluating the performance of other types of guarantee and insurance schemes would also be analyzed to provide a basis for discussion with financial institutions in the Eastern Caribbean. Finally, an analysis of the capacity of Caribbean lending institutions would be performed by visiting all banks interested in providing agricultural loans.

The study team will be composed of a banking/financial analysis expert and a guarantee fund specialist and require about 24 person-weeks of time.

3. Transportation Study

The lack of adequate transportation facilities for inter-island shipments of fresh produce has constrained both intra- and extra-regional market development in the region. Specifically, inadequacies in the inter-island schooner services has ensured that a modern, fresh produce marketing sector has not emerged in intra-regional trade; the lack of specialized air freight services linking, in particular, St. Vincent, Dominca and Grenada with trans-shipment points in Barbados, St. Lucia, Antigua and Trinidad has served to suppress the development of extra-regional trade in fresh produce by air freight.

The objectives of the transportation study will be:

- to identify transportation problems that constrain intra- and extra-regional exports of fresh produce from the Eastern Caribbean, and

- to design a project(s) to help remove such constraints and, thereby, support the HIAMP project.

Since there have been many previous studies of transportation constraints in the Eastern Caribbean and little corrective action taken, a synthesis of past reports with a focus on fixing the problems identified will be the study team's charter. The team will comprise a senior transportation management expert (6 weeks), a transportation economist (6 weeks), an agribusiness marketing specialist (2 weeks), a post-harvest specialist (4 weeks), a financial analyst (3 weeks), specialists from within the region in air freight (2 weeks) and sea freight (2 weeks) for a total of 25 person weeks.

One outcome of the study, for example, could be the design and subsequent implementation under HIAMP of an inter-island fresh produce air freight line project. Using an existing carrier company (e.g. Tropic Air, LIAT, CARICARGO, etc.), scheduled inter-island shipments of high value-low volume produce (e.g. tropical flowers) would be shipped from the Windward Islands to a trans-shipment point in Barbados for export to Europe and North America at freight rates that

reflect volumes of air-freight business that could be expected in a mature tropical flower export program. The project might: cover the development costs of reaching a critical mass in air-freight shipment volume for highly perishable, high value crop; "show by doing" the longer-term returns of such a business to existing companies and provide a testing ground for the logistical and post-harvest requirements that must be in place at point of trans-shipment (Barbados) if export market development using air freight is to be successful from the Windward Islands.

Best Available Document

TAGS:
SUBJECT: PID REVIEW, HIGH IMPACT AGRICULTURE MARKETING AND PRODUCTION PROJECT (HIAMP), 538-0140

1. A DAEC REVIEW OF THE REFERENCED PROJECT WAS HELD ON FRIDAY OCT 11. THE MISSION WAS AUTHORIZED TO PREPARE THE PP, SUBJECT TO THE FOLLOWING GUIDANCE, AND FORWARD IT TO AID/W FOR REVIEW AND APPROVAL. AID RECOGNIZED AND COMMENDED THE CREATIVE APPROACH TO MANAGEMENT OF RESOURCES OVER AN AREA INCLUDING SIX INDEPENDENT REPUBLICS. FOLLOWING GUIDANCE ON PP PREPARATION IS DESIGNED TO STRENGTHEN THE APPROACH.

2. POLICY REFORM. IT WAS AGREED AT THE DAEC THAT TO THE EXTENT FEASIBLE THIS CLUSTER'S ACTIVITISS WILL BE USED TO LEVERAGE OR ACT AS A CATALYST IN THE REFORM OF POLICIES RELATING TO COUNTRY AND PROJECT SPECIFIC ACTIVITIES. AREAS WHICH BEAR DIRECTLY ON THE VIABILITY OF PROJECT ACTIVITIES, SUCH AS PRICE CONTROLS AND MARKETING BOARDS, ARE LIKELY AREAS FOR POLICY DIALOGUE DURING SUB-PROJECT NEGOTIATIONS. THE DIFFICULTY OF TYING BROADER CONDITIONALITY, SUCH AS CHANGES IN EXCHANGE RATES, TO THE DEVELOPMENT OF ONE COMMODITY WAS RECOGNIZED, BUT AT THE SAME TIME THE MISSION SHOULD NOT OVERLOOK OPPORTUNITIES TO PRESS FOR BROAD REFORMS.

THE PP SHOULD INCLUDE AN ANALYSIS OF POLICY CONSTRAINTS IN THE AGRICULTURAL SECTOR THAT COULD REASONABLY BE ADDRESSED THROUGH PROJECT INTERVENTIONS AND RELATED POLICY REFORMS. IN DESCRIBING THE ACTIVITIES TO BE UNDERTAKEN IN THE PROJECT, THE PP SHOULD DISCUSS THE POLICY ENVIRONMENT AFFECTING THEM, POTENTIAL AREAS OF CONFLICT WITH REGARD TO POLICY AND HOW THESE WILL BE ADDRESSED.

3. PROJECT IMPLEMENTATION. THE PROJECT COMPRISES SOME EIGHT MAJOR ACTIVITIES AND 40 TO 80 SMALLER ACTIVITIES OVER THE LOP, EACH OF WHICH WILL REQUIRE DISCRETE DEVELOPMENT, CONTRACTUAL ARRANGEMENTS, MANAGEMENT AND MONITORING. THE PP SHOULD DESCRIBE THE PROCESS FOR DEVELOPING THESE ACTIVITIES AND HOW THE CORE CONTRACT WILL PROVIDE THE LEVEL OF TECHNICAL ASSISTANCE AND

SUPPORT NECESSARY TO CARRY OUT THESE FUNCTIONS WITHOUT UNDULY INCREASING THE BURDEN ON THE RDO/C STAFF.

4. CORE CONTRACT. IN DEVELOPING THE PLAN FOR PROJECT IMPLEMENTATION AND SCOPE OF WORK FOR THE CORE CONTRACTOR, THE MISSION SHOULD BE SENSITIVE TO POTENTIAL AREAS OF CONFLICT OF INTEREST. THE PP SHOULD DESCRIBE THE ROLE OF THE CORE CONTRACTOR IN THE IMPLEMENTATION OF TYPICAL ACTIVITIES UNDER THE SMALLER QUICK RESPONSE FUND AND LARGER MAJOR PROJECT FUND, AND CARE TAKEN THAT THE CONTRACTOR IS NOT PUT IN A POSITION OF RECOMMENDING THE FEASIBILITY OF A SUB-PROJECT IN WHICH IT WOULD HAVE A SUBSEQUENT FINANCIAL INTEREST.

5. GRANT VERSUS LOAN FINANCING. CONSIDERABLE CONCERN WAS EXPRESSED OVER THE MISSION'S PROPOSAL TO ENTIRELY GRANT FUND THIS PROJECT, WHICH ESSENTIALLY SEEKS TO EXPAND INVESTMENT AND PRIVATE SECTOR INVOLVEMENT IN THE AGRICULTURE SECTOR. WHILE SOME ACTIVITIES, SUCH AS TA AND TRAINING, MAY BE CANDIDATES FOR GRANT FINANCING, THE PRESUMPTION IS THAT FARM INPUTS AND CONSTRUCTION OF PHYSICAL FACILITIES SHOULD BE LOAN FINANCED. TO THE EXTENT THAT THE MISSION PROPOSES TO GRANT FINANCE THESE ACTIVITIES, THE PP SHOULD DISCUSS THE CIRCUMSTANCES THAT WOULD WARRANT AN EXCEPTION TO THE LOAN FUNDING PREFERENCE, AND STILL QUALIFY WITHIN THE GUIDELINES ON TERMS OF AID.

6. PARASTATALS. CONSISTENT WITH AID POLICY TO BUILD UP AND RELY ON THE INDIGENOUS PRIVATE SECTOR FOR LONG RUN ECONOMIC DEVELOPMENT RATHER THAN TO ASSIST CONTINUED

RELIANCE ON PARASTATALS, THE MISSION SHOULD MAKE EVERY EFFORT TO CARRY OUT PROJECT ACTIVITIES THROUGH PRIVATEORGANIZATIONS. PROJECT ACTIVITIES THAT UTILIZE PARASTATALS OR STATE-OWNED ENTERPRISES SHOULD BE CONDUCTED IN ACCORDANCE WITH AID'S PRIVATE ENTERPRISE DEVELOPMENT POLICY.

7. PROJECT PAPER ANALYSES. THE DAEC APPROVED DEVELOPMENT OF A PROJECT PROPOSAL FOR UP TO DOLS 40 MILLION. HOWEVER, THE PP WILL NEED TO JUSTIFY THE LEVEL OF ASSISTANCE PROPOSED WITH A LIST OF IDENTIFIED ACTIVITIES, DETAILED COST ESTIMATES OF INITIAL MAJOR SUB-PROJECTS, AND ILLUSTRATIVE COSTS OF OTHER, SMALLER ACTIVITIES. THERE ARE DOUBTS AS TO THE AGRICULTURAL POTENTIAL OF THE ISLANDS OF THE EASTERN CARIBBEAN. MANY FACTORS, INCLUDING HIGH TRANSPORTATION COSTS, LOCAL CLIMATIC CONDITIONS, LABOR COSTS, LACK OF SCALE, AND UNREALISTIC EXCHANGE RATES, ARE BELIEVED TO LIMIT THE AGRICULTURAL POTENTIAL. THEREFORE, THE PP SHOULD DISCUSS THIS ISSUE

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THOROUGHLY AND DEMONSTRATE THAT THE PROPOSED SUB-PROJECTS WILL CLEARLY BE ECONOMICALLY AND FINANCIALLY VIABLE.

8. THE MISSION MAY ALSO WISE TO CONSIDER THE ADDITION OF A MARICULTURE SPECIALIST TO THE PP TEAM.

9. THE PP WILL BE REVIEWED IN AID/W. SHULTZ
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5C(1) - PROJECT CHECKLIST

Listed below are statutory criteria applicable to projects. This section is divided into two parts. Part A. includes criteria applicable to all projects. Part B. applies to projects funded from specific sources only: B.1. applies to all projects funded with Development Assistance loans, and B.3. applies to projects funded from ESF.

CROSS REFERENCES: IS COUNTRY CHECKLIST UP-TO-DATE?
HAS STANDARD ITEM CHECKLIST BEEN REVIEWED FOR THIS PROJECT?

A. GENERAL CRITERIA FOR PROJECT

1. FY 1985 Continuing Resolution Sec. 525; FAA Sec. 634A.	
Describe how authorizing and appropriations committees of Senate and House have been or will be notified concerning the project;	Congressional Notification will be sent forward and the waiting period will have expired prior to project authorization.
2. FAA Sec. 611(a)(1). Prior to obligation in excess of $500,000, will there be (a) engineering, financial or other plans necessary to carry out the assistance and	Yes; also, prior to financing each subproject activity, a subproject technical and financial design document will be approved by AID.
(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	No action required.

4.	FAA Sec. 611(b); FY 1985 Continuing Resolution Sec 501 If for water or water-related land resource construction, has project met the principles, standards, and procedures established pursuant to the Water Resources Planning Act (42 U.S.C. 1962, et seq.)? (See AID Handbook 3 for new guidelines.)	Yes
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 Assistant Administrator taken into consideration the country's capability effectively to maintain and utilize the project?	N.A.
6.	FAA Sec. 209. Is project susceptible to 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.	Yes, it 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; and (c) encourage development and use of cooperatives, and credit unions, and savings and loan	This project is designed to: a. b. e.) increase flow of trade in private sector agricultural products; c) through showing evidence that agricultural financing is a reasonable investment, the project will encourage broadening of portfolios of all financial institutions, unions, and savings and loan associations;

	associations; (d) discourage monopolistic practices; (e) improve technical efficiency of industry, agriculture and commerce; and (f) strengthen free labor unions.	(d) will discourage monopolistic practices; f) have no direct effect on labor unions.
8.	FAA Sec. 601(b). Information and conclusions 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).	The project seeks to attract U.S. investors to the Eastern Caribbean to participate in the production and marketing of agricultural products for export. The project will support these investments by eliminating constraints to investment.
9.	FAA Sec. 612(b), 636(h); FY 1985 Continuing Resolution Sec 501. 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 in lieu of dollars.	N/A
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?	The core contract, estimated at $ .0 million was formally advertised November 12, 1985. Contracts for subproject activities will be let according to the Federal Acquisition Regulations as amended to reflect AID special circumstances.

12.	FAA 1985 Continuing Resolution Sec. 522. 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?	The project seeks to stimulate the production of high value speciality crops which are not in surplus in world markets.
13.	FAA 118(c) and (d). Does the project comply with the environmental procedures set forth in AID Regulation 16. Does the project or program take into consideration the problem of the destruction of tropical forests?	Detailed environmental guidelines will be followed in the preparation of each subproject proposal.
14.	FAA 121(d). If a Sahel project, has a determination been made that the host government has an adequate system for accounting for and controlling receipt and expenditure of project funds (dollars or local currency generated therefrom)?	N/A
15.	FY 1985 Continuing Resolution Sec. 536. Is disbursement of the assistance conditioned solely on the basis of the policies of any multilateral institution?	No
16.	ISDCA of 1985 Sec. 310. For development assistance projects, how much of the funds will be available only for activities of economically and socially disadvantaged enterprises,	No plans to specify amount although sub-contracting services to these 8(a) HBCU, & other firms under major core contract is encouraged in AID's advertising.

historically black colleges and universities, and private and voluntary organizations which are controlled by individuals who are black Americans, Hispanic Americans, or Native Americans, or who are economically or socially disadvantaged (including women)?

B. FUNDING CRITERIA FOR PROJECT

1. Development Assistance Project Criteria

a. FAA Sec. 102(a), 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;

a) The project seeks to establish private agricultural production and marketing centers into which small farmers can channel their produce for export;

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;

b) Private sector agricultural production and marketing will utilize cooperatives and grower's associations where crop lines so dictate;

	(c) support the self-help efforts of developing countries;	c) N/A
	(d) promote the participation of women in the national economies of developing countries and the improvement of women's status,	d) Majority of small farmers in project area are women who will benefit as in (a) above; and,
	(e) utilize and encourage regional cooperation by developing countries?	e) many constraints to be eliminated by this project will be eliminated on a regional basis (shipping, marketing, etc.).
b.	FAA Sec. 103, 103A, 104, 105, 106. Does the project fit the criteria for the type of funds (functional account) being used?	Yes, 103
c.	FAA Sec. 107. Is emphasis on use of appropriate technology (relatively smaller, cost-saving, labor-using technologies that are generally most appropriate for the small farm, small businesses, and small incomes of the poor)?	Not necessarily, emphasis is on using whatever it takes to produce and market agricultural commodities efficiently.
d.	FAA Sec. 110(a). Will the recipient country provide at last 25% of the costs of the program, project, or activity with respect to which the assistance is to be furnished (or is the latter cost-sharing requirement being waived for a "relatively least developed country)?	N/A, this is a regional project which will be carried out by making assistance available directly to non-governmental grantees.

e.	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
f.	FAA Sec. 128(b). If the activity attempts to increase the institutional capabilities of private organizations or the government of the country, or if it attempts to stimulate scientific and technological research, has it been designed and will it be monitored to ensure that the ultimate beneficiaries are the poor majority?	N/A
g.	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 processes essential to self-government.	Project will give host country agricultural producers an opportunity to operate profitable companies.

2. Development Assistance Project Criteria (Loans Only)

   a. FAA Sec. 122(b). Information and conclusion on capacity of the country to repay the loan, at a reasonable rate of interest.

   b. FAA Sec. 620(d). If assistance is for any productive enterprise which will compete with U.S. enterprises, 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. Economic Support Fund Project Criteria

   a. FAA Sec. 531(a). Will this assistance promote economic and political stability? To the maximum extent feasible, is this assistance consistent with the policy directions, purposes, and programs of part I of the FAA?

   b. FAA Sec. 531(c). Will assistance under this chapter be used for military, or paramilitary activities?

c. ISDCA of 1985 Sec. 207. Will ESF funds be used to finance the construction of, or the operation or maintenance of, or the supplying of fuel for, a nuclear facility? If so, has the President certified that such country is a party to the Treaty on the Non-Proliferation of Nuclear Weapons or the Treaty for the Phohibition of Nuclear Weapons in Latin America (the "Treaty of Tlatelolco"), cooperates fully with the IAEA, and pursues nonproliferation policies consistent with those of the United States?

d. FAA Sec. 609. If commodities are to be granted so that sale proceeds will accrue to the recipient country, have Special Account (counterpart) arrangements been made?

MISSION DIRECTOR'S GRAY AMENDMENT CERTIFICATION

"I, James S. Holtaway, as Director of the Regional Development Office/Caribbean, hereby certify that the procurement plan was developed with full consideration of maximally involving Gray Amendment organizations in the provision of required goods and services and that the High Impact Agricultural Marketing and Production Project is appropriate for minority or Gray Amendment organization contracting.

James S. Holtaway
James S. Holtaway
Director

2/12/86
Date

GRAY AMENDMENT OPPORTUNITIES

There is wide scope for services to be provided by firms defined in the Gray Amendment in support of the various planned activities of HIAMP. RDO/C will explicitly encourage consideration of these firms for all technical assistance work proposed. Moreover, RDO/C will, where appropriate, limit certain procurement to those firms designated as "8(a) firms".

It is anticipated that several Gray Amendment defined firms will in fact submit proposals to provide "core contractor" services. Full competitive consideration will, of course, be afforded. In addition, we anticipate that sub-grant activities under the QRF will require at least 400 work months of technical assistance over the LOP and involve at least 50 procurement actions. Opportunities for Gray Amendment firms will be purposefully encouraged in each procurement, and when appropriate, RDO/C will limit competition for certain work to "8(a)" firms only.

Similar consideration and encouragement for Gray Amendment firms will be available with "Major Project Activities" funded under HIAMP.

This level of effort and guidance to optimize opportunities for work by Gray Amendment defined firms is feasible under HIAMP because RDO/C will be directly involved in the review and approval of all sub-project activities.

CARIBBEAN FINANCIAL SERVICES CORPORATION

Chapel Street, Bridgetown, Barbados, W.I.
Tel: (809) 436 - 1960, Telex: 2544 CARIFIN WB

24th February, 1986

Mr. James S. Holtaway,
Director,
USAID,
P.O. Box 302,
Bridgetown.

Dear Mr. Holtaway,

Re: High Impact Agricultural Marketing and Production Project

The purpose of this letter is to request a grant from the United States of America in the amount of US$12,850,000 to assist the private sector in the Eastern Caribbean to accomplish the objectives of the High Impact Agricultural Marketing and Production Project. CFSC will use the funds to stimulate private sector agricultural investment through a combination of grant and equity contributions to businesses engaged in agricultural production, processing, and marketing. The grant/equity fund will require US$12,000,000 and the operating costs for this activity are estimated to be US$850,00 over the five year project period.

We look forward to successfully negotiating with USAID the details of the contract under which CFSC can be involved in the project.

Yours sincerely,

David DaCosta
Managing Director

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project:
From FY to FY
Total U.S. Funding:
Date Prepared:

Project Title & Number: High Impact Agricultural Marketing and Production No. 538-0140

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Program or Sector Goal: To achieve a growth-oriented sustainable, private sector-led agricultural production, marketing and export industry in the Eastern Caribbean.	Measures of Goal Achievement: Continuation of a 5 percent annual increase in agricultural GDP after Project completion.	National statistics.	Assumptions for Achieving Goal a Targets: 1. Business investment climate in the Eastern Caribbean remains stable. 2. Continued support of CBI. 3. Absence of major climatic disturbances.
Project Purpose: To increase the contribution of the agricultural sector and associated agricultural enterprises to Gross Domestic Product by improving the investment environment, relieving development constraints to private capital inflows, and demonstrating attractive returns on capital at acceptable levels of risk.	Conditions that will Indicate Purpose has Been Achieved: End of Project Status Annual agricultural GDP increasing at a rate of 5 percent per annum.	National statistics and end of Project Evaluation.	Assumptions for Achieving Purpose: 1. Private agricultural enterprises are prepared to expand or seek to develop new ventures. 2. Governments take necessary structural adjustment measures. 3. Absence of major climatic disturbance.
Outputs: 1. Expansion or establishment of profitable agricultural production and/or processing enterprises exporting to regional and/or international markets. 2. Increased yields among medium and large cocoa growers in the four Windward Islands, improved quality and consistency in quality in fermented beans, better marketing strategies for forward contracting, and a demonstration of the feasibility of hybrid cocoa technology 3. Design of a tropical fruit production project to increase yields, improve quality and strengthen marketing channels. 4. Design of a project to diversify agricultural production on the Leeward Islands. 5. Design of a project to promote the growth of mariculture commercial ventures.	Magnitude of Outputs: 1. Equity fund investments made to 50 - 80 firms, grant funds used to assist 100 ventures. Small- and medium-scale agricultural export activities established with $250,000 in gross annual sales each by 1995. 2. Regional Cocoa: Improvement of cocoa yields to 1,000 lbs./ac. on 1,000 acres held by medium and large growers; replanting of cocoa using a hybrid: clonal mix to yield 1,200 lbs./ac. on 1,000 acres of land held by medium and large growers; improvement of yields and introduction of the hybrid:clonal mix on nearly 840 acres of land under the model farms divestiture program; promotion of at least two joint ventures between Grenadians and foreign investors to develop 100 percent hybrid plantings of cocoa on a total of 500 acres of land; and demonstration at the Ashendon Estate that an 80:20 hybrid:clonal mix will not affect the premium received for Grenada	Records kept by RDO/C, the Core Contractor, CFSC, subcontractors and assisted ventures and Project Evaluation.	Assumptions for Achieving Outputs: 1. Implementation targets are met. 2. Management capacity of private ventures can be strengthened. 3. Markets are accessed for non-traditional exports and for fine flavored cocoa. 4. Local and foreign entrepreneurs will invest equity in agribusiness ventures; and 5. Loans will be available from intermediate financial institutions.

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6. Establishment of efficiently-managed. profitable venture capital fund for non-traditional export agriculture within the Caribbean Financial Services Corporation.
7. Increased lending to HIAMP agricultural enterprises by intermediary financial institutions.

cocoa.
3. Design of Tropical Fruit Tree Development Subproject to Handbook III specifications.
4. Design of a Leewards Islands Diversification Subproject to Handbook III specifications.
5. Design of a Regional Mariculture Sub-Project to Handbook III specifications.
6. Value of CFSC equity fund does not decline during project life; staff members trained and actively seeking new agricultural investments.
7. Intermediary financial institutions to disburse $7 million in loan funds throughout project life (equal to amount of equity fund investments).

Inputs:

COMPONENT	LOP COST (USD 000's)
a) Quick Response Funds	12000
b) CFSC QRF Admin.	850
c) Major Subproject Fund	12500
Regional Cocoa	3000
Tropical Fruits	6000
Leewards Diversification	2000
Mariculture	1500
d) Core Contractor	10000
e) Special Studies & Eval.	750
f) Contingency	3900
TOTAL	40000

Implementation Target (Type and Quality):

(in millions of US$)

	Yr 1	2	3	4	5
1. USAID/RDO/C Grant Funds.	4.0	7.7	10.3	10.1	8.0

2. CFSC annual contribution: 15 percent of profits plus cost of an additional secretary.
3. Investors' contribution: about $1.75 million from private investors (25 percent of equity fund) and $300,000 from groups and cooperatives (15 percent of grant funds).

Records kept by RDO/C, Core Contractor, CFSC, subcontractors and assisted ventures and Project Evaluation.

Assumption for Providing Inputs:
1. AID funds for the project are available as projected.
2. CFSC profitability targets are achieved.
3. HIAMP project components are sufficient to induce lending from intermediary financial institutions.
4. Private enterprises exist which are prepared to invest to expand or establish agricultural production activities.

INITIAL ENVIRONMENTAL EXAMINATION

Project Location:	Grenada, St. Vincent, St. Lucia, Dominica
Project Title:	Regional Cocoa Rehabilitation
Project Number:	XXXX
Funding:	FY 1986, $2.5 M Grant; $500,000 Venture Capital
Life of Project:	Five years, FY 1986-1991
IIE Prepared By:	XXXX

Signature _____ Date _____

Environmental Action Recommended: Negative Determination

A negative determination is recommended for the Regional Cocoa Rehabilitation and Development Project. Overall, the project should have predominantly positive effects on the biological, human, and physical environments of the project. The reasons for this recommendation are summarized below.

1. Cocoa development will foster more rational use of sloped lands in the region improving on the current use of slopes above 5% for production of bananas and root crops by small holders. Soil and water conservation benefits are anticipated.

2. A major thrust of the project is the reduction of current pesticide applications through training in integrated pest management and certification level training in pesticide application, safety, and disposal.

3. The project will engage in no procurement of pesticides beyond those needed for research and limited scope field evaluation qualifiying for exceptions to pesticide procedures as cited in Regulation 216.3(b)(2)(iii). Pesticides will be applied under the supervision of project personnel. Suppliers of pesticides will be required to obtain from manufacturers the toxicological and environmental data necessary to safeguard the health of research personnel and the quality of the local environmental applications procedures, rates, frequencies and preharvest intervals will not result in residues on the cocoa beans.

4. Cocoa's use as an understory crop in coconuts will increase biological diversity.

5. Farmer training in good cocoa husbandry practices will improve soil conserving canopy characteristics and help reduce non-point source contamination of streams by fertilizers.

6. The project will sponsor the establishment of a regional cocoa plant material phytosanitary protocol for cocoa seeds, seedlings and vegetative material.

Concurrence:_____
James S. Holtaway
Director
USAID, Regional Development
Office/Caribbean

Date: February , 1986

Chief Environmental Officer, LAC Decision:

Recommendation Approved: _____ Date:_____

Recommendation Disapproved:_____ Date:_____

AMENDED INITIAL ENVIRONMENTAL EXAMINATION

A. Basic Project Data

Project Location	Grenada, St. Vincent, St. Lucia, Dominica
Name of AID Project	Regional Cocoa Rehabilitation
Number of AID Project	543-0140.04
Funding	FY 1986, $3.0 M Grant
Life of Project	5 years FY86-91
IEE Prepared By:	William Baucum, ADO USAID/RDO/C, Barbodos Will B. Baucum
Date Prepared	February 12, 1986
Amended By	Mary Louise Higgins, LAC/DR/EST Mary Louise Higgins
Date Amended	March 3, 1986

Environmental Action Recommended: Negative Determination

Concurrence: James S. Holtaway

James S. Holtaway
Director
USAID, Regional Development Office/Caribbean

Date: 3/7/86

James S. Hester, LAC/DR/EST
Chief Environmental Officer, LAC Decision:

Recommendation Approved:_____ Date:_____

Recommendation Disapproved:_____ Date:_____

B. Project Description

The regional cocoa rehabilitation and development subproject (RCRD) is part of the High Impact Agricultural Marketing and Production Project (HIAMP), the goal of which is to move the cocoa industry in Grenada and the Eastern Caribbean to a new plane of productivity managed by the private sector and towards sustained growth in the marketplace. This goal will be attained through three components.

--A contract to provide management and outreach support to cocoa technology specialists and the individual country activities;

--A Grenada-specific set of activities in technology transfer, promotion, research and demonstration; and

--Country activities in demonstration and outreach in cocoa production in St. Vincent, St. Lucia and Dominica.

Through the contractor and the Grenada Cocoa Corporation, these three components are aimed at increasing cacao production. Increases in cocoa yield and production will be realized through a variety of technological inputs which include: using higher-yielding cacao varieties, using seedling propagation and higher plant densities, developing appropriate shade programs to maximize yield and minimize disease and pest problems, and developing a program of fertilizer applications and suitable pesticide use and pruning practices.

C. Initial Environmental Examination

A number of the planned activities to improve cocoa production such as pest management and land use practices may have potentially negative impacts on the environment. This Initial Environmental Examination assesses the potential impacts of the project on humans and the natural environment according to the United States Agency for International Development's Environmental Procedures (22CFR Part 216) of Regulation 16 of the Code of Federal Regulations. A negative determination is recommended contingent upon meeting the conditions discussed below with regards to pesticide use and land use patterns.

Pesticide Use

The chemicals proposed for the HIAMP RCRD subproject are effective and commonly used on cocoa and widely available in the Caribbean Islands. These chemicals were selected based on efficacy and safety, and were those identified in common use by Cyril R. M. Dominique, Specialist in Entomology in the Ministry

of Agriculture in Grenada. These include carbaryl (Sevin), fenitrothion, malathion, copper hydroxide, copper oxychloride, Spreader-sticker (Tenac, Triton), and paraquat. All of these chemicals, except paraquat, are registered for general use by the U.S. EPA, although residue tolerances for either carbaryl and malathion on cacao have not been established by EPA or FAO/WHO. The use of the agrichemicals mentioned, except paraquat may be purchased under the RCRD subproject. The use of agrichemicals, however, will be limited to research and limited field evaluation. Where general use is planned or anticipated, additional precautions as discussed below will be followed.

Pesticide Safety and Integrated Pest Management

Because of the high toxicity and user-hazard of paraquat, its purchase will not be authorized under the subproject. However, paraquat is cheap, readily available and commonly used in Grenada, and no equal substitute is known. Therefore, prohibiting the purchase of paraquat under the subproject does no more than avoid the problem in order to meet the requirements of Reg. 216.3(B)(1). As part of the research/demonstration component of the RCRD subproject, alternative approaches to weed control will be investigated. The use of ground cover species which compete with weed species, such as Desmodium or clover, also have the added advantage of fixing nitrogen and producing fodder. In addition, although more expensive, the use of alternative, safer herbicides such as glyphosate (Round-up), should be examined and encouraged. There is evidence to show that use of glyphosate can be extended and thus costs reduced when applied in combination with urea.

In Grenada, where the bulk of the RCRD subproject will take place, the Pest Management Unit (PMU), under the bilateral project, Agricultural Sector Revitalization (543-0005), will be training extension agents and ultimately farmers in safe handling and use of pesticides. The HIAMP RCRD subproject will provide additional support to this effort to educate farmers in safe use of pesticides, with the long-term aim of transferring the responsibility for pest management to the farmer. Use of protective clothing and equipment by farmers will be encouraged through these training efforts, and will be made available whenever pesticides are to be promoted and used.

In order to promote a reduction in the use of pesticides, training efforts with farmers under the subproject will also concentrate on proper identification of pests and pest population monitoring, and the application of alternative control methods. Application of pesticides will be done in response to the real threat of economic damage rather than as part of a preventative spraying schedule. Using a 'hot spot' approach, as discussed in the project paper, will reduce pesticide use.

Continued assistance to the Mirabeau Pest Identification Laboratory will be provided under the subproject. This will include technical assistance, improvement of the facilities and a library resource concentrated on cocoa cultivation to better assist with identification and solutions to specific pest problems. The research and demonstration area at the Ashendon Estate and the support to develop improved applied skills of the field outreach agents will be closely coordinated with the program of assistance to the PMU under the Agricultural Sector Revitalization project. Working with and augmenting the PMU will provide the vehicle for the development of appropriate IPM strategies for insect and disease pests of cocoa.

Precautions for safe use and handling will be taken. This will include proper storage, mixing and application procedures, and disposal. Pesticide applicators will be trained to recognize the signs of poisonings, and antidotes, where available, will be provided under the subproject. The contractor of the subproject will require suppliers of pesticides to obtain from the manufacturers the toxicological and environmental data necessary to safeguard health and safety of humans and the environment. Pesticides will be used in accordance with these guidelines.

Effects on Non-target Organisms

Extreme care should be taken to use insecticides so that they do not interfere with pollination of the cacao. Additionally, pesticide use is likely to reduce populations of the natural enemies of the insect pests of cacao, but the negative effects on beneficial insects can be minimized by their rational and prudent use.

Ability to Regulate the Safe and Proper Use of Agrichemicals

Grenada has recently adopted the FAO/WHO standards for the storage, use and disposal of pesticides. In addition, a Pesticide Control Board is now being formed as part of the PMU efforts. This board will regulate and analyze pesticide residues. To date, one chemist has received training at the University of Florida in pesticide residue analyses.

Land Use Patterns

Much of Grenadian agriculture is practiced on steep slopes. The HIAMP RCRD subproject proposes to concentrate on rehabilitation and improved maintenance of existing cacao areas, and the planting or replanting with new, more productive varieties. Thus, there will largely be no changes in land use practices which would lead to increased runoff and erosion. In addition, tree-crops such as cacao provide continuous cover and protection of fragile hillside regions. The following recommendations with regards to land use will be incorporated into the project.

--Any new plantings will be restricted to areas already in cultivation or fallow areas without removing existing forested areas. Special care will be taken in hillside areas.

--New plantings and rehabilitation will be carried out in conjunction with appropriate soil and water conservation practices. This will include intercropping, possible use of cover crops as discussed above, careful and prudent use of fertilizers to minimize run-off into streams and waterways.

--Irrigation programs will be restricted to demonstration areas or will be done only under the close supervision of project personnel trained to mitigate potential problems of soil loss and inappropriate water use practices.

--The PP discusses the economic advantages of cultivating cacao and bananas in pure stands, particularly in Grenada, rather than intermixed as is the current common practice. Under the subproject, the technical advantages of continuing to intercrop cacao and banana, as well as other crops, will be examined. Improved phytosanitary practices will also be encouraged as discussed in the PP, and may eliminate many of the difficulties associated with current intercropping practices. Intercropping not only can increase biological diversity of crops and natural enemies of pest species, but can increase the economic diversity for the farmer.

POLICY ISSUES

A. Policy Issues in Perspective for HIAMP

HIAMP is a private sector project using grant funds to encourage private investment in export agriculture. In addition, the Project seeks to improve the environment for investment in agriculture by demonstrating the effectiveness of private, rather than government or parastatal, ownership and management of agricultural resources. Quick Response Activities (QRA's) will lead the early demonstration of this principle. Individually, they are not of the scale to be treated as points of leverage in USAID's policy dialogue. However, they will focus attention on constraining policies and their implementation on a case-by-case basis. In each country the recurring need to ease or modify policy as succeeding QRA's are developed will directly contribute to an institutional and operational awareness of the relationship between the policy environment, investment, and growth in GDP.

On the other hand, major subprojects will provide some leverage opportunities for AID. They involve significant single blocks of funds for which RDO/C review and approval are required. These subprojects affect the major sub-sectors in agriculture in each country and will need a supportive policy and administrative setting to be most effective. Each major subproject is aimed at improvements in the allocation of resources to the exports which will contribute most to GDP: cocoa, tropical fruits, sea island cotton and other crops and mariculture. This process will involve a round of negotiations between RDO/C and governments to ensure that mutual objectives can be achieved. The parameters of the policy dialogue have been well-established. HIAMP will provide a forum for detailed discussions of the impact of policies on improvements in agriculture's contributions to GDP.

The design team did not attempt a comprehensive review of agricultural policy in all countries. It did concentrate on particular policies which appeared to carry the greatest weight with private investors, owners and operators of farms and agroprocessing companies. The listing of policy issues, therefore, does not always cover the full policy agenda of the RDSS. Sector investment policy formulation, taxation, and land use issues arise in all countries to varying degrees. The following issues flow from the projection of the needs of the HIAMP project activities on each island, not the more expansive list and prioritization within the full RDO/C portfolio.

Policy Issues in Antigua

1. Import Duties, Consumption Tax, and Stamp Tax on Agricultural Inputs, Machinery and Equipment

While many case by case exemptions of these levies have been granted, there seems to be little reason to maintain a system of taxes which complicates the establishment or expansion of agricultural enterprises. Also,

the RDSS noted that, "Tax collection is hampered by the complexity of the system, the dispersion of tax collection and assessment functions in various government agencies, auditing and valuation weaknesses, legal hamstrings on entities responsible for collection and mild penalties for nonpayment." A complicated, arbitrarily enforced tax system is often viewed by investors as an element of political risk. The risk of agricultural investment in Antigua is already great enough due to climatic factors.

2. Land and Water Use Policy

Antigua is a water short country. The domestic population, tourist industry, small industrial sector, and agriculture all require water. There is a clear need for asessment of the island's water resources to permit the elaboration of guidelines for well digging, water extraction from surface and groundwater sources, and rights to the on-farm or on-site retention of water for potable, agricultural and industrial uses. A corollary effort is needed in land use policy. Government holds substantial land areas that were primarily in sugar cane and pasture. Soil conservation and water retention structures on some lands have been removed as government and private projects attempt diversification efforts. Two issues are at stake here. The first is ownership and access to the land resource base. The second is land use and soil and water conservation. Policies are needed in both areas.

C. Policy Issues in St. Kitts

The agricultural sector in St. Kitts is in a state of transition. Once privately held sugar lands have come under control of Government, which is expected to take formal title to them in 1986. Current intentions are to make 25-year leases of land to producers to enable government to control use of the small amount of class I and II agricultural land available. The implications of this policy for security of tenure, flexibility in crop selection, incentives to preserve soil fertiilty, maintenance of soil conservation and drainage structures, ownership and tendency to make leasehold improvements to the capital asset base, and agricultural financing do not appear to have been sufficiently considered in policy formulation. State ownership of productive land will not provide the collateral base needed to attract short and medium term credit. Government mandated credit in support of goverment selected crop may maintain employment, but at high costs and with no inducements for efficient management.

State ownership may be needed to protect employment of sugar workers in the near term and to provide time for new policies, such as land use zoning, to be examined. In the near term USAID should support studies to examine alternative policy choices. In the medium term, divestiture of the newly acquired state lands and diversification of crop production should be policy change objectives. Specific policy discussions should include:

1. Lease or Purchase of Agricultural Lands

Government indicates that land purchase by farmers is difficult because of very high costs compared with traditional lease arrangements. This suggests that land leases have not reflected economic land rent values and that land owners have been subsidizing leases. Government ownership of undervalued land will result in a transfer of responsibility for these subsidies to the general treasury. As Government will own the collateral base for agriculture, it will also have to finance any major capital improvements and underwrite or act as the guarantor of operating capital and medium-term equipment and facilities loans. Housing and farm structures will carry discounted collateral valuations by banks and will bear higher risks than similar structures built on privately owned lands. Few incentives will exist for individuals to improve leaseholding to increase productivity, e.g., irrigation and drainage system construction.

2. Land Use

Two other rationales for Government ownership of prime agricultural land are to ensure that it remains in agriculture and that it continues to produce the crops which government believes are needed to support the economy. The first objective could be accomplished by zoning laws and sanctions. The second objective reflects a near-term need to maintain the sugar industry while diversification plans are laid out and a belief that, in the longer term, only government control can avoid the creation of another sugar-like dilemma. Current government policy to begin agricultural diversification by focusing on import substitution for what is really a very small domestic market suggests that government could usefully reconsider alternative strategies to find a more viable economic basis for their agriculture. USAID will offer to assist in constructing an analytic framework to examine the export-driven versus import-substitution models and their implications for land use.

3. Agricutural Marketing Policy

The Government of St. Kitts and Nevis has indicated that its diversification policy creates the need for new marketing arrangements and structures. It has requested consideration of assistance to the Central Marketing Corporation (CEMACO). CEMACO has performed poorly to date, but the greater policy issue is whether agricultural marketing in St. Kitts, either for export or national sales, should be directly undertaken or controlled by a marketing board. Other marketing boards in the region show consistent drains on the treasury, making operating gains only on consumer imports where monopoly rights are granted. There is little reason to believe that marketing boards can be efficient competitors in an open market setting. USAID should discourage Government from attempting control of the market place through monopsony and monopoly regulation.

4. Agricultural Investment Policy

Government policies on the type and levels of foreign investment in agriculture, taxation, incentives for agricultural investment, regulation of agricultural enterprises, etc., are unclear or unformulated. While publication of such policies for the fishing and farm sectors is about to occur, additional work to operationalize these policies, or to modify them, will be needed. USAID's Public Policy and Management Project may provide useful assistance in this area.

D. Policy Issues in Dominica

The policy environment is characterized by the belief that government must maintain an operational decisionmaking role in the national economy. This belief is embodied in state ownership of large estates; the operation of statutory bodies in production, processing and marketing. At the same time the current Dominican administration has committed itself to the promotion of private sector-led development. The following policy issues are of substantial interest to the agricultural sector:

1. Government Ownership and Control of the Dominica Marketing Corporation (DMC)

Government indicated that it owned and operated the DMC because there was no suitable private sector alternative. During HIAMP design visits discussions were held about private sector alternatives for the marketing function, if not ownership of the physical facilities. These discussion should be pursued on a general basis in terms of ownership and on a specific basis as arrangements for handling products expected from HIAMP sub-activities. The transformation of the Dominica Marketing Board into the DMC provides the opportunity to discuss minimization of direct government involvement in commercial trading and improvements in its service delivery to the export industry as a whole.

2. Government Land Ownership

Dominica is a mountainous country. While the government rightfully serves as steward and conservator of forest and watershed areas, it also holds agricultural land which is underutilized. The Government of Dominica is seeking financing to carry out a Land Redistribution program for estates now operated by the government. While the government should be encouraged in its efforts at land divestitiure.

3. Natural Resources Management

RDO/C is continuing a dialogue with the Government of Dominica to undertake a natural resources planning and policy effort. Key concerns to HIAMP are the maintenance of sufficient watershed area to protect water supplies and quality and avoid excessive erosion from highly sloped land, and the determination of carrying capacity and land use classification for agricultural purposes. Policy issues revolve around whether and how the Government will incorporate agricultural production concerns in its definition of land use policies and administrative actions.

E. Policy Issues in St. Lucia

While the overall investment climate of St. Lucia is welcoming to private sector investment, the GOSL sees a continuing need for substantial public control of crop selection and marketing arrangements through mandated zoning of production and establishment of a single marketing outlet for the major crop lines. While the structures that would carry out production and marketing could be private, the potential rigidity of the system would be likely to discourage investment in St. Lucian agriculture. The following specific issues should be included in the policy agency:

1. Government Control of Agricultural Marketing

Through grants of monopsony/monopoly rights to the St. Lucia Marketing Board, disincentives have beeen created for the production of ginger, tumeric, and other spices. At the same time, local processors complain of lack of local supply and the need to purchase their raw and semi-procesed materials from clearing houses in Europe. The GOSL has indicated that it is considering abolishing these controls and perhaps substantially changing the role of the marketing board.

2. Government Selection of Crop Lines for Production

Using the argument that critical minimums of individual crops must be produced to enable market entry, St. Lucian policymakers are currently formulating a dialogue with other regional governments on the formation of a regional grouping to determine which crops and varieties should be selected for production and marketing. The intent of the grouping would be to provide the region with a way to diversify and depend less on bananas. This approach threatens to establish a commodity system that would likely need to be sheltered from market forces and likely fail to develop the capacity to shift to meet external economic realities or to address the fundamental problems of in-country land, capital, and labor productivity.

F. Policy Issues in St. Vincent

The current administration in St. Vincent favors private sector involvement in its agricultural economy with the proviso's that its limited area of arable land not come under the control of large estates, and that the smallholder subsector of the country be able to participate in agricultural growth which would occur under private sector auspices. At the same time there are some structural problems in the way that government has supported agricultural investments which need to be addressed.

1. Parastatal Activities

The St. Vincent Agricultural Marketing Board is a state subsidized competitor of both the commercial trading sector in processed foodstuffs and the private exporters in the country. It also provides services which have improved the quality and packaging of fruits and vegetables in the huckster trade. Performance has been mixed, and the board has never made substantial inroads in extra-regional markets for fruits, vegetables and root crops that are also handled by the major private agricultural trading house in the country. The government controlled Arrowroot Industry Association has recently become a major draw on the government treasury. Reduction of public support to these institutions so that the former concentrates on services and the latter confronts the need to radically alter its marketing approaches and phaseout of arrowroot production are needed elements in the restructuring effort.

2. Agricultural Investment Policy

Industrial investment polices have only recently been developed by the GOSV. While the government is favorable to external agricultural investment when it involves local joint partners, it has no operationalized policy for dealing with potential new investors and their concerns about land availability, taxes and duties, and other investment concerns. Decisions in these areas are made on a case-by-case basis requiring cabinet level involvement. While the need for cabinet approval will not change, investment guidelines that enable the various parts of the public service to formulate their response to investor proposals are needed.

G. Policy Issues in Grenada

Policy issues in Grenada grow at least partially from the restructuring needed after years of highly centralized government control of public and private resources and resource flows.

1. Divestiture

The Government of Grenada holds many estates that are managed currently by the Grenada Farms Corporation. The productivity of these farms under GFC administration has been low. The GOG has begun a model farm program to distribute land in economic units to smallholders. At issue is the continued management of these farms by a central unit or series of central units supported by the public coffer.

2. Monopoly/Monopsony Control of Agricultural Marketing

The major agricultural commodities produced on the island -- bananas, cocoa, nutmeg and mace, minor spices -- are all bought and marketed by statutory bodies. These bodies were created in the 1950's and early 1960's to remove marketing control from the hands of colonial companies and middlemen. The statutory bodies have become dinosaurs in the world of agricultural marketing, with their fixed costs and service costs incurring high per unit production charges. While growers are in control of these

bodies, they view the boards not as viable investments in whose growth they can share, but as sources of price support that they can vote into existence and expect government to underwrite by guarantee of overdraft facilities, direct support from the central treasury, or indirect support in the form of subsidized service supply by public agencies. The statutory body concept needs to be revamped.

3. Export Taxation

The GOG currently taxes all major agricultural commodities as they leave the country, providing a major disincentive for increased production. The tax structure of the country is confusing and unenforced. Agricultural growth will proceed slowly as long as the tax structure provides disincentives to production. AID has provided major support to the government for fiscal reform, and the expectations are that export taxation on agricultural production will be relaxed in 1986.

MARKETING ANALYSIS

A. Agricultural Export Trade Overview

Revenues earned from agricultural exports dominate the export picture in all countries except Antigua in the O.E.C. States (Table H.1). In St. Vincent, Grenada, Dominica and St. Kitts, agricultural exports account for over 70 per cent of all export earnings, in St. Lucia more than 50 per cent, whereas in Antigua agriculture exports represent a relatively minor 5.6 per cent of total. In the countries where agricultural exports are of significance, one traditional export crop tends to dominate the export scene, viz. sugar in St. Kitts (95 per cent of all agricultural exports), and bananas in the Windward Islands (82 per cent of total agricultural exports in St. Lucia, 66 per cent in Dominica, 40 per cent in St. Vincent, and 22 per cent in Grenada - See Table H.2).

Within the O.E.C.S. region, it is only the Windward Islands that have a past history of fresh produce shipments to extra- and intra-regional markets; indeed, Antigua in particular is a consistent recipient of fresh produce exports from Dominica. A brief review of the 'non-banana' fresh produce export experience of the Windward Island countries is presented below.

1. Dominica

By regional standards, Dominica is a significant producer of coconuts which are processed locally and largely exported (as soap products) to Jamaica. The nation has a small niche in the U.K. grapefruit market (servicing buyers between August and October) and exports the produce through the Cooperative Citrus Growers' Association. Tonnage shipped is still far below pre-hurricane levels (Table H.3).

Table H.3
Exports of Dominican Citrus to the U.K.

Year	Cartons Supplied	Tonnes
1975	207,106	3,100
1980	55,310	830
1982	72,140	1,080
1984	48,214	720

Source: Dominica Cooperative Citrus Growers' Association

Table H.1
Export Revenues and the Relative Importance
of Agricultural Exports in the Eastern Caribbean

	Dominica[1/]	Grenada[1/]	St. Lucia[1/]	St. Vincent[2/]	St. Kitts/Nevis	Antigua[2/]
Value of Total Exports (EC$)	42.0	44.7	123.8	106.7	46.5	49.7
Value of Total Agricultural Export (EC$m)	36.2	36.3	68.1	74.9	34.2	2.8[4/]
Per cent of Total	86.2	81.2	55.0	70.2	73.5	5.6

1/ 1984
2/ 1983
3/ 1982
4/ Includes SITC categories 'Food and Live Animals' and 'Beverages and Tobacco'.
Source: Various Government Statistics

Table H.2
Export Revenues from Agricultural Products and the
Relative Importance of Banana Exports in the Windward
Islands and Sugar in St. Kitts/Nevis

	Dominica[1/]	Grenada[1/]	St. Lucia[2/]	St. Vincent[2/]	St. Kitts/Nevis[3/]
Major crop export revenues as a Per cent of total Agricultural Export Product	66.3	22.3	82.2	39.7	95.0

1/ 1984
2/ 1983
3/ 1982
Source: Various Government Statistics

The regional market is of considerable and growing importance to Dominica for fresh produce (See Table H.4) By 1984, intra-regional trade accounted for 86 per cent of the country's non-banana fresh produce exports. The most significant crops are grapefruit, oranges, plantain and dasheen. Guadeloupe is the single most important regional market, followed by Antigua and Trinidad.

Table H.4
Dominica's Exports of Fresh Produce by Destination

Destination	1977	1982	1984
Total metric tonnes	33,990	31,573	37,462
Bananas	29,837	27,177	31,880
Other:			
U.K.	910	1,635	762
Guadeloupe	1,369	1,584	2,687
Antigua	416	453	840
Trinidad & Tobago	1	0	409
Barbados	791	254	286
Total within region	3,242	2,761	4,796

Source: Market Intelligence Unit, Ministry of Agriculture, Dominica

2. Grenada

Banana exports comprise the least important proportion of total agricultural exports in Grenada of all the Windward Islands (22 per cent) and, as a result, Grenada has a relatively diversified agricultural economy. The island has a longstanding traditional export trade in cocoa, nutmeg and minor spices. (See Table H.5). In recent years, intra-regional exports of, in particular, fresh fruits to Trinidad have increased sharply. Extra-regional exports of 'non-banana' fresh produce have been insignificant in recent years.

Table H.5
Exports of Major Products from Grenada by Main Destination

Product	1983 Volume (tonnes)	1983 Value EC$000	1984 Volume (tonnes)	1984 Value EC$000
Total domestic export (1)		49,765		44,730
Bananas	8,858	8,748	8,748	8,113
UK (% of total)	8,807 (99.4%)	8,695	8,713 (99.6%)	8,088
Cocoa	2,243	10,967	2,060	11,988
UK (% of total)	611 (27.2%)		1,056 (51.3%)	
Other N. Europe	938 (41.8%)		630 (30.6)	
North America	186 (8.3%)		186 (9.0%)	
Nutmeg	2,420	8,782	1,870	5,951
UK (% of total)	161 (6.7%)		207 (11.1%)	
Other N. Europe	1,260 (52.1%)		1,374 (73.5%)	
North America	175 (7.2%)		202 (10.8%)	
Other Fruit and Vegetable	6,882	11,183	8,389	13,902
Trindad	6,882 (100%)		Not available	

Notes: (1) Excluding re-exports at about 2 per cent of total.
Source: Ministry of Trade, Grenada

3. St. Lucia

Banana exports have and continue to dominate export volume and value in St. Lucia (over 80 per cent of total agricultural export volume/value). The island has a small export cocoa trade (estimated shipment of only 60 tonnes in 1985), and coconuts, once a processed product for export, are now processed for domestic consumption. St. Lucia is very slowly developing an export trade in exotic fruits and vegetables to the U.K. (largely servicing ethnic segments of this market); export tonnage in these tropical crops has been of the order 500 to 700 tonnes per annum in very recent years a (mainly consisting of mangoes, plantain, breadfruit, and Caribbean root crops). St. Lucia exports about 600 tonnes of ornamental live plants a year from a handful of growers.

St. Lucia's main intra regional market for fresh produce is Barbados, comprising huckster shipments of mangoes, plantain, root crops, avocadoes, and bananas. Recent export statistics for selected 'non-banana' produce is presented in Table H.6. Undoubtedly, volumes are understated as statistics on huckster shipments of produce are notoriously difficult to quantify.

Table H.6
Exports of Selected Fresh Produce From St. Lucia 1984

Commodity	Tonnes
Mangoes	433
Oranges	13
Grapefruit	47
Plantain	501
Root Crops	31
Pumpkin	4
Other Fruit	605

Source: Ministry of Agriculture, Lands, Fisheries, and Cooperatives, St. Lucia, 1985

4. St. Vincent

Next to bananas, arrowroot is the second most important agricultural export in St. Vincent; however, the Arrowroot Association has major marketing problems and the relative importance of the crop has declined sharply over the past decade.

Exports of selected agricultural commodities are shown in Table H.7.

Table H.7

Exports of Selected Agricultural Commodities, St. Vincent, 1983

Commodity	Tonnes
Arrowroot	591
Coconuts ('000 nuts)	1,029
Sweet Potatoes	944
Plantains	1,430
Eddoes and Dasheen	8,348
Tannias	2,691
Yams	1,236
Ginger	168
Mangoes	244

Source: Statistical Unit, Government of St. Vincent and the Grenadines, 1984

St. Vincent has a healthy export trade in root crops, largely being shipped to Trinidad, but also significant quantities to ethnic markets in the U.K. Intra-regionally, Trinidad and Barbados are the major export markets, while the U.K. has traditionally been the major recipient of Vincentian ethnic produce, in recent years Cananda and, to a lesser extent, the U.S. have been developed as small export markets.

B. Market Structure and Marketing Characteristics for Fresh Produce in the Eastern Caribbean

1. Domestic Market Characteristics

a) Very small size, reflecting, inter alia: Small size of the domestic population; small tourist sector (with seasonal bias to the December - January period); history of home gardening to provide "greens" for home consumption. Fruit trees in most gardens; relatively low per capita consumption of vegetables - diet focussed more on starchy products (rice, potatoes, other roots); relatively easy access to imported supplies of extra-regional vegetables via Geest/Tropical (U.K. and U.S. respectively) to fill market gaps; high product and retail prices for fresh produce in off-season that discourage consumption; and low per capita income of majority of consuming public.

b) Simple market structure: There is little evidence of any significant development of a wholesale trade in fresh produce in the Windward Islands. Farmers grow fruits and vegetables and, often, immediately prior to harvesting will contact potential buyers to solicit sales orders (buyers include hotels, restaurants, institutional agencies, supermarkets) and/or harvest produce and deliver it directly to the central retail market for sale to market vendors. Supermarkets are only very slowly moving into merchandising of highly perishable produce (tending to focus on less perishable items such as root crops, bananas/plantains, onions, etc.). The "fresh" market for produce is still perceived as the traditional central market by many consumer buyers.

In both the Windwards and the Leewards, the Government-owned Marketing Boards act as both a wholesale outlet and retail outlet for fresh produce. Typically, the Boards are perceived by farmers as buyers of last resort, i.e. if the farmer cannot sell at a higher price to the huckster, then, he/she will sell to the Marketing Board.

Specialist hucksters servicing the hotel and restaurant trade have developed in more recent years as hotel sector demand has increased (reflecting, in part, increased tourist demand for fresh produce rather than canned/frozen products). Hotel produce buyers are reluctant to enter into firm contracts for produce.

The Leeward Islands (in particular, Antigua) are a regular export market for Windward Island produce (specially, tree crops, bananas, plantains, roots). Export hucksters from Dominica and, to a lesser extent, St. Lucia, sell produce directly to vendors in the central/traditional market in St. John's (Antigua), or may service selected supermarkets in the town. As in the Windward Islands, Leeward island farmers, generally, merchandise their produce directly to the final retailers and, generally, will have no formal contract (specifying quantity or price) with the buyer.

2. Intra-Regional Trade in Fresh Produce - Characteristics of the Trade and Constraints to Development

Intra-regional trade in fresh produce has been traditionally, and still is, the domain of the hucksters/traffickers in the Eastern Caribbean. Hucksters/traffickers are small-scale traders (usually female) based in the Windward Islands (Grenada, St. Vincent, St. Lucia, Dominica), that purchase produce from farmers and transport the produce to intra-regional markets by schooner (or, occasionally, by aeroplane) for sale at the wharf at point of import or at traditional wholesale and retail markets. Major characteristics of this commercial group are:

- The low overhead nature of individual businesses, e.g. a huckster may use only family labor, have no investment in packaging and storage facilities apart from space set aside at her home, may use hired transport to move produce to point of export;

- The volume of produce shipped weekly is, typically, relatively small (perhaps, consisting of between 15 to 30 individual boxes/packages);

- The huckster will accompany her produce to complete the sale at point of market entry, will purchase dry goods with the proceeds of the sale to ship back to her home country for subsequent sale in local markets;

- Expected losses resulting from poor post-harvest practices, inadequate packaging/storage/loading/shipping facilities, etc., can range between 20 and 50 per cent of shipment volume;

- The relatively poor condition of the produce on arrival at export point ensures that the market segment it can be sold into is the street vendor/market stall outlet rather than via higher unit value outlets such as supermarkets or the tourist sector.

Notwithstanding the small-scale nature of individual huckster businesses, in aggregate this commercial group generates substantial economic activity in the Region and is a major outlet for farmers' produce.

Accurate statistics on the annual volume of fresh produce shipped by hucksters from each of the Windward Islands to Eastern Caribbean markets are not available, although estimates range between 5,000 and 10,000 tons per exporting country per year.

One feature of the huckster trade is that, over time, a "super huckster" group has not emerged to dominate intra-regional trade and take advantage of economies of scale to penetrate the higher value market outlets for farm produce. Several factors have contributed to this lack of development, inter alia:

- In the Eastern Caribbean, domestic markets for fresh produce are small in absolute terms and are relatively unsophisticated - only within the past decade has the supermarket sector offered the more perishable farm produce items (fruits, vegetables) for retail sale. Further, harvest periods in potential supply countries (Windward Islands) coincide with harvest periods in potential importing countries (Trinidad, Barbados, etc.), and technological improvements in production and marketing practices (e.g. irrigation and/or cool storage to extend the period of supply availability) have not developed;

- The domestic and export marketing infrastructure within the Region is poorly developed, not the least being inadequacies in the inter-island transportation system. Reliable scheduled shipping services are not in-place and the quality of the existing schooner services leaves much to be desired (e.g. lack of adequate cool and/or dry cargo space for fresh produce);

- Lack of secure access to regional markets. For example, the Government of Trinidad and Tobago require that imports of fresh produce must be accompanied by an appropriate import permit. In practice, hucksters can land their relatively small volume shipments without the required permit, however, higer volume/higher value shipments are refused entry without appropriate permits. In general, the "major" intra-regional markets for fresh produce - Trinidad, Barbados, Guadeloupe, Antigua - will allow regional importation of produce if it is of a traditional huckster nature (small-scale, fragmentary, disorganized), but import permits for larger-scale shipments are both difficult to obtain and unpredictable in the timing of permit approval. As a result, the intra-regional exporter is at a marked disadvantage to the shipper from outside the Region. A fresh produce broker based in Miami

views the Eastern Caribbean as a tiny residual market; supplies to this market area can be accessed readily when and if an import permit is approved. The regional suppliers do not have this degree of latitude.

- Historically, public sector institutions have played a major role in the intra-regional marketing of fresh produce and, indubitably, their participation in trade has served to constrain private sector development. Under an agreement between member countries of CARICOM (the Agricultural Marketing Protocol - AMP), trade in a wide range of traditional Caribbean fresh produce staples (root crops, onions, pulses, etc.) has been largely restricted to sales from national boards in importing countries at pre-arranged prices that bear little or no relationship to market conditions. The sales volumes shipped under the Protocol have been relatively small (largely root crops from St. Vincent to Trinidad), but the effect has been to exclude private traders from this area of business. More recently, it has been recognized by Governments in the Region that the AMP has not served the interests of either producers or consumers in the Region. Agreement has been reached, in principle, to liberalize regional trade in fresh produce; however, as yet, there has been a lack of political will to convert the principle into practice.

- The many and various impediments to intra-regional trade in fresh produce have ensured that there is a dearth of experience and skills in fresh produce trading beyond the huckster level. As a result, there is a substantial human resource barrier to establish a modern fresh produce trading sector within the Eastern Caribbean.

3. Extra-Regional Trade in Fresh Produce

As a result of the constraints identified in the previous section, the huckster trader has not developed from small-scale beginnings servicing the regional market into larger-scale marketers of fresh produce in extra-regional markets. Indeed, within the Eastern Caribbean region, there are relatively very few participants in extra-regional fresh produce trade.

In Grenada, the major participant in extra-regional fresh produce trading has been the Marketing and National Importing Board (a public sector institution). Export volume has declined sharply in recent years (reflecting uncertainties associated with changing political circumstances, and declining with problems of management and finance availability), and the

Board has operated its fresh produce trading activities at a substantial loss. Marketing Boards in Dominica, St. Lucia and St. Vincent are also active, to a greater or lesser extent, in extra-regional fresh produce trading and, in general, also operate at a loss.

Within the private sector, the handful of traders that operate at a 'larger than huckster scale' are based in the Windward Islands and focus on exporting relatively small volumes of ethnic and exotic produce (Lisbon yams, sweet potatoes, tannias/eddoes, breadfruit, mangoes, etc.) to wholesale markets in the U.K. using both sea and air transportation. Quality of produce shipped has, in general, been relatively poor and prices received by shippers have been low relative to quoted prices in European wholesale markets. In very recent years, one or two enterprises have experienced some success in penetrating the U.K. market for cut flowers and ornamentals. Fresh produce traders in the Region have not had sustained success in penetrating U.S. markets for exotic/ethnic and off-season fruits and vegetables. The reasons for failure include small volumes, lack of a business track record in the U.S., quality of the product and the packaging, and phytosanitary standards. Also, the Caribbean Basin Initiative has only recently granted the Region access to this market for a wide range of agricultural commodities.

The one outstanding example of sustained penetration of an extra-regional market - that is, the export of Windward Island bananas to the U.K. market - has been based on building a commercial relationship between producer organizations and a U.K.-based marketing firm (Geest). Of course, this example is hardly representative as the U.K. is a protected market for Eastern Caribbean bananas. However, the principle of building a commercial relationship between buyer and seller is still sound, and provides one workable model for Eastern Caribbean producers and traders to follow.

C. Potential Extra-Regional Market Opportunities for Eastern Caribbean Produce

There are a wide range of fresh produce items that are currently grown or could be grown in the Eastern Caribbean that have high consumer acceptibility in the relatively high income countries of North America and Europe. Eight major market sectors can be readily identified:

- Traditional Eastern Caribbean export commodities such as bananas, cocoa, spices;

- Fresh produce items that have been traditionally grown in the region that have a small but still significant and loyal market amongst Caribbean emigrants who now live in the U.K. and North America (London, Birmingham, New York city, Toronto, Montreal). Examples include Lisbon yams, sweet potatoes, eddoes, tannias, dasheeen, breadfruit, sugar apples etc.;

- Produce that is not currently grown widely in the region but could satisfy demand in other ethnic markets in Europe and North America (in particular, Asian and Chinese produce). Examples include "Indian vegetables", Chinese cabbage etc.;

- There is an increasing demand for exotic produce sold through the North American and European supermarket systems to indigenous consumers, as consumers travel more widely and expand the range of fresh produce items they are willing to taste and buy. For example, mangoes, avocadoes, pink grapefruit;

- Off-season (or "winter") vegetables that are grown in Europe and North America, but only in the warmer seasons. For example, bell peppers, egg plant, okra, chillies etc.;

- Tropical cut flowers and ornamentals. For example, anthuriums, ginger lilies; and

- Processed products that are grown and processed locally in the region. For example, pepper sauce, dried sorrel, sea island cotton, West Indian cherries.

Each of the above eight categories have very specific niches in the market places of Europe and North America; whether the niches are established by uniqueness of product or by specificity of availability during the year. For Eastern Caribbean growers and traders to penetrate successfully and satisfy the sophisticated requirements of these developed country markets, there is a need to focus on specific niches, to maximize comparative and competitive advantages, and not to compete head-on with major low-cost producers that already are well-established in the target markets for Caribbean produce.

To undertake a comprehensive analysis of potential markets for Eastern Caribbean produce is beyond the scope of this Project Paper. Feasibility studies initiated under the HIAMP Project will focus on specific market opportunities for specific entrepreneurs. However, for a few selected items that have particular potential from an Eastern Caribbean point-of-view, a preliminary indication of market potential is presented in the following sections.

1. Mangoes

The main opportunities for Eastern Caribbean mangoes lie in the markets of Europe, and Canada. Little is known about the absorbtive capacity of the latter as import information for mango is not separately recorded. Demand for mangoes is good and growing in the U.S.A. The removal of Ethylene Dibromide (EDB) as a fumigant by the EPA, makes it extremely difficult for small producer countries to ship mangoes to the U.S.A. Should

Methyl Dibromide become an acceptable treatment, its cost would tend to make O.E.C.S. mangoes more costly. Initially, the U.K. and Canada provide the easiest market entry.

In Europe the recent expansion in demand promises well for further expansion and a likely similar situation exists in Canada. Mangoes have been given promotional support by COLEACP (eg. in-store promotions in Germany and elsewhere). Growth prospects are principally with the indigenous populations, not the minor ethnic groups; the supermarkets' growing interest is a major plus factor. With preference for grafted varieties becoming established, the future lies with these, not local seedling varieties.

Imports into Europe have taken off in the last few years and currently aggregate at about 13,000 tonnes per annum. Import growth in the last 2 years has averaged 2,000 tonnes per annum. France and the U.K. are the major importers with about 4,500 tonnes each or about 70% of European imports. There are many sources for mangoes because seasons in most countries are short. The U.K.'s main suppliers in 1983 were Mexico, Pakistan, India, Brazil, Venezuela, Kenya and the East Caribbean; France's were Burkina Fasso, Mali, Ivory Coast, Mexico, Brazil and S. Africa.

Mangoes are becoming a popular fruit and the trade is optimistic for significant growth. A growth in further demand through a continuation of the 2,000 tonnes per annum experienced in recent years can be envisaged. This would result in incremental demand of at least a further 25,000 tonnes by 1995. Additionally there must be significant prospects in Canada.

Demand is largely aseasonal and the above growth would indicate market requirements for an extra 2,000 tonnes per month by 1995. The Windward islands can supply for the months of April - September and would, therefore, have access to a further 12,000 tonne market. The major competitors in this period would be Mali, Mexico, Brazil and Peru with the latter two showing the greatest production growth.

2. Avacado

The markets with apparent potential are Europe, the U.S. and Canada although there is significant competition in each and difficult technical problems in meeting market requirements. The EC market currently absorbs some 70,000 tonnes of avocado per annum with France taking over 70% of imports and the U.K. 15%. Growth in European imports in the last 5 years suggests further expansion.

The East Caribbean season coincides with the high priced market period. However, the varieties planted are likely to be discounted on the market; Martinique avocados (Lula variety) are believed to be discounted by up to 20% in France which is the main market. The price data for Nov/Dec 1984 shows a discount of 45% for Martinique compared to Israeli avocados but the former were at the end of their season while the Israeli were in main flow.

3. Grapefruit

The opportunities for Windward Island grapefruit exports seem to lie in:

a. Winter Markets

Supplying markets in the short window left between the Southern and Northern hemisphere organized suppliers. This window is being aggressively eroded by South Africa lengthening her season by storage, the Mediterranean producers advancing their season by agronomic means, and aggressive exploitation of the window by Cuba who places high priority on foreign exchange earnings. The window is a maximum of 6 weeks and under the agressive competitive and static demand, the Windward Islands are unlikely to increase their share of the white grapefruit market more than marginally.

b. Red Grapefruit

Supplying the growing market for red grapefruit particularly in the U.K. and France. The Canadian market is believed to be supplied with red grapefruit from the U.S. (who stimulated the demand in Europe). Principally, the opportunity lies to supply red grapefruit in the 6 week window discussed above but to some extent outside this window period, at least until other producers who are likely to be more price competitive have increased their supplies. Frosts and freezes in Florida and Texas will maintain increased demand for red grapefruit for another five to six years.

The U.K. and French markets are the most interesting for the Windward Islands. Currently they jointly provide a grapefruit market of 215,000 tonnes of which some 10% in the U.K. and 40% in France is from reds. The share of reds in both markets is expanding and could jointly reach 40 - 45% by 1995. This would indicate an increase in demand for reds of at least 15 - 20,000 tonnes.

This offers an opportunity to the Windward Islands whose current and planned production would provide for no more than 2,800 tonnes by 1995 much, if not all of which, could be absorbed in the Regional market. Assuming exploitation of the 6 weeks window, a further expansion in supply of 3,000 tonnes could be justified. There could be further potential in other markets. Since much of the marsh seedless is underutilized the first course of action would be to investigate the possibility of top working some of these into reds. This would offer the most rapid means of expanding production.

4. Other Fruit Tree Crops

There is a strong and growing interest in European and North American Markets for new "exotic" fruits eg. Lychees, mangosteens etc. The current import base is small, e.g., about 500 tonnes of lychees are imported

into Europe. Nevertheless, the rapid growth and strong interest by the trade offers prospects for new suppliers. Apart from specialist products like breadfruit for ethnic markets, the prospects are good for "attractive" products with easy preparation, small size and a unit cost low enough to provide "portions". In this context, lychees are described as a fruit of the future. In particular, prospects for a new supplier are good if supplies can be sent either in late autumn, September - November, before supplies from Madagascar and Reunion arrive, or in late spring, i.e. after South Africa. Thus importers are particularly interested in extending, in both directions, the existing period of imports over the autumn to spring period. However, little guidance can be obtained from the trade as to prospects in the summer when there is an abundance of seasonal soft fruits. Mangosteens, too, are an attractive and tasty fruit. Present imports of these fruits are so low (albeit estimated) that little can be deduced from them, and there is certainly no trend line as a basis for predictions. No doubt there will be increases in imports for these fruits as exclusive outlets endeavour to stimulate consumers' interests in the unusual. Dramatic increases in demand are unlikely at present price levels and in the absence of producer (exporter) led promotion, such as with avocado and kiwi in the past. Sooner or later this will occur for a selected range of exotics. Nevertheless, countries which have supplies, and which have favorable air freight rates, might expect to place quantities on the market in competition with existing suppliers at the same period of the year. Exporters with production at other times of the year might expect to find a market.

In the context of the Windward Islands there are a number of "exotics" already produced for which trial shipment should occur, e.g., West Indian cherry, sapodilla, sour-sop etc. There are others such as the lychee, mangosteens and durian etc which have prospects but efforts must be made to establish how well they grow and yield and to provide a basis for further selection of planting material if they look promising.

5. Tropical Cut Flowers and Ornamentals

In 1981, imports of cut flowers into Europe and North America exceeded $1 billion. Major importers were F.R. Germany ($580 million), USA ($135 million), France/U.K./Canada (total of $134 million). Exports of cut flowers have grown at around 7 per cent per annum in recent years.

A 1983 study of the market for five tropical flowers (all grown in the Eastern Caribbean) in the U.S.A. identified a $7 to $10 million market for Anthurium, Bird of Paradise, Ginger Lilly, Heliconia, and Torch Lily. Although tropical flowers are a minor element in the U.S. floriculture market (retail sales for all flowers are + $5 billion), they have high unit value and probably account for a total retail sales value of between $65 and $95 million. Demand for tropical flowers is perceived to have increased rapidly in the last three years, although accurate market research is difficult to undertake as statistics for tropicals appear in a composite

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"other, unspecified" category. Tropical flowers in the U.S. are purchased most frequently for 'business gifts', and as holiday gifts (Christmas, Valentine's Day), current supplies to this market are domestic (Hawaii, California), although Jamaica and the Netherlands have made some market in-roads.

In Canada, Heliconia and Ginger Lillies are better known than in the U.S., although Anthuriums and Birds of Paradise are the most frequently purchased blooms. Eastern Canada is the major market for tropical flowers in Canada - a market area serviced by direct flight from the Eastern Caribbean. Toronto and Montreal flower consumers, as a percentage of wholesale sales, have the highest consumption of tropical blooms in the U.S. and Canadian north-eastern region.

6. Cocoa

Eastern Caribbean production of cocoa beans represents a miniscule proportion of the 1.8 million tonnes of the commodity that was produced in 1984/85 and are projected to be produced in 1985/86. Yet in this commodity market - dominated by the major producers of Brazil, Ivory Coast, Ghana, Nigeria, Cameroons, Ecuador and Malaysia (85 per cent of world production) - Eastern Caribbean cocoa growers produce a differentiated product i.e. "fine flavored" cocoa. This product often sells at a premium to ordinary cocoa. Chocolate manufacturers, particularly those that focus on the high quality end of the confectionary market, prefer to include a proportion of "fine flavored" cocoa in that manufacturing process to increase end quality. As a result, when demand for chocolate products increase (normally associated with buoyant economic periods), there is a corresponding increase in demand for "fine flavored" cocoa; whereas a decline in consumption is not necessarily associated with a corresponding decline in demand for "fine flavored" cocoa, as manufacturers frequently respond to market pressures in the quality segment of the market by endeavoring to enhance product quality and, thereby, maintain sales volume and increase market share. In summary, there is ready demand for Eastern Caribbean cocoa at prices that are at a premium to world cocoa prices.

7. Ethnic Produce

Covent Garden and Spitalfields Wholesale markets in the U.K., Toronto Wholesale Food Terminal in Canada, and Hunts Point and the Bronx Terminal Market in the U.S. are major commercial centres for the merchandizing of wholesale ethnic produce to North America and the U.K. Size of market for ethnic produce is small relative to "main-line" fruits and vegetables, but still significant and represents important niche markets for Eastern Caribbean produce. For example: the U.K. market size for Lisbon yams (only supplied by Eastern Caribbean sources) is estimated at around 2,000 tonnes annually and is presently under-supplied; there is a ready and steady market for West Indian-grown sweet potatoes; bright orange pumpkin, a color characteristic of Caribbean varieties, is an important item in the West Indian immigrant diet in

the U.K.; U.K.-based West Indians express a demand preference and will pay a premium for the "Scotch Bonnet"-type hot pepper that is grown in the Eastern Caribbean; a healthy seasonal market exists (which is exploited by Vincentian producers) for coconuts in the shell for both the U.K. summer market and for Indian religious festivals; breadfruit market size could be expanded significantly, according to U.K. trade sources, if product quality and price can be improved (the latter is certainly attainable if shipping losses are reduced); tannias, eddoes and dasheen are popular "Sunday lunch" items with the West Indian immigrant population (estimated population of 1.5 million); the one million plus Indian immigrant population are consistent purchasers of significant volumes of so-called "Asian vegetables", e.g. Karilla, mooli, tindo, kadu, patras, brinjal, that can be grown well in the Eastern Caribbean soils and climate. As identified earlier, the growing interest of indigenous North American and European consumers in exotic produce dramatically increases the potential market that could exist, if appropriately developed, for these items identified above.

D. HIAMP - Addressing Constraints to Fresh Produce Market Development

HIAMP is designed to restructure agriculture in the Eastern Caribbean through market-oriented, private sector-led initiatives in export agriculture; an important project maxim is that successful and sustained penetration of export markets is contingent upon Eastern Caribbean entrepreneurs satisfying the sophisticated requirements of niche markets in North America and Europe. The focus of HIAMP is squarely upon identifying buyers for agricultural exports which are or can be produced in the Eastern Caribbean, then, growing and selling the commodities (preferably as differentiated products) in international markets.

In sharp contrast to most agricultural development projects in the region, HIAMP is systems oriented i.e. it has the capability to address constraints to development throughout the system, from market identification, contact of buyers, back through transport of the products, post-harvest requirements and agronomic activties, to selection of variety and contact and organization of interested producers.

HIAMP is a proactive project - market opportunities can be identified, would-be buyers and sellers can be linked, encouraged, supported from introductory stage to consummation of commercial activities. Concomitantly, the project can address the immediate needs of existing entrepreneurs; the Quick Response Fund is designed to address the financial and human resource needs that are constraining immediate market developments. Through a combination of the injection of the triad of inputs that are fundamental to encouraging and sustaining commercial success in the region - finance, technical assistance, and U.S. company joint-venture participation - the project can attack key constraints such as lack of market knowledge, inadequacies in regional production, post-harvest and management experience and expertise, lack of access to fixed and working capital, and inadequacies in regional production and marketing infra-structure.

QUICK RESPONSE ACTIVITIES

The following preliminary suggestions for Quick Response Activities (QRA) under HIAMP were prepared from field investigation of what already exists in the Eastern Caribbean. With few exceptions, all subprojects are underway, with growers, shippers, investors beginning activities. The Design Team catalogued the requirements to significantly expand their operations.

There is a different set of opportunities not presented in this document -- those which are driven by the market needs of importing countries, which have not yet been initiated in the Eastern Caribbean. These, like the special seed oysters for the French market, are the result of special knowledge of international markets, combined with an understanding of the potential of the islands in the Eastern Caribbean. This deliberate search for new opportunities and linkage to productive capacity on the six islands is one of the driving forces behind HIAMP. The important subprojects which will be generated by this as yet unknown set of activities cannot be listed. It would be reasonable, however, to assume in the five years of HIAMP, that the generation of new opportunities exceeds the income potential of the expansion of existing activties. Thus what we know today is likely to be less than a minor percentage of what will be discovered and put into place in the future.

The fundamental issue is whether there is a reasonable place to begin -- small activities with attractive potentials to start HIAMP. We believe those opportunities are within the Eastern Caribbean, although not equally distributed. Water and prior commitments on land will limit what can be done in the leeward Islands. Those islands with available flat land will have winter vegetable potential, while all the Windwards offer strong possibilities for floriculture and tree crop production.

The following possibilities, investigated by the field team, are offered as examples of the small Quick Response Activities that HIAMP could support, with feasibility studies completed by the Core Contractor, and proposals presented to CFSC and RDO/C for review and approval. The division of the enterprises discussed below into private and grower associations was done based upon the existing organizational structure, and the division between equity and grant funds was estimated prior to the development of criteria which relate the two. Thus, the list is illustrative only of the opportunities which exist within the Eastern Caribbean, and not the proposed division of equity/grant funding needed, or the relationship between private firms and grower associations which will be supported. HIAMP will make incentives for many of the small grower associations or cooperatives to become part of a for-profit enterprise. This will change the ratios between venture capital and grants shown in the summary below. RDO/C expects that the equity/grant ratio will be 7/5, with the Core Contractor and CFSC working to move the ratio in favor of equity participation.

Attached is a list of subproject possibilities identified by the design team. Each subproject is supported by a two page analysis. These are on file in LAC/DR and RDO/C.

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SUMMARY OF ORA POTENTIAL BY COUNTRY

ACTIVITY	RECIPIENT	US DOLLARS VENTURE CAPITAL	US DOLLARS GRANT FUNDING
ANTIGUA			
Winter Vegetables	Private	200,000	70,000
Pigeon Peas	Grower Assoc.	-	130,000
Sea Island Cotton	Private	150,000	50,000
Pineapple	Private	120,000	60,000
Fish Export Marketing	Private	50,000	25,000
SUB-TOTAL		520,000	335,000
ST KITTS			
Sea Island Cotton	Nevis CP Assoc.	-	125,000
Rabbits	Private	125,000	50,000
Dairy	Private	195,000	55,000
Shrimp Hatchery	Private	300,000	-
SUB-TOTAL		620,000	230,000
DOMINICA			
Floriculture	Grower Assoc.	-	300,000
Fruit Processing	Private	149,000	15,000
Passion Fruit	Grower Assoc.	-	150,000
Dom. Food Industries	Private	105,000	50,000
Cardamom	Private	170,000	30,000
SUB-TOTAL		424,000	545,000

ACTIVITY	RECIPIENT	VENTURE CAPITAL	GRANT FUNDING
ST. VINCENT			
Eggplant Export	Grower Assoc.	-	85,000
Montreal Gardens	Private	170,000	80,000
Fruit Juice Material	Private	75,000	25,000
Tropical Fruit Export	Private	75,000	25,000
Vegetable Production	Private	410,000	90,000
Vegetable Pack/Storage	Government/lease	-	350,000
SUB-TOTAL		730,000	555,000
ST.LUCIA			
Anthurium Lilies	Private	100,000	35,000
Contract Vegetables	Private	100,000	50,000
SUB-TOTAL		200,000	85,000
GRENADA			
Anthurium Lilies	Private	190,000	35,000
Cocoa Pod Feed	Private	-	75,000
SUB-TOTAL		190,000	110,000
EC WIDE			
Carton Design and Manufacture (R&D)	CATCO	-	200,000
Oyster Seed Hatchery	Private	250,000	50,000
Mithrax Crabs (R&D)	Private	-	490,000
SUB-TOTAL		250,000	740,000
GRAND TOTAL		2,934,000	2,700,000
TOTAL QRA FUND POTENTIAL		$5,634,000	

REGIONAL COCOA REHABILITATION AND DEVELOPMENT SUBPROJECT

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I. SUMMARY AND RECOMMENDATIONS

A. Recommendation

This Major Subproject Paper recommends approval of the Regional Cocoa Rehabilitation and Development Subproject (RCRD) as part of the High Impact Agricultural Marketing and Production Project (HIAMP). This subproject is requested for a $3 million DA Grant subsumed within HIAMP. The proposed obligation for FY86 is $711,000. The Project Assistance Completion Date is scheduled to be April 30, 1991.

B. Summary Project Description

The goal of the Regional Cocoa Rehabilitation and Development Subproject is to move the cocoa industry in the Grenada and the Eastern Caribbean to a new plane of productivity managed by the private sector and towards sustained growth in a marketplace. The purpose of the subproject is to increase annual export revenues from $2.2 million in 1984/85 to $5.8 million by 1990/91. Project outputs will consist primarily of increased production from key cocoa growers in the four Windward Islands, improved quality and consistency in quality in fermented beans, better marketing strategies for forward contracting, and demonstration of the feasibility on flavor and price grounds of hybrid cocoa technology. The project will provide regional coverage with a geographic concentration and overall program management in Grenada. Close coordination will be maintained with the CIDA-funded Cocoa Rehabilitation Project.

The project will provide technical assistance, commodities, applied training, and individual country activities in cocoa technology demonstration and outreach. The subproject will obtain management, extension, training assistance through a contract with a US institution with a track record in assistance to the cocoa industry in the Caribbean and Latin America. The contractor will be required to subcontract with Hershey Foods Corporation to provide discrete technical advisory services on a programmed basis and be responsible for managing resource flows to the implementing grower organizations in each country under subgrant agreements.

Consistent with the overall direction of HIAMP, the project will concentrate its efforts on delivering technology to those growers with the best near-term ability to generate more production. In each country the project will have two basic thrusts. The first is to quickly rehabilitate and improve the management of cocoa stands which are not performing to full potential. The second is to plant or replant acreage using more productive varieties and growing practices designed to draw higher yields earlier in the production cycle. The project will draw upon the technical expertise of Hershey Foods Corporation and scientific expertise from regional cocoa centers to introduce higher intensity cocoa production practices, achieve greater

impact from training and visit outreach programs, and to improve fermentation practice and marketing strategies. The contractor will provide the support network for the delivery of technology and provide advisory services to industry associations on each island.

C. Financial and Economic Rates of Return

The financial IRR for the production models of the subproject is 0.32 with a Benefit/Cost Ratio of 1.19 at a discount rate of 15 percent (See Appendix F.). The economic IRR for all project costs including design and other AID expenditures is 0.16 with a Benefit/Cost Ratio of 1.08 at a social discount rate of 10 percent (see Appendix G). The subproject offers substantial financial and economic feasibility.

D. RCRD Components

The project has three major components:

- o A contract to provide management and outreach support to cocoa technology specialists and the individual country activities;
- o A Grenada-specific set of activities in technology transfer, promotion, and research and demonstration; and
- o Country activities in demonstration and outreach in cocoa production in St. Vincent, St. Lucia and Dominica.

The three components will be managed from Grenada, by far the largest cocoa producing country in the region.

The contractor will provide two long-term advisors, one responsible for overall program management and coordination, and one charged with the execution of the grower outreach and demonstration components of the subproject. The contractor will rely on an agreement with HFC to provide the cocoa production, postharvest handling and fermentation, and marketing skills. It will draw on the wider community of cocoa workers for skills in cocoa selection, experimentation, pathology and entomology, and other specialized fields. It will oversee the four country components of the project and the activities that involve region-wide interaction by the industry.

Grenada is the largest part of the project. It includes components of commercial outreach to key growers, support to cocoa production on model farms, promotion of joint ventures in modern cocoa production, a research/demonstration effort at Ashenden Estate, and some support to improving the applied skills of field agents. A subgrant agreement will be signed with the Grenada Cocoa Association (GCA) or the proposed Grenada Cocoa Corporation (GCC) to undertake these components. Over a five-year period major activity benchmark will be improvement of husbandry practices or replanting using hybrid seedling technology on 3340 acres. Subsidiary objectives and more detail on these components are provided in the Project Description and Summary Analyses sections.

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In St. Vincent, the subproject will establish a subgrant agreement with the Organization for Rural Development (ORD) a local NGO. ORD is already involved in cocoa rehabilitation and development work. The subproject will concentrate initially on rehabilitation of existing cocoa stands on holdings of 5 acres or more. At the same time, ORD will receive assistance to develop demonstrations of modern cocoa production techniques, to introduce hybrid seedlings, and to examine ways of producing a consistently well-fermented and dried product at reasonable cost. Approximately 300 acres will be rehabilitated and another 300 acres planted over the LOP.

St. Lucia is undergoing a resurgence of interest in cocoa. World's Finest Chocolate (WFC) has offered a five year contract to buy all of St. Lucia's cocoa at a price of $1.25/lb, a $0.25/lb premium over the world price. In addition, the owner of WFC has bought and undertaken the rehabilitation of an estate using hybrid seedling technology. This individual has agreed to permit the estate to be used as a demonstration site by the subproject. Support in the form of technical assistance, outreach programs to demonstrate the hybrid based technology, and some training, storage and fermentation assistance will be provided through the St. Lucia Agriculturists Association (SLAA). The SLAA was originally established by cocoa growers to support growth in the industry. The major benchmarks over the LOP are rehabilitation of 300 acres and replanting of an additional 300 acres, yielding 1000 lbs/ac and 1200 lbs/ac respectively.

Dominica has a few reasonably large stands (70 acres) of cocoa on private estates. Working initially through the Ministry of Agriculture, the subproject will establish links with individual farm owners to establish rehabilitation and replanting demonstrations. Benchmark objectives in the first five years of the project are rehabilitation of 150 acres yielding 1000 lbs/ac and replanting of an additional 150 acres yielding 1200 lbs/ac.

E. Policy and Strategy Linkages

The Regional Cocoa Rehabilitation and Development Subproject is the first of HIAMP's major subprojects that will address the issue of a private sector restructuring of agriculture. In Grenada, the project will contribute to RDO/C strategy objectives of privatization of state lands, privatization of production and production services, and increased efficiency of use of productive resources. HIAMP will deliver technology developed by the U.S. private sector to the existing growers in Grenada and to the producers acquiring land on what were government farms. It will contribute to crop diversification in the three other Windward Islands. Cocoa will also contribute to more rationale exploitation of the available soil and water resources on hillside land. The project directly addresses the RDO/C strategy

to increase export sales and agricultural GDP in the region. The producers targeted by this project will move from an export sales base of $2.2 million in 1984/85 to $5.8 million in 1990/91 and $6.4 million by 1995/96.

F. AID Concerns

During project design an Initial Environmenal Examination was undertaken with the assistance of the Regional Environmental Management Specialist. Discussions with LAC/DR/EO and S&T Agriculture stressed the importance of careful analysis of pesticide and land use related issues. The IEE (Annex F to the HIAMP PP) and the overall HIAMP Environmental Assessment address these issues. It is anticipated that both improved land use and reduction in pesticide use and exposure will be accomplished by this project.

G. Summary Project Costs

Total LOP funding is estimated to be $3 million. The fiscal year allocation of these funds is as follows:

Table 1
SUMMARY PROJECT COSTS

USD '000

Category	FY86	FY87	FY88	FY89	FY90	FY91	LOP
LTTA 72pm	180	240	240	240	60	0	720
STTA 85pm	204	204	204	204	204	0	1020
Ashenden Res/Demo	30	30	30	30	30	0	150
Outreach	25	25	25	25	25	0	125
Applied Training	35	35	35	35	35	0	175
Vehicles, Commodities, Equipment	52	52	32	52	32	0	220
Contract Demonstrations	125	125	0	0	0	0	250
Evaluations	0	0	20	0	20	0	40
Contingency	60	60	60	60	60	0	300
TOTAL	711	771	646	466	406	0	3000

II. PROJECT RATIONALE AND DESCRIPTION

A. Rationale

1. Background

Three of the four Windward Islands have historically been export producers of cocoa -- Grenada, St.Lucia and Dominica. St. Vincent produces cocoa almost entirely for domestic consumption. All four islands produce "flavor cocoa" which often sells at a premium over ordinary cocoa. A ready market exists for cocoa produced in the Windwards. Favorable advance purchase contracts have been offerred by US and European chocolate manufacturers.

Key constraints to increased production include high plant propagation and protection costs, relatively low intensity management of existing stands, variable postharvest handling, fermentation and drying practices, and a far from aggressive marketing stance. All of these problems exist on each island. Grenada, while productive in terms of average yields compared with other producers in the world, must improve its land, labor and input productivity if cocoa is to sustain its position as a major net contributor to the nation's and individual farmer's finances. The three other Windward Islands are unlikely become major cocoa producers, but cocoa can be an important element in their efforts to capture near-term export value by rehabilitating old stands, as well as in their medium-term efforts to diversify their agricultural base.

The Regional Cocoa Rehabilitation and Developoment Subproject is the first of HIAMP's major subprojects that will address the issue of a private sector restructuring of agriculture. In Grenada, the project will contribute to RDO/C strategy objectives of privatization of state lands, privatization of production and production services, and increased efficiency in the use of productive resources. HIAMP will deliver technology developed by the U.S. private sector to the key existing growers in Grenada and to the producers acquiring land on what were government farms. It will contribute to crop diversification in the three other Windward Islands. Cocoa will also contribute to more rationale exploitation of the available soil and water resources on hillside land. The project directly addresses the RDO/C strategy to increase export sales and agricultural GDP in the region. The high impact of this sub-project will be most evident when the producers targeted by this project move from an export sales base of $2.2 million in 1984/85 to $5.8 million in 1990/91 and $6.4 million by 1995/96.

2. Project Strategy

The project will concentrate its efforts on delivering technology to those growers with the best near term ability to generate more production. In each country the project will have two basic thrusts. The first is to quickly rehabilitate and improve the management of cocoa stands which are not performing to full potential. The second is to plant or replant

acreage using more productive varieties and growing practices designed to draw higher yields earlier in the production cycle than has been done to date in the Eastern Caribbean. The project will call upon the technical and commercial expertise of Hershey Foods Corporation (HFC) and scientific expertise from regional cocoa centers to introduce higher intensity cocoa production practices, achieve greater impact from training and visit outreach programs, and to improve fermentation practice and marketing strategies. A U.S. contractor will provide the support network for the delivery of technology and provide advisory services in extension and demonstration to industry associations each island.

Each island has a grower association or cooperative that provides production and/or marketing services to its members. While the project will work with these associations, it is not the intent of the project to engage in institution building. Project resources are devoted to the demonstration of the feasibility and practicality of the cocoa production technologies. They are also directed towards rapidly increasing ouput of the growers best able to undertake the risk of new investments and obtain financing, and with the management ability needed to adapt new technology to their farms.

The strategic targeting of key growers is especially important in Grenada where 12% of the cocoa farmers produce 75% of the crop. These farmers are not predominantly large land owners, but farmers who hold five acres or more of land and farm full time. Near-term increases in the productivity of this segment of cocoa producers will fundamentally improve the attractiveness of cocoa production for all cocoa farmers. It will improve throughput on fixed cost facilities and overhead involved in accumulation, fermentation, storage, and marketing by the current Grenada Cocoa Association and the proposed Grenada Cocoa Corporation. Farmgate prices should increase, providing incentives for medium and smaller growers to reinvest in the crop. Project support to cocoa rehabilitation and new plantings in the model farm program will assist sustained divestiture of state farm lands in a productive way. Activities at the Ashenden Estate will have a far-reaching effect on cocoa production in Grenada and the region. The project will demonstrate that use of hybrid seedlings (the least cost planting solution) will not reduce the value of the crop as a "flavor cocoa". The final strategy element in Grenada is the promotion of private sector joint ventures in cocoa in which the best available production technology will be employed. The joint ventures will serve as commercial demonstrations of the potential of the new technology under good management.

B. Subproject Objectives

The goal of the Regional Cocoa Rehabilitation and Development Subproject is to move the cocoa industry in the Grenada and the Eastern Caribbean to a new plane of productivity managed by the private sector and towards sustained growth in a marketplace subject to marked price cycles. The purpose of the subproject is to increase annual export revenues from $2.2

million in 1984/85 to $5.8 million by 1990/91. Project outputs will consist primarily of increased production from key cocoa growers in the four Windward Islands, improved quality and consistency in quality in fermented beans, better marketing strategies for forward contracting, and demonstration of the feasibility, on flavor and price grounds, of hybrid cocoa technology. The project will provide regional coverage with a geographic concentration and overall program management in Grenada. Close coordination will be maintained with the CIDA-funded Cocoa Rehabilitation Project.

C. Project Components

The subproject is constructed around sustained delivery of technological expertise from the international cocoa industry to the region. It will use focused and applied training and visit methods to gain adoption of the technology by the most important segments of cocoa producers. The needed commercial expertise is not found on campuses, research stations, or consulting firms. It is found within Hershey Foods Corporation and Hershey's Hummingbird Farms in Belize. Availability of the people who carry the skills is very limited, thus, long-term assignment of the individuals with commercial skills in cocoa production is limited. Yet, there is a real need for ongoing management to provide continuity and support to subproject activities. The subproject will obtain management, extension, and training through a US institution with a track record in assistance to the cocoa industry in the Caribbean and Latin America. The contractor will be required to subcontract with Hershey Foods Corporation to provide discrete technical advisory services on a programmed basis and be responsible for managing resource flows to the implementing organizations in each country.

The contractor will provide two long-term advisors, one responsible for overall program management and coordination of the project, and one charged with the execution of the grower outreach components of the subproject. The contractor will rely on the subcontract with HFC to provide the cocoa production, postharvest handling and fermentation, and marketing skills. It will draw on the wider community of cocoa workers, such as those from the University of the West Indies Cocoa Research Unit (UWI/CRU), the American Cocoa Research Institute (ACRI), CATIE in Turrialba, Costa Rica, the Institute in San Pedro Sula, Honduras, the USDA Subtropical Research Station in Miami, the Mayaguez Institute of Tropical Agriculture in Puerto Rico, and CEPLAC in Itabuna, Brazil for skills in cocoa selection, experimentation, pathology and entomology, and other specialized fields. It will oversee the four country components of the project and the activities that involve region-wide interaction by the industry.

Grenada is the largest part of the project. It includes components of commercial outreach to key growers, support to cocoa production on model farms, promotion of joint ventures in modern cocoa production, a research/demonstration effort at Ashenden Estate, acontract demonstration

program and some support to improving the applied skills of field outreach agents. A subgrant agreement will be signed with the Grenada Cocoa Association (GCA) or the proposed Grenada Cocoa Corporation (GCC) to undertake these components. Over a five-year period major activity benchmarks will be:

- o improvement of cocoa yields to 1000 lbs/ac on 1000 acres of land held by key growers;
- o replanting of cocoa using a hybrid:clonal mix to yield 1200 lbs/ac on 1000 acres of land held by key growers;
- o improvement of yields and introduction of the hybrid:clonal mix on nearly 840 acres of land under the model farms divestititure program;
- o promotion of at least two joint ventures between Grenadians and foreign investors to develop 100% hybrid plantings of cocoa on a total of 500 acres of land;and,
- o demonstration at the Ashenden Estate that an 80:20 hybrid:clonal mix will not affect the premiums received for Grenadian cocoa.

In St. Vincent, the subproject will establish a subgrant agreement with the Organization for Rural Development (ORD) a local PVO. ORD is already involved in cocoa rehabilitation and development work. The subproject will concentrate initially on rehabilitation of existing cocoa stands on holdings of five acres or more. At the same time, ORD will receive assistance to develop demonstrations of modern cocoa production techniques, to introduce hybrid seedlings, and to examine ways of producing a consistently well-fermented and dried product at reasonable cost. Approximately 300 acres will be rehabilitated and another 300 acres planted over the LOP. Working with a few of the larger estate owners, the subproject will introduce the intercropping of coconut stands with cocoa, a practice that has demonstrated its commercial value in Asia, as well as having been researched, but never applied on a significant scale, in the Eastern Caribbean.

St. Lucia is undergoing a resurgence of interest in cocoa. World's Finest Chocolate (WFC) has offered a five year contract to buy all of St. Lucia's cocoa at a price of $1.25/lb, a $0.25/lb premium over the world spot market price. In addition, the owner of WFC has bought and undertaken the rehabilitation of an estate using hybrid seedling technology. This individual has agreed to permit the estate to be used as a demonstration site by the subproject. Support in the form of technical assistance, outreach programs to demonstrate the hybrid based technology, and some training, storage and fermentation assistance, will be provided through the St. Lucia Agriculturists Association (SLAA). The SLAA was originally established by cocoa growers to support growth in the industry. The major benchmarks over the LOP are rehabilitation of 300 acres and replanting of an additional 300 acres, yielding 1000 lbs/ac and 1200 lbs/ac respectively.

Dominica has a few reasonably large stands (70 acres) of cocoa on private estates. Working initially through the Ministry of Agriculture, the subproject will establish links with farm owners to establish rehabilitation and replanting demonstrations. Benchmark objectives in the first five years of the project are rehabilitation of 150 acres yielding 1000 lbs/ac and replanting of an additional 150 acres yielding 1200 lbs/ac.

During the fourth year of the subproject an evaluation will be undertaken to determine whether additional resources should be devoted to cocoa development on the St. Vincent, St. Lucia, and Dominica. If the findings are positive, additional funding may be needed for intensification of effort in one or more country. It is anticipated that Grenada will need no further project-type assistance to develop its cocoa industry after 1990/91. Success in the subproject, combined with structural adjustments suported by AID and reorganization of the industry boards supported by CIDA should provide the financial foundation for sustained growth drawing on commercial sources of support.

D. Expanded Component Descriptions

1. Subproject Management

In the United States the predominant organizations with institutional experience in providing techical assistance and advisory services to commercial cocoa growers are HFC and a handful of PVO's. HFC is a diversified foods corporation which has no interest in providing technical assistance services as a business, but with a substantial interest in developing supplies of cocoa from the Caribbean and South America. The company has worked with grower associations, industry boards, and buyers and shippers to provide a market pull which increased incentives for production of high quality cocoa. Over the past several years HFC has used the management and extension umbrella provided by PVO's to develop sources of supply which it feels will produce a consistent quantity and quality of fermented cocoa. The RCRD subproject will assist in the extension of a modified model of this type to the Eastern Caribbean.

From the institutions that have worked with cocoa in the Caribbean Basin area, one will be competitively contracted to provide management support, outreach, and coordination services for the four-country effort. A two person technical assistance team will be based in Grenada. The team leader will be an experienced manager who will arrive at agreements with participating grower associations on Grenada, St. Vincent, and St. Lucia, and the Ministry of Agriculture in Dominica to carry out project activities. The team leader will also be responsible for programming short-term technical assistance visits from personnel of HFC and regional cocoa centers, working with intermediate financial institutions to develop credit programs for cocoa, coordinating field activities in Grenada with the CIDA-funded technical assistance team and for all reporting to USAID on project matters.

The outreach advisor will work to establish the country activities in cocoa technology transfer. Commercial outreach, applied training, contract demonstrations, and the research/demonstration program at Ashenden will be this individual's responsibility. The individual's duties are not to personally execute these programs but to implement them by bringing local resources in the form of grower associations, private services, and ministerial staff together with external specialists and some supporting resources.

The general approach is to serve as a catalyst for technology transfer and improved postharvest handling and marketing of cocoa, not to build a support service for the industry that will increase its recurrent costs. It is a leveraged approach to improving production.

2. Grenada Cocoa Component

The current Minister of Agriculture has characterized the cocoa industry as holding great potential, but also facing perhaps the greatest crisis in its existence. A combination of factors have come together to make the need for new directions apparent and the ability to make bold decisions difficult. World cocoa prices have retreated from their record levels in the late 1970's. When cocoa prices were high, the statutory body for cocoa grew in size and fixed operating costs, while providing attractive bonuses to all registered cocoa growers. At the same time, there was little reinvestment in either cocoa production or the modernization of cocoa production technology. Little reinvestment occured because all lands were in jeopardy of being taken over by the central government. This environment did not foster efficient management of the Grenada Cocoa Association or the Grenada Cocoa Industry Board. The price declines over the first half of the 1980's have revealed the management problems of the industry.

The management problems of the industry are of two general types. The first relates to the overall costs and services provided per unit cost of the Grenada Cocoa Association (GCA), the Ministry of Agriculture (MOA), and the Cocoa Rehabilitation Project (CRP). The GCA is a statutory body established in the early 1960's to eliminate a series of middlemen in the cocoa trade. It was granted a complete monopsony and monopoly for the export trade in cocoa. The MOA provides research, extension and plant protection services. The Cocoa Rehabilitation Project provides support to the Ministry of Agriculture through another statutory body, the Cocoa Project Management Board (CPMB). After an intensive industry wide study done with Canadian assistance, a restructuring of the industry has been proposed that would amalgamate the GCA and the CPMB to form a new statutory body, the Grenada Cocoa Corporation, responsible for industry production services and the purchase, fermentation and marketing of cocoa that has been the primary function of the GCA to date. This rationalization of the support structure for the cocoa industry in time should result in improved services tothe body of growers at large. However, the structural and organizational shaking out process will take time. Also, the new institution must continue to provide services to a large body of farmers, many of whom contribute only small amounts of the cocoa output of the country, whether on an individual basis or in aggregate.

The Canadian International Development Agency will underwrite technical assistance to the overall process of melding the two cocoa boards to form the Grenada Cocoa Corporation, a single statutory body with the mandate to support the industry from planting through marketing. The Regional Cocoa Rehabilitation and Development Subproject will concentrate on:

- o the key cocoa farmers in the country;
- o farmers inthe model farms divestiture program;
- o promotion of intensively managed joint ventures in new cocoa production technology; and
- o a research and demonstration effort at Ashenden Estate.

a. Key Farmer Program

The key cocoa farmers in Grenada are those growers in the 5 acre farm size category and above who are full-time farmers (See Table 2.). They make up 12 % of the cocoa farming population (Figure 1.) have the highest yielding stands on the island (Figure 2.), and contribute over 75% percent of the country's total cocoa output (Figure 3). The potential productivity and return from their trees is also higher than most in the country because their trees are younger (Figure 4). The key farmer program has two primary objectives:

- o improvement of cocoa yields up to 1000 lbs/ac on 1000 acres of land held by key growers;
- o replanting of cocoa using a hybrid:clonal mix to yield 1200 lbs/ac on 1000 acres of land held by key growers.

The contracted outreach advisor will work with HFC and GCA/GCC staff to identify the key farmers and develop a program of applied training, demonstration, and production assistance to carry out improvement and replanting with those farmer who agree to participate. Initial emphasis will be on closely supervised demonstration of improved husbandry techniques on farmers fields and an initially more limited program of replanting using hybrid technology. The demonstrations will be reinforced using training and visit methods to tansfer skills in husbandry techniques, pest management, and replanting. By the end of the project about one quarter of the 530 key farmers in Grenada will be using the technologies introduced by the project.

b. Model Farms

Table 3 gives an inventory of model farms scheduled for distribution and development in 1986 and 1987. The Grenada Model Farms program currenly includes about 840 acres of land which is either in bearing cocoa or

could be replanted. Working with the staff of the Model Farms program, the contracted long-term advisors and HFC consultants will initiate an intensive rehabilitation campaign on the existing cocoa acreage. Subproject staff will provide applied training to model farm technical staff and to farmers working on land with bearing cocoa. Hybrid cocoa technology will be introduced on land with non-bearing cocoa and land that is earmarked for replanting. Modification of the hybrid technology will be necessary as at least part of the cocoa replant acreage will be intercropped with bananas as temporary shade. However, this acreage should be minimized as overall return to farmers is improved with pure cropping of cocoa and pure cropping of bananas on different plots of land. About 460 acres of cocoa will receive improved husbandry practices as a result of the project and about 380 will be replanted in pure stand.

c. Joint Ventures

One of the missing ingredients in the cooca industry of Grenada today is the demonstration that the farming of cocoa can be an agribusiness attractive as an investment and a career. Since HIAMP seeks to demonstrate the value of private sector management of agriculture, the cocoa subproject will seek to find investors willing to form joint ventures to use high intensity hybrid cocoa production technology. It is expected that two such ventures could be formed during the life of project, each covering 250 acres.

The joint venture farms would use one hundred percent hybrid seedlings to establish new cocoa stands. The two joint ventures will probably grow out from two demonstration sites of 5 acres apiece that will be established in the first year of the project and closely monitored by the resident contracted staff and HFC and Hershey Hummingbird Farms consultants. The demonstration sites will be selected for their potential for growth and their attractiveness to potential joint venture investors. High intensity management practice will be employed, i.e., 9'x9' spacing, optimum fertilizer applications, careful pruning, shade manipulation, pest scouting and "hot spot" insect and disease control. The subproject will rely upon the DCMC of HIAMP to assist in identifying potential investors in the cocoa joint ventures. During project design contact was made with four estate owners interested in such jiont venture arrangements.

d. Ashenden Estate

Ashenden Estate is located in the southwestern quadrant of Grenada close to the 100 inch rainfall isohyet. Average rainfall is about 90.1 inches or 228 cm annually. Rainfall distribution is good with only dry years resulting in seasonal stress to cocoa plants. In higher rainfall years some problems with control of fungal disease occur, but this drawback is more than balanced by the reliable water supply.

Ashenden is one of four cocoa stations established to carry out applied cocoa research under a U.K.- funded cocoa scheme begun shortly

after World War II. The Cocoa Scheme ended in 1961 and its functions were taken over by the Ministry of Agriculture. Research undertaken at the station included work on evaluation of clonal and hybrid material, soil fertility and fertility management, pest and disease screening studies, and yield and bean quality studies. Much of the data produced was sent to the Universtiy of the West Indies (UWI) for analysis. However, it has been recently discovered that the analysis of a large body of trials was not done. The newly reactivated Cocoa Research Unit (CRU) of the UWI will undertake analysis of some of these older trials with CIDA support. The Cocoa Project Management Board is Grenada has also started analyzing these trials. Initial evaluation suggests that there are higher productivity clones in colections which have never been extended to farmers.

However, the trials which were done will not answer a major technical and economic question facing the cocoa industry. This question is whether or not the use of a large percentage of hybrid cocoa or a one hundred percent stand of hybrid cocoa will alter the flavor character of their production. The trials under the Cocoa Scheme were designed to introduce and adapt clonal technology which was developed in the 30's and 40's to produce disease resistant cultivars with larger bean sizes. Hybrid techniques have long since surpassed the clonal technology and have permitted major savings to be made in propagation and establishment costs. Ashenden will serve as the site at which the new hybrid technology will demonstrate the large positive effect it can have on Grenadian cocoa production.

Since 1980, Ashenden has been a propagation station and district demonstration station under the Cocoa Rehabilitation Project (CRP) aided by the Canadian government. While it will not be used as a major propagation center under the proposals for extension of the CRP, the Ministry of Agriculture has indicated its willingness to see the estate used for the testing of the hybrid technology. The Project will draw upon the broader cocoa research community and the assistance of the contracted firm and HFC to design and lay out commercial size trials of a mix of ratio's of clonal:hybrid seedling material to determine the mixes effects on flavor evaluation, yield, disease and pest management practices, and production costs and returns.

3. St. Lucia Component

St. Lucia is undergoing a resurgence of interest in cocoa. World's Finest Chocolate (WFC) has offered a five year contract to buy all of St. Lucia's cocoa at a price of $1.25/lb, a $0.25/lb premium over the world price. In addition, the owner of WFC has bought and undertaken the rehabilitation of an estate using hybrid seedling technology. This individual has agreed to permit a site within the estate to be used for demonstration by the subproject. Support in the form of technical assistance, outreach programs to demonstrate the hybrid based technology, and some training, storage and fermentation assistance, will be provided through the St. Lucia Agriculturists Association (SLAA). The major benchmarks over the LOP are rehabilitation of 300 acres and replanting of an additional 300 acres, yielding 1000 lbs/ac and 1200 lbs/ac respectively.

The SLAA was originally established by cocoa growers to support growth in the industry. It currently buys cocoa from small farmers, estates, and traders, carries out fermentation and drying, and markets the fermented beans. The SLAA also has the only cocoa officer in the country who is seconded to the association by the MOA. The subproject will work with the SLAA to establish a demonstration and outreach program designed to achieve the subsectoral objectives of the country in cocoa production. The approach will be two-pronged. One prong will be demonstration and training in improved cocoa stand management. The second prong will be rehabilitation of stands and replanting with hybrid seedlings.

a. Improved Cocoa Husbandry

A reconnaisance of cocoa in St. Lucia done by CATIE personnel at the request of CARDI stressed that cocoa stands were neglected, but not over age as had been assumed in the past. These findings were confirmed by the subproject design team. Many stands contain 15 year old trees which should just be entering their most productive years. They are not, due to neglect and to a high degree of intercropping with bananas that has continued long after the shade of the banana plant was needed to establish the cocoa trees. The subproject will assist the SLAA to carry out demonstrations of good husbandry practices, concentrating on improved shade manipulation, better pruning, fertilization, field sanitation, and harvest practices. Three hundred acres of cocoa will be yielding 1000 lbs/ac by the end of the subproject.

b. Replanting

Working with the SLAA cocoa officer and the ownership and management of the Union Vale estate, the contracted staff in Grenada and consultants will develop a demonstration program for the Soufriere area, where much of the country's cocoa is produced. The demonstration work will be coordinated with support to the Bath propagation facility to produce seedlings from hybrid seeds for distribution to farmers. Startup of these activities will require some short-term technical assistance and regular follow-up by the Grenada based staff. Three hundred acres of cocoa will be planted or replanted during the project attaining yields of 1200 lbs/ac at full development.

c. Regional Activity

Subproject design team field visits revealed the presence of productive Criollo types of cocoa from Nicaragua which probably include ICS 39. The material may be extremely useful to regional breeding programs and for crosses with IMC 66 that could be used in St. Lucia. One of the early tasks of the regional team of cocoa specialists that will survey the four countries for planting material will be to identify existing cocoa varieties and determine if their characteristics warrant the creation of a seed garden to continue rehabilitation and replanting efforts.

4. St. Vincent Component

In St. Vincent, the subproject will establish a agreement with the Organization for Rural Development (ORD) a local NGO. ORD is already involved in cocoa rehabilitation and development work. The subproject will concentrate initially on rehabilitation of existing cocoa stands on holdings of 5 acres or more. At the same time, ORD will receive assistance to develop demonstrations of modern cocoa production techniques, to introduce hybrid seedlings, and to examine ways of producing a consistently well-fermented and dried product at reasonable cost. Approximately 300 acres will be rehabilitated and another 300 acres planted over the LOP.

St. Vincent currently produces cocoa on about 300 to 600 acres of land. The range is wide because only crude estimations have been made from interviews performed by a variety of organizations over the past several years. The availability of a high price market and the ability of cocoa to play a role in soil and water conservation on hillside land has generated renewed interest in the crop. ORD staff have visited the Hershey Hummingbird Farm in Belize and become acquainted with the production technology used there. They had planned to introduce hybrid seedlings in 1985, but could not overcome a phytosanitary embargo that was placed on their material. The Ministry of Agriculture prepares clonal material in Trinidad propagators for sale to farmers. Demand has increased as the Cumberland Watershed hydoelectric project has included protection of exposed slopes in catchment areas.

The project will help accelerate the progress of cocoa revitalization efforts initiated to date. Short-term technical assistance will be provided to execute a demonstration and outreach program already well-conceptualized by the ORD. The plan will be to select a group of larger farmers with about five acres of cocoa each to serve as demonstration sites for improved husbandry practices, more radical rehabilitation of overgrown and damaged stands, and planting on new lands or replanting.

a. Demonstration of Improved Husbandry and Rehabilitation Techniques

On selected five acre sites identified by ORD field workers, the subproject will assist in improved husbandry and rehabilitation demonstrations. Many sites are almost completely overgrown with large gaps in stands. Radical pruning back and underplanting with new material will be the first step in resuscitating cocoa production. At other sites lighter pruning and much heavier fertilization and weed contrl measures are needed and will be demonstrated. The Grenada based team will help to organize applied training for ORD field agents and those specialists of the MOA and the watershed projects.

b. Hybrid Seedling and Replanting Techniques

Only clonal materials are currently produced on St. Vincent by the MOA. The one attempt by ORD to introduce seeds as propagation materials

was blocked by an unfortunate misinterpretation of phytosanitary advice by plant health officials in the country. Clonal saplings are subsidized to almost 95 percent of their actual cost of production. Through the establishment of a regional protocol on cocoa plant material movements, the subproject will aid in the introduction of much lower cost seedling technology. It will then help support the demonstration of the technology and the training of field workers in growing techniques.

5. Dominica Component

Dominica has a few reasonably large stands (70 acres) of cocoa on private estates. It also has numerous smaller holders about 25 percent of whom produce cocoa. Land use maps also show a broad band of land around the island which is suitable for cocoa. In total about 400 acres of land is devoted to the crop.

Working initially through the Ministry of Agriculture, the subproject will establish links with the estate and larger farm owners to establish rehabilitation and replanting demonstrations. Benchmark objectives in the first five years of the project are rehabilitation of 150 acres yielding 1000 lbs/ac and replanting of an additional 150 acres yielding 1200 lbs/ac. To the extent possible, cooperatives and grower associations will become the second generation vehicles for cocoa activities in Dominica.

As on St.Lucia and St. Vincent early demonstration work will begin with the larger growers. Three sites were visited of 25 acres, 50 and 70 acres within which demonstrations could be held. The Tree Crops Specialist in the MOA has indicated his ability to manage the overall program with some external technical assistance and the supply of hybrid seeds and some inputs and equipment. Two growers have indicated their willingness to participate in the first year of the program.

Table 2

GRENADA COCOA FARM SIZE DISTRIBUTION AND PRODUCTIVITY

FARM SIZE RANGE (AC)	NUMBER FARMERS	TOTAL ACRES	AVERAGE YIELDS	AVERAGE TREES/AC	AVERAGE AGE/TREE	TOTAL OUTPUT LBS
0 TO 2 AC	3100	1700	380	240	36	646000
2 TO 5 AC	900	2100	450	280	30	945000
5 TO 15 AC	400	2200	510	290	26	1122000
OVER 15 AC	130	6200	620	300	21	3844000
GRENADA	4530	12200	537	286	26	6557000

NOTE: ALL AVERAGES ARE WEIGHTED BY ACREAGE IN FARM SIZE CLASS
SOURCE: Recalculated from p.46 data in CIDA/MMB-RDC, "COCOA INDUSTRY WIDE STUDY" Volume 1.

FIGURE 1

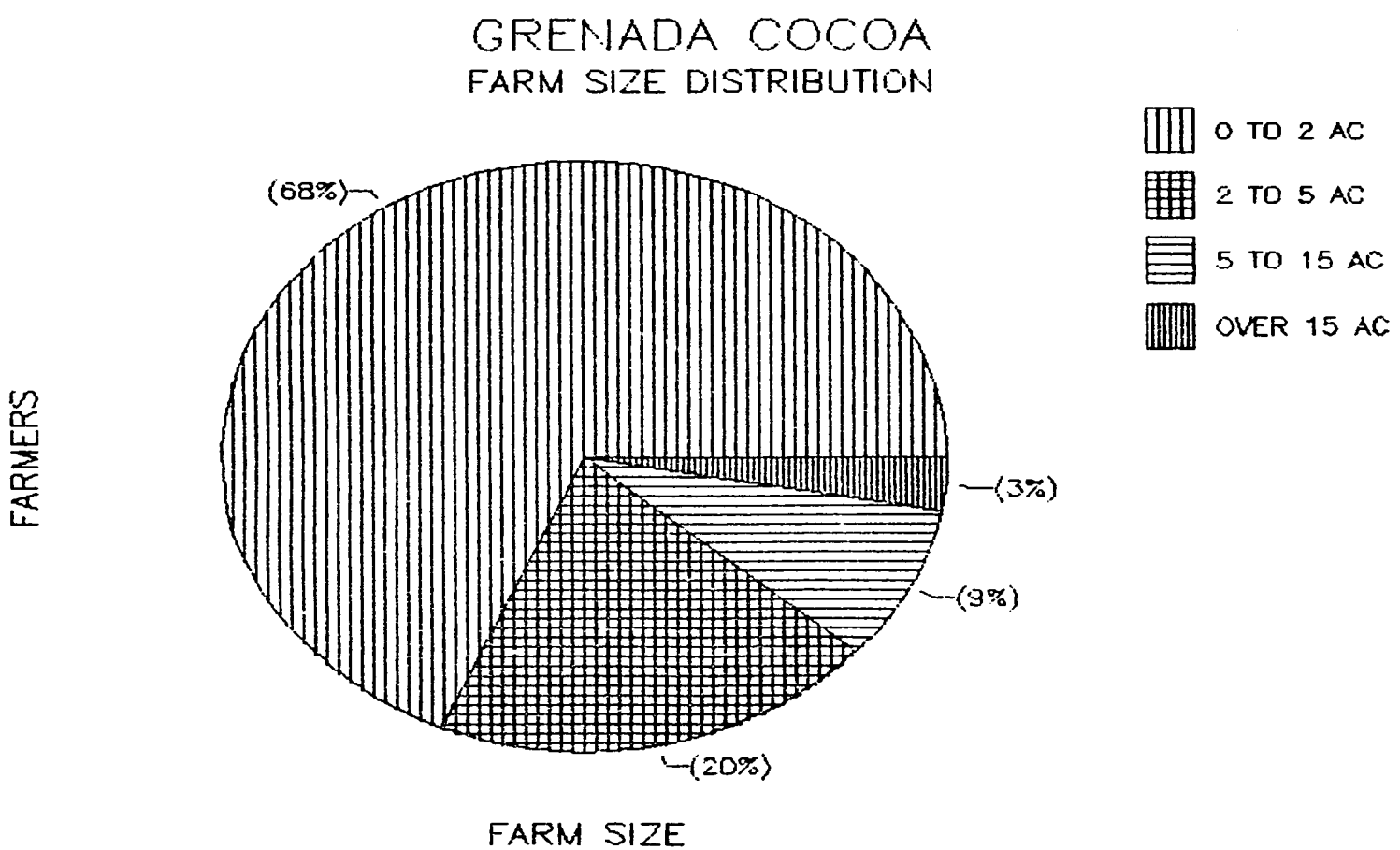
GRENADA COCOA
FARM SIZE DISTRIBUTION
FARMERS
(68%)
(3%)
(9%)
(20%)
FARM SIZE
0 TO 2 AC
2 TO 5 AC
5 TO 15 AC
OVER 15 AC

FIGURE 2

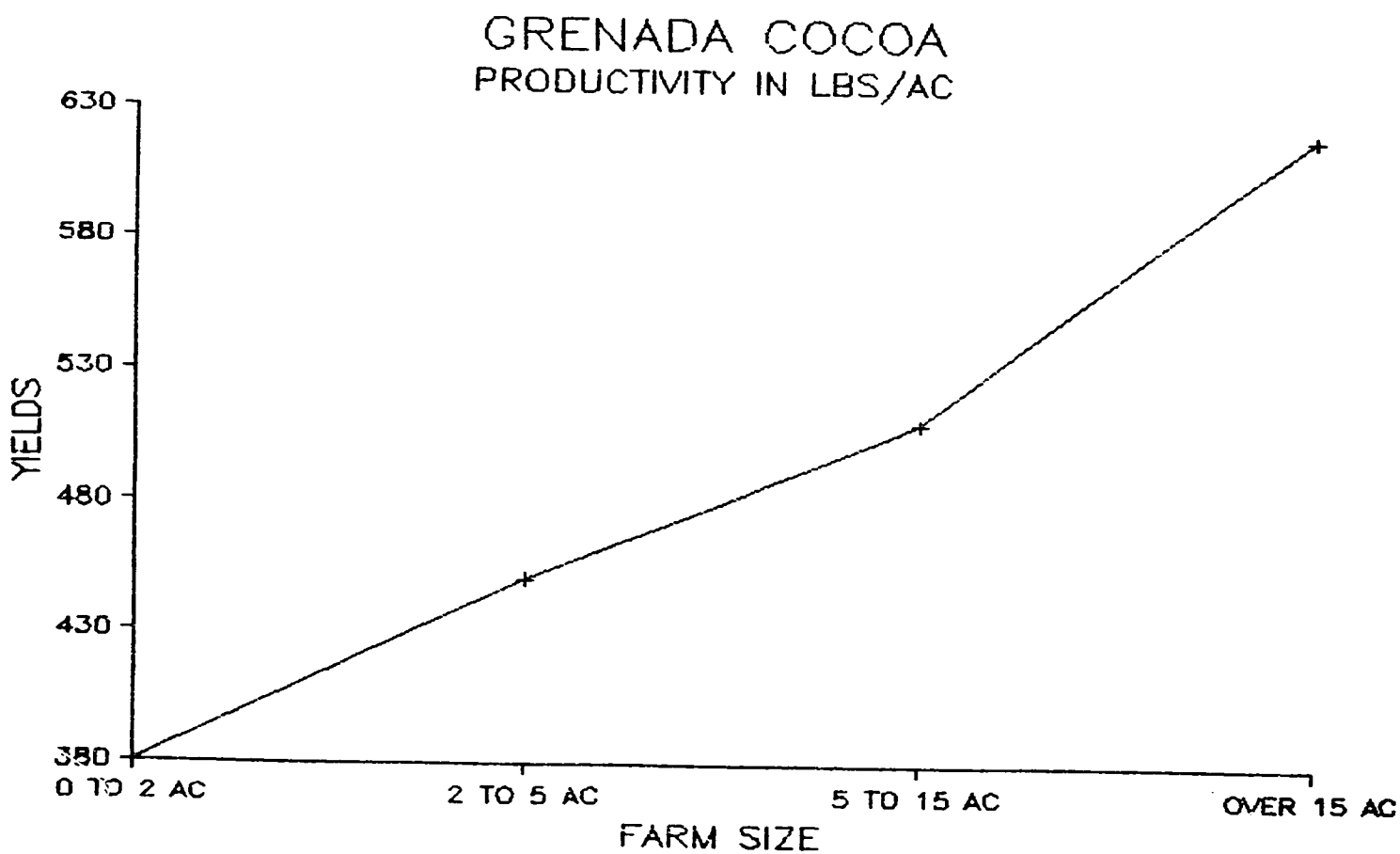
GRENADA COCOA
PRODUCTIVITY IN LBS/AC
YIELDS
630
580
530
480
430
380
0 TO 2 AC
2 TO 5 AC
5 TO 15 AC
OVER 15 AC
FARM SIZE

FIGURE 3

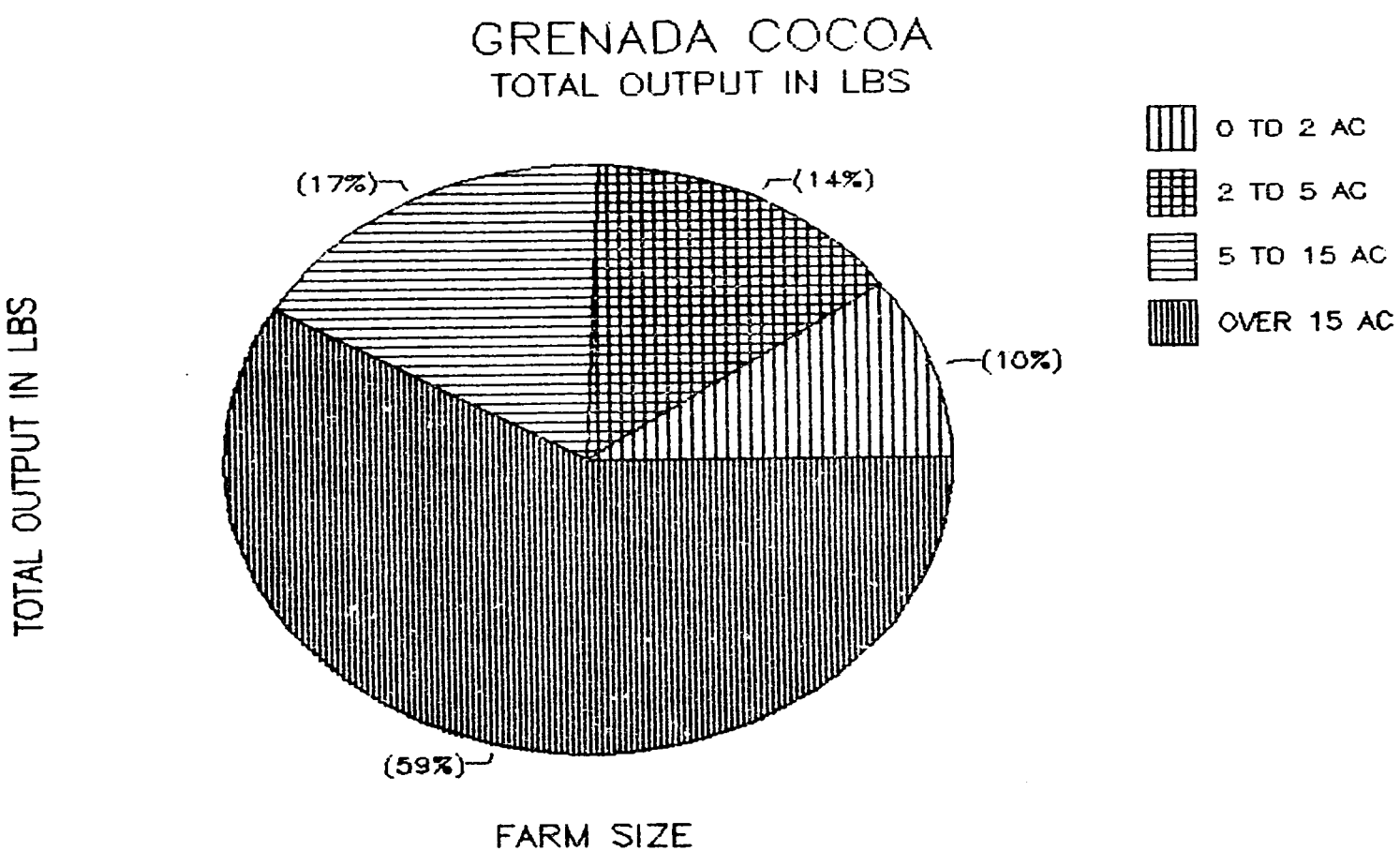
GRENADA COCOA
TOTAL OUTPUT IN LBS
TOTAL OUTPUT IN LBS
(17%)
(14%)
(10%)
(59%)
FARM SIZE
0 TO 2 AC
2 TO 5 AC
5 TO 15 AC
OVER 15 AC

FIGURE 4

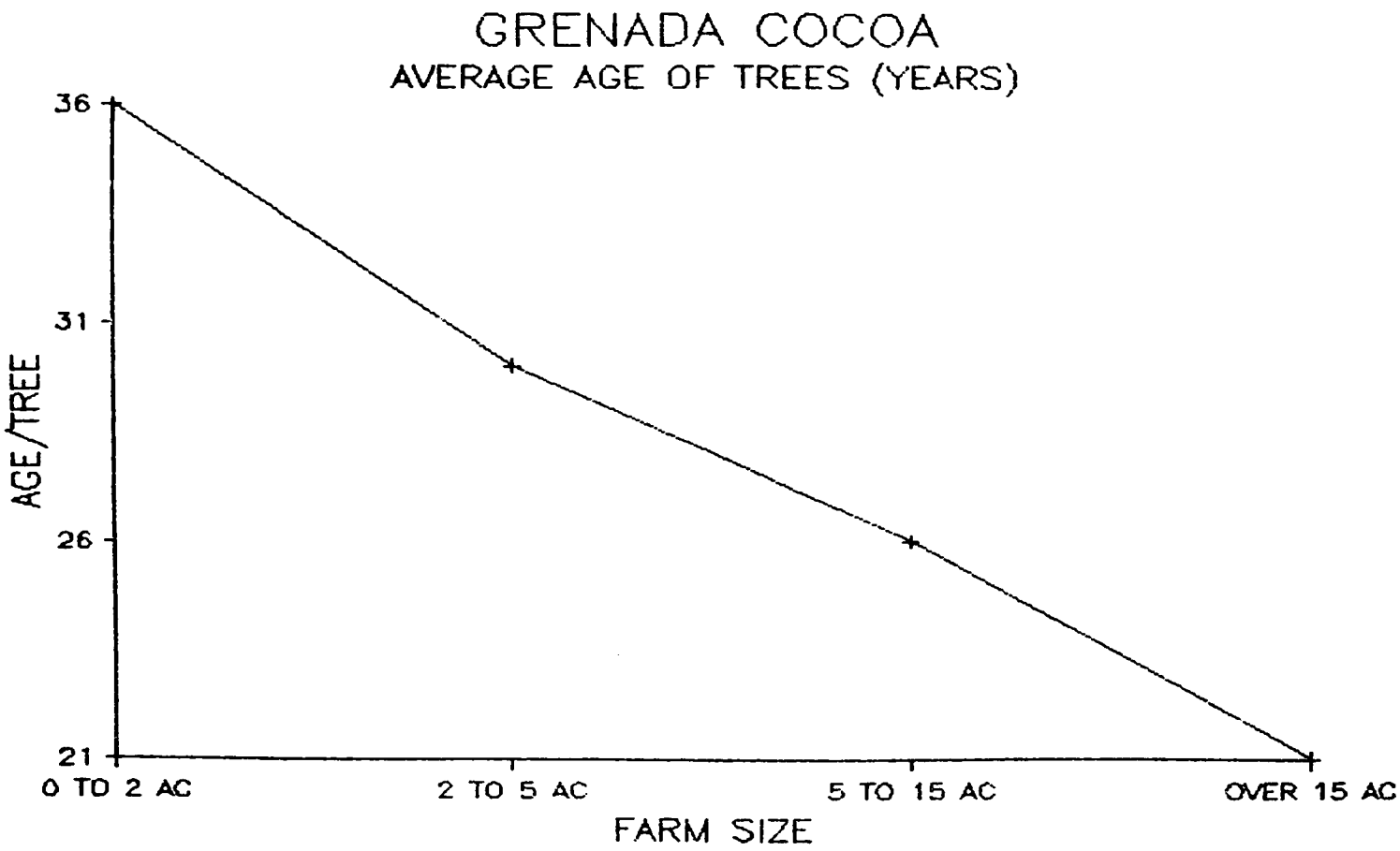
GRENADA COCOA
AVERAGE AGE OF TREES (YEARS)
AGE/TREE
36
31
26
21
0 TO 2 AC
2 TO 5 AC
5 TO 15 AC
OVER 15 AC
FARM SIZE

Table 3

GRENADA MODEL FARMS INVENTORY

ESTATE NAME	TOTAL ACREAGE	BEARING COCOA	NON-BEAR COCOA	LAND TO DEVELOP	REPLANT ACREAGE	TOTAL COCOA AC
SCHEDULED FOR 1986						
ANNANDALE-ST.GEO.	42	6	0	0	0	6
BELLEVUE-ST.GEO.	72	30	0	31	16	46
GOOD HOPE					0	0
MARLMONT-ST.DAV.	148	80	5	9	10	90
ST.OMER-ST.JOHN	104	0	0	74	37	37
SPRINGS-ST.AND.	206	22	4	30	19	41
SUBTOTAL	572	138	9	144	81	219
SCHEDULED FOR 1987						
BLACK BAY-ST.JOHN	100	13	3	50	28	41
BOCAGE/DIAMOND-ST.MRK.	465	113	53.5	65	86	199
CARRIERE-ST.AND.	78	25	3	22	14	39
GRAND BRAS/CADRONA-ST.AN	194	73	7	20	17	90
LORETTO-ST.JOHN	82	23	5	10	10	33
MT. HORNE-ST.AND.	62	13	4	0	4	17
MT. REUIL-ST.PAT	250	20	20	69	55	75
PARADISE-ST.AND.	198	12	2	25	15	27
PERSEVERENCE-ST.GEO.	280	3	0	100	50	53
POYNTZEFIELD-ST.PAT.	50	16	7	0	7	23
SAMARITAN-ST.PAT.	43	8	15.25	0	15	23
SUBTOTAL	1802	319	119.75	361	300	619
TOTALS	2374	457	128.75	505	381	838

NOTES:Replant acreage assumed to be all nonbearing cocoa and half the land suitable for development.

III. COST ESTIMATE AND FINANCIAL PLAN

A. Component Cost Summary

Each of the subproject coponent costs within the Regional Cocoa Rehabilitation and Development Project is estimated as follows:

Table 4
RCRD COMPONENT COST SUMMARY

	(USD)
Long Term Technical Assistance	720,000
Short-term Technical Assistance	1,020,000
Ashenden Research/Demonstration	150,000
Cocoa Outreach	125,000
Applied Training	175,000
Vehicles, Commodities, Equipment	220,000
Contract Demonstrations	250,000
Evaluations	40,000
Contingency	300,000
TOTAL	3,000,000

B. Financial Plan

Table 5 estimates the level of expenditure by fiscal year. Funding obligations during five fiscal years will be used to put cocoa rehabilitation and development activities on a solid footing. Cesses collected from the marketing of the cocoa crop should continue the provision of outside technical expertise when USAID support ceases.

The contractor selected to implement this subproject will have to establish and maintain accurate financial records on the use of AID funds. The contractor will:

- ensure that grant funds have been expended in compliance with AID regulations and source origin requirements; and
- establish financial management systems to produce reliable statements on a quarterly basis.

A total of $ 1.7 million has been allocated for technical assistance. While long-term technical assistance will be headquartered in Grenada, the advisory services of the project will be used on all four participating nations: Grenada, St. Vincent, St. Lucia and Dominica. Allocation of Technical Assistance budgets according to individual islands would not provide the flexiblity that is necessary to achieve overall program success should unforeseen blockages arise on any given island. However, as an indicative planning figure two person-months of short-term technical

assistance in direct demonstration and training of outreach staff and farmers has been programmed for St. Vincent, St. Lucia, and Dominica. An additional nine person months per year of short-term technical assistance has been programmed for Grenada and region-wide work in specialized work on cocoa agronomy, plant pathology, entomology, post-harvest handling, fermentation, and marketing. The Ashenden Research and Demonstration activity will also require two months a year of short-term technical assistance which is expected to make a contribution to overall cocoa research and development activity in Grenada.

The Ashenden research and demonstration activity will require about $150,000 to show that the proposed hybrid technology can bring substantially increases in benefits to Grenada. This component will benefit from existing MOA staff and programs and the recent assistance of CIDA in the operation at the site of a plant propagation and demonstration program. The Cocoa Outreach line item ($125,000) will support the costs of training and visit extension materials and programs to be used in the rehabilitation and replanting activities on each island. The Applied Training line item ($175,000) will pay for field staff of the implementing agencies in each country and farmers to visit and particpate in field days at the subproject's major demonstration sites in each country, bring cocoa field workers and a few farmers to Grenada, and permit smaller groups to undergo training at UWI/CRU, the Belize Hummingbird Hershey Farm, and perhaps CATIE in Costa Rica. Vehicles, commodities, and equipment ($220,000) will be procured in support of all of the above activities through the contractor.

The Contract Demonstration line item ($250,000) will be managed by the contractor. It will be used to rapidly develop demonstration sites for the commercialoutreach program during years one and two of the project. These sites will be used for demonstration and in-country applied traing programs to benefit the entire population of farmers participating in the subproject. Farmer demonstrators will incur additional cost ad bear the risk of initial introduction of a new technology. For these reasons, a $250,000 line item ahs been established to cotract with selected growers to establish and manage the improved husbandry and hybrid seedling planting demonstrations. Using a shared establishment cost of $500 per acre, about 500 acres of emonstrations/trainng plots will be established with project assistance.

Two outside evaluations will be conducted at year two and one-half and year four and one-half. The costs of these evaluations are estimated to be $ 20,000 apiece.

Finally, a contingency of ten percent of the total project funds has been reserved to cover increased prices due to inflation and any increased need for additional funds within the major line items.

C. Total Contributions to the Regional Cocoa Subproject

USAID funds will be used to provide a boost to production that other sources of funding for the industry will not be able to provide over the near

term. They are a complementary use of funds in Grenada where the major tasks and costs of structural reorganization of the cocoa producer's association will be borne by CIDA ($6.39 million). It is anticipated that the subproject will attract an additional S500,000 dollars of private investor funds, $100,000 from grower groups and cooperatives, and additional loan and equity funds of $1.25 million from intermediary financial institutions. The total value of cocoa activities will be approximately $11.4 million.

Cocoa production has tremendous potential for the region, but the credit-worthiness of private cocoa development needs to be demonstrated if structural inefficiencies in the production technology and organizational arrangements are to be corrected. The project is designed to show how costs can be reduced and returns increased.

Table 5
SUMMARY PROJECT COSTS

USD '000

Category	FY86	FY87	FY88	FY89	FY90	FY91	LOP
LTTA 72pm	180	240	240	240	60	0	720
STTA 85pm	204	204	204	204	204	0	1020
Ashenden Res/Demo	30	30	30	30	30	0	150
Outreach	25	25	25	25	25	0	125
Applied Training	35	35	35	35	35	0	175
Vehicles, Commodities, Equipment	52	52	32	52	32	0	220
Contract Demonstra-tions	125	125	0	0	0	0	250
Evaluations	0	0	20	0	20	0	40
Contingency	60	60	60	60	60	0	300
TOTAL	711	771	646	466	406	0	3000

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IV. IMPLEMENTATION PLAN

A. Implementation Analysis

The RCRD Subproject is a five year project, with a PACD of April 30, 1991. The project will be implemented as a contract with a US institution experienced in joint cocoa development projects with Hershey Foods Corporation, the sole corporate repository for hybrid cocoa production technology in the USA. The project has three major components:

- o A contract to provide management and outreach support to cocoa technology specialists and the individual country activities;
- o A Grenada-specific set of activities in technology transfer, promotion, and research and demonstration; and
- o Country activities in demonstration and outreach in cocoa production in St. Vincent, St. Lucia and Dominica.

The three components will be managed from Grenada, by far the largest cocoa producing country in the region.

1. Management and Contract Services

The contractor will serve as an umbrella for all project services, financial flows, and accounting. Implementation will require the following RDO/C actions: a.) Competitive solicitation of a firm to implement the subproject; b.) Selection and award of a contract to a US institution skilled in assisting the delivery of cocoa production technology.

a. Solicitation of Proposals

It is extremely important that the solicitation of proposals include sufficient specification of institutional experience that only firms with strong backgrounds in assisting cocoa programs in the Caribbean and Latin America will qualify for the award. A condition of the award will specify that a subcontract with Hershey Foods Corporation will be a contractual requirement.

b. Selection and Award

A number of firms have already expressed interest in the implementation of the subproject. The required skills for implementation are such that solicitation and review should take 4 months after project approval. Technical advisory resources will be procured by the contractor from the Hershey Foods Corporation, the only U.S. institutional source of advanced

hybrid cocoa technology. Within 90-120 days of the approval of the HIAMP Project Paper, the contract will have been let by RDO/C, with approval of the Hershey subcontract to follow within 30 days, and fielding of the technical assistance team within an additional 30 days. A short-term, intermediary implementation action, will be financed through Project 538-0147. This assistance will provide technical assistance services until the subproject contractor is mobilized.

2. Grenada Based Activities

Grenada is the largest part of the project. It includes components of commercial outreach to larger growers, support to cocoa production on model farms, promotion of joint ventures in modern cocoa production, a research/demonstration effort at Ashenden Estate, and some support to improving the applied skills of field outreach agents. An agreement will be signed with the Grenada Cocoa Association (GCA) or the proposed Grenada Cocoa Corporation (GCC) to undertake these activities.

a. Commercial Outreach

Commercial outreach activities will begin within 30 days after the agreement with the GCA/GCC is signed. The contractor and HFC advisers will work with GCA/GCC staff to identify growers who will cooperate as demonstrators of improved husbandry and replanting techniques.

b. Support to Model Farms

Model farms have been selected for divestiture and rehabilitation for 1986 and 1987. The contractor will establish a work plan with the Grenada Model Farms program manager, the GCA/GCC, and the CIDA technical assistance team within two months after the subproject technical assistance team arrives in country.

c. Joint Ventures

The contractor will establish a link to the HIAMP personnel to locate potential investors for this activity within the subproject. The search should begin within six months after the arrival of the contractor's technical assistance team.

d. Ashenden Research/Demonstration

Drawing on Hershey Foods Corporation, the American Cocoa Research Institute, CATIE, UWI/Cocoa Research Unit, and other appropriate sources, the contractor will field a team within 90 days of their arrival to survey the region's cocoa germplasm resources, select promising varieties for

seed gardens, draft a regional cocoa propagation material movement protocol, and design the Ashenden hybrid:clonal mix trial and evaluation procedures. Depending upon joint review of these plans with the CIDA technical assistance team, the contractor will establish a scientific and industrial review committee which will meet annually to guide the Ashenden effort. The committee should be established within 6 months of the arrival of the contractor's technical assistance team.

e. Applied Training

The contractor and HFC will develop an applied training plan in cocoa husbandry, plant protection and integrated pest management, and postharvest handling of cocoa beans for field staff. The plan will be developed within 90 days of the team's arrival. Training plan elements will be tested first in Grenada beginning four months after project start-up, with field application in Grenada, St. Lucia, Dominica and St. Vincent within six months of start-up.

f. Contract Demonstrations

The commercial outreach activities in Grenada will have identified sites for contract demonstrations starting within 60 days of the arrival of technical assistance. Thirty days later a combination of short-term technical assistance, long-term advisory staff and GCA/GCC field staff will assist farmer demonstrators to establish demonstration fields of one to ten acres in size. Within five months of the arrival of the technical assistance, contract demonstrations will be set up in St. Lucia, St. Vincent, and Dominica.

3. St. Vincent, St. Lucia, Dominica

The contractor will develop a work plan for field consultation with implementing agencies in the three other countries in the subproject within 30 days after arrival at post. The initial regional reconnaissance of cocoa will permit interaction on start-up activities in applied training and initiation of demonstration plots in a phased manner depedning on thestate of readiness of the individual implementing agencies (St. Vincent-ORD, St. Lucia-SLAA, and Dominica- MOA). Demonstration sites will begin activity within five months of project start up.

Table 6
RCRD SUBPROJECT IMPLEMENTATION SCHEDULE

April 86	-	HIAMP Project Authorized by AID/Washington
	-	RFP for Mangement Services Finalized and Advertised
	-	Cocoa Subproject begins with Short-term TA from PADF
June 86	-	Proposals for Contractor Received and Evaluated
July 86	-	Cocoa Contract Awarded
	-	Subcontract with Hershey Negotiated
August 86	-	Resident TA for Cocoa Subproject In Place; Technical Services from Hershey Begins
Sept. 86	-	Operating Agreement with GCA/GCC Signed
	-	St. Lucia, St. Vincent, Dominica Work Plan Drafted
	-	Grenada Commercial Outreach Begins
October 86	-	Grenada Model Farms Work Plan Defined and Activities Begin
	-	Research/Demonstration Team Fielded
	-	Grenada Contract Demonstration Program Begins
November 86	-	Applied Training Program Work Plan Drafted
December 86	-	Regional Germplasm/Seed Garden Survey Done
	-	Regional Cocoa Propagation Material Protocol Drafted Ashenden Hybrid:Clonal Trial Designed
	-	Applied Training Program Field Test - Grenada
January 87	-	Applied Training Program Field Test - St. Lucia, St. Vincent, Dominica
	-	St. Lucia, St. Vincent, Dominica Contract Demonstration Programs Begin
	-	Ashenden Trial Planted
February 87	-	Investor Search for Grenada Joint Venture Begins
	-	Scientific and Industrial Review Committee Established
June 87	-	Grenada Joint Venture Begins
August 88	-	First Midterm Evaluation of Subproject Activities
August 90	-	Final Evaluation of Subproject Activities
April 91	-	PACD

B. Procurement Plan

1. Commodities

All commodities to be acquired under the RCRD Subproject will be procured by the contractor for the Regional Cocoa Rehabilitation and Development Subproject. The contractor will procure all commodities specified under the subproject (vehicles, farm equipment, planting material, plant protection equipment), subject to AID procurement regulations and source and origin provisions.

2. Technical Assistance

Technical assistance procurement will be made by RDO/C. The contractor for the Regional Cocoa Rehabilitation and Development Subproject, with 72 months of long-term and 85 months of short-term technical assistance to be contracted by RDO/C. These person months will be used to oversee all AID inputs and procure all commodities required for the Cocoa Rehabilitation Subproject, as well as to integrate technical specialists from the Hershey Foods Corporation Subcontract into the project. The contractor will be selected by RDO/C from among those U.S. Private Voluntary Agencies with a good track record in the Eastern Caribbean, and awarded a contract under the AID direct contracting procedures. RDO/C will specify that the organization must provide specified types and kinds of technical services in support of high-yielding and high-return cocoa farming. The only U.S. organization that can provide these services is believed to be the Hershey Foods Corporation. The contractor will be responsible for negotiating an agreement with HFC for technical services. Additionally, a special provision will require the contractor to obtain additional technical and scientific expertise in cocoa from regional cocoa centers, e.g., UWI/CRU, CATIE, the Mayaguez Institute of Tropical Agriculture, ACRI, CEPLAC-Brazil, and others as appropriate.

3. Funding Flows and Financial and Accounting Requirements

The contractor will be responsible for monitoring and reporting on the disbursement and use of funds for all project activities, including procurement of all goods and services obtained with project funds.

V. MONITORING PLAN

A. AID Responsibilities

The Agriculture and Rural Development Office (ARDO) of RDO/C will have overall management responsibility for the RCRD Subproject. The Agricultural Dvelopment Officer of the RDO/C/Grenada will have initial field responsibility for subproject management. The Chief of the ARD Office (the ADO) will directly monitor the actions of the contractor.

The ADO will monitor actions of the contractor through monthly activity reports, quarterly progress reports, forward work plans and field inspections of subprojects underway. The ADO will provide the contractor with a set of procedures to be followed for reporting on the activities planned and achieved by the cooperating producer organizations.

The ADO will schedule the first and second evaluations with the RDO/C evaluation officer. The results will be used to measure progress towards the objective of phasing out AID assistance as cess flows enable producer organizations to hire their own technical advisory services.

B. Contractor Responsibilities

The contractor will submit an aggregated monthly activity report for each island's activities. In addition, the contractor will submit quarterly progress reports set against rolling forward plans which cover the next 12 calendar months in general, the next six months in more specific detail. The quarterly reports will indicate progress against the plans submitted, and revisions and new plans for the upcoming six months.

C. HIAMP Core Contractor Subprojects

RDO/C will require regular reporting from the contractor. The Core Contractor working on the Islands will provide a reality check on the reporting from the cocoa contractor through quarterly monitoring reports against plans set forth for subproject implementation.

D. Producer Association Responsibilities

Producer associations will sign memorandums of understanding with the contractor specifying the types and level of support that they will provide to RCRD subproject activities. Support should include provision of some management and needed field personnel, logistic support for field activities, and action towards collection of fees for service or cesses to support association expenses related to cocoa.

E. Ministries of Agriculture

In Dominica, the Ministry of Agriuclture will be the early implementor of the subproject. An agreement between the MOA and the contractor will be neeeded to ensure that the Tree Crops Officer personel will be assigned to the cocoa subproject.

VI. SUMMARY ANALYSES

A. TECHNICAL ANALYSIS

1. Current Technology and Productivity Level

a. Grenada

In Grenada the average yield of cocao is about 500 pounds per acre. This is double the yield of many countries in the world in which cocoa averages about 250 pounds per acre, but is about one-third of the yield levels obtained on the best managed plantings. Production technology in Grenada is based on plant material and practices introduced in the 1950's during a major cocoa rehabilitation effort following Hurricane Janet. The basic technology has not changed since its introduction. Plant husbandry levels have varied tremendously over time due to a mix of political and economic factors. Grenada has failed to keep pace with the world cocoa industry.

b. St. Vincent

Vincentian cocoa production is in a state of neglect. While soils and microclimate on the leeward side of the island are favorable for cocoa, the area that is planted is small and msot production consumed locally. Very little cocoa has been exported in the last five years. Average yield figures are not available. Recommended production practices are the same as those in Grenada. The same varieties are grown. Lack of a market pull on production has led owners of larger stands to abandon their stands.

c. St. Lucia

Cocoa production in St.Lucia has faired a bit better than in St. Vincent. While using the same basic package of varieties and practices, the industry has maintained cotact with the external marketplace. While many stands suffer from neglect, others have been maintained in fair to good condition. The recent purchase by an American chocolate manufacturer of an estate with a large block of cocoa has renewed interest in the crop and provided a entry point for new planting material and growing practices.

d. Dominica

Dominica is home to a few estates with older cocoa and many smallholders with relatively few cocoa trees. Dominica last exported cocoa in any significant amount in 1983. Most of the cocoa has suffered from long periods of neglect, but retain good production potential. Current tree productivity is low. Few resources have been devoted to cocoa programs in Dominica. Even the larger estates have not maintained their stands.

2. Potential Productivity Levels

Malaysia and Belize are the points of reference for establishing what the potential productivity of cocoa could be in the Windward Islands of the Eastern Caribbean. In Malaysia large estates have been able to maintain yields on the order of 1800 pounds per acre over a five to seven year period. On the Hummingbird Farm owned and operated by Hershey Foods Corporation in Belize, yields from five year old trees have averaged in the range of 800 to 1,200 pounds pers acre. The differences between these yields and the average in Grenada is due to the use of more productive varities, more intensive tree management, improved pest control practices, and better overall farm management. Economic returns are higher as well due to lowered unit costs of the dried bean output. In the estimation of the design team existing stands of cocoa can probably attain sustained yields of 1000 lbs/acre under better management. New plantings of hybrid materials should be able to reach the 1200 lb/ac yield level within six to seven years after planting.

3. Technology Alternatives

a. Choice of Varieties

The major debate during project design concerned the use of hybrid versus clonal materials. Grenada practice is especially conservative given what that country's policymakers feel is their special position as a producer of flavor cocoa. However, their current policy is based on an assessment of productivity, bean size, disease resistance, insect pest resistance, and market preference that existed in the 1950's and 60's.

There are now good choices within both types of planting materials. Many of the hybrids available tarce their ancestry to many of the flavor clones. Too, flavor is believed to be the result of the interacting factors of heredity, soils and growing conditions, and fermentation and drying practice. For example, a sample of Grenadian cocoa recently analyzed by an American chocolate manufacturer resulted in an assessment that the sample had a hammy or meaty aroma with putrified overtones suggesting over fermentation. The sample was classed as comparable in quality to that of average Ivory Coast filler beans. Clearly, clones do not guarantee flavor.

While there is general agreement within Grenada that there should be a recommended mix of hybrids and clones in plantings, the current recommended ratio of 80 percent clonal to 20 percent hybrid is exactly the inverse of what the design team's cocoa agronomist felt the eventual ratio should become. The design team believes that Grenada has placed too much emphasis onteh genetic factor. To permit objective analysis of the choice, the subproject will sponsor a reconnaissance of cocoa stands in the Eastern Caribbean region. A roundtable discussion on the results will be used to inform the work proposed at Ashenden and the overall research and development program of the cocoa industry in Grenada. A scientific and industrial evaluation committee wil eb formed to permit dispassionate monitoring and evaluation of the trails results which should be available in year four of the subproject.

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St. Lucia and Dominica are moving much more rapidly to hybrid cultivars than is Grenada. St. Vincent is slow to adopt hybrids because of extremely conservative and misdirected phytosanitary policy.

b. Choice of Plant Propagation Techniques

Propagation techniques have come full cycle in 30 to 40 years. The preferred method moved from seedlings to clonal propagation inthe 1940's and 50's. The reason for the change was the search to find clones with uniformly high productivity and desired flavor and disease resistance characteristics. Also, there were disappointing results from the first group of hybrids that were released. The old hybrids had a small seed size which reduced their grade on the marketplace. However, the current high cost of clonal rooted cuttings and the availability of much better hybrid varieties now has moved the world industry back into seedling production. Seedling production should be phased in quickly in Grenada. On the other islands, there is no good reason why the dominant propagation technique should not be seedlings.

The economic incentives are all strongly weighted towards seedlings. Clonal root cuttings cost ten or more times as much to produce and appear to have higher field mortality rates after transplanting. The plant habit of sedlings reduces labor costs for pruning and spraying and facilitates harvesting. Conservatism in the change over will cost each country substantial sums of money. A major demonstration effort is needed in each country to overcome this needless expense.

c. Plant Husbandry

1. Plant spacing should move to a 10 x 10 or 9 x 9 spacing for pure stands. If the cocoa is to be intercropped with bananas for establishment, then slightly wider spacings are permissable. Returns from cocoa are deferred, but bananas provide an early and steady cash flow needed by smaler farmers.

2. Shading depends on the location and the intensity of other tree management practices, especially fertilization and pruning. Bananas must be removed by year four if a constant struggle against etiolated cocoa trees is to be avoided.

3. Pruning should be done to open up the canopy for penetration of sunlight and energy to produce pods on trunk and fan branches. The practice may reduce pod rot and should be used to maintain the size of tree and keep it manageable. Pruning practices need to be carefully linked to plant habit and management practice.

4. Fertilization needs to be higher when other improved practices are used. The need for higher fertilization is especially marked in the intercropped situation.

d. Plant Protection

Current techniques are based on whole stand treatment on a scheduled basis. This is costly in terms of labor and materials and may adversely affect pollination through reduction in pollinating midge populaitons. The subproject will promote new "hot spot" or Integrated Pest Management of pest and disease problems, especially when agricultural chemicals are involved. Much of the pod rot disease problems can be handled by improved field sanitation, pruning,and plant husbandry.

The major change supported by the subproject will be to shift responsibility for plant protection from the central government to the farmers. This recommendation was originally identified by the cocoa Industry Wide Study sponsored by CIDA. The subproject will sponsor farmer applicator certification training and inspection drawing upon the resources availble from the Consortium for International Pest Control.

e. Harvesting

Harvesting needs to be more regular. Training needs to be provided on harvest maturity indicators and their determination. This is not the most critical issue in Grenada, but it will be a more important training activity on the other islands.

f. Wet Bean Handling

If well organized, the generalization of the purchase of the wet beans permits better quality control and uniformity of the final dry bean product. Wet to dry bean conversion ratios need to checked in each major growing area in a country and throughout the harvesting season to avoid financial losses for the producer associations handling the crop.

g. Fermentation

There is a problem with over fermentation of beans, even in the centralized fermenteries of the Grenada Cocoa Association. This problem can be handled fairly quickly by more careful scheduling and monitoring of fermentation. Once adjusted, the priority becomes fine tuning the handling of the wet bean so that consistency in bean quality is maintained. As indicated earlier bean quality evaluation needs to be undertaken regularly to maintain preferred flavor and quality. HFC and other buyers should be sent sample lots on a regular basis for evaluation.

h. Drying

Drying is done using old solar drying racks. Roller driers were constructed on Grenada and St. Vincent but never used. The cheapest method that produces a consistently good bean in the 8 to 10 % moisture content range should be followed. This issue is one of fine tuning the post-harvest handling afte the major problems have been resolved in each island. It is not an early priority for the subproject.

i. Storage and Stock Management

A well-run marketing operation should only have to hold cocoa for short periods of time, reducing the need for storage of the entire crop. Storage space may be inadequate in Grenada and St Lucia if anticipated production levels are reached in years three and following.

j. Transportation and Containers

Most cocoa from the Islands is packed in hemp ro jute sacks. Utilization of less expensive plastic weave acks should be examined. Sacks are placed in steel containers for shipment. Condensation and drip sometimes leads to rots and molds, especially during the cooler winter months in the more temperate latititudes. Investigation of bin shipments may be an area of investigation for the technical assistance team in later years of the project.

4. Summary Technical Recommendations

Substantial increases in production can be obtained, along with increased profitability, through the lowering of cost of production. Elements common to the achievement by all four countries of yields averaging 800 to 1200 lbs/ac include the following practices:

- o Use plants with demonstrated genetic potential for high yield;
- o Propagate by using seedlings; they are lower cost, and, through their growth characteristics, permit higher plant density with minimal labor in pruning;
- o Increase plant density to 500 or more trees per acre; this results in high early yield and reduces cost of weed control;
- o Develop a shade program that will maximize yield and minimize disease and pest problems;
- o Develop a program of fertilizer applications which will sustain high yields without depleting soil fertility;
- o Use pruning practices which permit good air flow to minimize fungal losses and to permit good access for plant protection and harvest labor movement.

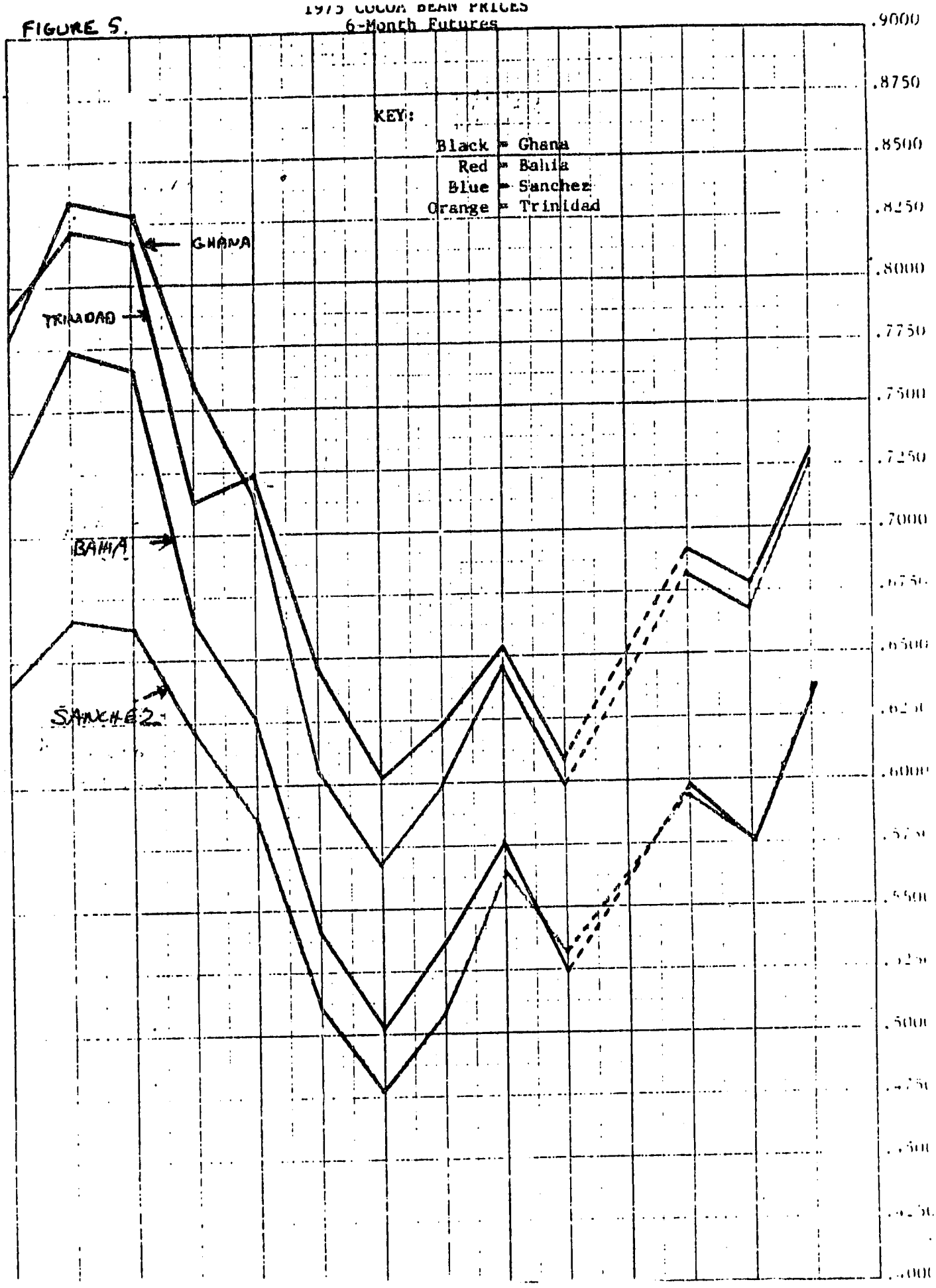
B. Marketing Analysis

1. World Cocoa Market

The world production of cocoa totals about 1.9 million metric tons. The Eastern Caribbean states produce about 2,500 metric tons or about 0.13 % of the world's output. However, the region has traditionally produced a

FIGURE 5.

1975 COCOA BEAN PRICES
6-Month Futures



flavor cocoa recognized as a differentiated product which carries a premium over spot market prices for ordinary cocoa. However, as the recent Industry Wide Survey of cocoa in Grenada has pointed out, premiums for flavor cocoa compared with ordinary cocoa of consistent quality are essentially nonexistent. Figure 5 demonstrates this point for cocoa from four countries in 1975. Ordinary Ghanaian cocoa brought premiums higher than Trinidadian flavor cocoa over the first sixteen weeks and paralleled the flavor cocoa within one-half to two and one-half cents a pound over the rest of the year. Quality and consistency have replaced flavor as the principal premium earner for cocoa among most of the world's chocolate manufacturers. It is becoming clearer and clearer that the winners in the world cocoa market are going to be the efficient and reliable producers.

There is an inverse relationship between cocoa yields and costs of production. A yield of 1,000 lbs/acre is rapidly becoming the lower limit of profitable production in most areas of the world. The current world price is about $2,100 /mt or $0.95/lb. The cost of production for high yielding cocoa can be as low as $.45 /lb. Low yielding cocoa can cost as much or more than $1.13/lb to produce. While there exists a significant opportunity for cocoa produced with high technology to be profitable, there is virtually no profitable opportunity for cocoa at low or average yields.

It must be stressed that the prices received for most quality cocoa is only partially a macroeconomic issue. Thus, while the World Bank prognosticates a flat price curve perhaps rising to $,2300/mt by 1990 with a further gradual increase to $2,400 on the spot market by the year 2000, this only represents the base from which most sales in the segmented cocoa markets begins. Prices for differentiated coco are determined through individual deals. Quality and consistency in delivering quality can push premiums well above spot market averages.

Current marketing arrangements in Grenada are not achieving the premium levels that could be obtained with a more efficient and consistent production system behind it. Also, the GCA or GCC needs to learn to base its evaluation of marketing success and premiums not on the margin above world spot market prices, but on the comparison between the prices it receives and the premiums obtained by other producers of flavor cocoa's and ordinary cocoa of high quality and consistency.

C. Financial Analysis

1. Agricultural Credit

The overall financial analysis for HIAMP describes financial marketplaces in the Eastern Caribbean. While recognizing the need for agriucltural credit this subproject follows the overall apprach of HIAMP to demonstrte the viability of productive investments to obtain credit from existing institutions. Cocoa producer associations have a long enough track record and the monopsonistic power to satisfy conservative bankers that cocoa

production liens are acceptable security. The contractor will monitor the flow of credit to participants in the subproject and signal RDO/C if adjustments to this strategy are needed.

2. Financial Analysis of Production Models

Table 7. gives the financial rates of return for the various production models. In aggregate the rate of return of justifies proposed project activities. The financial rate of return for the model farms program is lower than the economic rate of return in Table 8. due to the inclusion in both economic and financial analyses of land rental charges not incurred in other models. Appendix F provides details on the cost and return estimates.

Table 7
COST BENEFIT AND IRR ANALYSIS OF PRODUCTION MODELS

Production Model	B/C @ 15 %	NPV @ 15% (USD '000)	IRR
I. Grenada Key Farmer	1.22	746	0.39
II. Grenada Model Farms	1.13	308	0.28
III. Grenada Joint Venture	1.08	110	0.19
IV. Other Windward Islands	1.24	729	0.44
Aggregated All Model	1.19	1893	0.32

The analyses used conservative assumptions about costs of inputs, labor, and services. The higher B/C ratio and IRR on other Windward Islands reflects the higher price that these countries now receive for their cocoa and the presence of an assured market at $1.25/lb for the next five years. Conversely, Grenada with its tradition bound marketing arrangements is receiving about $1/lb despite its much larger total output. The lower B/C ratio for the joint venture use of 100% hybrid seedlings reflects the exclusion of improvements to existing stands that might be held by joint venture partners and higher management costs that will accrue to such ventures. It reflects the most conservative analysis of joint venture potential. Actual joint ventures will probably include husbandry improvements which will generate earlier returns and rates of return more in the range of the other three models.

D. Economic Analysis

Table 8 presents the estimated economic rates of return to farmers involved in the project who adopt different technology practices. The analyses were performed using production assumptions developed during the design team's

field visits and in consultation with the Cocoa Rehabilitation Project in Grenada, the Caribbean Development Bank's agricultural division chief, farmers and farm managers. Economic shadow pricing assumptions follow the same pattern employed in the overall economic analysis for HIAMP.

Table 8
COST/BENEFIT, NPV, AND IRR ANALYSIS OF PRODUCTION MODELS

Production Model	B/C @ 10%	NPV @ 10% (USD '000)	IRR
I. Grenada Key Farmer	1.03	445	0.18
II. Grenada Model Farms	1.31	516	0.37
III. Grenada Joint Venture	1.04	68	0.12
IV. Other Windward Islands	1.31	1233	0.37
Aggregated All Models	1.19	2560	0.25
All Models Plus All AID Cost	1.08	1229	0.16

IRR's vary from a discount rate of 0.12 for the high technology joint venture replanting model in Grenada to a blended rate of 0.37 for combined stand improvement and replanting in the Windward Islands. The major difference in returns is that Grenadian cocoa sells at a significantly lower price than other Windward Island cocoa due to a tradition bound set of marketing arrangements. Also, the joint venture model in Grenada does not incorporate the higher earlier returns from stand improvement assumed in the other models. All models were evaluated over a ten year period and include allocation of both project design and technical assistance costs to income generating activities. Details are found in Appendix G.

E. Organizational and Administrative Analysis

Analysis of the organizational and administrative environment of agriculture in the Eastern Caribbean is given in the main body and annexes of the HIAMP PP. The interested reader is referred to that document. This section discusses issues of particular concern to the cocoa subproject.

1. Structure of Production

The issue is whether large or small management units should be the organizational focus of the project. The subproject strategy concentrates primarily on the full-time producers with holding sizes equal to or greater than five acres in each country due to their greater capacity to productively use the technology being introduced. This point is especially true when examining the management capacity, current levels of productivity of the

larger growers, and structural advantages of their farming operations. However, this body of growers should not be perceived as large landlords similar to those in Latin America.

2. The Role of Public and Private Organizations

Circumstances differ from country to country. While there are no truly private producer groups using US definitions of the private sector, the statutory bodies represent the only points of entry for the cocoa technology to be delivered. The subproject will attempt to foster greater private sector service supply through contract services to these groups when and where appropriate. A specific example would be the private pest management services that are envisioned for Grenada.

3. Management Capacity

The subproject is not an institution building effort. The CIDA-financed industry reorganization project will undertake institution building in Grenada. The subproject should benefit from this complementary activity. Individual producer management capacity should be enhanced by exposure to the project and the demonstration of the benefits accruing to well-focused allocation of financial and human resources.

F. Social Soundness Analysis

Grenada is a long standing producer of cocoa. Historically, it has been grown on both estates and smallholdings. Political expropriations have led over a two decade period to a restructured land ownership pattern. Much cocoa has been neglected as the security of land tenure was in question. Currently, the tenure situation is stabilizing. The GOG has reprivatized some estates and has purchased others for sale to smallholders. The current mix of cocoa farms contains: a set of larger, mainly expropriated estates, that are under the management of the Grenada Farms Corporation; a smaller subset of private estates; a group of farmers who produce cocoa on an intermediate scale; and a large group of smallholders with a few trees to one or two acres of cocoa which are generally intercropped with bananas.

The HIAMP project will work with the group of key, full-time growers and the farmers who acquire land in 10 to 15 acre holdings under the Model Farms program. This approach will have greatest effect on those who now produce 60 to 75 % of the cocoa crop each year. Indirect benefits will be shared by the majority of grower association members, because the increased throughput will reduce current overheads and should lead to increased per pound prices to all association members. Economically, greater productivity from cocoa will have a major positive impact on Grenada and its people. Politically, greater productivity wil help stabilize a farming sector which is aging and failing to attract both younger people and additional capital.

1. Participant and Benficiary Population

Participants are farmers small and large, grower association personnel, and some ministry personnel. Beneficiaries will primarily be farmers and grower association personnel. Demonstrations, joint programming sessions, and other mechanism will be used to involve the beneficiaries in implementation. The implementing agencies and poential cooperating frmers were closely consulted during project design. Team members participated in technical discussions with the boards of the implementing agencies.

2. Sociocultural Feasibility

Grenada and the three other countries that will be involved in the project are trending towards a farming structure that will include a landed farming population inhabiting farms that are viable economic units, a larger population on subeconomic holdings who are and will have to earn most of their income from other activities, and a few larger private estates. Cocoa interventions will initially work best with the larger full-time farmers, the newly settled farmers, and smaller holders with substantial numbers of trees managed as a single farming unit. The project is sociculturally feasible. The larger farmers production increases will help finance the provision of services in higher intensity stand management to smallholders by reducing overheads and improving the financial status of the proposed GCC.

3. Sociocultural Impact

Revenue flows should sustain project activities. The asumption is that there would also be some improvement in grower association and industry board management in Grenada, and that good marketing strategies would be employed in St. Vincent, St. Lucia, and Dominica, which would result in increased incomes for all cocoa growers.

A special circumstance exists in Grenada. About half of the work force on state farms is female representing women heads of household. These individuals are in line for land distribution in the model farm program. It is anticipated that up to half of ten to fifteen acre holdings will be distributed to women, who will become eligible for assistance under his subproject.

Cocoa labor tasks involve both men and women. Intensification of productionusing recommended techniques wil reduce some pruning and weeding tasks and increase the need for harvest labor. Harvesting is usually done by teams of men and women, thus the increased demand should be fairly evenly split by sex. A positive benefit will be a reduction in exposure to pesticides through the introduction of integrated pest management approaches and trainng of pesticide applicators.

4. Equity

In Grenada early benefits will be skewed towards full-time farmers with holdings greater than five acres, but benefits will accrue to the entire cocoa growing membership inthe near term. The full time farmers will, in effect, subsidize their part-tiem colleagues. Benefit distribution in the three other countries will folow a similar pattern, but fewer people will be involved as cocoa is not a major crop in those countries.

G. Environmental Analysis Recommended Environmental Threshold Decision for the Regional Cocoa Rehabilitation and Development Project

An IEE is attached as Appendix D. which covers the Regional Cocoa Rehabilitation and Management Project (LOP $3 million).

A negative determination is recommended for the Regional Cocoa Rehabilitation and Development Project. Overall, the project should have predominantly positive effects on the biological, human,and physical environments of project activities: The reasons for this recommendation are summarized below.

1. The project will work with a crop that has significant potential to reduce erosion problems in the hillside environments in which it will be produced. Successful implementation of the project should provide an incentive to extension of cocoa production in pure crop and intercropped agroforestry settings with substantial positive effect on soil and water conservation and quality. Project work on sloped land will utilize banana's as temporary shade while permanent shade tree plantings develop. Soil coverage should be good during the early years of planting and cocoa provides a basis for a permanent tree-crop based agriculture that is more in accordance with good land use pratice onsloped lands.

2. A major thrust of the project will be to reduce the current high, costly and potentially unsound use of pesticides in preventative spraying programs. The project will undertake intensive training and follow up of major cocoa grower's in Integrated Pest Management practices including pest scouting, hot spot rather than total stand spraying practices, and pesticide handling and disposal safety. With the assistance of CIPC, farmers and field staff will undergo training for certification as pesticide applicators following EPA guidelines and recommendations.

3. The project will engage in the procurement and use of pesticides only for purposes for research and limited field evaluation purposes under the supervision of project personnel, thus qualifiying for the exceptions to pesticide procedures as cited in Regulation 216.3.(b)(2)(iii). Manufacturers will be required to provide the necessary toxicological and technical data to protect human health and the local environment. All residue tolerances of the FAO will be respected.

4. Where applicable and technically sound, cocoa production as an understory crop beneath coconuts in St. Lucia and St. Vincent will be promoted, increasing the biological diversity on monocropped estates, as well as economic return.

5. Farmers will be trained in husbandry techniques aimed at increasing the density of trees per acre and the effective application of fertilizers to avoid losses through runoff. While these practices are aimed primarily at improving productivity, they will provide ancillary environmental benefits through earlier and denser canopy cover and reduced non-point source contamination of streams.

6. Extensive consideration was given during project design to phytosanitary requirements needed for the introduction of higher yielding hybrid varieties of cocoa. Direct contacts were made with USDA's APHIS/PPQ in Washington; the USDA Cocoa Quarantine Station in Florida; the Mayaguez, Puerto Rico cocoa field station; CATIE in Turrialba, Costa Rica; the Barbados Plant Quarantine Facility; the Cocoa Research Unit at the Univesity of the West Indies in Trinidad; and the FAO Regional Plant Protection Officer in Trinidad. The project will sponsor the establishment of a regional cocoa plant material protocol for cocoa seeds, seedlings and vegetative material.

VII. CONDITIONS PRECEDENT, COVENANTS AND WAIVERS

A. Special Covenants

The implementing organization shall covenant to:

1. Enter into a subcontract with Hershey Foods Corporation to provide technical services, personnel, and advice on commercial practices for cocoa rehabilitation and replanting using high management intensity approaches.

2. Enter into agreements with implementing agencies in Grenada, St. Lucia, St. Vincent, and Dominica which specify those agencies contributions of staff and other resources for subproject execution and certifies their ability and willingness to comply with AID-mandated reporting requirements.

B. Waivers

1. Vehicles

A waiver is requested of source/origin requirements (AID Code 000) and of the provision of Section 636(i) of The Foreign Assistance Act of 1961, as amended, to permit contractor procurement of six four-wheel drive jeeps. These vehicles will be used by the two contract advisers in Grenada and by these advisers, short-term technical assistance, and staff of the implementing agencies in the performance of their duties in Grenada, St. Vincent, St.Lucia, and Dominica. All personel will require sturdy four-wheel drive vehicles to provide ongoing technical assistance to agricultural enterprises often located in rough terrain. Three vehicles will be based in Grenada with one each in St.Vincent (ORD), St.Lucia (SLAA), and Dominica (MOA).

A waiver is requested because service facilities and spare parts for US-made vehicles are not available on these islands and the use of left-hand drive vehicles has proven to be hazardous. Maximum cost for each four wheel drive is $14,000 for a total waiver amount of $84,000.

In approving such a waiver, AID must find that "certain circumstances" exist. The circumstances include:

(a) The inability of US manufacturers to provide the necessary vehicles, e.g., right-hand drive vehicles; and,

(b) Present or projected lack of service facilities and supply of spare parts for US-made vehicles.

In addition, AID Handbook 11, Chapter 3, Section 2.6.1.3 provides that a source/origin waiver may be approved when "the commodity is not available from countries or areas included in the authorized geographic code". Thus, it is recommended that a waiver of Section 636(i) of the FAA and a source/origin waiver to permit procurement of the required vehicles from AID Geographic Code 935 (Special Free World).

VIII. EVALUATION

This five year subproject will have two evaluations: a mid-term assessment in August 1988 two and one-half years into imlementation and an end of project evaluation in August 1990 eight months before the PACD.

The mid-term evaluation should examine progress towards meeting subproject objectives, the adequacy of implementation arrangements, the timeliness of the disbursement of project inputs and progress made towards achieving project outputs. Another subject should be the extent to which this project has helped to elicit loans from private and public lending institutions. If such lending activity has not occured, then alternative measures should be suggested. This evaluation will be expected to require two professionals for four calendar weeks each: one cocoa agriculturalist and an agricultural economist skilled in evaluation.

The final evaluation should attempt to analyze the project's impact on the agricultural GDP of each country. This would be accomplished through a combination of analyzing national statistics and conducting on-site interviews. The evaluation team should visit a representative sample of assisted farmers and conduct interviews with managers and owners to determine the project's financial (change in sales, profitability, net worth) and economic (foreign exchange earnings, value added, employment changes) impact. The financial statements for these farms should be made available to the evaluation team. The performance of the Private Voluntary Organization and any other contractors should also be evaluated. Suggestions should be offered on appropriate follow-on activities.

The final evaluation of this $3 million subproject is expected to require four calendar weeks of a team including an economist/evaluation expert and a cocoa expert.

LOGICAL FRAMEWORK MATRIX

GOAL, PURPOSE, OUTPUT, INPUT STATEMENTS

GOAL:

To move the cocoa industry in Grenada and the Eastern Caribbean to a new plane of productivity and sustained growth managed by the private sector.

PURPOSE:

To increase the annual export revenues from sales of cocoa using intensified management practices.

OUPUTS:

1. Increased production and yields among key cocoa growers in the four Windward Islands.
2. Increased production from model farmers using improved cocoa husbandry and adopting the hybrid seedling replant technology.
3. Formation of joint ventures with foreign investors to use one hundred percent hybrid seedlings and associated higher technology management systems.
4. Demonstration of the feasibility of hybrid cocoa technology.
5. Improved quality and consistency in quality in fermented beans.
6. Better marketing strategies for forward contracting.
7. Increased lending from Intermediate Financial Institutions to cocoa producers

INPUTS:

1. AID grant to cover technical assistance and other input costs as follows:
   a. Technical Assistance: $1.72 million
   b. Ashenden Research and Demonstration: $150,000
   c. Applied Training: $175,000
   d. Outreach Programs: $125,000
   e. Contract Demonstrations: $250,000
   f. Commodities and Equipment: $220,000
   g. Evaluations: $40,000
   g. Contingency: $300,000

2. CIDA support to the proposed Grenada Cocoa Corporation ($6.39 million).

3. Owners equity.

OBJECTIVELY VERIFIABLE INDICATORS

MEASURES OF GOAL ACHIEVEMENT:

Continued growth in annual export sales of cocoa to $6.4 million by 1995/96.

END OF PROJECT STATUS:

Growth in annual export sales from $2.2 million in 1984/85 to $5.8 million in 1990/91.

MAGNITUDE OF OUTPUTS

1. Improvement of cocoa yields to 1000 lbs/ac on 1000 acres held by key growers and replanting of cocoa using a hybrid:clonal mix to yield 1200 lbs/ac on 1000 acres of land held by key growers.

2. Improvement of yields and introduction of the hybrid:clonal mix on nearly 840 acres of land under the model farms divestiture program.

3. Promotion of at least two joint ventures between Grenadians and foreign investors to develop 100 percent hybrid plantings of cocoa on a total of 500 acres of land.

4. Demonstration at the Ashenden Estate that an 80:20 hybrid:clonal mix will not affect the premium received for Grenada cocoa.

5. One quarter of cocoa sold fermented, stored and shipped correctly.

6. Samples and bid documents submitted to at least five buyers for evaluation and bids on at least half of annual sales.

7. Intermediary financial institutions to disburse approximately $1.25 million in loan funds to cocoa growers throughout project life.

INPUTS

	(in millions of US$)				
	Yr 1	2	3	4	5
1. USAID/RDO/C grant funds	1.096	0.709	0.556	0.436	0.203

2. CIDA annual support of about $1.25 milion annually over a five year period.

3. Investors' contribution: about $500,000 from private investors and $100,000 from groups and cooperatives.

MEANS OF VERIFICATION

GOAL:

National statistics, sales records of grower associations.

PURPOSE:

National statistics and end of project evaluation.

OUTPUTS:

Records kept by RDO/C, the PVO, subcontractors and assisted grower associations

INPUTS

Records kept by RDO/C, the PVO, and assisted ventures and project evaluation.

IMPORTANT ASSUMPTIONS

GOAL:

1. Business investment climate in the Eastern Caribbean remains stable.

2. Absence of major weather disturbances.

PURPOSE:

1. Private agricultural enterprises are prepared to expand or seek to develop new ventures.

2. Governments take necessary structural adjustment measures.

3. Absence of major climatic disturbances.

4. The GCA/GCC improves its marketing strategy and procedures.

5. No major decline in cocoa prices.

OUTPUTS:

1. Implementation targets are met.

2. Model Farms Program implemented in a timely manner

3. GCA/GCC improves its accumulation and fermentation practices.

4. The CIDA-sponsored restructuring effort is effectively implemented

INPUTS

1. AID funds for the project are available as projected.

2. CIDA monies are available.

3. The subproject components are sufficiently viable to induce lending from intermediary financial institutions.

4. Private enterprises prepared to invest to expand or establish agricultural production activities.

TECHNICAL ANALYSIS

A. Background

Grenada, St. Vincent, St. Lucia and Dominica each has a policy to continue cocoa production as a significant part of their agriculture. They plan to rebuild and increase production through rehabilitaiton or replanting of existing plantings. This is a logical and wise policy with excellent prospects for early benefits to national economies.

Cocoa has a long history in the Caribbean, but with low yields per acre and high costs of production. Previous studies including the Grenada Cocoa Industry-Wide Study Report November 1985 confirm this situation. Opportunities for profitable cocoa prodcution are small unless the best modern technologies and planting materials are used. Best production per acre, profitability to growers, and benefits to national economies will result if best technologies are applied. Improvements in technologies and planting materials are going on all the time and these changes will continue. At this time, it seems certain that one of the more important aspects of cocoa production improvement is the use of improved plant materials for new plantings and rehabilitation of older ones. All things considered, at this time the best field planting materials are the special, improved, selected seedling lines from clones with desired characteristics.

In Grenada the CIDA-funded Cocoa Rehabilitation Project has been underway for about five years. This project is discussed in a separate section on that country. Following, two brief sections are given on St. Vincent and St. Lucia.

B. St.Vincent

In St. Vincent a modest cocoa improvement and development project is being conducted by ORD. Recommendations for Grenada will also apply in part for St. Vincent. ORD in St. Vincent has already taken steps to purchase and import seeds from CATIE in Costa Rica.

C. St. Lucia

In St. Lucia a special situation exists in that a U.S. chocolate manufacturer (World's Finest Chocolate - Chicago) is developing and renovating Union Vale Plantation, using seedling material being imported as seeds from CATIE in Costa Rica. Most of this special planting material has been shared with the St. Lucia Agriculturalists Association (SLAA) membership. Approximately 160,000 seeds have been imported and more than two-thirds have gone to the Ministry of Agriculture propagation stations. Plants are sold to growers at EC$2.00 a piece. Technology and advice are also shared by Union Vale. Additional special impetus for St. Lucia to improve cocoa production comes from a guarantee by World's Finest Chocolate to purchase St. Lucia's entire commercial crop over the next five years at a price above world market.

1. Seeds and Rooted Cuttings

Some refinements are needed in procedures for seed selection, purchase and distribution and greater amounts of seed will have to be imported if St. Lucia's goal of planting 300 acres per year and an eventual annual production of 700-800 tons per year are to be achieved. Approximately 120,000 to 150,000 special seeds per year will have to be purchased and imported.

At present the Ministry produces and distributes about 3,000 rooted cuttings per year. Since the MOA appears to be partial to the clones they are using and since some of them are indeed good in St. Lucia, rooted cuttings can continue to supply a part of their total needs. However, these should comprise no more than 20% of the total plants distributed, and preferably less than 20%. This will depend in part on national preference, on the opinion of the first introduced seedlings now three to four years old and on costs of the rooted cuttings. The design team's recommendation is to place a strong reliance on seedlings.

2. Extension Service Needs

One cocoa officer has been placed on secondment by the MOA to the SLAA. He reviews cocoa planting activities and reports to the association Director. He has inadequate cocoa extension service support, none in fact. The need for greater cocoa extension support is marked. A higher ranking cocoa development officer might help to give strength in this area and to get greater extension support for cocoa and cocoa rehabilitation.

3. Cocoa Storage

St. Lucia faces a serious shortage of modern storage space for cocoa. A special cocoa warehouse of 60' x 100', costing perhaps US$150,000 was cited as a need. This would allow space for special grading or other machinery in order to help St. Lucia reach their goal of perhaps 700 to 800 tons per year of high quality single trademark beans.

4. Rat Control

Rats cause heavy damage in the field. No estimates were available, but we saw much evidence of rat presence and damage in the field. A rodent control biologist could make a contribution to these problems which also affect other crops, such as coconuts and most food crops.

5. Plant Protection

There is no plant protection service or advice at all for growers of cocoa. A Plant Protection Officer, or a Pathologist and Entomoligst team, perhaps on the AID staff at Barbados, could service all the islands by keeping on top of new problems and by advising on control and on organziations to facilitate control services in each island.

6. Propagation Centers

Of three visited -- Bath, Beausejour, and Union -- only the last had good to fair results with cocoa seedlings. The other two had heavy losses, over 50% and many weak plants. Proper facilites for cocoa seedlings were non-existent or poor. No more cocoa seeds should go to the first two stations until facilities are installed or repaired. Saran shade, propagation houses, wind breaks, better soil mixes for poly bags, etc., are needed. Seedlings from Bath and Beausejour that were doing so poorly had come from the same lot of seed as the plants at Union Station and Union Vale Farm, at which places they did well, a clear indication of the poor facilites for cocoa at the two first stations.

The design team was told that USAID had made a grant to the MOA to repair plant propagation stations. So far this work has not been done.

7. Cocoa Under Coconuts

This combination exists in many parts of St. Lucia. More coconut areas could be underplanted with benefits for both crops. If these two crops are to be grown intensively together, close attention should be paid to Malaysian work with this combination where high-yielding disease resistant coconuts are being widely planted for production and for shade of cocoa. A program of introducing hybrid coconuts would upgrade production of that crop, would make the coconut/cocoa mixed crop more profitable and would help ensure St. Lucia against future devastation from Lethal Yellowing disease of coconuts were that disease to enter the country. The hybrid coconuts (selected dwarf x selected tall parents) resist or are immune to lethal yellowing disease.

8. Irrigation of Cocoa

Increased yields are to be expected from irrigation in areas where a dry season stresses the cocoa plant. Water is available in many places. A study of drip or low pressure sprinkler irrigation possibilities with cocoa may be justified.

9. Crosses Introduced into St. Lucia

UF-676 X SCA-12
IMC-67 X UF-668
EET-62 X IMC-67
UF-613 X IMC-67
UF-12 X IMC-67
UF-654 X IMC-67
UF-29 X IMC-67
IMC-67 X UF-613
IMC-67 X UF-654
UF-667 X IMC-67

ISC-6 X SCA-12
UF-613 X ROUND 12
ROUND 12 X ICS-8

UF-613 X ROUND 7

UF-668 X UF-613
UF-613 X ICS-6
CAMONGO X ROUND-12
UF-668 X IMC-67

D. Cocoa in Grenada

Cocoa has a long history in Grenada. Annual exports have ranged between 4 and 6 million pounds and have been a major income source. The crop fits well into Grenada's development plans. Average prodction per acre stands near 500 lbs/acre but could be raised to 1000 lbs/ac by removing constraints and adopting some well-known and practical inputs.

Some special attributes of cocoa are:

- It is grown by small as well as large farmers;
- It is non-perishable and stores well;
- It can be shipped by sea freight;
- A market always exists for beans meeting minimum quality standards;
- It's potential for high per acre production has been increased by recent research;
- As a tree crop it is compatible with soil conservation programs and favors stability of land tenure.

The crop is adapted to soils and climates found in many places in Grenada. It complements many other agricultural pursuits. Grenada has a reputation for good quality and their beans have beeen rated by many users as a flavor-type bean. All things considered, it is prudent and timely that Grenada cocoa production be modernized for greater profitability. This will require early adoption of some of the latest research results, most specifically the importation of special seed from CATIE in Costa Rica.

It has been said by Cruickshank and others that Grenada has allowed cocoa research progress to pass them by while they continued their exclusive use of rooted clonal cuttings for distribution to growers. There is no question but that many of the GS-clones and others in the 15 or 20 clone mix being distributed are very good. They will in fact have to continue use of this material until seed imports can be arranged -- trying meanwhile to reduce the very high cost of producing the cuttings.

Grenada can and should make a quick and relatively inexpensive catch-up on cocoa research progress by purchasing and importing special seed from crosses between selected clones. Rooted cuttings cost the CIDA program EC$7.00 a piece to produce. Seedlings will cost in the neighborhood of EC$0.5, probably less. Seedling plants are easier for the farmers to manage.

They come into production somewhat earlier. There is no sound reason to expect that the crop from a properly selected mix of special seedlings will alter the character of Grenada's export cocoa if the beans are given good post-harvest handling.

Judicious and early increase in the use of selected seedlings for 80% or 90% of all distributions will be a big step in putting Grenada back in the mainstream of modern cocoa technology.

A recent report on the CIDA program covers in good detail establishment, production, processing, marketing and related actiities. Review of the CIDA report and of other reports, our on-site observations and knowledge of cocoa research and development elsewhere in the world lead us to recommend several changes in CIDA's program. These changes have been discussed with personnel in CIDA, Grenada, CDB and USAID. They are listed below as recommendations:

- Change over from distribution of rooted cuttings to use of superior seedlings from selected parents. The program should aim at 80% or 90% seedlings. Cuttings will have to be continued until the desired seed can be procured in adequate quantity.

- Since use of rooted clonal cuttings must be continued for a time -- seek expert help from Trinidad (UWI or the MOA) to improve success and reduce the cost of rooted cuttings.

- Appropriate cocoa specialists from CATIE, UWI, Holland and elsewhere should be brought together to work out with the Grenadians and CIDA the best possible list of seedling material to be imported. These same specialists can advise for St. Vincent, St. Lucia, and Dominica. Specialists to consider include Enriquez (CATIE); Kennedy (UWI); Bartlay (Trinidad); Toxopeus (Holland).

- As soon as agreement is reached on what seedling lines are best for Grenada, orders should be placed for purchase of the seeds and all arrangements made for their safe and legal importation into Grenada and incorporation into the plant distribution program.

- While in Grenada, these same specialists should assist in design and establishment in Grenada of new seed gardens using the best known parent clones from advanced research programs in Costa Rica and Trinidad in combination with some of Grenada's own best

clonal selections. These advanced seed gardens will, within a few years, produce superior seed for Grenada's planting program. Until that time, most seed needed must be purchased and imported.

- The same specialists while in Grenada should advise on design and establishment of modest, replicated field trials in which presently available superior seedlings lines can be field tested for performance under conditions typical of Grenadian farms. Those tests will be the basis for future recommendations on field planting material.

- Spacing for commercial field planting should be at 10' x 10' rather than 12' x 12' to favor higher yields. Individual farm circumstances will affect the spacing used.

- Costs of pest and diseasecontrol at 23 cents per pound by the GCA are excessive. A plan to have these operations become the growers own responsibility is needed. Hand operated back-pack sprayers of latest design could serve the one to two acre grower's needs. Extension advisory services will need to be strengtened if farmers take on this work. A plant protection specialist could give valuable guidance in transferring plant protection to the farmers or in reducing costs as currently carried by GCA. Improved pest and disease control could raise productivity by 25% or more.

- The old seed garden at Mirabeau consists of SCA-6, SCA-12, ICS-1 and ICS-6. Very limited seed production can be expected from it for two or three years, because of this poor condition. Seedling trees from these SCA-ICS crosses will produce a crop with relatively small beans, but with satisfactory quality otherwise. These few seeds can be used in the distribution program in general mixtures, but the garden should not be expanded in size.

E. Ashenden Estate Description

1. Facilities

Ashenden covers about 48 acres. Eight to ten acres are under cocoa production. Three acres have been laid out in a long-standing cocoa experiment to evaluate accessions. There are scattered nutmeg trees throughout the estate. About 37 acres are unused and overgrown.

Infrastructure at the estate includes:

- propagation shed
- potting shed
- manure shed
- storage shed
- garage
- water reservoir and reticulation system
- a small batch drier and floor
- a plant nursery
- a servant's house and outbuildings
- the old estate house and outbuildings
- a foreman's house.

Additionally, access roads and drains exist. New drains will have to be opened to permit the commercial plots to be laid out.

2. Proposed Use of the Site

A major demonstration/trial of 100:0, 20:80, 40:60, 60:40, 80:20, 0:100 clonal to hybrid ratios will be performed. This effort will require close collaboration with the CRP and the proposed GCC Technical Department. It will also require inputs from CRU (Kennedy), CATIE (Enriquez), Mayaguez, ACRI, and perhaps others. Hershey through ACRI will provide some backstopping. The trial will require good technical advice for set up. It does not require full-time TA support. The scientific evaluation committee will also be able to support other parts of the cocoa project. Grenadian technicians will do day-to-day management and data collection from joint plans established with the scientific committee. The contractor and HFC will provide liaison to the proposed GCC Technical Department. Each plot will be split into high and current management practices. The main plot size for evaluation of ratio effects should be about four acres.

Ashenden will also serve as a demonstration site for farmers in the area and for larger growers throughout the island. This effort will be organized through the outreach program.

3. Budget

TA Part of LTTA team. The outreach advisor will spend about 10% of his time there.

STTA. Total of 10 pm over a five year period. Will call on other STTA to assist on specific problems. Dedicated TA will also consult on other cocoa technology problems, including some travel to other islands to compare with hybrid technology that will dominate there.

$150,000 to cover establishment and operating costs of the trial and demonstration effort.

BUDGET TABLE

DESCRIPTION	FY86	FY87	FY88	FY89	FY90	TOTAL
STTA 10 pm	24000	24000	24000	24000	24000	120000
Experiment/ demonstration	30000	30000	30000	30000	30000	150000
TOTAL	54000	54000	54000	54000	54000	270000

5. IIE Issues

Pesticide purchase and use will be supervised by project personnel. It qualifies for exclusion under Regulation 16, Paragraph 216.3.(b)(2)(iii). Manufacturers will be required to supply necessary toxicological and environmental data to safeguard human health and the local environment. The site will be used for some training in pesticide application and IPM. See the IEE in Appendix D. Note as well that the bilateral project 543-0005 will establish a farmer applicator and certified applicator training and registration program.

F. Recommendations Applying to the Windward Islands

Assistance from AID or other sources will be needed to improve cocoa production. Below are listed recommendations which must be a part of any rational program for raising per acre yields, increasing efficiency, improving quality and for general rehabilitation of the industry. They refer to all four Windward countries.

1. Superior Seedlings

Superior selected seeds should be imported from CATIE where there is a wide range of genetic material and an ongoing program of seed production from selected clones. Trinidad (UWI) may also be a source - relevant authorities there should be approached with a view to obtaining improved plant materials to augment limited supplies at CATIE.

This planting material should eventually make up 80% or more of plants distributed to farmers. Rooted clonal cuttings may continue to be used for up to 20% of total distributions where locally available clones are clearly desireable (as in Grenada) provided per plant costs of producing cuttings can be reduced and where growers demand cuttings. (Trinidadian expertise may be helpful in reducing the costs of producing rooted cuttings).

AID or other assistance will be needed to supply expert advice and to pay for seeds.

2. National Seed Sources

Each country should establish at the earliest date their own seed gardens. This may require importation of vegetative material of the better parent clones and use of those imported clones in seed gardens along with some of their own best clones (GS-clones in Grenada), for production of seed for future field plantings. (An exception may be Dominica if their program seems to be too small to justify their own seed gardens. Any country can continue to buy and import the best products from other programs).

3. Field Plots

Replicated field plot tests on some modest scale should be established in each coutnry to give a better basis for recommending the best mixes of seedling lines for future distributions.

4. Technical Assistance

Technical advice and guidance for planning and carrying out 1-3 above will have to be imported. Purveyors of this expertise shoud visit the Caribbean area together as small two or three person teams at the earliest date and should work out together with local specialists, the most promising lists of seedlings for each country and best sources of these materials. At the same time, the experts should design and plan the tests and seed gardens mentioned under 1 and 2.

5. CATIE

At CATIE there has to be a strengthening of evaluation of the crop beans coming from each cross or seedling line. Although CATIE has data on yields, bean size, reaction to diseases, etc. for some of their older lines, more information is needed on all of their many crosses. Some of this information has been recorded but not analyzed. There is no project for post-harvest investigations at CATIE. Information is needed on bean size, average weights and bean variations for each cross, and on flavor qualities and special needs in fermentation of the beans each seedling line will produce.

High yields per acre of a particular seedling line is of utmost importance but is not the only criterion for recommending it for growers. CATIE has distributed 16 million seeds in the past nine years. Cocoa development programs all over Central America and the Caribbean are making ever greater use of seeds from CATIE. Soon a significant part of the cocoa trees in the area will be of this newer material. All data confirm that good or superior cocoa will come from this newer population, but post-harvest evaluations of all seedling lines needs to be done. It will be a valuable technical backstop for all producing country programs, will make producers more aware of manufacturer problems and will help exports.

6. Seed Movement

Movement of cocoa seeds between countries involves certain phytosanitary considerations and could become a sensitive and obstructive matter in some instances. The FAO Regional Plant Protection and Quarantine office in Trinidad should be asked to prepare, in cooperation with CATIE, the necessary protocols for safety in moving seeds. No vegetative material should be imported except via intermediate quarantine at Miami, Florida, Glenndale, Maryland and a new quarantine station in Barbados.

7. Plant Protection

Plant protection services are non-existent in some islands and generally inadequate and too costly in the others. Specialist assistance is needed to overcome this problem.

FINANCIAL ANALYSIS

A. Agricultural Lending in the Eastern Caribbean

A review of agricultural lending was performed during HIAMP design. That review is presented as Annex N to the main body of the HIAMP Project Paper. The interested reader is referred to Annex N for a full discussion of the issues involved in agricultural credit.

The principal findings of the review were that:

- Liquidity varies by season, country and type of bank, but that sufficient funds are available for agricultural lending;
- Loans for agriculture and agricultural processing represent only three and two percent respectively of the value of all loans in the Eastern Caribbean; and
- Agricultural lending is constrained by three main factors: the perception that agricultural activities carry excessive risk, the dearth of high quality studies presented by borrowers to indicate project feasibility; and the lack of bank staff capable of analyzing agricultural loans and willing to supervise such activities.

Using these results the overall HIAMP PP recommended a strategy which combines:

- grant and equity financing of agricultural enterprises to improve the financial condition of loan applicants;
- technical assistance to prepare high quality feasibility studies and business plans;
- assistance from the core contractor and the Caribbean Financial Services Corporation for the supervision of loan recipients that receive HIAMP grant or equity funding.

The three strategy elements are designed to elicit loan flows from intermediary financial institutions.

B. Agricultural Credit in the RCRD Subproject

The financial tables describing the production models for cocoa replanting (Tables F7, F9, F10, and F12) show that, as with most tree crops, farmers will experience negative cash flows for three to four years before achieving substantial positive reflows. One year of net losses will be incurred even for improvement to existing stands. To a certain extent, farmers will be able to reduce this problem by relying on family labor or by adjusting the ratio between area replanted and area improved, letting the

earlier positive returns from improvements carry the costs of replanting. However, most farmers will need some form of credit to permit them to capture the greatest benefits from the introduced technology.

The CIDA-funded Island Wide Study (IWS) of cocoa in Grenada estimated the need for $2.0 million in loan funds to support overall cocoa rehabilitation efforts with all growers on the island. At the same time they noted that a fertilizer credit facility established with the Grenada Development Bank (GDB) was not being taken up. CIDA will undertake a more detailed study of credit needs and underwrite a new credit program if one is needed. The RCRD will assist farmers to obtain credit from the GDB and other available sources. With the possible exception of the Model Farm program, most of the farmers the project will work with on Grenada and other island's have the asset and existing production base to qualify for credit needed to improve production.

C. Contract Demonstrations

The RCRD subproject must rapidly develop demonstration sites for the commercial outreach program during years one and two. Because these sites will be used for demonstration and in-country applied training programs to benefit the entire population of farmers participating in the subproject, a $250,000 line item has been established to contract with growers to establish and manage the improved husbandry and hybrid seedling planting technology demonstrations. Farmer demonstrators will sign agreements to follow all recommended practices and keep production and cost records for use by the subproject and the cocoa industry at large in each country. Using a shared establishment cost of $500 per acre on average, about 500 acres of demonstrations/training plots will be established by the project.

D. Financial Analysis of Production Models

Using the financial analysis methodology developed in the HIAMP PP (See Annex N), financial tables were prepared for costs and returns from improvements to husbandry of existing stands and replanting or planting new cocoa fields. These tables (Tables F6-F12) were then used to construct project models according to anticipated rates of implementation (Tables F1-F5). The models and their distribution by country are listed in the following chart.

Chart C-1
RCRD SUBPROJECT MODELS

Country	Production Model
Grenada	I. Key Farmer Program A. Improvement B. Replanting
	II. Model Farm Program A. Improvement B. Replanting
	III. Joint Venture 100 % Hybrid Seedlings
St. Lucia, St. Vincent, Dominica	IV. Other Windward Islands A. Improvement B. Replanting

Each model was subjected to cost:benefit and IRR analysis. The results of the overall analysis are contained in Chart F-2.

Chart C-2
COST BENEFIT AND IRR ANALYSIS OF PRODUCTION MODELS

Production Model	B/C @ 15%	NPV @ 15% (USD '000)	IRR
I. Grenada Key Farmer	1.22	746	0.39
II. Grenada Model Farms	1.13	308	0.28
III. Grenada Joint Venture	1.08	110	0.19
IV. Other Windward Islands	1.24	729	0.44
Aggregated All Model	1.19	1893	0.32

The analyses used conservative assumptions about costs of inputs, labor, and services. The higher B/C ratio and IRR on other Windward Islands reflects the higher price that these countries now receive for their cocoa and the presence of an assured market at $1.25/lb for the next five years. Conversely, Grenada with its tradition bound marketing arrangements is receiving about $1/lb despite its much larger total output. The lower B/C ratio for the joint venture use of 100% hybrid seedlings reflects the exclusion of improvements to existing stands that might be held by joint venture partners and higher management costs that will accrue to such

ventures. It reflects the most conservative analysis of joint venture potential. Actual joint ventures will probably include husbandry improvements which will generate earlier returns and rates of return more in the range of the other three models.

Table C1

CHCOM AGGREGATED COSTS AND RETURNS — FINANCIAL PRICES

829 2830 2930 4130 4630 4830 4830 4830 4830 4830

	UNITS	COST/UNIT	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10	TOTAL
SALES REVENUES	0	1	119375	575613	1307500	2232850	2981725	3791400	4440100	5000105	5460100	5700100	17497500
TOTAL INVESTMENT COST			830720	1313376	1536953	2449586	2882953	2623301	2720130	2887615	2854966	2686492	12055651
NET BENEFITS	0		-711353	-737764	-231493	-216736	98772	1072319	1719962	2200485	2613134	2821608	4651649

BENEFIT:COST AND IRR

NET PRESENT VALUE	TOTAL	BENEFITS	COSTS
0100 DISCOUNT	3238000	16290834	12973226
0150 DISCOUNT	1892515	12055697	10163182
0200 DISCOUNT	1027727	9174489	8146762

	B/C	IRR=	.32
0100 DISCOUNT	1.25		
0150 DISCOUNT	1.19		
0200 DISCOUNT	1.13		

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Table C2

GRENADA CONSOLIDATED IMPROVEMENT AND REPLANT COSTS AND RETURNS — FINANCIAL PRICES

			60	400	900	1700	2000	2000	2000	2000	2000
	UNITS	COST/UNI	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10
SALES REVENUES	$	1	31000	192000	451000	781000	947000	1222000	1532000	1820000	2000000	2140000
VARIABLE COSTS			23140	147464	311194	556925	611231	612673	658451	681066	707937	728821
FIXED COSTS			6936	59450	104040	196520	231200	231200	231200	231200	231200	231200
FIXED ASSETS			67332	86584	172732	338064	200440	0	0	0	0	0
OTHER COSTS			0	0	0	0	0	40000	40000	40000	40000	40000
TOTAL INVESTMENT COST			97415	293498	587966	1083509	1122879	883873	921651	952205	979137	1000021
NET BENEFITS	$		-66415	-101498	-136966	-302509	-175879	338127	610349	867714	1020863	1139979

BENEFIT:COST AND IRR

NET PRESENT VALUE	TOTAL	BENEFITS	COSTS
@10% DISCOUNT	1218332	5645395	4427063
@15% DISCOUNT	746310	4182743	3436433
@20% DISCOUNT	445600	3170687	2725086

	B/C	IRR=	.39
@10% DISCOUNT	1.28		
@15% DISCOUNT	1.22		
@20% DISCOUNT	1.16		

Table C3

CONSOLIDATED MODEL FARM COCOA IMPROVEMENT AND REPLANT COSTS AND RETURNS FINANCIAL PRICES FIMFCON2 LAND LEASE
219 838 838 838 838 838 838 838 838 838

	UNITS	COST/UNI	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10
SALES REVENUES	$	1	69000	263060	401350	595600	725350	754400	845600	985600	985600	985600
TOTAL INVESTMENT COST	$		198605	615966	451899	448546	513149	506395	538002	546951	546951	546951
NET BENEFITS	$		-129605	-352966	-50349	147054	212201	248005	307598	358649	358649	358649

BENEFIT/COST AND IRR

NET PRESENT VALUE	TOTAL	BENEFITS	COSTS
@10% DISCOUNT	540369	3454407	2914037
@15% DISCOUNT	307584	2645416	2337832
@20% DISCOUNT	153683	2072272	1918589

	B/C	IRR= .28
@10% DISCOUNT	1.19	
@15% DISCOUNT	1.13	
@20% DISCOUNT	1.08	

Table C4

JOINT VENTURE

LARGER FARMER COCOA REPLANT COSTS AND BENEFITS ALL HYBRID SEEDLING OPTION FINANCIAL PRICES

500 500 500 500 500 500 500 500 500 500

	UNITS	COST/UNI	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10
SALES REVENUES	$/LBS	1	0	0	150000	300000	400000	500000	600000	600000	600000	600000
TOTAL INVESTMENT COST	0		424955	178416	192692	209931	225352	293888	263340	263890	264458	265042
NET BENEFITS	0		-424955	-178416	-42692	90069	174648	206112	336660	336110	335542	334958

BENEFIT/COST AND IRR

NET PRESENT VALUE	TOTAL	BENEFITS	COSTS
@10% DISCOUNT	321458	1921791	1600333
@15% DISCOUNT	108547	1425759	1316212
@20% DISCOUNT	-28834	1079858	1108692

	B/C	IRR=	.19
@10% DISCOUNT	1.20		
@15% DISCOUNT	1.08		
@20% DISCOUNT	.97		

Table C5

CONSOLIDATED ST. LUCIA, ST. VINCENT, AND DOMINICA COCOA REHABILITATION AND DEVELOPMENT C:B AND IRR FINANCIA

			50	300	700	1100	1500	1500	1500	1500	1500
	UNITS	COST/UNI	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10
SALES REVENUES	$	$1.25/LB	19375	120313	305000	556250	909375	1225000	1462500	1762500	1962500	2062500
TOTAL INVESTMENT COST			109753	225195	306398	707600	1021473	943225	997145	1044488	1064420	1074388
NET BENEFITS			-90378	-104883	-1398	-151350	-112098	279775	465355	718013	898000	988113

BENEFIT COST AND IRR

NET PRESENT VALUE	TOTAL BENEFITS	COSTS
@10% DISCOUNT	1150649	5182441	4031792
@15% DISCOUNT	729074	3801779	3072705
@20% DISCOUNT	457198	2851671	2394473

	B/C	IRR=	.44
@10% DISCOUNT	1.29		
@15% DISCOUNT	1.24		
@20% DISCOUNT	1.19		

Table C6

COCOA PRODUCTION COSTS-IMPROVEMENT TO EXISTING STANDS — FINANCIAL PRICES

	UNITS	COST/UNI	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10
SALES REVENUES	LBS	1.00	620.00	750.00	750.00	1000.00	1000.00	1000.00	1000.00	1000.00	1000.00	1000.00
PROJECTED YIELDS	LBS		620.00	750.00	750.00	1000.00	1000.00	1000.00	1000.00	1000.00	1000.00	1000.00
VARIABLE COSTS			412.83	389.73	344.00	353.97	353.97	353.97	353.97	353.97	353.97	353.97
MATERIALS			122.20	122.20	111.20	111.20	111.20	111.20	111.20	111.20	111.20	111.20
FERTILIZER	LBS	.15	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
HERBICIDE	LITERS	8.00	16.00	16.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
PESTICIDE	LBS	1.80	5.40	5.40	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60
FUNGICIDE	LBS	1.20	10.80	10.80	9.60	9.60	9.60	9.60	9.60	9.60	9.60	9.60
LABOR	DAYS/PIECE		178.00	162.00	156.20	181.20	181.20	181.20	181.20	181.20	181.20	181.20
DRAIN INST/MNT $5.8/DAY	DAYS	5.80	34.80	17.40	17.40	17.40	17.40	17.40	17.40	17.40	17.40	17.40
WEED CONTRL $5.8/DAY	DAYS	5.80	17.40	17.40	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60
DISEASE CONTRL $5.8/DAY	DAYS	5.80	23.20	17.40	17.40	17.40	17.40	17.40	17.40	17.40	17.40	17.40
FERTILIZING $5.8/DAY	DAYS	5.80	17.40	17.40	17.40	17.40	17.40	17.40	17.40	17.40	17.40	17.40
TREE MAINT $5.8/DAY	DAYS	5.80	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60
PROP,STAKE,MULCH $5.8/D	DAYS	5.80	11.60	5.80	5.80	5.80	5.80	5.80	5.80	5.80	5.80	5.80
HARVESTING $0.1/LB	$/LBS	.10	62.00	75.00	75.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
PACKAGING COSTS	SACKS	2.00	4.13	5.00	5.00	6.67	6.67	6.67	6.67	6.67	6.67	6.67
UTILITIES												
EQUIP MAINT&SPARES			10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
DOMESTIC TRANSPORT			4.88	5.40	5.40	6.40	6.40	6.40	6.40	6.40	6.40	6.40
FERT/TRANSP $0.004/LB		.004	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
COCOA/TRANSP $0.004/LB		.004	2.48	3.00	3.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
EXPORT TAX PHASE OUT	-25%/YR	.15	69.75	56.25	28.13							
COMMISSIONS	$/LB	.04	23.87	28.88	28.88	38.50	38.50	38.50	38.50	38.50	38.50	38.50
STORAGE COSTS												
LAND RENTAL-ACT/IMPUTED		150.00										
CONTINGENCIES	.05		20.64	19.49	17.24	17.70	17.70	17.70	17.70	17.70	17.70	17.70
FIXED COSTS			115.60	115.60	115.60	115.60	115.60	115.60	115.60	115.60	115.60	115.60
ADMINISTRATIVE COSTS GCA$/AC		64.60	64.60	64.60	64.60	64.60	64.60	64.60	64.60	64.60	64.60	64.60
MGMT/ACCTNG/SECTL		20000.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
OFFICE SUPPL/COMMUNIC		500.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EXTERNAL AUDIT		2500.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
INSURANCE CHARGES		2500.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
FIXED ASSETS			133.00	.00	.00	.00	56.00	.00	.00	.00	.00	.00
NEW EQUIPMENT		10000.00	20.00				20.00					
NEW VEHICLES		10000.00	36.00				36.00					
LAND IMPROVEMENT												
Land Clear $7.7/day	DAYS	7.70	77.00									
Land Prep $5.8/day	DAYS	5.80	.00									
Planting $5.8/day	DAYS	5.80	.00									
TREES-CLONAL 12X12	UNITS	3.80										
TREES-CLONAL 9X9	UNITS	3.80										
TREES-HYBRID SEED 12X12	UNITS	.38										
TREES-HYBRID SEED 9X9	UNITS	.38										
LAND PURCHASE	ACRES	1500.00										
OTHER COSTS			.00	.00	.00	.00	.00	20.00	20.00	20.00	20.00	20.00
FEASIBILITY STUD		10000.00										
TECHNICAL ASSISTANCE		20000.00						20.00	20.00	20.00	20.00	20.00
TOTAL INVESTMENT COST			661.43	505.33	460.40	469.57	525.57	489.57	489.57	489.57	489.57	489.57
NET BENEFITS	$		-41.43	244.68	289.60	530.43	474.43	510.43	510.43	510.43	510.43	510.43

Table C7

LARGER FARMER COCOA REPLANT COSTS AND BENEFITS — FINANCIAL PRICES

	UNITS	COST/UNI	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10
SALES REVENUES	LBS	1.00	.00	.00	300.00	600.00	800.00	1000.00	1200.00	1200.00	1200.00	1200.00
PROJECTED YIELDS	LBS		.00	.00	300.00	600.00	800.00	1000.00	1200.00	1200.00	1200.00	1200.00
VARIABLE COSTS			250.60	221.60	268.80	294.30	324.13	353.97	383.80	383.80	383.60	383.60
MATERIALS			122.20	122.20	111.20	111.20	111.20	111.20	111.20	111.20	111.20	111.20
FERTILIZER	LBS	.15	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
HERBICIDE	LITERS	8.00	16.00	16.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
PESTICIDE	LBS	1.80	5.40	5.40	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60
FUNGICIDE	LBS	1.20	10.80	10.80	9.60	9.60	9.60	9.60	9.60	9.60	9.60	9.60
LABOR	DAYS/PIECE		116.00	87.00	111.20	141.20	161.20	181.20	201.20	201.20	201.20	201.20
DRAIN INST/MNT $5.8/DAY	DAYS	5.80	34.80	17.40	17.40	17.40	17.40	17.40	17.40	17.40	17.40	17.40
WEED CONTRL $5.8/DAY	DAYS	5.80	17.40	17.40	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60
DISEASE CONTRL $5.8/DAY	DAYS	5.80	23.20	17.40	17.40	17.40	17.40	17.40	17.40	17.40	17.40	17.40
FERTILIZING $5.8/DAY	DAYS	5.80	17.40	17.40	17.40	17.40	17.40	17.40	17.40	17.40	17.40	17.40
TREE MAINT $5.8/DAY	DAYS	5.80	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60
PROP,STAKE,MULCH $5.8/D	DAYS	5.80	11.60	5.80	5.80	5.80	5.80	5.80	5.80	5.80	5.80	5.80
HARVESTING $0.1/LB	$/LBS	.10	.00	.00	30.00	60.00	80.00	100.00	120.00	120.00	120.00	120.00
PACKAGING COSTS	SACKS	2.00	.00	.00	2.00	4.00	5.33	6.67	8.00	8.00	8.00	8.00
UTILITIES												
EQUIP MAINT&SPARES			10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
DOMESTIC TRANSPORT			2.40	2.40	3.60	4.80	5.60	6.40	7.20	7.20	7.20	7.20
FERT/TRANSP $0.004/LB		.004	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
COCOA/TRANSP $0.004/LB		.004	.00	.00	1.20	2.40	3.20	4.00	4.80	4.80	4.80	4.80
EXPORT TAX PHASE OUT	-25%/YR	.15	.00	.00	11.25							
COMMISSIONS	$/LB	.04	.00	.00	11.55	23.10	30.80	38.50	46.20	46.20	46.20	46.20
STORAGE COSTS												
LAND RENTAL-ACT/IMPUTED		150.00										
CONTINGENCIES	.05		12.53	11.08	13.04	14.72	16.21	17.70	19.19	19.19	19.19	19.19
FIXED COSTS			115.60	115.60	115.60	115.60	115.60	115.60	115.60	115.60	115.60	115.60
ADMINISTRATIVE COSTS GCA$/AC		64.60	64.60	64.60	64.60	64.60	64.60	64.60	64.60	64.60	64.60	64.60
MGMT/ACCTNG/SECTL		20000.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
OFFICE SUPPL/COMMUNIC		500.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EXTERNAL AUDIT		2500.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
INSURANCE CHARGES		2500.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
FIXED ASSETS			884.16	.00	.00	.00	50.00	.00	.00	.00	.00	.00
NEW EQUIPMENT		10000.00	20.00				20.00					
NEW VEHICLES		18000.00	36.00				36.00					
LAND IMPROVEMENT												
Land Clear $7.7/day	DAYS	7.70	32.40									
Land Prep $5.8/day	DAYS	5.80	46.40									
Planting $5.8/day	DAYS	5.80	34.80									
TREES-CLONAL 12X12	UNITS	3.80										
TREES-CLONAL 9X9	UNITS	3.60	410.40									
TREES-HYBRID SEED 12X12	UNITS	.38										
TREES-HYBRID SEED 9X9	UNITS	.38	164.16									
LAND PURCHASE	ACRES	1500.00										
OTHER COSTS			.00	.00	.00	.00	.00	20.00	20.00	20.00	20.00	20.00
FEASIBILITY STUDY		10000.00										
TECHNICAL ASSISTANCE		20000.00						20.00	20.00	20.00	20.00	20.00
TOTAL INVESTMENT COST			1170.36	337.20	376.40	409.90	495.73	489.57	519.40	519.40	519.40	[illegible]
NET BENEFITS	$		-1170.36	-337.20	-76.40	190.10	304.27	510.43	680.60	680.60	680.60	680.60

Table C8

MODEL FARM COCOA COSTS AND RETURNS TO IMPROVEMENT OF EXISTING STANDS — FINANCIAL PRICES

	UNITS	COST/UNI	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10
SALES REVENUES	LBS	1.00	500.00	750.00	1000.00	1000.00	1200.00	1200.00	1200.00	1200.00	1200.00	1200.00
PROJECTED YIELDS	LBS		500.00	750.00	1000.00	1000.00	1200.00	1200.00	1200.00	1200.00	1200.00	1200.00
VARIABLE COSTS			531.43	539.73	541.47	527.17	557.80	545.40	591.80	591.60	568.60	661.40
MATERIALS			122.20	122.20	111.20	111.20	111.20	111.20	111.20	111.20	111.20	111.20
FERTILIZER	LBS	.15	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
HERBICIDE	LITERS	8.00	16.00	16.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
PESTICIDE	LBS	1.80	5.40	5.40	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60
FUNGICIDE	LBS	1.20	10.80	10.80	9.60	9.60	9.60	9.60	9.60	9.60	9.60	9.60
LABOR	DAYS/PIECE		166.00	162.00	181.20	204.40	224.40	212.80	259.20	259.20	236.00	328.80
DRAIN INST/MNT $5.8/DAY	DAYS	5.80	34.80	17.40	17.40	17.40	17.40	17.40	17.40	17.40	17.40	17.40
WEED CONTRL $5.8/DAY	DAYS	5.80	17.40	17.40	11.60	34.80	34.80	23.20	69.60	69.60	46.40	139.20
DISEASE CONTRL $5.8/DAY	DAYS	5.80	23.20	17.40	17.40	17.40	17.40	17.40	17.40	17.40	17.40	17.40
FERTILIZING $5.8/DAY	DAYS	5.80	17.40	17.40	17.40	17.40	17.40	17.40	17.40	17.40	17.40	17.40
TREE MAINT $5.8/DAY	DAYS	5.80	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60
PROP,STAKE,MULCH $5.8/D	DAYS	5.80	11.60	5.00	5.80	5.80	5.80	5.80	5.80	5.80	5.80	5.80
HARVESTING $0.1/LB	$/LBS	.10	50.00	75.00	100.00	100.00	120.00	120.00	120.00	120.00	120.00	120.00
PACKAGING COSTS	SACKS	2.00	3.33	5.00	6.67	6.67	8.00	8.00	8.00	8.00	8.00	8.00
UTILITIES												
EQUIP MAINT&SPARES		10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.20
DOMESTIC TRANSPORT			4.40	5.40	6.40	6.40	7.20	7.20	7.20	7.20	7.20	7.20
FERT/TRANSP $0.004/LB		.004	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
COCOA/TRANSP $0.004/LB		.004	2.00	3.00	4.00	4.00	4.80	4.80	4.80	4.80	4.80	4.80
EXPORT TAX PHASE OUT	-25%/YR	.15	56.25	56.25	37.50							
COMMISSIONS	$/LB	.04	19.25	28.88	38.50	38.50	46.20	46.20	46.20	46.20	46.20	46.20
STORAGE COSTS												
LAND RENTAL-ACT/IMPUTED		150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00
CONTINGENCIES	.05		26.57	26.99	27.07	26.36	27.85	27.27	29.59	29.59	28.43	33.07
FIXED COSTS			95.03	95.03	95.03	95.03	95.03	95.03	95.03	95.03	95.03	95.03
ADMINISTRATIVE COSTS GCA$/AC		64.60	64.60	64.60	64.60	64.60	64.60	64.60	64.60	64.60	64.60	64.60
MGMT/ACCTNG/SECTL		20000.00	23.87	23.87	23.87	23.87	23.87	23.87	23.87	23.87	23.87	23.87
OFFICE SUPPL/COMMUNIC		500.00	.60	.60	.60	.60	.60	.60	.60	.60	.60	.60
EXTERNAL AUDIT		2500.00	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98
INSURANCE CHARGES		2500.00	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98
FIXED ASSETS			110.41	.00	.00	.00	33.41	.00	.00	.00	.00	.00
NEW EQUIPMENT		10000.00	11.93				11.93					
NEW VEHICLES		18000.00	21.48				21.48					
LAND IMPROVEMENT												
Land Clear $7.7/day	DAYS	7.70	77.00									
Land Prep $5.8/day	DAYS	5.80										
Planting $5.8/day	DAYS	5.80										
TREES-CLONAL 12X12	UNITS	3.80										
TREES-CLONAL 9X9	UNITS	3.80										
TREES-HYBRID SEED 12X12	UNITS	.38										
TREES-HYBRID SEED 9X9	UNITS	.38										
LAND PURCHASE (6X 1)	ACRES	1500.00										
OTHER COSTS			.00	.00	.00	.00	.00	23.87	23.87	23.87	23.87	23.87
FEASIBILITY STUDY		10000.00										
TECHNICAL ASSISTANCE		20000.00						23.87	23.87	23.87	23.87	23.87
TOTAL INVESTMENT COST			736.88	634.75	636.50	622.20	685.44	664.30	710.70	710.70	687.50	780.30
NET BENEFITS	$		-236.88	115.25	363.50	377.80	514.56	559.57	513.17	513.17	536.37	443.57

Table C9

MODEL FARM COCOA REPLANT CLONAL:HYBRID = 20:80 COSTS AND RETURNS FINANCIAL PRICES

	UNITS	COST/UNI	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10
SALES REVENUES	LBS	1.00	.00	.00	300.00	600.00	750.00	1000.00	1200.00	1200.00	1200.00	1200.00
PROJECTED YIELDS	LBS		.00	.00	300.00	600.00	750.00	1000.00	1200.00	1200.00	1200.00	1200.00
VARIABLE COSTS			400.60	365.80	410.80	444.30	466.60	503.97	533.80	533.80	533.80	533.80
MATERIALS			122.20	122.20	111.20	111.20	111.20	111.20	111.20	111.20	111.20	111.20
FERTILIZER	LBS	.15	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
HERBICIDE	LITERS	8.00	16.00	16.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
PESTICIDE	LBS	1.60	5.40	5.40	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60
FUNGICIDE	LBS	1.20	10.80	10.80	9.60	9.60	9.60	9.60	9.60	9.60	9.60	9.60
LABOR	DAYS/PIECE		116.00	81.20	111.20	141.20	156.20	181.20	201.20	201.20	201.20	201.20
DRAIN INST/MNT $5.8/DAY	DAYS	5.80	34.80	17.40	17.40	17.40	17.40	17.40	17.40	17.40	17.40	17.40
WEED CONTRL $5.8/DAY	DAYS	5.80	17.40	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60
DISEASE CONTRL $5.8/DAY	DAYS	5.80	23.20	17.40	17.40	17.40	17.40	17.40	17.40	17.40	17.40	17.40
FERTILIZING $5.8/DAY	DAYS	5.80	17.40	17.40	17.40	17.40	17.40	17.40	17.40	17.40	17.40	17.40
TREE MAINT $5.8/DAY	DAYS	5.80	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60
PROP,STAKE,MULCH $5.8/D	DAYS	5.60	11.60	5.80	5.80	5.80	5.80	5.80	5.60	5.80	5.60	5.60
HARVESTING $0.1/LB	$/LBS	.10	.00	.00	30.00	60.00	75.00	100.00	120.00	120.00	120.00	120.00
PACKAGING COSTS	SACKS	2.00	.00	.00	2.00	4.00	5.00	6.67	8.00	8.00	8.00	8.00
UTILITIES												
EQUIP MAINT&SPARES		10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
DOMESTIC TRANSPORT			2.40	2.40	3.60	4.80	5.40	6.40	7.20	7.20	7.20	7.20
FERT/TRANSP $0.004/LB		.004	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
COCOA/TRANSP $0.004/LB		.004	.00	.00	1.20	2.40	3.00	4.00	4.80	4.80	4.80	4.80
EXPORT TAX PHASE OUT	-25%/YR	.15	.00	.00	11.25							
COMMISSIONS	$/LB	.04	.00	.00	11.55	23.10	28.88	38.50	46.20	46.20	46.20	46.20
STORAGE COSTS												
LAND RENTAL-ACT/IMPUTED		150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00
CONTINGENCIES	.05		20.03	16.29	20.54	22.22	23.33	25.20	26.69	26.69	26.69	26.69
FIXED COSTS			95.03	95.03	95.03	95.03	95.03	95.03	95.03	95.03	95.03	95.03
ADMINISTRATIVE COSTS GCA$/AC		64.60	64.60	64.60	64.60	64.60	64.60	64.60	64.60	64.60	64.60	64.60
MGMT/ACCTNG/SECTL		20000.00	23.87	23.87	23.87	23.87	23.87	23.87	23.87	23.87	23.87	23.87
OFFICE SUPPL/COMMUNIC		500.00	.60	.60	.60	.60	.60	.60	.60	.60	.60	.60
EXTERNAL AUDIT		2500.00	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98
INSURANCE CHARGES		2500.00	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98
FIXED ASSETS			510.81	.00	.00	.00	33.41	.00	.00	.00	.00	.00
NEW EQUIPMENT		10000.00	11.93				11.93					
NEW VEHICLES		16000.00	21.48				21.48					
LAND IMPROVEMENT												
Land Clear $7.7/day	DAYS	7.70	77.00									
Land Prep $5.8/day	DAYS	5.80	46.40									
Planting $5.8/day	DAYS	5.80	34.80									
TREES-CLONAL 12X12	UNITS	3.80	228.00									
TREES-CLONAL 9X9	UNITS	3.80										
TREES-HYBRID SEED 12X12	UNITS	.38	91.20									
TREES-HYBRID SEED 9X9	UNITS	.38										
LAND PURCHASE (6% I)	ACRES	1500.00										
OTHER COSTS			.00	.00	.00	.00	.00	23.87	23.87	23.87	23.87	23.87
FEASIBILITY STUDY		10000.00										
TECHNICAL ASSISTANCE		20000.00						23.87	23.87	23.87	23.87	23.87
TOTAL INVESTMENT COST			1006.44	460.83	505.83	539.33	595.12	622.86	652.70	652.70	652.70	652.70
NET BENEFITS	$		-1006.44	-460.83	-205.83	60.67	154.88	377.14	547.30	547.30	547.30	547.30

Table C10

JOINT VENTURE
ALL HYBRID SEEDLING OPTION

LAMBER FARMER COCOA REPLANT COSTS AND BENEFITS — FINANCIAL PRICES

	UNITS	COST/UNI	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10
SALES REVENUES	LBS	1.00	.00	.00	300.00	600.00	800.00	1000.00	1200.00	1200.00	1200.00	1200.00
PROJECTED YIELDS	LBS		.00	.00	300.00	600.00	800.00	1000.00	1200.00	1200.00	1200.00	1200.00
VARIABLE COSTS			273.75	250.55	278.15	311.65	341.48	365.52	395.35	395.35	395.35	395.35
MATERIALS			133.45	133.45	122.45	122.45	122.45	122.45	122.45	122.45	122.45	122.45
FERTILIZER	LBS	.15	101.25	101.25	101.25	101.25	101.25	101.25	101.25	101.25	101.25	101.25
HERBICIDE	LITERS	8.00	16.00	16.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
PESTICIDE	LBS	1.80	5.40	5.40	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60
FUNGICIDE	LBS	1.20	10.80	10.80	9.60	9.60	9.60	9.60	9.60	9.60	9.60	9.60
LABOR	DAYS/PIECE		127.60	104.40	117.00	147.00	167.00	101.20	201.20	201.20	201.20	201.20
DRAIN INST/MNT $5.8/DAY	DAYS	5.80	34.80	17.40	17.40	17.40	17.40	17.40	17.40	17.40	17.40	17.40
WEED CONTRL $5.8/DAY	DAYS	5.80	17.40	17.40	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60
DISEASE CONTRL $5.8/DAY	DAYS	5.80	23.20	17.40	17.40	17.40	17.40	17.40	17.40	17.40	17.40	17.40
FERTILIZING $5.8/DAY	DAYS	5.80	17.40	17.40	17.40	17.40	17.40	17.40	17.40	17.40	17.40	17.40
TREE MAINT $5.8/DAY	DAYS	5.80	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60
PROP,STAKE,MULCH $5.8/D	DAYS	5.80	23.20	23.20	11.60	11.60	11.60	5.80	5.80	5.80	5.80	5.80
HARVESTING $0.1/LB	$/LBS	.10	.00	.00	30.00	60.00	80.00	100.00	120.00	120.00	120.00	120.00
PACKAGING COSTS	SACKS	2.00	.00	.00	2.00	4.00	5.33	6.67	8.00	8.00	8.00	8.00
UTILITIES												
EQUIP MAINT&SPARES		10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
DOMESTIC TRANSPORT			2.70	2.70	3.90	5.10	5.90	6.70	7.50	7.50	7.50	7.50
FERT/TRANSP $0.004/LB		.00	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70
COCOA/TRANSP $0.004/LB		.00	.00	.00	1.20	2.40	3.20	4.00	4.80	4.80	4.80	4.80
EXPORT TAX PHASE OUT	-25%/YR	.15	.00	.00	11.25							
COMMISSIONS	$/LB	.04	.00	.00	11.55	23.10	30.80	38.50	46.20	46.20	46.20	46.20
STORAGE COSTS												
LAND RENTAL-ACT/IMPUTED		150.00										
CONTINGENCIES	.05		13.69	12.53	13.91	15.58	17.07	18.28	19.77	19.77	19.77	19.77
FIXED COSTS			105.36	106.28	107.23	108.21	109.22	110.26	111.33	112.43	113.57	114.73
ADMINISTRATIVE COSTS GCA$/AC		64.60	64.60	64.60	64.60	64.60	64.60	64.60	64.60	64.60	64.60	64.60
MGMT/ACCTNG/SECTL		30.76	30.76	31.68	32.63	33.61	34.62	35.66	36.73	37.83	38.97	40.13
OFFICE SUPPL/COMMUNIC		2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
EXTERNAL AUDIT		4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
INSURANCE CHARGES		4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
FIXED ASSETS			470.00	.00	.00	.00	.00	92.00	.00	.00	.00	.00
NEW EQUIPMENT			20.00					20.00				
NEW VEHICLES			72.00					72.00				
LAND IMPROVEMENT												
Land Clear $7.7/day	DAYS	7.70	92.40									
Land Prep $5.8/day	DAYS	5.80	46.40									
Planting $5.8/day	DAYS	5.80	34.80									
TREES-CLONAL 12X12	UNITS	3.60										
TREES-CLONAL 9X9	UNITS	3.80	.00									
TREES-HYBRID SEED 12X12	UNITS	.38										
TREES-HYBRID SEED 9X9	UNITS	.38	205.20									
LAND PURCHASE (6X I)	ACRES	1500.00										
OTHER COSTS			.00	.00	.00	.00	.00	20.00	20.00	20.00	20.00	20.00
FEASIBILITY STUDY	ACRES	1500.00										
TECHNICAL ASSISTANCE	ACRES	5000.00						20.00	20.00	20.00	20.00	20.00
TOTAL INVESTMENT COST			849.91	356.83	385.38	419.86	450.70	587.78	526.68	527.78	528.92	530.08
NET BENEFITS	$		-849.91	-356.83	-85.38	180.14	349.30	412.22	673.32	672.22	671.08	669.92

Table C11

ST. LUCIA COCOA IMPROVEMENT COSTS AND RETURNS FINANCIAL PRICES

	UNITS	COST/UNI	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10
SALES REVENUES	LBS	1.25	775.00	937.50	937.50	1250.00	1250.00	1250.00	1250.00	1250.00	1250.00	1250.00
PROJECTED YIELDS	LBS		620.00	750.00	750.00	1000.00	1000.00	1000.00	1000.00	1000.00	1000.00	1000.00
VARIABLE COSTS			555.00	550.40	541.60	603.97	603.97	603.97	603.97	603.97	603.97	603.97
MATERIALS			122.20	122.20	111.20	111.20	111.20	111.20	111.20	111.20	111.20	111.20
FERTILIZER	LBS	.15	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
HERBICIDE	LITERS	8.00	16.00	16.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
PESTICIDE	LBS	1.80	5.40	5.40	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60
FUNGICIDE	LBS	1.20	10.40	10.80	9.60	9.60	9.60	9.60	9.60	9.60	9.60	9.60
LABOR	DAYS/PIECE		178.00	162.00	156.20	181.20	181.20	181.20	181.20	181.20	181.20	181.20
DRAIN INST/MNT $5.8/DAY	DAYS	5.80	34.80	17.40	17.40	17.40	17.40	17.40	17.40	17.40	17.40	17.40
WEED CONTRL $5.8/DAY	DAYS	5.00	17.40	17.40	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60
DISEASE CONTRL $5.8/DAY	DAYS	5.80	23.20	17.40	17.40	17.40	17.40	17.40	17.40	17.40	17.40	17.40
FERTILIZING $5.8/DAY	DAYS	5.80	17.40	17.40	17.40	17.40	17.40	17.40	17.40	17.40	17.40	17.40
TREE MAINT $5.8/DAY	DAYS	5.80	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60
PROP,STAKE,MULCH $5.8/D	DAYS	5.80	11.60	5.80	5.80	5.80	5.80	5.80	5.80	5.80	5.80	5.80
HARVESTING 00.1/LB	$/LBS	.10	62.00	75.00	75.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
PACKAGING COSTS	SACKS	2.00	4.13	5.00	5.00	6.67	6.67	6.67	6.67	6.67	6.67	6.67
UTILITIES												
EQUIP MAINT&SPARES		10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
DOMESTIC TRANSPORT			4.00	5.40	5.40	6.40	6.40	6.40	6.40	6.40	6.40	6.40
FERT/TRANSP 00.004/LB		.004	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
COCOA/TRANSP 00.004/LB		.004	2.48	3.00	3.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
CESS FOR OUTREACH PGM	$/LB	.05	31.00	37.50	37.50	50.00	50.00	50.00	50.00	50.00	50.00	50.00
COMMISSIONS	$/LB	.04	23.67	28.68	28.68	38.50	38.50	38.50	38.50	38.50	38.50	38.50
STORAGE COSTS	$/LB	.05	31.00	37.50	37.50	50.00	50.00	50.00	50.00	50.00	50.00	50.00
LAND RENTAL-ACT/IMPUTED		150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00
CONTINGENCIES	.05		27.75	27.92	27.08	30.20	30.20	30.20	30.20	30.20	30.20	30.20
FIXED COSTS			72.50	72.50	72.50	72.50	72.50	72.50	72.50	72.50	72.50	72.50
ADMINISTRATIVE COSTS SLA$/AC		30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00
MGMT/ACCTNG/SECTL		20000.00	33.33	33.33	33.33	33.33	33.33	33.33	33.33	33.33	33.33	33.33
OFFICE SUPPL/COMMUNIC		500.00	.83	.83	.83	.83	.83	.83	.83	.83	.83	.83
EXTERNAL AUDIT		2500.00	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17
INSURANCE CHARGES		2500.00	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17
FIXED ASSETS			139.87	.00	.00	.00	46.67	.00	.00	.00	.00	.00
NEW EQUIPMENT		5000.00	16.67				16.67					
NEW VEHICLES		9000.00	30.00				30.00					
LAND IMPROVEMENT												
Land Clear $7.7/day	DAYS	7.70	92.40									
Land Prep $5.8/day	DAYS	5.00	.00									
Planting $5.8/day	DAYS	5.00	.00									
TREES-CLONAL 12X12	UNITS	3.00										
TREES-CLONAL 9X9	UNITS	3.00	.00									
TREES-HYBRID SEED 12X12	UNITS	.38										
TREES-HYBRID SEED 9X9	UNITS	.38	.00									
LAND PURCHASE (5x 1)	ACRES	1500.00										
OTHER COSTS			.00	.00	.00	.00	.00	33.33	33.33	33.33	33.33	33.33
FEASIBILITY STUDY		5000.00										
TECHNICAL ASSISTANCE		10000.00						33.33	33.33	33.33	33.33	33.33
TOTAL INVESTMENT COST			766.65	630.98	614.18	676.47	723.13	709.80	709.80	709.80	709.80	709.80
NET BENEFITS	$		8.35	306.53	323.33	573.53	526.87	540.20	540.20	540.20	540.20	540.20

Table C12

ST. LUCIA COCOA REPLANTING COSTS AND RETURNS FINANCIAL PRICES

	UNITS	COST/UNI	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10
SALES REVENUES	LBS	1.25	.00	.00	375.00	750.00	1000.00	1250.00	1500.00	1500.00	1500.00	1500.00
PROJECTED YIELDS	LBS		.00	.00	300.00	600.00	800.00	1000.00	1200.00	1200.00	1200.00	1200.00
VARIABLE COSTS			411.85	388.65	440.80	515.55	565.38	615.22	665.05	665.05	665.05	665.05
MATERIALS			133.45	133.45	122.45	122.45	122.45	122.45	122.45	122.45	122.45	122.45
FERTILIZER	LBS	.15	101.25	101.25	101.25	101.25	101.25	101.25	101.25	101.25	101.25	101.25
HERBICIDE	LITERS	8.00	16.00	16.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
PESTICIDE	LBS	1.00	5.40	5.40	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60
FUNGICIDE	LBS	1.20	10.80	10.80	9.60	9.60	9.60	9.60	9.60	9.60	9.60	9.60
LABOR	DAYS/PIECE		116.00	92.80	111.20	141.20	161.20	181.20	201.20	201.20	201.20	201.20
DRAIN INST/MNT $5.8/DAY	DAYS	5.80	34.80	17.40	17.40	17.40	17.40	17.40	17.40	17.40	17.40	17.40
WEED CONTRL $5.8/DAY	DAYS	5.80	17.40	17.40	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60
DISEASE CONTRL $5.8/DAY	DAYS	5.80	23.20	17.40	17.40	17.40	17.40	17.40	17.40	17.40	17.40	17.40
FERTILIZING $5.8/DAY	DAYS	5.80	17.40	17.40	17.40	17.40	17.40	17.40	17.40	17.40	17.40	17.40
TREE MAINT $5.8/DAY	DAYS	5.80	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60
PROP,STAKE,MULCH $5.8/D	DAYS	5.80	11.60	11.60	5.80	5.80	5.80	5.80	5.80	5.80	5.80	5.80
HARVESTING $0.1/LB	$/LBS	.10	.00	.00	30.00	60.00	80.00	100.00	120.00	120.00	120.00	120.00
PACKAGING COSTS	SACKS	2.00	.00	.00	2.00	4.00	5.33	6.67	8.00	8.00	8.00	8.00
UTILITIES												
EQUIP MAINT&SPARES		10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
DOMESTIC TRANSPORT			2.40	2.40	3.60	4.80	5.60	6.40	7.20	7.20	7.20	7.20
FERT/TRANSP $0.004/LB		.004	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
COCOA/TRANSP $0.004/LB		.004	.00	.00	1.20	2.40	3.20	4.00	4.80	4.80	4.80	4.80
CESS FOR OUTREACH PGM	$/LB	.05	.00	.00	15.00	30.00	40.00	50.00	60.00	60.00	60.00	60.00
COMMISSIONS	$/LB	.04	.00	.00	11.55	23.10	30.80	38.50	46.20	46.20	46.20	46.20
STORAGE COSTS	$/LB	.05	.00	.00	15.00	30.00	40.00	50.00	60.00	60.00	60.00	60.00
LAND RENTAL-ACT/IMPUTED		150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00
CONTINGENCIES	.05		20.59	19.43	22.04	25.76	28.27	30.76	33.25	33.25	33.25	33.25
FIXED COSTS			72.50	72.50	72.50	72.50	72.50	72.50	72.50	72.50	72.50	72.50
ADMINISTRATIVE COSTS SLA$/AC		30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00
MGMT/ACCTNG/SECTL		20000.00	33.33	33.33	33.33	33.33	33.33	33.33	33.33	33.33	33.33	33.33
OFFICE SUPPL/COMMUNIC		500.00	.83	.83	.83	.83	.83	.83	.83	.83	.83	.83
EXTERNAL AUDIT		2500.00	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17
INSURANCE CHARGES		2500.00	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17
FIXED ASSETS			425.47	.00	.00	.00	46.67	.00	.00	.00	.00	.00
NEW EQUIPMENT		5000.00	16.67				16.67					
NEW VEHICLES		9000.00	30.00				30.00					
LAND IMPROVEMENT												
Land Clear $7.7/cav	DAYS	7.70	92.40									
Land Prep $5.8/day	DAYS	5.80	46.40									
Planting $5.8/day	DAYS	5.80	34.80									
TREES-CLONAL 12X12	UNITS	3.00										
TREES-CLONAL 9X9	UNITS	3.00	.00									
TREES-HYBRID SEED 12X12	UNITS	.36										
TREES-HYBRID SEED 9X9	UNITS	.38	125.20									
LAND PURCHASE (6% I)	ACRES	1500.00										
OTHER COSTS			.00	.00	.00	.00	.00	33.33	33.33	33.33	33.33	33.33
FEASIBILITY STUDY		5000.00										
TECHNICAL ASSISTANCE		10000.00						33.33	33.33	33.33	33.33	33.33
TOTAL INVESTMENT COST			909.82	461.15	513.30	568.05	684.55	721.05	770.68	770.68	770.68	770.68
NET BENEFITS	$		-909.82	-461.15	-138.30	161.95	315.45	528.95	729.12	729.12	729.12	729.12

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ECONOMIC ANALYSIS

A. Introduction

This economic analysis assesses the return on the Regional Cocoa Rehabilitation and Development Subproject (RCRD) as an investment. The economic analysis identifies the social profit of the subproject, its impact on the fundamental objectives of the economy as a whole. Project costs not borne by the farmer or entrepreneur (e.g. project design costs, technical assistance and other grant funded project components, inputed land rents, etc.) are included, whereas they were excluded in the calculation of financial return reported in the Financial Appendix (Appendix F.). Further, unskilled labor wages and imported raw materials are valued at their opportunity costs rather than at posted prices, i.e., shadow prices are applied to these cost categories.

B. Economic Analysis of Production Models and the RCRD Subproject

The process of constructing farm level production models and their aggregation into project component models was discussed in Appendix F the Financial Analysis. Each of the farm level models has been subjected to economic analysis in disaggregated form in Tables E8 to E14. The project component models I through IV have been analyzed in Tables E3 to E7. Finally, the overall project has been analyzed including all AID-related project costs in Table E1 and only that Technical Assistance directly tied to farm level production in Table E2.

The cost categories and their valuation differ from the financial valuation in two important respects:

- Costs borne by RCRD and not by the farmer have been included in calculation of economic returns; specifically, the costs of project design, management and technical assistance, and grant-funded assistance to the producer associations that benefit the individual cocoa grower;

- Shadow prices have been utilized on labor wages (0.5 times nominal rates) and certain imported materials (1.25 times nominal rates to account for currency overvaluation). Major equipment costs associated with the project have been valued at border prices, i.e., they have not been adjusted for import duties, taxes, etc.). Inputed land rental values were applied following the opportunity cost method employed by the Grenada Island Wide Study of cocoa financed by CIDA.

Three measures of economic returns to the RCRD Subproject are presented in this section:

- o A benefit/costs ratio comparing the net present value of benefits and costs calculated at the social discount rate of 10 percent — a B/C ratio greater than 1 shows that subproject benefits exceed subproject costs;
- o A Net Present Value at the 10% discount rate of the component model and overall subproject; and
- o An Internal Rate of Return (IRR) for each component and the overall subproject.

The results of the economic analysis are given in Chart D-1.

Chart D-1
COST/BENEFIT, NPV, AND IRR ANALYSIS OF PRODUCTION MODELS

Production Model	B/C @ 10%	NPV @ 10% (USD '000)	IRR
I. Grenada Key Farmer	1.03	445	0.18
II. Grenada Model Farms	1.31	516	0.37
III. Grenada Joint Venture	1.04	68	0.12
IV. Other Windward Islands	1.31	1233	0.37
Aggregated All Models	1.19	2560	0.25
All Models Plus All AID Cost	1.08	1229	0.16

TABLE D-1

CROSS [illegible] COSTS AND RETURNS — INCLUDING TOTAL [illegible] INPUTS — ECONOMIC PRICES

	829	2600	2500	4130	4000	4000	4000	4000	4000	4000
	UNITS	COST/UNIT	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10
SALES REVENUES	0		119875	575313	1307500	2232050	2901725	3701400	4440100	5200100	5460100	5700100
TOTAL INVESTMENT COST	0		1090650	2662500	2328975	3015407	3165692	2698696	2709627	2779290	2822879	2852350
NET BENEFITS	0		-971275	-1987188	-1021425	-782157	-185967	1002704	1730473	2420810	2637221	2847702

BENEFIT:COST AND IRR

NET PRESENT VALUE	TOTAL	BENEFITS	COSTS
0102 DISCOUNT	1229149	16204034	14974884
0152 DISCOUNT	119627	12055697	11936069
0202 DISCOUNT	-552995	9174495	9727491

	B/C	IRR=	.16
0102 DISCOUNT	1.08		
0152 DISCOUNT	1.01		
0202 DISCOUNT	.94		

TABLE D-2

[illegible] COSTS AND BENEFITS — ECONOMIC PRICES

[illegible]

	UNITS	COST/UNIT	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10
SALES REVENUES	0		119575	575313	1397550	2232253	2961725	3701400	4440168	5550100	5460100	5760100
TOTAL INVESTMENT COST	0		591150	1418500	1857973	2514087	3027692	2693855	2709627	2779230	2872670	2853370
NET BENEFITS	0		-471775	-843188	-539423	-281157	-65967	1007704	1730473	2770870	2586430	2906730

BENEFIT:COST AND IRR

NET PRESENT VALUE	TOTAL	BENEFITS	COSTS
0102 DISCOUNT	2559016	16209834	13649210
0152 DISCOUNT	1296677	12055687	10759020
0202 DISCOUNT	495665	5174489	4678824

	B/C	IRR=	.25
0102 DISCOUNT	1.19		
0152 DISCOUNT	1.12		
0202 DISCOUNT	1.06		

TABLE D-3

GRENADA CONSOLIDATED IMPROVEMENT AND REPLANT COSTS AND RETURNS — ECONOMIC PRICES

			60	400	900	1700	2000	2000	2000	2000	2000
	UNITS	COST/UNI	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10
SALES REVENUES	$	1	31000	192000	451000	781000	947000	1222000	1532000	1820000	2000000	2140000
VARIABLE COSTS			27268	176509	381518	694610	779961	774503	794651	813886	831737	845621
FIXED COSTS			6936	46240	104040	196520	231200	231200	231200	231200	231200	231200
FIXED ASSETS			65975	82075	172550	337400	237500	0	0	0	0	0
OTHER COSTS			60000	40000	40000	40000	40000	40000	40000	40000	40000	40000
TOTAL INVESTMENT COST			160179	344824	698108	1268530	1348661	1045703	1065851	1085086	1102937	1116821
NET BENEFITS	$		-129179	-152824	-247108	-487530	-401661	176297	466149	734914	897063	1023179

BENEFIT:COST AND IRR

NET PRESENT VALUE	TOTAL	BENEFITS	COSTS
@10% DISCOUNT	444707	5645395	5200688
@15% DISCOUNT	130814	4182743	4051929
@20% DISCOUNT	-54151	3170687	3224839

	B/C	IRR=	.18
@10% DISCOUNT	1.09		
@15% DISCOUNT	1.03		
@20% DISCOUNT	.98		

TABLE D-4

CONSOLIDATED MODEL FARM COCOA IMPROVEMENT AND REPLANT COSTS AND RETURNS ECONOMIC PRICES ECNFCOM2 LAND LEASE

			219	838	838	838	838	838	838	838	838	838
	UNITS	COST/UNI	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10
SALES REVENUES	0	1	69000	263000	491550	555600	725350	754400	845600	905600	905600	905600
TOTAL INVESTMENT COST	0		187116	588985	417236	439432	444179	470440	458803	464752	464752	464752
NET BENEFITS	0		-118116	-325985	-15686	156168	281171	283950	386797	440848	440848	440848

BENEFIT/COST AND IRR

NET PRESENT VALUE	TOTAL	BENEFITS	COSTS
@10% DISCOUNT	814041	3454407	2640366
@15% DISCOUNT	516143	2645416	2129273
@20% DISCOUNT	316634	2072272	1755638

	B/C	IRR=	.37
@10% DISCOUNT	1.31		
@15% DISCOUNT	1.24		
@20% DISCOUNT	1.18		

TABLE D-5

JOINT VENTURE

LARGER FARMER COCOA REPLANT COSTS AND BENEFITS ALL HYBRID SEEDLING OPTION ECONOMIC PRICES

500 500 500 500 500 500 500 500 500 500

	UNITS	COST/UNI	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10
SALES REVENUES	$	1	0	0	150000	300000	400000	500000	600000	600000	600000	600000
TOTAL INVESTMENT COST	$		464555	238566	249692	259430	269850	324840	289290	289840	290410	290990
NET BENEFITS	$		-464555	-238566	-99692	40570	130150	175160	310710	310160	309590	309010

BENEFIT/COST AND IRR

NET PRESENT VALUE	TOTAL	BENEFITS	COSTS
@10% DISCOUNT	67580	1921791	1854211
@15% DISCOUNT	-103684	1425759	1529443
@20% DISCOUNT	-211286	1079859	1291067

	B/C	IRR=	.12
@10% DISCOUNT	1.04		
@15% DISCOUNT	.93		
@20% DISCOUNT	.84		

TABLE D-6

CONSOLIDATED ST LUCIA, DOMINICA, AND ST. VINCENT IMPROVEMENT AND REPLANT ECONOMIC COST:BENEFIT AND IRR ANALYSIS

			50	300	700	1100	1500	1500	1500	1500	1500	1500
	UNITS	COST/UNIT	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10
SALES REVENUES	$	$1.25/LB	19375	120313	305000	556250	909375	1225000	1462500	1762500	1962500	2062500
TOTAL INVESTMENT COST			179300	246125	472938	676615	965083	852713	895683	939620	963980	979835
NET BENEFITS			-159925	-125813	-167938	-120365	-55620	372288	566818	822880	998520	1082665

BENEFIT COST AND IRR

NET PRESENT VALUE	TOTAL BENEFITS	COSTS
@10% DISCOUNT	1233489	5182441 3948953
@15% DISCOUNT	753404	3801779 3048375
@20% DISCOUNT	444390	2851671 2407280

	B/C	IRR= .37
@10% DISCOUNT	1.31	
@15% DISCOUNT	1.25	
@20% DISCOUNT	1.18	

TABLE D-7

CONSOLIDATED ST LUCIA COCOA IMPROVEMENT AND REPLANT ECONOMIC COST:BENEFIT AND IRR ANALYSIS

			20	120	200	440	600	600	600	600	600	600
	UNITS	COST/UNIT	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10
SALES REVENUES	$	$1.25/LB	7750	48125	122050	222500	353750	490000	585000	705000	785000	825000
VARIABLE COSTS			8375	59275	117715	187586	263341	277585	294773	312348	322092	328434
FIXED COSTS			1450	8700	20300	31900	43500	43500	43500	43500	43500	43500
FIXED ASSETS			31895	19475	31160	31160	59160	0	0	0	0	0
OTHER COSTS			30000	20000	20000	20000	20000	20000	20000	20000	20000	20000
TOTAL INVESTMENT COST			71720	98450	189175	270646	386001	341085	358273	375848	385592	391934
NET BENEFITS			-63970	-50325	-67175	-48146	-22251	148915	226727	329152	399408	433066

BENEFIT COST AND IRR

NET PRESENT VALUE	TOTAL BENEFITS	COSTS
@10% DISCOUNT	493396	2072976 1579580
@15% DISCOUNT	301362	1520711 1219349
@20% DISCOUNT	177757	1140668 962912

	B/C	IRR= .37
@10% DISCOUNT	1.31	
@15% DISCOUNT	1.25	
@20% DISCOUNT	1.18	

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TABLE D-8

COCOA PRODUCTION COSTS-IMPROVEMENT TO EXISTING STANDS — ECONOMIC PRICES

	UNITS	COST/UNI	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10
SALES REVENUES	LBS	1.00	620.00	750.00	750.00	1000.00	1000.00	1000.00	1000.00	1000.00	1000.00	1000.00
PROJECTED YIELDS	LBS		620.00	750.00	750.00	1000.00	1000.00	1000.00	1000.00	1000.00	1000.00	1000.00
VARIABLE COSTS			476.33	461.23	419.20	415.87	415.87	415.87	415.87	415.87	415.87	415.87
MATERIALS			122.20	122.20	111.20	111.20	111.20	111.20	111.20	111.20	111.20	111.20
FERTILIZER	LBS	.15	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
HERBICIDE	LITERS	8.00	16.00	16.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
PESTICIDE	LBS	1.35	5.40	5.40	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60
FUNGICIDE	LBS	1.20	10.80	10.80	9.60	9.60	9.60	9.60	9.60	9.60	9.60	9.60
LABOR	DAYS/PIECE		89.00	81.00	78.10	90.60	90.60	90.60	90.60	90.60	90.60	90.60
DRAIN INST/MNT $5.8/DAY	DAYS	2.90	17.40	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70
WEED CONTRL $5.8/DAY	DAYS	2.90	8.70	8.70	5.80	5.80	5.80	5.80	5.80	5.80	5.80	5.80
DISEASE CONTRL $5.8/DAY	DAYS	2.90	11.60	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70
FERTILIZING $5.8/DAY	DAYS	2.90	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70
TREE MAINT $5.8/DAY	DAYS	2.90	5.80	5.80	5.80	5.80	5.80	5.80	5.80	5.80	5.80	5.80
PROP,STAKE,MULCH $5.8/D	DAYS	2.90	5.80	2.90	2.90	2.90	2.90	2.90	2.90	2.90	2.90	2.90
HARVESTING $0.1/LB	$/LBS	.05	31.00	37.50	37.50	50.00	50.00	50.00	50.00	50.00	50.00	50.00
PACKAGING COSTS	SACKS	2.00	4.13	5.00	5.00	6.67	6.67	6.67	6.67	6.67	6.67	6.67
UTILITIES												
EQUIP MAINT&SPARES		12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50
DOMESTIC TRANSPORT			4.38	5.40	5.40	6.40	6.40	6.40	6.40	6.40	6.40	6.40
FERT/TRANSP $0.004/LB		.004	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
COCOA/TRANSP $0.004/LB		.004	2.48	3.00	3.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
EXPORT TAX PHASE OUT	-25%/YR	.15	69.75	56.25	28.13							
COMMISSIONS	$/LB	.04	23.87	28.88	28.88	38.50	38.50	38.50	38.50	38.50	38.50	38.50
STORAGE COSTS												
LAND RENTAL-ACT/IMPUTED		150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00
CONTINGENCIES	.05		23.82	23.06	20.96	20.79	20.79	20.79	20.79	20.79	20.79	20.73
FIXED COSTS			115.60	115.60	115.60	115.60	115.60	115.60	115.60	115.60	115.60	115.60
ADMINISTRATIVE COSTS GCA$/AC		64.60	64.60	64.60	64.60	64.60	64.60	64.60	64.60	64.60	64.60	64.60
MGMT/ACCTNG/SECTL		20000.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
OFFICE SUPPL/COMMUNIC		500.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EXTERNAL AUDIT		2500.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
INSURANCE CHARGES		2500.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
FIXED ASSETS			94.50	.00	.00	.00	56.00	.00	.00	.00	.00	.00
NEW EQUIPMENT		10000.00	20.00				20.00					
NEW VEHICLES		18000.00	36.00				36.00					
LAND IMPROVEMENT												
Land Clear $7.7/day	DAYS	3.85	38.50									
Land Prep $5.8/day	DAYS	2.90	.00									
Planting $5.8/day	DAYS	2.90	.00									
TREES-CLONAL 12X12	UNITS	4.75										
TREES-CLONAL 9X9	UNITS	4.75										
TREES-HYBRID SEED 12X12	UNITS	.48										
TREES HYBRID SEED 9X9	UNITS	.48										
LAND PURCHASE	ACRES	1875.00										
OTHER COSTS			30.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00
FEASIBILITY STUDY		10000.00	10.00									
TECHNICAL ASSISTANCE		20000.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	22.00
TOTAL INVESTMENT COST			716.43	596.83	534.80	551.47	607.47	551.47	551.47	551.47	551.47	551.47
NET BENEFITS	$		-96.43	153.18	195.20	448.53	392.53	448.53	448.53	448.53	448.53	448.53

TABLE D-9

LARGER FARMER COCOA REPLANT COSTS AND BENEFITS — ECONOMIC PRICES

	UNITS	COST/UNI	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10
SALES REVENUES	LBS	1.00	.00	.00	300.00	600.00	800.00	1000.00	1200.00	1200.00	1200.00	1200.00
PROJECTED YIELDS	LBS		.00	.00	300.00	600.00	800.00	1000.00	1200.00	1200.00	1200.00	1200.00
VARIABLE COSTS			345.10	338.60	357.70	376.20	396.03	415.87	435.70	435.70	435.70	435.70
MATERIALS			122.20	122.20	111.20	111.20	111.20	111.20	111.20	111.20	111.20	111.20
FERTILIZER	LBS	.15	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
HERBICIDE	LITERS	8.00	16.00	16.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
PESTICIDE	LBS	1.80	5.40	5.40	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60
FUNGICIDE	LBS	1.20	10.80	10.80	9.60	9.60	9.60	9.60	9.60	9.60	9.60	9.60
LABOR	DAYS/PIECE		50.20	43.50	55.60	70.60	80.60	90.60	100.60	100.60	100.60	100.60
DRAIN INST/MNT $5.8/DAY	DAYS	2.90	17.40	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70
WEED CONTRL $5.8/DAY	DAYS	2.90	8.70	8.70	5.80	5.80	5.80	5.80	5.80	5.80	5.80	5.80
DISEASE CONTRL $5.8/DAY	DAYS	2.90	11.60	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70
FERTILIZING $5.8/DAY	DAYS	2.90	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70
TREE MAINT $5.8/DAY	DAYS	2.90	5.80	5.80	5.80	5.80	5.80	5.80	5.80	5.80	5.80	5.80
PROP,STAKE,MULCH $5.8/D	DAYS	2.90	5.80	2.90	2.90	2.90	2.90	2.90	2.90	2.90	2.90	2.90
HARVESTING $0.1/LB	$/LBS	.05	.00	.00	15.00	30.00	40.00	50.00	60.00	60.00	60.00	60.00
PACKAGING COSTS	SACKS	2.00	.00	.00	2.00	4.00	5.33	6.67	8.00	8.00	8.00	8.00
UTILITIES												
EQUIP MAINTENANCES		12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50
DOMESTIC TRANSPORT			2.40	2.40	3.60	4.80	5.60	6.40	7.20	7.20	7.20	7.20
FERT/TRANSP $0.004/LB		.004	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
COCOA/TRANSP $0.004/LB		.004	.00	.00	1.20	2.40	3.20	4.00	4.80	4.80	4.80	4.80
EXPORT TAX PHASE OUT	-25%/YR	.15	.00	.00	11.25							
COMMISSIONS	$/LB	.04	.00	.00	11.55	23.10	30.80	38.50	46.20	46.20	46.20	46.20
STORAGE COSTS												
LAND RENTAL-ACT/IMPUTED		150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00
CONTINGENCIES	.05		17.26	16.53	17.89	18.01	19.80	20.79	21.79	21.79	21.79	21.79
FIXED COSTS			115.60	115.60	115.60	115.60	115.60	115.60	115.60	115.60	115.60	115.60
ADMINISTRATIVE COSTS GCA$/AC		64.60	64.60	64.60	64.60	64.60	64.60	64.60	64.60	64.60	64.60	64.60
MGMT/ACCTNG/SECTL		20000.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
OFFICE SUPPL/COMMUNIC		500.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EXTERNAL AUDIT		2500.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
INSURANCE CHARGES		2500.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
FIXED ASSETS			861.00	.00	.00	.00	56.00	.00	.00	.00	.00	.00
NEW EQUIPMENT		10000.00	20.00				20.00					
NEW VEHICLES		10000.00	36.00				36.00					
LAND IMPROVEMENT												
Land Clear $7.7/day	DAYS	3.85	46.20									
Land Prep $5.8/day	DAYS	2.90	23.20									
Planting $5.8/day	DAYS	2.90	17.40									
TREES-CLONAL 12X12	UNITS	4.75										
TREES-CLONAL 9X9	UNITS	4.75	513.00									
TREES-HYBRID SEED 12X12	UNITS	.48										
TREES-HYBRID SEED 9X9	UNITS	.48	205.20									
LAND PURCHASE	ACRES	1875.00										
OTHER COSTS			30.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00
FEASIBILITY STUDY		10000.00	10.00									
TECHNICAL ASSISTANCE		20000.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00
TOTAL INVESTMENT COST			1351.70	466.20	493.30	511.80	587.63	551.47	571.30	571.30	571.30	571.30
NET BENEFITS	$		-1351.70	-466.20	-193.30	88.20	212.37	448.53	628.70	628.70	628.70	628.70

TABLE D-10

MODEL FARM COCOA COSTS AND RETURNS TO IMPROVEMENT OF EXISTING STANDS — ECONOMIC PRICES

	UNITS	COST/UNI	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10
SALES REVENUES	LBS	1.00	500.00	750.00	1000.00	1000.00	1200.00	1200.00	1200.00	1200.00	1200.00	1200.00
PROJECTED YIELDS	LBS		500.00	750.00	1000.00	1000.00	1200.00	1200.00	1200.00	1200.00	1200.00	1200.00
VARIABLE COSTS			458.93	461.23	453.37	415.87	435.70	435.70	435.70	435.70	435.70	435.70
MATERIALS			122.20	122.20	111.20	111.20	111.20	111.20	111.20	111.20	111.20	111.20
FERTILIZER	LBS	.15	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
HERBICIDE	LITERS	8.00	16.00	16.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
PESTICIDE	LBS	1.00	5.40	5.40	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60
FUNGICIDE	LBS	1.20	10.80	10.80	9.60	9.60	9.60	9.60	9.60	9.60	9.60	9.60
LABOR	DAYS/PIECE		83.00	81.00	90.60	90.60	100.60	100.60	100.60	100.60	100.60	100.60
DRAIN INST/MNT $5.8/DAY	DAYS	2.90	17.40	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70
WEED CONTRL $5.8/DAY	DAYS	2.90	8.70	8.70	5.80	5.80	5.80	5.80	5.80	5.80	5.80	5.80
DISEASE CONTRL $5.8/DAY	DAYS	2.90	11.60	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70
FERTILIZING $5.8/DAY	DAYS	2.90	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70
TREE MAINT $5.8/DAY	DAYS	2.90	5.80	5.80	5.80	5.80	5.80	5.80	5.80	5.80	5.80	5.80
PROP,STAKE,MULCH $5.8/D	DAYS	2.90	5.80	2.90	2.90	2.90	2.90	2.90	2.90	2.90	2.90	2.90
HARVESTING $0.1/LB	$/LBS	.05	25.00	37.50	50.00	50.00	60.00	60.00	60.00	60.00	60.00	60.00
PACKAGING COSTS	SACKS	2.00	3.33	5.00	6.67	6.67	8.00	8.00	8.00	8.00	8.00	8.00
UTILITIES												
EQUIP MAINT&SPARES		12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50
DOMESTIC TRANSPORT			4.40	5.40	6.40	6.40	7.20	7.20	7.20	7.20	7.20	7.20
FERT/TRANSP $0.004/LB		.004	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
COCOA/TRANSP $0.004/LB		.004	2.00	3.00	4.00	4.00	4.80	4.80	4.80	4.80	4.80	4.80
EXPORT TAX PHASE OUT	-25%/YR	.15	56.25	56.25	37.50							
COMMISSIONS	$/LB	.04	19.25	28.88	38.50	38.50	46.20	46.20	46.20	46.20	46.20	46.20
STORAGE COSTS												
LAND RENTAL-ACT/IMPUTED		150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00
CONTINGENCIES	.05		22.55	23.06	22.67	20.79	21.79	21.79	21.79	21.79	21.79	21.79
FIXED COSTS			95.03	95.03	95.03	95.03	95.03	95.03	95.03	95.03	95.03	95.03
ADMINISTRATIVE COSTS 6CA$/AC		64.60	64.60	64.60	64.60	64.60	64.60	64.60	64.60	64.60	64.60	64.60
MGMT/ACCTNG/SECTL		20000.00	23.87	23.87	23.87	23.87	23.87	23.87	23.87	23.87	23.87	23.87
OFFICE SUPPL/COMMUNIC		500.00	.60	.60	.60	.60	.60	.60	.60	.60	.60	.60
EXTERNAL AUDIT		2500.00	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98
INSURANCE CHARGES		2500.00	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98
FIXED ASSETS			71.91	.00	.00	.00	33.41	.00	.00	.00	.00	.00
NEW EQUIPMENT		10000.00	11.93				11.93					
NEW VEHICLES		18000.00	21.48				21.48					
LAND IMPROVEMENT												
Land Clear $7.7/day	DAYS	3.85	38.50									
Land Prep $5.8/day	DAYS	2.90										
Planting $5.8/day	DAYS	2.90										
TREES-CLONAL 12X12	UNITS	4.75										
TREES-CLONAL 9X9	UNITS	4.75										
TREES-HYBRID SEED 12X12	UNITS	.46										
TREES-HYBRID SEED 9X9	UNITS	.48										
LAND PURCHASE (6% I)	ACRES	1500.00										
OTHER COSTS			35.80	23.67	23.87	23.87	23.87	23.87	23.87	23.87	23.87	23.87
FEASIBILITY STUDY		10000.00	11.93									
TECHNICAL ASSISTANCE		20000.00	23.87	23.67	23.87	23.87	23.87	23.87	23.87	23.87	23.87	23.87
TOTAL INVESTMENT COST			653.68	580.12	572.26	534.76	588.01	554.60	554.60	554.60	554.60	554.60
NET BENEFITS	$		-153.68	169.88	427.74	465.24	611.99	645.40	645.40	645.40	645.40	645.40

TABLE D-11

MODEL FARM COCOA REPLANT CLONAL:HYBRID = 20:80 COSTS AND RETURNS ECONOMIC PRICES

	UNITS	COST/UNI	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10
SALES REVENUES	LBS	1.00	.00	.00	300.00	600.00	750.00	1000.00	1200.00	1200.00	1200.00	1200.00
PROJECTED YIELDS	LBS		.00	.00	300.00	600.00	750.00	1000.00	1200.00	1200.00	1200.00	1200.00
VARIABLE COSTS			345.10	327.70	357.70	376.20	391.00	415.87	435.70	435.70	435.70	435.70
MATERIALS			122.20	122.20	111.20	111.20	111.20	111.20	111.20	111.20	111.20	111.20
FERTILIZER	LBS	.15	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
HERBICIDE	LITERS	8.00	16.00	16.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
PESTICIDE	LBS	1.00	5.40	5.40	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60
FUNGICIDE	LBS	1.20	10.80	10.80	9.60	9.60	9.60	9.60	9.60	9.60	9.60	9.60
LABOR	DAYS/PIECE		58.00	40.60	55.60	70.60	78.10	90.60	100.60	100.60	100.60	100.60
DRAIN INST/MNT $5.8/DAY	DAYS	2.90	17.40	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70
WEED CONTRL $5.8/DAY	DAYS	2.90	9.70	5.80	5.80	5.80	5.80	5.80	5.80	5.80	5.80	5.80
DISEASE CONTRL $5.8/DAY	DAYS	2.90	11.60	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70
FERTILIZING $5.8/DAY	DAYS	2.90	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70
TREE MAINT $5.8/DAY	DAYS	2.90	5.80	5.80	5.80	5.80	5.80	5.80	5.80	5.80	5.80	5.80
PROP,STAKE,MULCH $5.8/D	DAYS	2.90	5.80	2.90	2.90	2.90	2.90	2.90	2.90	2.90	2.90	2.90
HARVESTING $0.1/LB	$/LBS	.05	.00	.00	15.00	30.00	37.50	50.00	60.00	60.00	60.00	60.00
PACKAGING COSTS	SACKS	2.00	.00	.00	2.00	4.00	5.00	6.67	8.00	8.00	8.00	8.00
UTILITIES												
EQUIP MAINT&SPARES		12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50
DOMESTIC TRANSPORT			2.40	2.40	3.60	4.80	5.40	6.40	7.20	7.20	7.20	7.20
FERT/TRANSP $0.004/LB		.004	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
COCOA/TRANSP $0.004/LB		.004	.00	.00	1.20	2.40	3.00	4.00	4.80	4.80	4.80	4.80
EXPORT TAX PHASE OUT	-25%/YR	.15	.00	.00	11.25							
COMMISSIONS	$/LB	.04	.00	.00	11.55	23.10	26.88	38.50	46.20	46.20	46.20	46.20
STORAGE COSTS												
LAND RENTAL-ACT/IMPUTED		150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00
CONTINGENCIES	.05		17.26	16.39	17.89	18.81	19.55	20.79	21.79	21.79	21.79	21.79
FIXED COSTS			95.03	95.03	95.03	95.03	95.03	95.03	95.03	95.03	95.03	95.03
ADMINISTRATIVE COSTS GCA$/AC		64.60	64.60	64.60	64.60	64.60	64.60	64.60	64.60	64.60	64.60	64.60
MGMT/ACCTNG/SECTL		20000.00	23.87	23.87	23.87	23.87	23.87	23.87	23.87	23.87	23.87	23.87
OFFICE SUPPL/COMMUNIC		500.00	.60	.60	.60	.60	.60	.60	.60	.60	.60	.60
EXTERNAL AUDIT		2500.00	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98
INSURANCE CHARGES		2500.00	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98
FIXED ASSETS			511.51	.00	.00	.00	33.41	.00	.00	.00	.00	.00
NEW EQUIPMENT		10000.00	11.93				11.93					
NEW VEHICLES		18000.00	21.48				21.48					
LAND IMPROVEMENT												
Land Clear $7.7/day	DAYS	3.85	38.50									
Land Prep $5.8/day	DAYS	2.90	23.20									
Planting $5.8/day	DAYS	2.90	17.40									
TREES-CLONAL 12X12	UNITS	4.75	285.00									
TREES-CLONAL 9X9	UNITS	4.75										
TREES-HYBRID SEED 12X12	UNITS	.48	114.00									
TREES-HYBRID SEED 9X9	UNITS	.48										
LAND PURCHASE (6x 1)	ACRES	1875.00										
OTHER COSTS			35.80	23.87	23.87	23.87	23.87	23.87	23.87	23.87	23.87	23.87
FEASIBILITY STUDY		10000.00	11.93									
TECHNICAL ASSISTANCE		20000.00	23.87	23.87	23.87	23.87	23.87	23.87	23.87	23.87	23.87	23.87
TOTAL INVESTMENT COST			987.44	446.60	476.60	495.10	543.38	534.76	554.60	554.60	554.60	554.60
NET BENEFITS	$		-987.44	-446.60	-176.60	104.90	206.62	465.24	645.40	645.40	645.40	645.40

TABLE D-12

JOINT VENTURE

LARGER FARMER COCOA REPLANT COSTS AND BENEFITS ALL HYBRID SEEDLING OPTION ECONOMIC PRICES

	UNITS	COST/UNI	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10
SALES REVENUES	LDS	1.00	.00	.00	300.00	600.00	800.00	1000.00	1200.00	1200.00	1200.00	1200.00
PROJECTED YIELDS	LBS		.00	.00	300.00	600.00	800.00	1000.00	1200.00	1200.00	1200.00	1200.00
VARIABLE COSTS			362.45	350.85	372.15	390.65	410.48	427.42	447.25	447.25	447.25	447.25
MATERIALS			133.45	133.45	122.45	122.45	122.45	122.45	122.45	122.45	122.45	122.45
FERTILIZER	LBS	.15	101.25	101.25	101.25	101.25	101.25	101.25	101.25	101.25	101.25	101.25
HERBICIDE	LITERS	8.00	16.00	16.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
PESTICIDE	LBS	1.80	5.40	5.40	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60
FUNGICIDE	LBS	1.20	10.80	10.80	9.60	9.60	9.60	9.60	9.60	9.60	9.60	9.60
LABOR	DAYS/PIECE		63.00	52.20	50.50	73.50	83.50	90.60	100.60	100.60	100.60	100.60
DRAIN INST/MNT $5.8/DAY	DAYS	2.90	17.40	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70
WEED CONTRL $5.8/DAY	DAYS	2.90	8.70	8.70	5.60	5.80	5.80	5.80	5.80	5.80	5.80	5.80
DISEASE CONTRL $5.8/DAY	DAYS	2.90	11.60	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70
FERTILIZING $5.8/DAY	DAYS	2.90	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70
TREE MAINT $5.8/DAY	DAYS	2.90	5.80	5.80	5.60	5.60	5.80	5.60	5.80	5.80	5.80	5.80
PROP,STAKE,MULCH $5.8/D	DAYS	2.90	11.60	11.60	5.80	5.80	5.80	2.90	2.90	2.90	2.90	2.90
HARVESTING $0.1/LB	$/LBS	.05	.00	.00	15.00	30.00	40.00	50.00	60.00	60.00	60.00	60.00
PACKAGING COSTS	SACKS	2.00	.00	.00	2.00	4.00	5.33	6.67	8.00	8.00	8.00	6.00
UTILITIES												
EQUIP MAINT&SPARES		12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50
DOMESTIC TRANSPORT			2.70	2.70	3.90	5.10	5.90	6.70	7.50	7.50	7.50	7.50
FERT/TRANSP $0.004/LB		.00	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70
COCOA/TRANSP $0.004/LB		.00	.00	.00	1.20	2.40	3.20	4.00	4.00	4.00	4.00	4.00
EXPORT TAX PHASE OUT	-25%/YR	.15	.00	.00	11.25							
COMMISSIONS	$/LB	.04	.00	.00	11.55	23.10	30.80	38.50	46.20	46.20	46.20	46.20
STORAGE COSTS												
LAND RENTAL-ACT/IMPUTED		150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00
CONTINGENCIES	.05		18.12	17.54	18.61	19.53	20.52	21.37	22.36	22.36	22.36	22.36
FIXED COSTS			105.36	106.28	107.23	108.21	109.22	110.26	111.33	112.43	113.57	114.73
ADMINISTRATIVE COSTS GCR$/AC		64.60	64.60	64.60	64.60	64.60	64.60	64.60	64.60	64.60	64.60	64.60
MGMT/ACCTNG/SECTL		30.76	30.76	31.68	32.63	33.61	34.62	35.66	36.73	37.83	38.97	40.13
OFFICE SUPPL/COMMUNIC		2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
EXTERNAL AUDIT		4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
INSURANCE CHARGES		4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
FIXED ASSETS			435.30	.00	.00	.00	.00	92.00	.00	.00	.00	.00
NEW EQUIPMENT			20.00					20.00				
NEW VEHICLES			72.00					72.00				
LAND IMPROVEMENT												
Land Clear $7.7/day	DAYS	3.85	46.20									
Land Prep $5.8/day	DAYS	2.90	23.20									
Planting $5.8/day	DAYS	2.90	17.40									
TREES-CLONAL 12X12	UNITS	4.75										
TREES-CLONAL 9X9	UNITS	4.75	.00									
TREES-HYBRID SEED 12X12	UNITS	.46										
TREES-HYBRID SEED 9X9	UNITS	.46	256.50									
LAND PURCHASE (6% I)	ACRES	1675.00										
OTHER COSTS			26.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00
FEASIBILITY STUDY	ACRES	1500.00	6.00									
TECHNICAL ASSISTANCE	ACRES	5000.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00
TOTAL INVESTMENT COST			929.11	477.13	499.38	518.86	539.70	649.68	578.58	579.68	580.82	581.98
NET BENEFITS	$		-929.11	-477.13	-199.38	81.14	260.30	350.32	621.42	620.32	619.18	618.02

TABLE D-13

ST. LUCIA COCOA IMPROVEMENT COSTS AND RETURNS ECONOMIC SHADOW PRICES

	UNITS	COST/UNI	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10
SALES REVENUES	LBS	1.25	775.00	937.50	937.50	1250.00	1250.00	1250.00	1250.00	1250.00	1250.00	1250.00
PROJECTED YIELDS	LBS		620.00	750.00	750.00	1000.00	1000.00	1000.00	1000.00	1000.00	1000.00	1000.00
VARIABLE COSTS			475.00	489.43	472.63	522.67	522.67	519.77	519.77	519.77	519.77	519.77
MATERIALS			122.20	122.20	111.20	111.20	111.20	111.20	111.20	111.20	111.20	111.20
FERTILIZER	LBS	.15	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
HERBICIDE	LITERS	8.00	16.00	16.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
PESTICIDE	LBS	1.80	5.40	5.40	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60
FUNGICIDE	LBS	1.20	10.80	10.80	9.60	9.60	9.60	9.60	9.60	9.60	9.60	9.60
LABOR	DAYS/PIECE		94.80	89.70	83.90	96.40	96.40	93.50	93.50	93.50	93.50	93.50
DRAIN INST/MNT $2.9/DAY	DAYS	2.90	17.40	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70
WEED CONTRL $2.9/DAY	DAYS	2.90	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70
DISEASE CONTRL $2.9/DAY	DAYS	2.90	11.60	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70
FERTILIZING $2.9/DAY	DAYS	2.90	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70
TREE MAINT $2.9/DAY	DAYS	2.90	5.80	5.80	5.80	5.80	5.80	5.80	5.80	5.80	5.80	5.80
PROP,STAKE,MULCH $2.9/D	DAYS	2.90	11.60	11.60	5.80	5.80	5.80	2.90	2.90	2.90	2.90	2.90
HARVESTING $0.05/LB	$/LBS	.05	31.00	37.50	37.50	50.00	50.00	50.00	50.00	50.00	50.00	50.00
PACKAGING COSTS	SACKS	2.00	4.13	5.00	5.00	6.67	6.67	6.67	6.67	6.67	6.67	6.67
UTILITIES												
EQUIP MAINT&SPARES		12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50
DOMESTIC TRANSPORT			5.50	6.15	6.15	7.40	7.40	7.40	7.40	7.40	7.40	7.40
FERT/TRANSP $0.004/LB		.004	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
COCOA/TRANSP $0.004/LB		.004	3.10	3.75	3.75	5.00	5.00	5.00	5.00	5.00	5.00	5.00
CESS FOR OUTREACH PGM	$/LB	.05	31.00	37.50	37.50	50.00	50.00	50.00	50.00	50.00	50.00	50.00
COMMISSIONS	$/LB	.04	23.87	28.88	28.88	38.50	38.50	38.50	38.50	38.50	38.50	38.50
STORAGE COSTS	$/LB	.05	31.00	37.50	37.50	50.00	50.00	50.00	50.00	50.00	50.00	50.00
LAND RENTAL-ACT/IMPUTED		150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00
CONTINGENCIES	.05		23.75	24.47	23.63	26.13	26.13	25.99	25.99	25.99	25.99	25.99
FIXED COSTS			72.50	72.50	72.50	72.50	72.50	72.50	72.50	72.50	72.50	72.50
ADMINISTRATIVE COSTS SLA$/AC		30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00
MGMT/ACCTNG/SECTL		20000.00	33.33	33.33	33.33	33.33	33.33	33.33	33.33	33.33	33.33	33.33
OFFICE SUPPL/COMMUNIC		500.00	.83	.83	.83	.83	.83	.83	.83	.83	.83	.83
EXTERNAL AUDIT		2500.00	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17
INSURANCE CHARGES		2500.00	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17
FIXED ASSETS			92.87	.22	.00	.00	46.67	.00	.00	.00	.00	.00
NEW EQUIPMENT		5000.00	16.67				16.67					
NEW VEHICLES		9000.00	30.00				30.00					
LAND IMPROVEMENT												
Land Clear $3.9/day	DAYS	3.85	46.20									
Land Prep $2.9/day	DAYS	2.90	.00									
Planting $2.9/day	DAYS	2.90	.00									
TREES-CLONAL 12X12	UNITS	4.75										
TREES-CLONAL 9X9	UNITS	4.75	.00									
TREES-HYBRID SEED 12X12	UNITS	.48										
TREES-HYBRID SEED 9X9	UNITS	.48	.00									
LAND PURCHASE (6% I)	ACRES	1875.00										
OTHER COSTS			50.00	33.33	33.33	33.33	33.33	33.33	33.33	33.33	33.33	33.33
FEASIBILITY STUDY		5000.00	16.67									
TECHNICAL ASSISTANCE		10000.00	33.33	33.33	33.33	33.33	33.33	33.33	33.33	33.33	33.33	33.33
TOTAL INVESTMENT COST			698.37	595.26	578.46	628.50	675.17	625.60	625.60	625.60	625.60	625.60
NET BENEFITS	$		84.63	342.24	359.04	621.50	574.83	624.40	624.40	624.40	624.40	624.40

TABLE D-14

ST. LUCIA COCOA REPLANTING COSTS AND RETURNS FOR 100% HYBRID SEEDLINGS ECONOMIC SHADOW PRICES

	UNITS	COST/UNI	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10
SALES REVENUES	LBS	1.25	.00	.00	375.00	750.00	1000.00	1250.00	1500.00	1500.00	1500.00	1500.00
PROJECTED YIELDS	LBS		.00	.00	300.00	600.00	800.00	1000.00	1200.00	1200.00	1200.00	1200.00
VARIABLE COSTS			362.45	350.85	397.85	461.65	504.18	543.82	586.35	586.35	586.35	586.35
MATERIALS			133.45	133.45	122.45	122.45	122.45	122.45	122.45	122.45	122.45	122.45
FERTILIZER	LBS	.15	101.25	101.25	101.25	101.25	101.25	101.25	101.25	101.25	101.25	101.25
HERBICIDE	LITERS	8.00	16.00	16.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
PESTICIDE	LBS	1.80	5.40	5.40	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60
FUNGICIDE	LBS	1.20	10.80	10.80	9.60	9.60	9.60	9.60	9.60	9.60	9.60	9.60
LABOR	DAYS/PIECE		63.80	52.20	65.15	83.90	96.40	106.00	118.50	118.50	118.50	118.50
DRAIN INST/MNT $2.9/DAY	DAYS	2.90	17.40	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70
WEED CONTRL $2.9/DAY	DAYS	2.90	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70
DISEASE CONTRL $2.9/DAY	DAYS	2.90	11.60	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70
FERTILIZING $2.9/DAY	DAYS	2.90	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70	8.70
TREE MAINT $2.9/DAY	DAYS	2.90	5.80	5.80	5.80	5.80	5.80	5.80	5.80	5.80	5.80	5.80
PROP,STAKE,MULCH $2.9/D	DAYS	2.90	11.60	11.60	5.80	5.80	5.80	2.90	2.90	2.90	2.90	2.90
HARVESTING $0.05/LB	$/LBS	.05	.00	.00	18.75	37.50	50.00	62.50	75.00	75.00	75.00	75.00
PACKAGING COSTS	SACKS	2.00	.00	.00	2.00	4.00	5.33	6.67	8.00	8.00	8.00	8.00
UTILITIES												
EQUIP MAINT&SPARES		12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50
DOMESTIC TRANSPORT			2.70	2.70	4.20	5.70	6.70	7.70	8.70	8.70	8.70	8.70
FERT/TRANSP $0.004/LB		.004	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70
COCOA/TRANSP $0.004/LB		.004	.00	.00	1.50	3.00	4.00	5.00	6.00	6.00	6.00	6.00
CESS FOR OUTREACH PGM	$/LB	.05	.00	.00	15.00	30.00	40.00	50.00	60.00	60.00	60.00	60.00
COMMISSIONS	$/LB	.04	.00	.00	11.55	23.10	30.80	38.50	46.20	46.20	46.20	46.20
STORAGE COSTS	$/LB	.05	.00	.00	15.00	30.00	40.00	50.00	60.00	60.00	60.00	60.00
LAND RENTAL-ACT/IMPUTED		150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00
CONTINGENCIES	.05		18.12	17.54	19.89	23.08	25.21	27.19	29.32	29.32	29.32	29.32
FIXED COSTS			72.50	72.50	72.50	72.50	72.50	72.50	72.50	72.50	72.50	72.50
ADMINISTRATIVE COSTS $30/AC		30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00
MGMT/ACCTNG/SECTL		20000.00	33.33	33.33	33.33	33.33	33.33	33.33	33.33	33.33	33.33	33.33
OFFICE SUPPL/COMMUNIC		500.00	.83	.83	.83	.83	.83	.83	.83	.83	.83	.83
EXTERNAL AUDIT		2500.00	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17
INSURANCE CHARGES		2500.00	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17
FIXED ASSETS			389.97	.00	.00	.00	46.67	.00	.00	.00	.00	.00
NEW EQUIPMENT		5000.00	16.67				16.67					
NEW VEHICLES		9000.00	30.00				30.00					
LAND IMPROVEMENT												
Land Clear $3.9/day	DAYS	3.85	46.20									
Land Prep $2.9/day	DAYS	2.90	23.20									
Planting $2.9/day	DAYS	2.90	17.40									
TREES-CLONAL 12X12	UNITS	4.75										
TREES-CLONAL 9X9	UNITS	4.75	.00									
TREES-HYBRID SEED 12X12	UNITS	.48										
TREES-HYBRID SEED 9X9	UNITS	.48	256.50									
LAND PURCHASE (6x I)	ACRES	1875.00										
OTHER COSTS			50.00	33.33	33.33	33.33	33.33	33.33	33.33	33.33	33.33	33.33
FEASIBILITY STUDY		10000.00	16.67									
TECHNICAL ASSISTANCE		20000.00	33.33	33.33	33.33	33.33	33.33	33.33	33.33	33.33	33.33	33.33
TOTAL INVESTMENT COST			874.92	456.68	503.68	567.48	656.68	649.65	692.18	692.18	692.18	692.18
NET BENEFITS	$		-874.92	-456.68	-128.68	182.52	343.32	600.35	807.82	807.82	807.82	807.82

REGIONAL TROPICAL FRUIT SUB-PROJECT

1. Rationale

The role of the major sub-projects in HIAMP is to influence the way that major new initiatives in crop production and marketing are undertaken to restructure national and regional agricultural environments such that private sector produce growers, buyers, packers, shippers, and sellers can profitably exploit export market opportunities. The anticipated result will be a significant annual growth in GDP over the period 1985 to 1995 (specifically, the HIAMP Project purpose is to boost contributions of the agricultural sector to GDP by five per cent per annum compounded). HIAMP stresses short- and medium-term returns to the investment of Project resources. Within the Eastern Caribbean, tropical fruits are an integral component of the mixed cropping farming systems and provide an important source of farm revenue for many growers. The opportunity exists for a HIAMP major sub-project to address and redress some major production and marketing problems that face the tropical fruit sector, with its existing production stock, in the region and, thereby, generate significant, immediate and medium-term returns from the tropical fruits sector.

Over the past decade, development projects aimed at increasing regional output of fruits (citrus, mangoes, avocados on Dominica and St. Lucia as part of British Development Division aid projects, in particular) have been implemented. They are now showing increased levels of output and are projected to show substantially increased output over the next few years. In Table K.1, the estimated production from existing tree crop acreage is shown with projected production for 1995 - production of selected fruits in the Leewards and Windwards is expected to increase from about 20,000 tonnes in 1985 to 36,000 tonnes in less than 10 years time. The data displayed in Table K.1 does not reveal four major regional concerns, viz:

* Of present Leeward and Windward Island production (20,000 tonnes), only a relatively small proportion enters commerical trade i.e. much of present production is never harvested (witness the tonnes of grapefruit that rot on the trees in Dominica) or spoils prior to sale;

* The present level of production could be increased significantly and its commercial value enhanced if (a) production practices were improved (e.g. improved chemical treatment, pruning, spacing, access to sunlight etc.), and (b) short-term varietal changes were made (e.g. mangoes from Julie to Tommy Atkins or by top-working marsh seedless grapefruit to produce the much more market desirable ruby red grapefruit for European markets).

* Of the major tree fruit commodity lines produced in the Eastern Caribbean - citrus, mango, avocado - there are immediate potential markets for these commodities in North America and Europe (See Annex H - Marketing Analysis), but there are inadequate marketing arrangements in place to ensure that Eastern Caribbean tropical fruit can successfully penetrate these markets.

* The exploration of fruits to extra-regional markets that have been traditionally grown in the region (e.g. breadfruit) are far below potential, reflecting inadequate practices for harvesting, cooling, packing etc. which have led to the establishment of a justly-earned poor reputation for quality and reliability of supply. There has been little or no penetration of exotic and ethnic extra-regional export markets for many of the exotic fruits grown in the region (e.g. soursop, golden apple, sappodilla, etc.) although they have wide acceptance in intra-regional markets and potentially, could establish important niche markets in developed countries that have a relatively high Caribbean immigrant population.

These four major concerns define a unique opportunity for a Regional Tropical Fruit Sub-Project to have a substantial short- and medium-term impact on tree crop export revenues and, thereby, contribute to the attainment of HIAMP objectives. The sub-project can provide a market-driven focus through: identifying specific markets for regional tropical fruits; linking buyers and sellers of the produce; and strengthening existing and building new and private sector institutions for collecting, grading, packing and exporting marketable produce; and improving and expanding the existing production base within the region. The sub-project will gain wide support from governments, growers and tropical fruit trade participants in the region as it addresses known and fundamental weaknesses in the tropical fruit production and marketing system.

2. Sub-Project Description

(a) Outline Description

In advance of formal design of the sub-project, it is premature to identify the specific nature of the components; however, it is possible to sketch out the type of project inputs and the sub-project implementation picture in general terms.

The central purpose of the tropical fruit sub-project is to get tropical fruit exports moving, i.e. to generate export sales revenues from fruits grown in the region; the major mechanism for achieving this will be using sub-project resources to establish a vibrant, private sector-led, export marketing system in the region. The nature of the marketing organizations that will be the institutional vehicles for expanding fruit exports may well vary by island. For example, the sub-project may have a leading role in establishing a Tropical Fruit Growers' Association in St. Lucia as the major institution responsible for organizing production, collecting/grading/packing produce for export shipment via CATCO to the U.K. market. Alternatively, this model may not be appropriate in, say, St. Vincent where a privately-owned corporation might be supported by project resources to undertake

collection/grading/packing/exporting functions on behalf of Vincentian growers. Or, yet again, a combination of the above Vincentian/St. Lucian models might be most appropriate i.e. Growers' Association in a tri-partite joint venture with a local private sector company and an extra-regional party representing interests at point of market. The design team will identify the model which is most appropriate for each supply country.

While the central implementation focus of the sub-project is the establishment and launching of marketing institutions and arrangements for regional tropical fruit produce, there will be other complementary and similarly fundamentally important components:

* A comprehensive assessment of consumer and trade requirements for existing commercial tropical fruit products in key export markets will be undertaken. Initially, the focus will be on the "main-line" commodities mangoes, citrus and avocados, but will also extend to fruits that are grown in the region but are not sold commercially in extra-regional markets (e.g. soursop, sugar/custard/star/mammey/golden/malay apples, sappodilla, genip, mombin, tamarind, passion fruit etc.). In conjunction with regional marketing system participants, buyers will be contacted in export markets and trading arrangements outlined and negotiated. Test marketing of main-line and exotic fruits will be undertaken to "iron-out" start-up problems in the export marketing systems.

* In conjunction with HIAMP core contractor staff in the region and in the U.S., interested U.S. investors/joint venture partners will be identified and introduced to regional private sector marketing firms to provide U.S. marketing expertise and, as export volumes develop, to gain secure market access to the U.S. for selected exotic produce. In this respect, if St. Vincent and Grenada are awarded "Fruit Fly Free Status" in the U.S. (the possibility is now being investigated by U.S.D.A.), then, there may well be substantial interest from U.S. fresh produce marketing firms as these two countries would be unique sources of some fresh tropical fruit to the U.S. market, e.g., passion fruit.

* Explore the feasibility, select a location and institutional vehicle, and establish a regional export market development service which would: ensure compatability and market acceptability of export grades and standards, negotiate on a regional basis on fresh produce air and sea freight rates with transport carriers; and provide a source and distribution point for regional supply and extra-regional export market intelligence. The Regional marketing participants can access existing extra-regional market intelligence sources (e.g. COLEACP market bulletins, ITC tropical produce European market telex service, etc). However, there may be advantages in establishing a centre for collecting, synthesising, and disseminating market intelligence from an existing institution in the region e.g. CATCO (although conflict of interest problems might negate this location), Regional Growers' Association, etc.

* Technical assistance would be provided for production and marketing planning, production/post-harvest/market problem-solving, short- and long-term management assistance to private sector (firms, grower organizations, national/regional service agencies etc.), and training of appropriate personnel in production, marketing and business management practices and procedures in general. Within this component, assistance would be provided to upgrade present production practices to improve the quality and quantity of exportable produce.

* Capital items would be provided by the sub-project to upgrade the marketing infra-structure within the region. This would include the construction of collecting/grading/packing facilities and purchase of required post-harvest equipment, building of cool storage units etc. Similarly, project funds would be utilized in smoothing out transportation flows and improving selected transportation facilities within the region, such that the cost efficacy of trans-shipment between islands for extra-regional shipment to export markets can be improved.

(b) Sub-Project Funding and Financial Plan

			$'000		
	FY 87	FY 88	FY 89	FY 90	LOP Total
Production and Marketing Infra-structure	500	1,500	1,500	500	4,000
Export Market Development Assistance	100	100	100	100	400
Technical Assistance	200	200	200	200	800
Training	200	200	200	200	800
	1,000	2,000	2,000	1,000	6,000

The total cost of the Regional Tropical Fruits Sub-Project is estimated to be $6 million. Purchase of commodities for infra-structural improvement in the production and marketing system will amount to $4.0 million over the life of the project; a market development fund of $100,000 available in each financial year will provide facilitatory grant funding to remove constraints that are halting export flows. Technical assistance and training costs are estimated at $1.6 million over the life of the project.

3. Sub-Project Design Steps

Within the first six months of HIAMP implementation, the core contractor will assemble a team to initiate and complete the design of the Regional Tropical Fruits Sub-Project. The Sub-Project will be designed to

Handbook III standards, and submitted to the Director RDO/C for immediate authorization. The purpose of the Regional Tropical Fruits Sub-Project will be to contribute to the attainment of the HIAMP goal and purpose through generating profitable sales of tropical fruits in, initially, Europe and Canada and, subsequently, as export volumes increase and export marketing systems develop, in U.S. markets for exotic tropical produce.

(a) Structure of Design Team

The Sub-Project design team should comprise the following functional specialists and time inputs:

	Time Input - Person Months -
Team Leader and Senior Marketing Economist	3
Tree Crop Agronomist (Major commodities)	3
Post-Harvest Specialist	2
Agro-Processing Specialist	1
Marketing Institution (O&M) Specialist	2
Financial Analyst	2
Tree Crop Agronomist (Specialized exotics)	1
Transportation Economist	1
Regionally-based General Agriculturalist	1
TOTAL PERSON MONTHS	16

The elapsed time for completion of sub-project design will be 3 months. Estimated costs of technical assistance for design completion are $192,000 (i.e. 16 p.m. x $12,000).

(b) Design Steps - Major Components

i. Evaluation of Existing Tropical Fruits Production and Marketing Situation

* Review and prepare synopses of relevant existing studies, reports etc. Review documentation on existing and planned tropical fruits development projects. Special attention will be given to the results of the IICA study at fruit production in St. Lucia. Undertake initial series of field visits, contact with production and marketing system participants, national/regional agencies, Governments etc. This would include undertaking field visits to existing export markets (U.K./Canada) to discern buyer/potential buyer reaction to regional fruit supplies (quality/reliability/price etc.)

* Documentation of existing production and marketing situation (including comprehensive review of existing systems).

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* Analysis of relationship between existing/projected supply and demand for main line fruits, opportunities for exotic produce not currently grown on a commercial scale.

* Specification of the existing roles of institutions in the production and marketing system (including growers, grower associations, other farmer organizations, private sector traders, national and regional agencies, extra-regional shippers, national governments), and discussions with same to ascertain aspirations of each group in future expansion of export trade.

* Identification of constraints to export market development for tropical fruits - agronomic, producer organization, service agency support, post-harvest, transport, marketing facility availability and adequacy, access to export markets, institutional (private sector and public sector), human resources, access to finance, governments etc.

ii. Specification of Initiatives Required to Stimulate Export Market Development

* Assessment of required initiatives to remove key constraints in the system. Evaluation of impact on systems performance of individual and aggregate constraint removal. Specification of options to be considered as components in sub-project. Liaison, discussions with systems participants to discern reaction to various options.

* Sub-project conceptualization. Identification of conceptual outline of major components, from representation at point of market, back through the export marketing system - transportation, post-harvest, production, extension, production and marketing input supply, and specification of the type of organization and nature of involvement of each agency in the system. Discussions with system participants, government representatives to discern reaction to conceptual outline and to refine outline.

iii. Definition of Sub-Project Major Components

* Detailed description of sub-project components. Specification of roles and responsibilities of system participants, required capital inputs, management assistance and training, service agency support, government policy considerations etc. Preparation of implementation plan, sub-project budget, analysis of expected returns from investment (financial and economic).

* Presentation, review and approval of sub-project proposal by RDO/C.

TABLE K.1

ESTIMATED CROP PRODUCTION FROM PRESENT TREE CROP ACREAGE IN THE EASTERN CARIBBEAN REGION[1/] IN 1985 AND PROJECTED ACREAGE AND PRODUCTION FOR 1995[1/]

ITEM	GRAPEFRUIT				ORANGES				LIMES				OTHER CITRUS				MANGOES				AVOCADOS			
COUNTRY	Acres 1985	Produ Tons 1985	Acres 1995	Produ Tons 1995	Acres 1985	Produ Tons 1985	Acres 1995	Produ Tons 1995	Acres 1985	Produ Tons 1985	Acres 1995	Produ Tons 1995	Acres 1985	Produ Tons 1985	Acres 1995	Produ Tons 1995	Acres 1985	Produ Tons 1985	Acres 1995	Produ Tons 1995	Acres 1985	Produ Tons 1985	Acres 1995	Produ Tons 1995
Antigua/ Barbuda	15	45	30	75	25	75	45	125	16	64	18	69	3	5	5	10	222	666	262	786	26	65	66	165
St. Kitts/ Nevis	15	20	17	54	30	30	32	109	10	12	12	54	3	2	5	10	30	50	34	83	10	20	14	38
Dominica																								
wt	1,615	5,042	1,692	7,057	1,217	580	1,417	2,800	1,235	1,220	1,305	3,175	50	75	80	200	598	600	712	1,740	238	163	288	640
rd	450	156	530	1,963																				
St. Lucia																								
wt	410	377	415	821	600	600	660	1,680	100	100	120	360	75	100	75	150	350	250	620	1,810	150	20	150	300
rd	140	23	145	865																				
St. Vincent + Grenadines	111	167	121	307	50	375	60	405	180	182	182	189	16	51	21	61	300	2,296	400	2,596	91	315	101	335
Grenada	234	2,113	254	2,173	198	917	208	942	68	332	78	357	50	75	60	125	217	1,702	257	1,762	117	1,549	157	1,639
Sub-Total	2,990	7,943	3,204	13,315	2,120	2,577	2,422	6,061	1,609	1,910	1,715	4,204	197	308	246	556	1,717	5,564	2,285	8,777	632	2,131	776	3,117
Other Region	3,136	2,499	4,201	8,859	2,236	868	6,805	7,068	1,856	4,690	1,908	14,859	541	551	1,063	2,136	1,046	2,188	3,541	5,773	2,799	6,048	3,683	12,678
Total Region	6,126	10,442	7,405	22,174	4,356	3,445	9,288	13,129	3,465	6,600	3,623	19,063	738	859	1,309	2,692	2,763	7,752	5,826	14,550	3,431	8,180	4,459	15,795

1/ Includes Montserrat, Antigua, St. Kitts, Guadeloupe, Martinique, Dominica, St. Lucia, St. Vincent, Grenada, Barbados, Trinidad

2/ Montserrat, Guadeloupe, Martinique, Barbados, Trinidad.

3/ Includes estimated increases in production from 1985 acreage plus expected output from proposed new projects and plant propogation stations in the region.

4/ wt: white grapefruit; rd: red grapefruit

Source: Adapted from British Development Division (Eastern Caribbean), 'Review of of Tree Crop Development in the Caribbean, 1985/86.

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LEEWARD ISLANDS DIVERSIFICATION SUBPROJECT

A. Subproject Rationale

This subproject will assist the Leeward States, Antigua and St. Kitts-Nevis. In both states, agricultural growth and contribution to GDP have been lagging. Crisis in the traditional agriculture sector has led to the concentration of productive resources in the public sector. This subproject will attempt to demonstrate that profitable agriculture is possible and thereby encourage private sector individuals and enterprises to invest in agricultural production.

The HIAMP subproject intends to demonstrate the benefits of diversification through the introduction of high-technology and mechanized crop production for the export market. The technology, management, and export sales will be extended to St. Kitts, Nevis and Antigua, bringing direct benefits to their programs of crop diversification.

B. The Necessary Preconditions

HIAMP will seek to match a U.S. producer or buyer of Sea Island Cotton or other exotic crop with local investors and growers in a joint venture enterprise. The Subproject will provide the major training inputs for a 40-acre demonstration farm, intending to teach local famers the use of mechanized production, using the most efficient and high-yielding practices, with supplemental irrigation. A second objective of the 40 acres is to grow sufficient high-quality seed for a full 1000 acre enterprise in the following year. Should the test results of the 40 acres prove that the 1000 acre farm is profitable, HIAMP will support the 1000 acre diversification with technical assistance, infrastructure, and training inputs, for two years.

A decision to lease land which is presently utilized for sugar production, cattle grazing, or other marginal operations will be problematic, involving hard choices over the best use of limited resources. The respective Governments are currently grappling with these issues and formulating agricultural development plans which include fostering private investment in agriculture. The design for this subproject is delayed until mid-1987, to allow time for the respective Governments to put their diversification plans in place, before the design team begins its work. The Core Contractor and RDO/C will examine the diversification climate by early 1987, and determine whether the design team should be called forth as proposed, or decide to revise the subproject and thus the composition of the design team.

C. Subproject Design Steps

As presently conceived, the design team would investigate and structure the subproject described below, with a focus on the introduction of modern agricultural techniques for the production of Sea Island Cotton or other exotic crops. In this instance, the HIAMP team charged with the design of the Leeward Islands Diversification Subproject will consist of a team leader and four specialists as follows:

Team Leader - M.S. degree preferred but a minimum of B.S. degree with at least five (5) years experience in international agribusiness projects, two of these in project design. He/she could be an agronomist or agricultural economist but should have broad agricultural knowledge i.e., irrigation, mechanical row-crop farming, plus agriculture engineering and oil-seed crushing/processing. Experience in the Leeward Islands would be a large plus.

Cotton Specialist - Minimum of a B.S. degree with some experience in international agribusiness preferable. A cotton agronomy background including knowledge of long-staple 'exotic' types of cotton is essential, including manual and mechanical harvesting techniques.

Agronomist - Minimum of a B.S degree in agronomy preferably with some international agribusiness experience. This specialist should be strong in row-crop farming of legumes (pigeon peas), corn and vegetables. Experience with irrigated crops plus a mechanical aptitude would assist.

Agricultural Economist/Marketing Specialist - Required is a minimum of a B.S. degree (M.S. preferred) with a major in economics and marketing. International experience in agricultural project design, marketing and cost analysis, also required. Practical experience preferred over academic.

Irrigation/Water Management Specialist - B.S. degree with a major in agricultural engineering, irrigation design and water management. Some international experience desirable - experience in irrigation studies, resevoir construction and reverse osmosis studies is most desirable.

Person-months for the Design Team:

Team Leader	8 weeks
Economist	8 weeks
Cotton Specialist	6 weeks
Agronomist	6 weeks
Irrigation Specialist	6 weeks
TOTAL	34 weeks

The estimated cost of approximately $102,000 will be met from within the Core Contract.

Approximately nine months after launching HIAMP, the Core Contract will assemble the design team with a charter to produce the design to Handbook III standards for RDO/C approval within three calendar months.

Major steps in the design are:

- determine the results of prior-year's Sea Island Cotton crops, yields, quality, water management, fertilizer, pest control, ginning, baleing, and transportion. Compute a rate of return to existing technology;

- using projections from high-yielding technology, mechanized land preparation and harvesting (if that is a technical possibility), determine rate of return to investments in modern long staple cotton production on the islands;

- examine irrigation options using ground water and surface water storage methods; if options exist, calculate the costs and benefits of supplemental irrigation for the cotton crop, and full irrigation for a summer crop;

- Examine the seed stock being used and develop a program for special selection of Sea Island Cotton seed to be used to propogate a purified variety of cotton on the islands;

- Determine suitable land to use as a test site for a 40-acre Sea Island Cotton farm. If the returns are profitable and leases can be negotiated, design a one-year training program for local farmers on how to prepare, plant, cultivate, fertilize and harvest Sea Island Cotton or other relevant exotic crop using mechanized equipment;

- Complete the design with methods for supplemental irrigation for the crop, and plant a summer crop to improve returns to capital invested in the enterprise;

- Using the 40 acres as a base, grow sufficient specially selected seed for 1,000 acres. Design a subproject which supports the planting of 1,000 acres of a marketable crop by private investors;

- Using subproject facilities to assist the government to allocate increasing amounts of land for conversion from marginal uses into other marketable crops in subsequent years.

D. Subproject Description

1. Subproject Components

a. Crop Conversion, Training, and Pilot Project Activity

A forty acre block of land preferably with no more than four (4) degree slope, will be the basis for this activity. In year one, all of the forty acres will be utilized for: (a) seed production, (b) training and (c) a pilot project for Sea Island Cotton or another marketable export crop. This pilot activity would be a joint venture with a U.S. producer and local growers and entrepreneurs, with a significant HIAMP contribution for infrastructure, training and technical assistance.

Forty acres will produce enough seed to plant one thousand acres. It will also be a training ground for tractor operators, mechanics, field foreman and administrative personnel. This seed farm training centre will become a pilot project easily convertible to large commercial scale projects. Machine and equipment use and calibrations for cotton, legumes, grains, and vegetables will be taught at this pilot farm This component will be linked to the following extension of the subproject.

b. Extension to a 1000-Acre Commercial Farm

By the beginning of year two, one thousand acres of land under marginal production will be converted to another marketable export crop. With irrigation, a second crop, i.e., corn, soybean, or selected vegetables, could be produced with the same personnel, equipment and machinery with only a few exceptions. The subproject will support the private agricultural enterprise with infrastructure inputs for the leased land, training and technical assistance for two years.

c. Agro-processing Possibilities

Outgrowths from these activities will be edible oil-extraction (from cotton seed or soyabean), resulting in both import substitution and exports of edible oil and other byproducts. Poultry and cattle ventures will benefit from locally-produced high quality feed, now the major constraint to development of these industries. Production of grain soyabean and corn integrates well with such a year-round planting program. HIAMP will use its investor search capacity to locate interested U.S. investors to join with local growers and entrepreners to take advantage of the opportunites which emerge from the profitable 1000-acre production enterprise.

2. Subproject Objectives

The goal of the subproject is to demonstrate the profitability to farmers and to the government, of diversification and private management of agricultural resources on land presently being cultivated uneconomically.

The purpose of the project is to provide major increases in export earnings from Sea Island Cotton or other marketable export crops grown and sold through the private sector. The Design Team will quantify realistic targets for these earnings, by year.

E. Selection of Sea Island Cotton as the Major Subproject Activity

There are four reasons why Sea Island Cotton is viewed as a crop with major potential for this subproject:

1. The price is right

In a market-led project like HIAMP, a very high (multiples of the price for other cotton qualities) price of $4.50/lb of lint cotton commands attention. The cotton is "exotic", in high demand and short supply for the specialized clothing market held by the Japanese. Preliminary analysis of returns to modern technology at the existing price shows exceedingly high profit margins, see the Sea Island Cotton examples in Annex I. Calculations at 50 percent of the existing price, which might be feasible for a large-scale commercial operation, show continued profitability, at rates which would attract foreign investors. Combined with a summer crop (which depends upon the establishment of irrigation), Sea Island Cotton would be a high-return investment under modern, high-yield, mechanized production.

2. Land/Capital Ratios are Highly Flexible

Sea Island Cotton demands more labor than the U.S. short staple variety, but the ratio of mechanized to hand-labor can be varied to fit the conditions which would prevail. There is understandable concern over the plight of the former plantation workers. When the time comes for diversification a choice must be made which provides continued high levels of employment. Sea Island Cotton has that capacity, and the design team will provide options of capital intensity for the enterprise at varying labor wages rates.

3. A Familiar and Well-Researched Crop

Sea Island Cotton is an old, familiar crop in the Eastern Caribbean. Production has been highly variable, with highs in the mid-1970s of 150,000 pounds of seed cotton, to lows in 1980 of 8,000 pounds on Nevis. At present, about 200 acres are planted by producers cooperatives, with high pink ballworm infestation, little spraying, low fertilizer, and attendant low yields. Sea Island Cotton has been an object of research since 1947, and a large volume of documentation has been assembled on cotton production, planting periods, harvesting methods, soil erosion control, intercropping and

double cropping. Ten years ago, the Tropical Products Institute completed a study on, " West Indies Sea Island Cotton: The Economics of Mechanical Harvesting and Processing" (March 1975) which set forth the costs and benefits for the conditions of the mid-70's. There is a broad body of literature on the technical specifications of the crop, and the details of maximizing inputs, land and capital. This will make re-introduction of Sea Island Cotton far more easily acceptable than a new crop line not previously grown in the Leewards.

4. Investor Interest

An American investor has been promised 4,000 acres on St. Kitts for the production of Sea Island Cotton. Best bets are that he will bring far fewer into production, since the lands are outside those best suited to mechanization, that is, outside the sugar cane production area. But he and others are interested, including the John Deere Company, which is assisting in mechanized Sea Island Cotton trials on Antigua and Barbados. Where there is investor interest, there is a profitable enterprise waiting to be discovered. With the government seeking a way out of its economic morass, the market paying high prices for output, and private investors willing to ante-up equity capital, the subproject has sufficiently strong assets to justify inclusion in the early stages of design.

F. Subproject Fundings and Financial Plan

1. Subproject Funding Estimates

	FY 88	FY 89	FY 90	LOP Total
		$ '000		
Production and Marketing Infrastructure	200	400	400	1,000
Technical Assistance	200	200	200	600
Training		200	200	400
TOTAL	400	800	800	2,000

2. Financial Plan

Financial costs related to the Leeward Islands Diversification Subproject may, like the Quick Response Activities, take the form of equity purchases in an agricultural enterprise chartered to test Sea Island Cotton production and then grow it commercially, with grants for technical assistance and training. Since the land to be used for the enterprise will need to be leased from the government, improvements to the infrastructure through grants would be feasible. The Design Team will consider alternative funding possibilities for the subproject and present these for review by RDO/C prior to completing their design.

REGIONAL MARICULTURE

A. Rationale

The dominate physical feature of the Eastern Caribbean region is the vast expanse of water surrounding each island state. In general, the fishery resources of these waters are not sufficiently abundant to support the degree of exploitation practised in temperate regions, but these waters do offer significant potential benefits. In particular, the ocean environment is easily accessable, non-polluted, and year round warm temperatures. These attributes are particularly suitable to a number of intensive mariculture enterprize alternatives. Given this resource base, it is appropriate to initiate and support selected mariculture enterprizes that show promise of contributing to new exports, economic growth, and diversification.

B. Design Steps

The design team will evaluate seven species of animals/plants already identified as holding the greatest potential for eventual commercial production in the region (e.g. molluses, brine shrimp, fin fish, algea, cray fish, prawns, crabs, and penaeid shrimp) to establish priorities. The focus will be on the adaptation and implementation of technical innovations required to initiate sustainable mariculture enterprises. The major steps include:

- Estimating the technical feasibility of potential innovations;
- identifying and describing specific sites where implementation is believed most feasible;
- determine how proposed techniques "fit" into existing fishery systems;
- detail design of recommended pilot initiatives, including technical, management, and financial aspects.

C. Description

Below is presented a brief synopsis of the mariculture intiatives that are likely to be undertaken.

1. Marine Algae

Projects to culture Gracilaria species may be implemented to extend development work recently completed in St. Lucia with IDRC support. These projects would involve:

a) an initial survey to identify promising culture sites and assess local markets for "sea-moss"
b) short-term intensive training of personnel from areas selected on the basis of (a), preferably in conjunction with the on-going St. Lucia project
c) on-site technical assistance with establishing plots
d) provision of basic equipment for culture
e) continuing access to technical counsel

Local fisheries personnel should be cognizant of these projects, but should not bear responsibility for day-to-day activities unless trained individuals can be assigned on a full-time basis. Because this is a proposed evaluation/
adaptation/demonstration activity, provision should be made to hire and train local personnel for the initial effort. Expatriot personnel (e.g., Peace Corps or other PVOs) may be a valuable adjunct to these projects, but must not replace local participants. If pilot projects are successful, future support should be confined to costs of training and equipping individuals or cooperative groups in establishing similar culture operations. Potential sites include Antigua, Grenada, Grenadines, and St. Lucia.

2. Bivalve Molluscs

This project should be undertaken to assess the mariculture potential of common Eastern Caribbean bivalve molluscs. For reasons of efficiency, this should be done in an established mariculture facility experienced with culture of bivalves. This project would provide estimates of growth, culture costs, available markets, and feasibility for application to the RDO/C countries. A brief survey would also be made to determine the occurrence of promising species in these countries, and location of potential culture sites.

3. Brine Shrimp

This pilot project should be undertaken based on the AID-funded assessment of mariculture potential of indigenous Eastern Caribbean brine shrimp. This project would include:

a) manipulation of a 20 hectone pond to produce brine shrimp biomass and cysts
b) a temporary applied research component to identify optimum culture conditions
c) trial marketing to local, regional, and extra-regional consumers
d) access to technical expertise and facilities for problem-solving and to monitor product quality.

Because this is a technology evaluation project, a project manager experienced with pond aquaculture and preferably with brine shrimp is essential, along with a local counterpart/trainee who can reasonably be expected to assume a managerial role in the future should also be included. Local fisheries personnel should be cognizant of the project's status, but should not be expected to assume responsibility for daily operations. Potential sites include Antigua, Grenadines, and St. Kitts.

4. Fin Fish

Aquaculture organizations in Martinique are collaborating with the South Carolina Sea Grant Consortium in a promising series of projects to culture marine fin fishes. A pilot project should be undertaken to extend this experience to selected RDO/C countries. This project would include:

a) identification and evaluation of potential sites for fin-fish cage culture in the RDO/C region
b) short-term intensive training in cage culture techniques
c) on-site technical assistance with establishment of local culture operations
d) provision for continued access to technical expertise and facilities for problem solving as well as results of research dealing with diets, disease control, maturation, etc.
e) feasibility analysis of expanded operations, based upon actual operating costs of pilot facilities and local market conditions
f) identification and quantification of target markets and marketing trials.

Guidelines for staffing of these projects are similar to those described for Marine Algae projects.

5. Freshwater Prawns

Projects currently underway with these species in the Eastern Caribbean should be closely monitored. Additional small projects should be undertaken at other sites if the prognosis for existing projects is favorable. These projects should include:

a) technical consultation and assistance with site selection
b) short-term training in culture techniques
c) on-site technical assistance for start-up and initial operation
d) provision for continued access to technical assistance
e) economic and social feasibility analyses on a site-by-site basis
f) identification and quantification of immediately accessible markets
g) determination of how best to handle post-larvae supply problem to allow small farms (up to a few hectares) to develop and prosper.

6. Mithrax

Pilot scale activities begun in Antigua to culture "Caribbean King Crab" should be continued to establish the viability of this technique as an industry appropriate to the RDO/C countries. Particular attention should be paid to:

a) biological production parameters (growth rate, mortality, permissable density of animals in cages)
b) economic production parameters (costs of culture, space required, manpower required)
c) processing and handling
d) trial marketing
e) environmental impacts

It is particulary urged that commercial feasibility be clearly established (i.e., at least 10,000 crabs should be reared and marketed with sufficient financial return to exceed production costs) before additional support is granted for extension to other areas.

7. Penaeid Shrimp

The factors which have contributed to the success of shrimp mariculture operations elsewhere are not prevalent in the Eastern Caribbean, and the level of capital investment and risk make this a dubious proposition for local participation. However, there may be potential for developing Penaeid shrimp for export as seed shrimp to Ecuador or for developing simple culture systems for native Penaeus schmitti. A project should be considered to determine distribution of this species around the RDO/C islands, and to evaluate its ease of culture in simple systems.

D. Preliminary Financial Plans

	FY 88	FY 89 ($000)	FY 90	LOP TOTAL
Production & Marketing Structure	100	200	100	400
Technical Assistance	200	300	300	800
Training	50	100	150	300
TOTAL	350	600	550	1,500

ECONOMIC ANALYSIS

1. Introduction

As per the Financial Analysis (Annex N), the Economic Analysis of HIAMP presented herein assesses the profitability (or return) on HIAMP as an investment. However, whereas financial analyses identify the money profit accruing to the profit-earning entity, the economic analyses identify the social profit, i.e. the impact of project activities on the fundamental objectives of the economy as a whole. These conceptual differences of profitability are reflected in the different items considered to be costs and benefits and in their valuation. As a result, in this economic analysis project costs not borne by the entrepreneur (e.g. feasibility study costs, audit fee, etc.) are included, whereas they are excluded in the calculation of financial return. Further, unskilled labor wages and selected imported raw materials are valued at their opportunity costs rather than at "posted prices" in the economic analysis, i.e. shadow prices are applied to labor wage costs and some imported raw materials.

In the following sections, the results of the economic analyses for major components of the HIAMP Project are presented: first, for the Quick Response Activities; secondly, for the Regional Cocoa Rehabilitation and Development Major Sub-Project; and, finally, a qualitative note is presented on the two major sub-projects that have yet to be designed (viz. Leeward Islands Diversification, and Regional Tropical Fruits).

2. Quick Response Activities

Synopses of the type of Quick Response Activities (QRA) envisaged under HIAMP are presented in Annex I. Six of these "activities" have been selected to investigate the potential economic returns to their implementation. These six were selected: a) because they provided a representative geographical spread of activities; and b) because they covered a reasonable cross-section of activity types (for example, a mix of private corporations and grower associations/cooperatives, a range of crop products, and a processing activity).

Each of the six activities has been subjected to economic analysis. As identified in the introduction to this Annex, the cost categories and their valuation differ from the Financial Analysis in two important respects:

i. Costs borne by HIAMP and not by the investor in the activity have been included in calculation of economic returns; specifically, the costs of activity feasibility studies, core contractor management supervision, project audit fees, and grants to government for improving production and marketing infrastructure that benefit an individual investor.

ii. Shadow prices have been utilized on labor wages and certain imported materials in the calculation of economic returns (for rates, see notes to

Tables). Major fixed equipment costs associated with the six activities have been valued at border prices, i.e. they have not been adjusted for import duties, taxes, etc.

The detailed economic analyses of the six activities are presented in tabular form at the end of this section, viz.: example 1 - cardamom production and marketing in Dominica; example 2 - black pineapple production and marketing in Antigua; example 3 - anthurium production and marketing in St. Lucia; sea island cotton production and marketing in St. Kitts; "winter vegetable" production and marketing in St. Vincent; passion fruit processing and marketing in Dominica. A very brief description of the rationale for the activity and relevant background is provided and, following the tabular presentation of the Economic Analysis, notes as to the assumptions underlying the revenue and cost categories are shown.

Three measures of economic returns to the QRA are presented in this section: a) a benefit/cost ratio, whereby the net present value of benefits and costs (calculated at the social discount rate of 10 percent) are contrasted - a B/C ratio of more than 1 shows that project benefits exceed project costs; b) an Internal Rate of Return (IRR) for the six activities in aggregate is calculated. As some of the activities generate net benefits from Year 1 of implementation, it was not possible to undertake the IRR calculation using the same investment timing assumptions as per the B/C ratio. Therefore, assumptions have been changed in the interests of producing an IRR (these assumptions are documented in full at the end of this section). Specifically, certain fixed costs (for example, the investment costs of new equipment, vehicles, management/accounting support, core container supervision, audit fees, etc.) have been moved from Year 1 to Year 0 such that in Year 0 there is a net cost to the activity (patently, this will generate a different set of NPV's than for calculation of the B/C ratios); c) the NPV (at the social discount rate) of each activity has been contrasted with the totality of AID-funded costs for each activity. An average (NPV: AID cost) ratio has been determined and applied to the overall cost of the QRA component, with a conservative estimate made of the QRA's that are failures, to determine expected return on AID funds.

a. Benefit/Cost Ratio at the Social Discount Rate

Activity	B/C
Cardamom	1.61
Pineapple	2.43
Anthurium	1.21
Cotton	2.54
Vegetables	1.22
Passion Fruit	1.35
Average	1.73

b. IRR for the Six Activities

The aggregated economic internal rate of return for the six example activities is 56 percent (see Table O-1).

c. NPV (10 percent Discount Rate)/AID Costs

Activity	NPV/AID Costs
Cardamom	3.85
Pineapple	10.45
Anthurium	1.51
Cotton	10.19
Vegetables	3.10
Passion Fruit	4.59
Average	5.62

In general, and certainly on aggregate, the results of the Economic Analysis on the Quick Response Activities show very positive returns (i.e. average B/C of 1.73, average IRR of 56 percent). If the assumptions are made that: the total cost of the QRA component is $16 million (i.e. including grant/equity total, CFSC and audit costs, core contractor associated costs, etc.); and that half of the QRA's fail completely - then, the return on AID-funded costs of $16 million are still substantial, i.e. $46 million return.

3. Major Sub-Projects

The Cocoa subproject Economic Analysis is contained within that subproject supplement, Annex J to the Project Paper. The three remaining major subprojects of HIAMP, on Regional Tropical Fruits, Leeward Islands Diversification and Regional Mariculture have yet to be designed in detail, and will be designed as part of the Core Contractor's duties in the earlier stages of HIAMP implementation. At the design stage, a subproject Financial Rate of Return of greater than 15% and an Economic (Social) Rate of Return of greater than 10% will be stipulated as criteria for project acceptability and approval.

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Assumptions/Notes on Calculation of Economic Internal Rate of Return for Example QRA

1. In order to derive an economic IRR for example activities in aggregate, certain costs of the activities initially specified in Year 1 of the investment were moved to Year 0 such that the net benefit stream showed a negative number in Year 0.

2. i. For cotton, anthurium, passion fruit, and black pineapple, the following costs were shifted to Year 0: management and accounting support; feasibility study costs; core contractor management supervision costs (i.e. c.c.m. costs are assumed to be incurred in Year 0 through Year 3, rather than Year 1 through 4); and fixed equipment and vehicle purchase costs.

ii. In addition to the costs specified in 2.i., the costs of establishing irrigation on 300 acres was moved to Year 0 for winter vegetables.

iii. For cardamom, Year 0 costs and benefits were assumed to be zero, as the crop does not yield any production until Year 3 and, as a result, investment in processing facilities, etc. would be made (at the earliest) in Year 1 rather than Year 0.

TABLE O-1

Economic International Rate of Return for Example QRA

Year/ Activity	0	1	2	3	4	5	6	7	8	9	10
VEGETABLES	-513000	309650	309650	314650	359650	359650	325650	359650	359650	359650	359650
PINEAPPLE	-198750	180281	184019	202499	207499	224459	239459	271420	271420	271420	271420
PASSION FR	-195000	-21663	33580	82235	146297	206212	206212	206212	206212	206212	206212
COTTON	-94000	128050	172650	217250	309450	309450	299000	299000	329000	329000	329000
CARDAMOM	-227481	-69138	-48084	17310	75774	159238	198601	311696	387416	425276	1230609
ANTHURIUM	-138000	-95923	-60845	-16535	48853	94240	137550	157550	157550	157550	157550
TOTAL	-1366231	431258	590970	817409	1147522	1353248	1406472	1605528	1711248	1749108	2554441
IRR	.56										

TABLE O-2

ECONOMIC ANALYSIS OF QUICK RESPONSE FUND PROJECT: CARDAMOM FARMERS' ASSOCIATION EXAMPLE ONE
using shadow prices & including USAID-funded costs

YEAR	One	Two	Three	Four	Five	Six	Seven	Eight	Nine	Ten	TOTAL
SALES REVENUES	0	0	38250	102000	178500	255000	331500	408000	484500	522750	2320500
VARIABLE COSTS	12991	19638	26834	35190	43226	51263	58399	51804	52584	52974	404891
Nursery Costs											
Materials	2625	2625	2625	2625	2625	2625	2625	0	0	0	18375
Labor Wages	4750	4750	4750	4750	4750	4750	4750	0	0	0	33250
Fertilizer & Chem.	1481	2963	4444	5925	7406	8888	10369	10369	10369	10369	72581
Labor Wages	2775	6450	10125	14850	19125	22950	26775	26775	26775	26775	183375
Packaging Costs	0	0	225	600	1050	1500	1950	2400	2850	3075	13650
Utilities	0	0	45	120	210	300	390	480	570	615	2730
Equipment Maintenance and Spare Parts	450	1050	1800	2400	3000	4050	4200	4200	4200	4200	29550
Domestic Transport	0	0	75	200	350	500	650	800	950	1025	4550
International Transport and Loading Charges	0	0	0	0	0	0	0	0	0	0	0
Commissions	0	0	0	0	0	0	0	0	0	0	0
Storage Costs	0	0	45	120	210	300	390	480	570	615	2730
Land Rental	900	1800	2700	3600	4500	5400	6300	6300	6300	6300	44100
FIXED COSTS	214500	49500	59500	49500	59500	44500	74500	44500	44500	44500	685000
Administrative Costs											
Management/Accounting/ Support	36000	36000	36000	36000	36000	36000	36000	36000	36000	36000	360000
Office Supplies/ Communications	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	50000
External Audit	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	20000
Insurance Charges	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	15000
Feasibility Study	15000	0	0	0	0	0	0	0	0	0	15000
CC Management Support	10000	5000	15000	5000	0	0	0	0	0	0	35000
Fixed Assets											
New Equipment	95000	0	0	0	0	0	30000	0	0	0	125000
New Vehicles	15000	0	0	0	15000	0	0	0	0	0	30000
Buildings	35000	0	0	0	0	0	0	0	0	0	35000
Land Improvement	0	0	0	0	0	0	0	0	0	0	0
Land Purchase	0	0	0	0	0	0	0	0	0	0	0
TOTAL COSTS	227491	69138	86334	84690	102726	95763	132899	96304	97084	97474	1089891
NET BENEFITS	-227491	-69138	-48084	17310	75774	159238	198601	311696	387416	425276	1230609

TABLE O-2

NET PRESENT VALUE	
@10 percent discount	466707
@15 percent discount	260492
@20 percent discount	118088

Net Present Value	Benefits	Costs
@10 percent discount	1232710	766003
@15 percent discount	928508	668016
@20 percent discount	713027	594939

	B/C		
@10 percent discount	1.61	IRR	.26
@15 percent discount	1.39		
@20 percent discount	1.20		

TOTAL AID COSTS											
Feasibility Study	15000	0	0	0	0	0	0	0	0	0	15000
CC Management Support	10000	5000	15000	5000	0	0	0	0	0	0	35000
Audit	1000	1000	1000	1000	1000	0	0	0	0	0	5000
Grant Funds	150000	75000	40000	0	0	0	0	0	0	0	265000
TOTAL	176000	81000	56000	6000	1000	0	0	0	0	0	320000

Project NPV/AID Costs	3.85

1.39
1.20

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TABLE O-3

ECONOMIC ANALYSIS OF QUICK RESPONSE FUND PROJECT:BLACK PINEAPPLE (ANTIGUA) EXAMPLE TWO
using shadow prices and including USAID grant-funded costs

YEAR	One	Two	Three	Four	Five	Six	Seven	Eight	Nine	Ten	TOTAL
SALES REVENUES	298155	298155	317460	317460	356070	356070	394680	394680	394680	394680	3522090
VARIABLE COSTS											
Raw Materials	15519	15519	15519	15519	15519	15519	15519	15519	15519	15519	155188
Labor Wages	11050	7313	7313	7313	7313	7313	7313	7313	7313	7313	76863
Packaging Costs	23976	23976	26979	26979	32985	32985	38991	38991	38991	38991	323844
Utilities	520	520	520	520	520	520	520	520	520	520	5200
Equipment Maintenance and Spare Parts	1625	1625	1625	1625	1625	1625	1625	1625	1625	1625	16250
											0
Domestic Transport	3539	3539	3861	3861	4505	4505	5148	5148	5148	5148	44402
International Transport and Loading Charges	0	0	0	0	0	0	0	0	0	0	0
											0
Commissions	0	0	0	0	0	0	0	0	0	0	0
Storage Costs	0	0	0	0	0	0	0	0	0	0	0
Land Rental	0	0	0	0	0	0	0	0	0	0	0
											0
FIXED COSTS											0
											0
Administrative Costs											
Management/Accounting/ Support	48750	48750	48750	48750	48750	48750	48750	48750	48750	48750	487500
											0
Office Supplies/ Communications	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	26000
											0
External Audit	2275	2275	2275	2275	2275	2275	2275	2275	2275	2275	22750
Insurance Charges	520	520	520	520	520	520	520	520	520	520	5200
Feasibility Study	20000	0	0	0	0	0	0	0	0	0	20000
Core Contractor Mgnt	10000	7500	7500	5000	0	0	0	0	0	0	30000
											0
											0
Fixed Assets											
New Equipment	75000	0	0	0	0	0	0	0	0	0	75000
New Vehicles	15000	0	0	0	15000	0	0	0	0	0	30000
Land Improvement	30000	0	0	0	0	0	0	0	0	0	30000
Land Purchase	0	0	0	0	0	0	0	0	0	0	0
											0
TOTAL COSTS	260374	114136	117461	114961	131611	116611	123260	123260	123260	123260	1348196
											0
NET BENEFITS	37781	184019	199999	202499	224459	239459	271420	271420	271420	271420	2173894
											0

TABLE O-3

NET PRESENT VALUE	TOTAL	BENEFITS	COSTS
@10 percent	1358711	2311197	952486
@15 percent	1114821	1947035	832214
@20 percent	934057	1676211	742154
@60 percent	374000	827464	453464
@90 percent	257697	647356	389659

	B/C
@10 percent	2.43
@15 percent	2.34
@20 percent	2.26
@60 percent	1.82
@90 percent	1.66

TOTAL AID COSTS

Feasibility Study	20000	0	0	0	0	0	0	0	0	0	20000
Core Contractor Mgmt	10000	7500	7500	5000	0	0	0	0	0	0	30000
External Audit	1000	1000	1000	1000	1000	0	0	0	0	0	5000
Equity Fund	75000	0	0	0	0	0	0	0	0	0	75000
TOTAL	106000	8500	8500	6000	1000	0	0	0	0	0	130000

Project NPV/AID cost 10.45

TABLE O-4

ECONOMIC ANALYSIS OF QUICK RESPONSE FUND PROJECT:ANTHURIUM (ST. LUCIA) EXAMPLE THREE
using shadow prices and including USAID grant-funded costs

YEAR	One	Two	Three	Four	Five	Six	Seven	Eight	Nine	Ten	TOTAL
SALES REVENUES	18000	36000	108000	198000	288000	360000	360000	360000	360000	360000	2448000
											0
VARIABLE COSTS											0
Establishment Costs											
Raw Materials	1750	7000	8750	8750	8750	8750	8750	8750	8750	8750	78750
Labor	2250	9000	11250	11250	11250	11250	11250	11250	11250	11250	101250
Operating Costs											
Raw Materials	2000	4000	12000	22000	32000	40000	40000	40000	40000	40000	272000
Labor	1900	3800	11400	20900	30400	38000	38000	38000	38000	38000	258400
Packaging Costs	1290	2580	7740	14190	20640	25800	25800	25800	25800	25800	175440
Utilities	95	190	570	1045	1520	1900	1900	1900	1900	1900	12920
Equipment Maintenance and Spare Parts	300	600	1800	3300	4800	6000	6000	6000	6000	6000	40800
Domestic Transport	150	300	900	1650	2400	3000	3000	3000	3000	3000	20400
International Transport	0	0	0	0	0	0	0	0	0	0	0
and Loading Charges											0
Commissions	0	0	0	0	0	0	0	0	0	0	0
Plant preservative Cost	188	375	1125	2063	3000	3750	3750	3750	3750	3750	25500
Land Rental	0	0	0	0	0	0	0	0	0	0	0
FIXED COSTS											
Administrative Costs											
Management/Accounting/ Support	55000	55000	55000	55000	55000	55000	55000	55000	55000	55000	550000
Office Supplies/ Communications	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	50000
External Audit	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	25000
Insurance Charges	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	15000
Feasibility Study	10000										10000
Core Contractor Mgmt	10000	5000	5000	5000							25000
Fixed Assets											
New Equipment	48000	0	0	0	0	20000	0	0	0	0	68000
New Vehicles	15000	0	0	0	15000	0	0	0	0	0	30000
Plant Material	35000	0	0	0	0	0	0	0	0	0	35000
Land Purchase	0	0	0	0	0	0	0	0	0	0	0
TOTAL COSTS	191922.5	96845	124535	154147.5	193760	222450	202450	202450	202450	202450	1793460
NET BENEFITS	-173923.	-60845	-16535	43852.5	94240	137550	157550	157550	157550	157550	654540
											0

TABLE O-4

NET PRESENT VALUE	Total	Benefits	Costs
@10 percent discount	249916	1417549	1167632
@15 percent discount	135399	1115799	980400
@20 percent discount	53902	895676	841774

NET PRESENT VALUE	B/C		
@10 percent discount	1.21	IRR	.24
@15 percent discount	1.14		
@20 percent discount	1.06		

OTHER COSTS											0
											0
											0
TOTAL AID COSTS											0
Feasibility Study	10000										10000
Core Contractor Mgmt	10000	5000	5000	5000							25000
Audit	1000	1000	1000	1000	1000						5000
Equity Fund	125000	0	0	0	0	0	0	0	0	0	125000
TOTAL	146000	6000	6000	6000	1000	0	0	0	0	0	165000

Project NPV/Tot.AID costs 1.51

TABLE O-5

ECONOMIC ANALYSIS OF QUICK RESPONSE FUND PROJECT:COTTON GROWERS ASSOCIATION EXAMPLE FOURion
using shadow prices and including USAID grant-funded costs

YEAR	One	Two	Three	Four	Five	Six	Seven	Eight	Nine	Ten	TOTAL
SALES REVENUES	270000	315000	360000	450000	450000	472000	472000	472000	472000	472000	4205000
VARIABLE COSTS											
Raw Materials	31250	31250	31250	31250	31250	32500	32500	32500	32500	32500	318750
Labor Wages	52500	52500	52500	52500	52500	52500	52500	52500	52500	52500	525000
Ginning,Baling, Utilities	10800	12000	14400	18000	18000	19200	19200	19200	19200	19200	169200
Equipment Maintenance	17000	17000	17000	17000	17000	17000	17000	17000	17000	17000	170000
and Spare Parts											0
Domestic Transport	400	400	400	400	400	400	400	400	400	400	4000
International Transport	0	0	0	0	0	0	0	0	0	0	0
and Loading Charges											0
Commissions	0	0	0	0	0	0	0	0	0	0	0
Storage Costs	400	400	400	400	400	400	400	400	400	400	4000
Land Rental	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	60000
											0
FIXED COSTS											0
Administrative Costs											0
Management/Accounting/	15000	15000	15000	12000	12000	12000	12000	12000	12000	12000	129000
Support											0
Office supplies/	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	10000
Communications											0
External Audit	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	10000
Insurance Charges	600	800	800	1000	1000	1000	1000	1000	1000	1000	9200
Feasibility Study	12000	0	0	0	0	0	0	0	0	0	12000
Core Contractor Mgmt	6000	6000	5000	3000	0	0	0	0	0	0	20000
											0
Fixed Assets											0
New Equipment	30000	30000	0	0	0	30000	30000	0	0	0	120000
Buildings	0	0	0	0	0	0	0	0	0	0	0
New Vehicles	0	0	0	0	0	0	0	0	0	0	0
Land Improvement	0	0	0	0	0	0	0	0	0	0	0
Land Purchase	0	0	0	0	0	0	0	0	0	0	0
Total Costs	183950	173350	144750	143550	140550	173000	173000	143000	143000	143000	1561150
NET BENEFITS	86050	141650	215250	306450	309450	299000	299000	329000	329000	329000	2643850
											0

TABLE O-5

NET PRESENT VALUE	TOTAL	BENEFITS	COSTS
@ 10 percent discount	1650585	2721415	1070829
@ 15 percent discount	1353087	2273934	920847
@ 20 percent discount	1132539	1940664	808125
@ 60 percent discount	451739	894616	442877
@ 90 percent discount	313721	674267	360546

	B/C
@ 10 percent discount	2.54
@ 15 percent discount	2.47
@ 20 percent discount	2.40
@ 60 percent discount	2.02
@ 90 percent discount	1.87

											1.87
Total AID-funded costs											
Feasibility Study	12000	0	0	0	0	0	0	0	0	0	12000
Core Contractor Mgmt	6000	6000	5000	3000	0	0	0	0	0	0	20000
Accounting/Audit	1000	1000	1000	1000	1000	0	0	0	0	0	5000
Grant Funding	125000	0	0	0	0	0	0	0	0	0	125000
TOTAL	144000	7000	6000	4000	1000	0	0	0	0	0	162000

NPV PROJECT/TOT.AID COSTS 10.19
at 10% discount rate for NPV project

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TABLE O-6

ECONOMIC ANALYSIS OF QUICK RESPONSE FUND PROJECT:VEGETABLE PRODUCTION (ST. VINCENT): EXAMPLE FIVE
using shadow prices and including USAID grant-funded costs

YEAR	One	Two	Three	Four	Five	Six	Seven	Eight	Nine	Ten	TOTAL
SALES REVENUES	1530000	1530000	1530000	1530000	1530000	1530000	1530000	1530000	1530000	1530000	15300000
VARIABLE COSTS											0
Raw Materials	210000	210000	210000	210000	210000	210000	210000	210000	210000	210000	2100000
Ag. Labor Wages	39150	39150	39150	39150	39150	39150	39150	39150	39150	39150	391500
Labor Pack. Costs	60000	60000	60000	60000	60000	60000	60000	60000	60000	60000	
Packaging Materials	175000	175000	175000	140000	140000	140000	140000	140000	140000	140000	1505000
Utilities	9000	9000	9000	9000	9000	9000	9000	9000	9000	9000	90000
Equipment Maintenance and Spare Parts	21000	21000	21000	21000	21000	21000	21000	21000	21000	21000	210000
											0
Domestic Transport	18000	18000	18000	18000	18000	18000	18000	18000	18000	18000	180000
International Transport and Loading Charges	343000	343000	343000	343000	343000	343000	343000	343000	343000	343000	3430000
											0
Commissions	183600	183600	183600	183600	183600	183600	183600	183600	183600	183600	1836000
Land Rental	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000	150000
Lease of Cooling Facil.	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000	150000
Irrigation Charge	30000	30000	30000	30000	30000	30000	30000	30000	30000	30000	
FIXED COSTS											0
Administrative Costs											0
Management/Accounting/ Support	78000	78000	78000	78000	78000	78000	78000	78000	78000	78000	780000
											0
Office Supplies/ Communications	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	30000
											0
External Audit	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	20000
Insurance Charges	3600	3600	3600	3600	3600	3600	3600	3600	3600	3600	36000
Feasibility Study	30000	0	0	0	0	0	0	0	0	0	30000
Core Contractor Mgmt	20000	15000	15000	10000	0	0	0	0	0	0	60000
											0
Fixed Assets											0
New Equipment	55000					34000					89000
New Vehicles	15000										15000
Expansion of Pack. She	15000										
Irrigation Cost	300000										300000
Land Purchase											0
											0
TOTAL COSTS	1640350	1220350	1220350	1180350	1170350	1204350	1170350	1170350	1170350	1170350	11402500
NET BENEFITS	-110350	309650	309650	319650	359650	325650	359650	359650	359650	359650	3897500
											0

TABLE O-6

NET PRESENT VALUE	TOTAL	BENEFITS	COSTS
@10 percent discount	1845482	10341306	8495825
@15 percent discount	1500986	8830523	7329538
@20 percent discount	1243547	7697379	6453831
@30 percent discount	893678	6149072	5255394
@40 percent discount	674067	5169869	4495802

	B/C		
@10 percent discount	1.22	IRR	2.83
@15 percent discount	1.20		
@20 percent discount	1.19		
@30 percent discount	1.17		
@40 percent discount	1.15		

AID TOTAL COSTS 0

Feasibility Study	30000	0	0	0	0	0	0	0	0	0	30000
Core Contractor Mgmt	20000	15000	15000	10000	0	0	0	0	0	0	60000
Audit	1000	1000	1000	1000	1000	0	0	0	0	0	5000
Grant to GOSV	300000	0									300000
Equity to Firm	200000	0	0	0	0						200000
TOTAL	551000	16000	16000	11000	1000	0	0	0	0	0	595000

Project NPV/AID Costs 3.10

TABLE O-7

ECONOMIC ANALYSIS OF QUICK RESPONSE FUND PROJECT:PASSION FRUIT PROCESSING EXAMPLE SIX
using shadow prices and including USAID grant-funded costs

YEAR	One	Two	Three	Four	Five	Six	Seven	Eight	Nine	Ten	TOTAL
SALES REVENUES	86400	172800	288000	432000	576000	576000	576000	576000	576000	576000	4435200
VARIABLE COSTS											
Raw Materials	46200	92400	154000	231000	308000	308000	308000	308000	308000	308000	2371600
Labor Wages	1200	1600	2400	3200	4800	4800	4800	4800	4800	4800	37200
Packaging Costs	0	0	0	0	0	0	0	0	0	0	0
Utilities	725	885	1040	1195	1455	1455	1455	1455	1455	1455	12575
Equipment Maintenance and Spare Parts	863	1150	1150	1438	1438	1438	1438	1438	1438	1438	13229
Domestic Transport	575	920	1175	1770	2300	2300	2300	2300	2300	2300	18240
International Transport and Loading Charges	0	0	0	0	0	0	0	0	0	0	0
Commissions	0	0	0	0	0	0	0	0	0	0	0
Storage & freezing costs	2690	5380	8960	13450	17930	17930	17930	17930	17930	17930	138060
Land Rental	0	0	0	0	0	0	0	0	0	0	0
FIXED COSTS											
Administrative Costs											
Management/Accounting/ Support	30000	30000	30000	30000	30000	30000	30000	30000	30000	30000	300000
Office Supplies/ Communications	270	345	500	650	865	865	865	865	865	865	6955
External Audit	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	10000
Insurance Charges	1540	1540	1540	2000	2000	2000	2000	2000	2000	2000	18620
Feasibility Study	8000	0	0	0	0	0	0	0	0	0	8000
Core Contractor Mgmt	8000	8000	4000	4000	0	0	0	0	0	0	24000
Food Technologist TA	15000	0	0	0	0	0	0	0	0	0	
Fixed Assets											
New Equipment	115000	0	0	0	0	0	0	0	0	0	115000
New Vehicles	34000	0	0	0	0	0	0	0	0	0	34000
Land Improvement	0	0	0	0	0	0	0	0	0	0	0
Land Purchase	0	0	0	0	0	0	0	0	0	0	0
											0
TOTAL COSTS	265063	143220	205765	289703	369788	369788	369788	369788	369788	369788	
											0
NET BENEFITS	-178663	29580	82235	142297	206212	206212	206212	206212	206212	206212	1312721
											0

TABLE O-7

NET PRESENT VALUE	TOTAL	BENEFITS	COSTS
@10 percent discount rate	697862	2690846	1992985
@15 percent discount rate	515932	2171772	1655840
@20 percent discount rate	382294	1788903	1406609
@50 percent discount rate	31240	768967	737728
@75 percent discount rate	-58840	498101	556942

	B/C	IRR
@10 percent discount rate	1.35	.56
@15 percent discount rate	1.31	
@20 percent discount rate	1.27	
@50 percent discount rate	1.04	
@75 percent discount rate	.89	

											.00
											0
OTHER COSTS											0
TOTAL AID COSTS											
Feasibility Study	8000	0	0	0	0	0	0	0	0	0	8000
Core Contractor Mgmt	8000	8000	4000	4000	0	0	0	0	0	0	24000
Grant/Food Tech TA	15000	0	0	0	0	0	0	0	0	0	15000
Audit	1000	1000	1000	1000	1000						5000
Equity	100000										100000
											0
TOTAL	132000	9000	5000	5000	1000	0	0	0	0	0	152000
											0
											0
Project NPV/AID cost	4.59										4.59

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QUICK RESPONSE ACTIVITY: EXAMPLE 1

Production and Marketing of Cardamon

Research and development on cardamon production in Dominica has shown that the crop can be grown successfully and has commercial potential in export markets. In this example, a potential project is described in which approximately 50 growers cooperate to form the Cardamon Growers' Association of Dominica. Each farmer will grow between 2 and 3 acres of the crop. The Association will be responsible for providing farmers with required inputs and for marketing the cardamon (to Middle Eastern markets - in particular, Saudi Arabia - trans-shipping through the U.K., and utilizing the services of Central American spice brokers). The Association is assumed to be open to all interested growers, as a result, it is eligible for grant-funding under the HIAMP program and has applied for a grant (to cover the costs of fixed capital items, feasibility study preparation, and technical assistance support during the formative years of the project.

Financial and Economic Analyses of Quick Response Fund Project - Cardamon (See Tables N-6 and 0.2)

Assumptions:

1. 15 acres of cardamon are planted each year over a seven year period, giving a total project acreage of 105 acres.

2. Cardamon takes 3 years before a crop can be harvested. Average yield increases from 3 short hundred-weights (3 x 100 lb.) per acre in Year 3 to 5 cwts in Year 5, and 6 cwts/acre thereafter (Years 6 through 10).

3. Average f.o.b. price for export grade cardamon is estimated at $850 per cwt. (100 lbs.). At current and expected world prices for cardamon, the assumed project average price is conservative and for middle export grades.

4. As a result of the phased planting program, the assumed harvested production over the ten year period presented for project analysis purposes is:

Year	1	2	3	4	5	6	7	8	9	10
Output (cwts)	0	0	45	120	210	300	390	480	570	615

5. The agricultural labor rate per day is assumed to be EC$25 (approximately US$9.60). N.B. This rate has been used throughout Examples 1 to 6. However, this daily rate is, in practice, the return to farm workers for 4 hrs. only in the field undertaking farming practices. Required 4 hr. labor days per acre for nursery establishment are 66 per acre in Years 1 through 7 (until all 105 acres are planted); planting, maintenance and harvesting of the crop require 38 4hr. days/acre/year.

6. Materials - the materials cost of nursery establishment are estimated at $140/acre, with over half this cost being associated with the purchase of nursery tools (specialized sprayers etc.) - about $100/acre - and $30/acre for crop chemicals. Raw material requirements for crop maintenance are estimated to be $79/acre (i.e. fertilizers - $43, crop chemicals - $36).

7. The line item 'Packaging Costs' is a composite which includes the non-labour costs of dehusking, washing, drying and bagging the cardamon, plus the cost of the sack. Estimated cost per cwt. of export cardamon is $5.

8. Utility costs in cardamon production and harvesting are minor, and have been estimated at $1 per cwt. harvested.

9. Equipment maintenance and spare parts for the project have been estimated on an acreage basis, viz. $30 acre in Year 1, $35 in Year 2, $40 in Years 3 to 5, $45 in Year 6 and reducing to $40/acre in Years 7 through 10 as the cardamon processing plant (see fixed costs) is refurbished in Year 7.

10. Transport cost from processing plant to dockside in Roseau is $1.66 per cwt.

11. Storage costs in the warehouse at Roseau, on average, are estimated to be $1 per cwt.

12. Land rental costs are estimated at $60/acre.

13. Management/accounting support: includes the salary and overhead expenses of General Manager, accountant, fieldman, secretary/clerk. Management would be heavily involved with supervision of the cardamon processing facility and production, selection, training of the farmer participants in the first years of the project - estimated total annual cost of $36,000.

14. Office supplies and communications are estimated at $5,000 per annum. A telex machine is to be located at the Association's offices and is the communication link for market intelligence between the producers and brokers/buyers/relevant trade personnel.

15. New equipment and buildings. The shell of the cardamon processing facility and construction of the office space for the Association is estimated to be $35,000; machinery costs will approximate $95,000 and include purchase of milling equipment, dryer, raker, conveyor belts and superstructure, bagger, water-powered generators etc. Mill facilities will be refurbished, at a cost of $30,000, in Year 7.

16. A pick-up truck is assumed to be purchased in Year 1 for $15,000 (landed cost in U.S. currency, net of duties, in Dominica). The vehicle is for distribution of inputs, collection of output, transport of growers to extension meetings etc. In Year 5, the vehicle is replaced.

17. Economic Analysis

(i) The labour wage (unskilled labour) component and raw materials purchased from off-shore component have been adjusted by appropriate shadow prices; viz. the official exchange rate is assumed to be overvalued by 25 per cent (i.e. imported raw material costs are increased by 1.25 for the purposes of the economic analysis), and the unskilled labour wage rate is assumed to be double the "market" rate (i.e. unskilled labour costs are decreased by 0.5 for these analytical purposes).

(ii) Feasibility study - under the project, a feasibility study will be undertaken to identify the financial and economic feasibility of the venture - estimated cost to AID of $15,000.

(iii) Consultant's core management support (i.e. monitoring of the implementation of the cardamon production and marketing activity) by the Management Advisor is estimated to be 20 days in Year 1, 10 in Year 2, 30 in Year 3 (when the first harvest is due), and 10 days in Year 4. At $500 per Advisor day, the total cost of support in this cost category is estimated to be $35,000.

(iv) AID-financed project audit cost of $1,000 for each of Years 1 through 5.

QUICK RESPONSE ACTIVITY: EXAMPLE 2

Production and Marketing of Black Pineapple

The black pineapple grown in Antigua is unique within the Caribbean region and, in the past (pre-early 1970's), it has been exported to the U.S. and the countries in the Greater Antilles as a premium fresh produce product. Within the last decade, commercial stands of black pineapple have declined in Antigua, available supplies have been sporadic, although demand has remained very strong from the domestic tourist sector and export buyers have continued to maintain interest in the product. In this example, a potential project is described in which an existing grower wishes to expand his enterprise to a larger commercial scale of 65 acres. The growers intend to service the requirements of the domestic market, in particular the price insensitive but quality and quantity sensitive hotel and restaurant sector, for a proportion of the crop as pineapple prices to the growers in this sector (averaging $0.70/lb) are significantly higher than in the export market ($0.30/lb. f.o.b. Antigua).

The grower is seeking equity funds under the HIAMP program to assist in purchase and installation of an irrigation network on the 65 acre production unit, and the construction of a reservoir to gaurantee water supplies. Additionally, the grower seeks grant-funding to provide technical assistance on production, post-harvest practices, and marketing issues during the formative years of project implementation.

Financial and Economic Analyses of Quick Response Fund Project - Black Pineapple (See Tables N-7 and O-3)

Assumptions:

1. 65 acres of pineapple are planted in Year 1, the plants yield 2 harvests every 3 years. Average harvestable yield increases and average annual production as per below:-

Year	1	2	3	4	5	6	7	8	9	10
Pineapples per acre ('000)	11	11	12	12	14	14	16	16	16	16
('000) lbs. pineapples/ acre	16.5	16.5	18	18	21	21	24	24	24	24
Average annual production* ('000 lbs)	708	708	772	772	901	901	1,030	1,030	1,030	1,030

* Yield x acreage x 0.66 (i.e. to reflect 2 harvests per 3 year period).

2. Sales Revenue - It is assumed that the grower sells 214,500 lbs. of pineapple per year into the domestic market (for tourist and local consumption) at an average price of $0.70 per lb.; this is a conservative assumption as it does not take account of potential growth in pineapple demand associated with growth in tourist arrivals over the ten year period. Remaining production is sold into export markets (regional and extra-regional) at $0.30 per. lb. f.o.b. St. John's, Antigua.

3. Raw material costs of pineapple production are estimated to be $215 per acre, comprising: nursery stock - $110; fertilizer - $60; crop chemicals - $35; and miscellaneous - $10; which remain constant through the ten-year period analysed for the project.

4. Establishment and maintenance of the pineapples in the first year are estimated to require approximately 35 labour days per acre (i.e. 35 labour days @ 4hrs. field work/day, and EC$25.00 per labour day wage), taking into account labour costs for nursery, land production and cultivation, fertilizers and chemical applications etc. In subsequent years, labour requirements decline to about 23 labour days per acre, reflecting reduced establishment costs and the requirement to harvest in only two out of every three years. The category 'Labor Wages' includes the labour costs of packing pineapples for domestic and export sale.

5. Packing costs - pineapples sold to the domestic market are sold in plastic bags, at 30 pineapples to the bag and a packaging cost of $0.20/bag i.e. total packaging material costs for pineapples destined for the domestic

market remain constant at $953. Pineapples for the export market are packed in boxes, 20 pineapples per box, at a cost per box of $1.40, as export volume expands to its maximum in Year 7, packaging material costs for export boxes increase to approximately $38,000 per year.

6. Utility costs are estimated at $8 per acre to cover water pumping and operation of the minimal farm machinery.

7. Equipment maintenance and spare part costs are assumed to average $25 per acre per year throughout the life of the project. Major items include maintenance and repair of irrigation equipment and a small horse power tractor.

8. Domestic transport costs are to cover hire of trucks to move pineapples from farm to point of domestic sale and to point of export shipment (sea port and airport). An average cost of $0.005/lb. of harvested product has been assumed to cover domestic transport costs.

9. Management/accounting support is estimated to be $48,780; covering salary and associated costs of a general manager, accountant/book-keeper, senior fieldsman/irrigation engineer, marketing/salesperson.

10. The office supplies/communciation cost component includes the rental and operational costs of a telex machine for the export sales business both within and outside the region.

11. A drip irrigation system is assumed to be purchased as an integral part of the project - purchase and installation is estimated to cost $1,000 per acre., plus $10,000 for turn-key pump/generator and associated equipment, for a total cost of $75,000.

12. A pick-up truck is assumed to be purchased as a project requirement, the truck is replaced in Year 5 of the project.

13. Land improvement costs of $30,000 are assumed for the project. This component covers the cost of reservoir construction and "benthenite" treatment (to seal the reservoir).

14. Economic Analysis

(i) As per the previous example (cardamon), shadow prices have been assigned to unskilled labour rates and to the proportion of the raw materials category that represents purchases of imported products (i.e. fertilizers and chemical costs).

(ii) A charge of $20,000 has been assigned for undertaking a feasibility study of the proposed project. Production aspects of pineapple production in Antigua are well documented and, as a result, the study would have particular emphasis on export marketing opportunities for black pineapple.

(iii) Core contractor management costs for monitoring the project are estimated to be $25,000 in total reflecting an input of 20 days in Year 1, 15 in Years 2 and 3, and ten days in Year 4.

(iv) AID-financed project audit cost of $1,000 for each of Years 1 through 5.

QUICK RESPONSE ACTIVITY: EXAMPLE 3

Production and Marketing of Anthuriums

Over the past decade, small quantities of anthuriums have been produced by growers in the Windward Islands and air-freighted to markets in Europe and North America. In very recent years, there has been increasing interest in expanding the scale of operations, particularly in St. Lucia, Dominica and St. Vincent, to service the growing demand for this long shelf-life product in these markets. In this example, a potential project is described in which a St. Lucian private sector business person wishes to expand from a trial one acre plot to a sustained production base of 20 acres. Target markets for the product are assumed to be the U.K., the U.S., and Canada. Equity funding is being sought for purchase of planting material, irrigation equipment, shade-netting, and associated farm equipment. Additionally, technical assistance on agronomic and post-harvest practices is required to increase the unit value of the export blooms.

Financial and Economic Analysis of Quick Response Fund Project - Anthuriums (See Tables N-8 and O-4)

Assumptions

1. The following planting and maintenance program is assumed:

Year	1	2	3	4	5	6	7	8	9	10
Acres established	1	4	5	5	5	5	5	5	5	5
Acreage maintained	1	2	6	11	16	20	20	20	20	20
Total acreage	2	6	11	16	21	25	25	25	25	25

In Year 1, 1 acre of anthuriums are already established (trial plot output) and 1 acre of imported hybrid planting material is set. In Year 2, 4 acres of hybrid anthuriums are added using planting material from the now-established 1 acre of hybrid anthuriums planted in Year 1. Subsequently, 5 acres of hybrids are planted each year to reach the 20 acre target for harvestable plants (requiring 25 acres in total to ensure a sustained yield

from 20 acres), and to replace hybrid plants placed in Years 1 through 5 that have productive output that is less than optimum (re-planting, on average, will occur every 5 years).

2. The assumed yield of export quality blooms is 60,000 per acre. Actual yields can be close to 200,000 per acre, however, a conservative yield figure has been selected as successful export market penetration will be contingent upon maintaining high quality shipments.

3. Average f.o.b. prices for export grade anthuriums are assumed to be $0.30 per bloom; this figure is in the mid-range of actual f.o.b. prices received by growers in the past year in the Eastern Caribbean. At peak production, sustained through Years 6 to 10, 1,200,000 blooms would be exported, generating a total export sales revenue of $360,000 per annum. Additional revenue could be generated by the growers through sale of hybrid anthurium planting stock, in this example, such sales have not been included.

4. Establishment costs for the hybrid anthuriums are estimated to average $5,900 per acre; of this total $4,500 is attributable to labour costs i.e. close to 470 labour days per acre (this underlines the high labour requirement for this crop - establishment requires about 2 person years per acre, given that a labour day in the Easter Caribbean is 4 hours of actual field time). Growing medium costs are estimated at $1,000 per acre, a figure substantially less than could be anticipated if growing medium were imported. However, fibrous coconut husks have proven to be acceptable as a medium under local conditions. Fertilizers and crop chemicals for establishment have been estimated at $400 per acre.

5. Operational (i.e. maintenance) costs are estimated to be $5,400 per acre. Again, there is a relatively very high labour input requirement ($3,800/acre i.e. close to 400 labour days per acre). Harvesting costs are subsumed) within this cost category. Of the materials cost of $1,600/acre, approximately 75 per cent is attributable to fertilizer and chemical costs

6. Packaging costs are estimated as: $2.15 per box and associated wrapping materials; 100 blooms per box i.e. $1,290 per acre.

7. Utility costs are estimated at $95 per acre and largely reflect the fuel costs of irrigating, in particular, the anthuriums that are being established each year.

8. Equipment maintenance and spare parts costs are estimated at $300 per acre of production acreage. Repairs/additions to the shade netting are assumed to be $200 per production acre, and buildings/irrigation equipment repairs at $100 per production acre.

9. Domestic transport - i.e. boxed export product being transported from point of packaging to Hewanorra Airport in St. Lucia - is assumed to be hired at a cost of $0.25 per box.

10. Prior to packing, it is assumed that the anthuriums are treated with a chemical preservative, at an estimated cost of $0.25 per 100 blooms.

11. Management/accounting support is estimated at $55,000 per year, which includes salaries and associated expenses for a General Manager, two senior field supervisors, an accountant book-keeper and clerical/secretarial assistant.

12. Office supplies/communication costs are estimated at $5,000 per annum. Telex rental and operations will be significant in this business which has markets in both North America and Europe.

13. It is assumed that implementation of the project requires the purchase of $48,000 of new equipment in Year 1 viz.

	$
Irrigation system on 10 acres (includes generator, pump, moveable sprinklers @ $800/acre i.e.	8,000
2 x 2 wheel tractors with spray booms and attachments @ $4,000	8,000
Knapsack sprayers and miscellaneous hand tools	2,000
Concrete base packing shed and lock-up storage area	10,000
Shade netting @ $1,000/acre	20,000
Replacement of same in Year 6	20,000
TOTAL	$68,000

14. A pick-up truck is purchased in Year 1, at a cost of $15,000, and replaced in Year 5.

15. In Year 1, it is assumed that hybrid planting material is purchased from the Netherlands, sufficient to plant 1 acre. This material provides the base stock from which the sustained yield of 20 acres of anthuriums will be drawn. The cost of the material is estimated to be $35,000.

16. Economic Analysis

(i) As per examples 1 and 2, unskilled labour costs and imported raw material costs (including plant preservation) have been adjusted by appropriate shadow price rates, viz. 0.5 for labour costs and 1.25 for imported raw materials.

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(ii) A feasibility study, costing $10,000, is assumed to be undertaken to assess the financial and economic viability of the project.

(iii) Core contractor management (i.e. supervision time over the first 4 years of the project) is estimated to take 20 days per year in Year 1, and 10 days per year in Years 2 through 4.

(iv) An AID-financed project audit cost of $1,000 for each of Years 1 through 5.

QUICK RESPONSE ACTIVITY: EXAMPLE 4

Production and Marketing of Sea Island Cotton

Sea island cotton is a premium grade cotton, characterized by very long staple length. It has been grown in the Eastern Caribbean for many years, although production declined sharply in the 1950s and 1960s in response to lower prices resulting from increasing market pressure from artificial fibres. However, increasing interest has been expressed more recently in this high quality cotton product as demand for 'natural' fibres, and in particular premium grade fibres, has had a recrudescence. In St. Kitts and Nevis, sea island cotton growers have been offered $4.50 per lb. for lint cotton, over a five year period, by a Japanese buyer; this price is approximately three times the prevailing price for regular grade cotton. In this example, a potential project is described in which the Nevis Sea Island Cotton Growers' Association gears up production to take advantage of the lucrative market opportunity outlined above. The Association seeks grant-funding to purchase required equipment, finance the purchase of inputs, undertake a project feasibility study, and to elicit technical assistance on sea island cotton production and processing.

Financial and Economic Analysis of Quick Response Fund Project - Sea Island Cotton (See Tables N-9 and O-5)

Assumptions:

1. 40 growers of cotton undertake to plant 5 acres each in Year 1 i.e. total project acreage is 200.

2. Yield of seed cotton expands from 900 lbs per acre in Year 1 to 1,600 lbs. per acre in Year 6:

Year	1	2	3	4	5	6	7	8	9	10
Yield/Acre										
Seed cotton (lbs.)	900	1,000	1,200	1,500	1,500	1,600	1,600	1,600	1,600	1,600
Lint (lbs.)	300	350	400	500	500	525	525	525	525	525

3. Grower price is fixed under contract to a Japanese buyer at $4.50 per lb. of lint cotton (f.o.b. Basseterre) throughout the project period. By-products have not been assigned a commercial value, although some growers may feed cotton seed to livestock, the seed output hardly justifies the investment in a seed crusher and oil extractor.

4. Raw material costs are estimated at $125 per acre: fertilizer - $90, crop chemicals - $30; and seed and miscellaneous - $5. In Year 6 through 10, raw material costs are estimated to increase to $130 per acre.

5. It is estimated that the labour requirement is about 55 labour days (@ 4 hrs. field time per labour day) per acre. This would cover all labour activities associated with land preparation, planting, crop maintenance, and harvesting (N.B. the contract with the buyer stipulates that the cotton must be hand-picked.) Labour costs per acre are estimated at $525.

6. The cost item 'Ginning, Baling, Utils' is a composite category that includes project utility costs as well as the costs of ginning and baling. The estimated cost is $6 per 100 lbs. seed cotton; in international comparation terms, these costs are as much as twice as would be the norm in major cotton producing countries, however, they reflect actual costs in the Leeward Islands.

7. Equipment maintenance and spare part costs are estimated at $85 per acre; the major items in this category are maintenance of the ginnery and of Association tractors (used in land preparation - diesel costs for their operation are included under 'utils').

8. Domestic transport and storage of bales are each estimated at $2 per acre. Purchase terms for the lint are f.o.b. dockside at Basseterre, St. Kitts.

9. Land rental costs are assumed to be $30 per acre.

10. Management/accounting support costs are estimated at $15,000 per year in the first 3 years of the Project. The Association would hire the services of a local cotton specialist to assist in project implementation, then, Association staff would take over the duties in Year 4.

11. New equipment costs are estimated at $120,000 over the ten year period analysed; viz. 1 x 60 HP tractors @ $17,000; 2 x two row disc harrows @ $3,000; 4 x two row cultivators @ $3,000, assorted knapsack sprayers and miscellaneous equipment - $8,000. In Years 6 and 7, one new replacement tractor would be purchaed, and the second tractor would be reconditioned, small-scale equipment would be replaced as necessary (for a total cost of $40,000); the ginnery would be reconditioned and refurbished at a cost of $20,000.

12. Economic Analysis

(i) Labour costs (unskilled) and imported raw material costs have been adjusted by appropriate shadow price rates (0.5 and 1.25, respectively).

(ii) Feasibility study costs for this project are estimated at $12,000. Core contractor supervision would comprise 12 days per annum in Years 1 and 2, 10 days in Year 3, and 6 days in Year 4 (for a total cost of $20,000).

(iii) An AID-financed project audit cost of $1,00 for each of Years 1 through 5.

QUICK RESPONSE ACTIVITY: EXAMPLE 5

Production and Marketing of "Winter Vegetables"

Growers and shippers of fresh produce in St. Vincent have long sold tropical fruits and vegetables to markets in the U.K. and, more recently, to Canada. These shipments have been largely sold to ethnic markets in these countries (i.e. Caribbeans living in the U.K. or Canada), although a major grower (Orange Hill Estate) produced "winter vegetables" for the U.K. market during the winter months (egg plant and zucchini). In this example, a potential project is described in which a private sector grower (with an off-shore joint-venture partner with experience in and access to market opportunities in the U.S.) leases 300 acres from the Government of St. Vincent and the Grenadines and produces "winter vegetables" for the U.S. market (mainland U.S. and Puerto Rico). In this context, "winter vegetables" refer to produce that is regularly grown in the U.S. during the summer months but which is imported during the colder winter months. The Government utilizes the HIAMP program to gain finance for the installation of a comprehensive irrigation system on the 300 acre plot (part of a recently purchased estate). The private sector grower takes a 15 year lease on the land and uses HIAMP equity funds to purchase equipment and improve existing buildings.

Financial and Economic Analyses of Quick Respose Fund Project - "Winter Vegetables" (See Tables N-10 and O-6)

Assumptions:

1. The production plan for the 300 acre farm is to grow cucumbers, egg plants, water melon and bell peppers for the U.S. market during the winter months, and corn and blackeye peas as a second crop in the summer months, to be sold on the domestic market.

Crop	Acreage	Marketable Production lbs. per acre
Cucumber	100	16,500
Egg plant	90	16,500
Water Melon	60	20,000
Bell Pepper	50	14,000
Corn	250	100 bu. per/acre
Blackeye Peas	50	2,500

Marketable produce is considered to be about 70 per cent of total production. In this example, it is assumed that there are no sales revenue from local sales of produce that is not of export grade.

2. Sales revenue a per acre for the above six crops is assumed to be:

	$
Cucumber	3,600
Egg Plant	4,500
Water Melon	4,000
Bell Pepper	7,000
Corn	660
Blackeye Peas	300
	$20,060

Total sales revenue per year from the six crops is $1,530,000.

Sales revenue estimates are based on the following price assumptions.

(a) Median Puerto Rico/ Miami c.i.f. Prices

	$/Pack	Produce Weight/Pack (lbs)
Cucumbers	12	35
Egg Plant	9	33
Water Melon	16	80
Bell Peppers	14	28

(b) St. Vincent Flour and Feed Mill have a guaranteed price to farmers for maize of $6.60 per bushel. Blackeye peas have a ready domestic and/or regional market at an f.o.b. price of $0.12 per lb.

3. Raw material costs are estimated to total $168,000 per year, comprising:

	$/acre
Cucumber	420
Egg Plant	525
Water Melon	390
Bell Peppers	625
Corn	90
Blackeye Peas	25

These costs are for seed, fertilizers, and crop chemicals. With the minor exception of pea seed, all items will be acquired from outside St. Vincent.

4. Unskilled agricultural labour costs for the project are estimated at $78,300 per year, i.e. about 8,140 labour days (4 hrs. field time) or more than 30 person years per year. Labour costs per crop are specified below.

	$/acre
Cucumber	235
Egg Plant	265
Water Melon	175
Bell Peppers	275
Corn	20
Blackeye Peas	35

It is assumed that the corn and peas will be harvested mechanically.

5. Packing-house unskilled labour costs are estimated at $120,000 per year, i.e. about 12,500 labour days or over 50 person years per year. Labour costs per crop are specified below:

	$/box
Cucumber	1.30
Egg Plant	0.80
Water Melon	0.80
Bell Pepper	1.30

Plus $5,000 unspecified labour costs for general duties.

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6. Packaging materials are estimated at $140,000 per annum, viz:

	$ Package Cost/Unit
Cucumber	1.20
Egg Plant	1.20
Water Melon	1.30
Bell Pepper	1.20
Blackeye Peas	0.20 per 50 lb. sack

7. Utility costs are estimated at $9,000. The major item will be diesel fuel for operating tractors and for running a mobile container cooler (the latter item, for example, will use 20 gallons of diesel per day over a three month period, costing aroung $3,500) at $7,000; pack-house utility costs are estimated to be $2,000 per annum.

8. Equipment maintenance and spare parts costs are estimated at $21,000 per annum. Field maintenance costs are assumed to be $18,000 ($60/cwt) to cater for irrigation system repairs and maintenance, and farm machinery maintenance; packing shed maintenance costs are $3,000 per annum.

9. Domestic Transport i.e. from farm to point of shipment (or to mill for the corn) costs have been calculated at the rate of $6 per tonne of output. Project aggregate output is about 2,900 tonnes plus package weight, i.e. total domestic transport costs of $18,000.

10. International transport and loading charges are estimated to be $343,000 per year. The produce will be sea-freighted in 40,000 lb. cooled containers. Shipping costs per box are:

	No. Cartons '000	Cost/Carton $
Cucumbers	30	3.00
Egg Plant	45	2.60
Water Melon	15	4.40
Bell Pepper	25	2.80

11. Sales commission is 12 per cent on the market value of exported produce i.e. $1,530,000 x 0.12, or $183,600 per year.

12. Land rental costs are $50 per acre.

13. It is assumed that the Government levy a $100 per acre irrigation charge to cover use of irrigation facilities and water.

14. Management and accounting support costs are estimted at $78,000 per year: $40,000 salary for an expatriate or top-qualified regional manager; $16,000 for administrative staff (book-keeper, secretary); $14,000 for a senior field supervisor/pack-house manager; $8,000 for other staff.

15. New equipment purchases are assumed to total $55,000 in Year 1, with renewal of selected items in Year 6 at a cost of $34,000. Initial purchases will include a small combined harvester and spares ($20,000) a 65 HP tractor ($20,000), a disc harrow and 4 row cultivator ($10,000), a planter ($5,000), and a pick-up truck ($15,000).

16. Economic Analysis

(i) Unskilled labour costs and imported raw materials inputs and packaging materials (in the first 3 years of operations) are valued at appropriate shadow prices (see previous examples).

(ii) Feasibility study costs are estimated at $30,000 for this multiple-double-cropping project. Core contracor management supervision is assumed to take 40 days in Year 1, 30 days in each of Years 2 and 3, and 20 days in Year 4.

(iii) Installation of a drip irrigation system on the 300 acres (a Government investment) is estimated to be $1,000/acre i.e. $300,000 in total.

(iv) An AID-financed project audit cost of $1,000 for each of Years 1 through 5.

QUICK RESPONSE ACTIVITY: EXAMPLE 6

Production and Marketing of Passion Fruit Juice

Citrus juices (in particular, orange) dominate the world fruit juice market, followed a long way behind by tomato juice. In recent years, juices extracted from tropical fruits have made small but still significant inroads into juice markets in developed countries; chief amongst these juices has been passion fruit, a vine crop that has been present in the Eastern Caribbean for some years, but not in commercial quantities. In this example, a potential project is described in which a Dominican private sector business person has taken the decision to process passion fruit into juice and sell on an f.o.b. contract basis to a buyer in Puerto Rico. The processor has promoted the crop in Dominica and now, has over 500 farmers on the island growing passion fruit for sale at a pre-established price per lb. on a delivered-to-the-plant basis. The entrepreneur has sought equity financing for the purchase of equipment and requires technical assistance on processing technology and practices to ensure project success.

Financial and Economic Analyses of Quick Response Fund Project - Passion Fruit Juice (See Tables N-11 and O-7)

Assumptions:

1. The processor's farmer network to assure sources of raw material supply covers 540 growers. Deliveries to the plant increase from 300,000 lbs. in Year 1 to 2,000,000 lbs. in Year 5 and on:

Year	1	2	3	4	5	6	7	8	9	10
('000 lbs) Raw Material Deliveries	300	600	1,000	1,500	2,000	2,000	2,000	2,000	2,000	2,000

2. The processor operates the plant at a conversion ratio of 100 lbs. raw material: 48 lbs. juice and seed. The juice and seed is sold, in frozen form, on an f.o.b. basis, Roseau, Dominica, at $0.60 per lb. to a Puerto Rican buyer, price fixed for 3 year period.

3. Price to growers for product delivered to the plant is EC$0.40 per lb. i.e. US$0.154 per lb.

4. Unskilled labour rates have been costed at the agricultural labour wage of EC$25/day for 4 hrs. field/plant time. Processing capacity of the plant is much greater than the projected availability of raw material, as a result, capacity utilization is very low in the early years of the investment. In Year 1, it is estimted tht 250 labour days will be required to operate the plant rising to 500 in Year 3, and 1,000 labour days per year by Year 5 through 10.

5. Packaging costs for this particular investment are zero. The buyer provides the processor with four gallon polyethylene drums for the juice and seed.

6. Utility costs are almost exclusively diesel purchases for the generator. It has assumed that the generator operates:

Year	1	2	3	4	5	6	7	8	9	10
Operating days	40	85	100	115	140	140	140	140	140	140

The generator uses 6 gallons of diesel per day at a diesel cost of $1.73/gallon.

7. Equipment maintenance and spare part costs rise from $720 per year in Year 1 to $1,435 each in Year 5 through Year 10. The costing formula is 0.75 per cent of new machinery cost in Year 1, 1 per cent in Years 2 and 3, and 1.25 per cent in Years 4 through 10.

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8. Domestic transport costs are based on the daily rental cost for a 5 ton truck ($23.00 - a rate that is common to shipments of all produce, whether it be bananas or processed juice) multiplied by the number of shipment days per year. For example, in Year 1 the calculation is estimated to be $23 x 25 shipment days i.e. $575.

9. Freezing and cold storage costs per lb. of juice and seed are estimated at $0.0187.

10. Management and accounting support costs are estimated to be $30,000, which includes salaries of General Manager and book-keeper/secretary.

11. New equipment and machinery costs are estimated at $115,000 in Year 1, viz:

	$
Pulper	25,000
Freezer	85,000
Finishes	5,000
	115,000

As capacity utilization is relatively low, it is assumed that this equipment, under an adequate maintenance regime, will not be required to be replaced during the 10 year period of the project that has been analysed.

12. A 4 tonne truck and pick-up truck (total cost $34,000) are purchased in Year 1.

13. Economic Analysis

(i) Unskilled labour wage rates have been adjusted by an appropriate shadow price (0.5 - see previous examples).

(ii) An $8,000 feasibility study is undertaken to assist the financial and economic viability of the project, and it is assumed that core contractor management supervision will be 16 days in each of the first 2 years, and 8 days in each of Years 3 and 4. Food processing technical assistance is required in the first year, and has been estimated at a cost of $15,000.

(iii) An AID-financed project audit cost for each of Years 1 through 5.

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FISHERIES PROJECT COMPONENT FOR HIGH IMPACT AGRICULTURE, MARKETING AND PRODUCTION (HIAMP) PROJECT PAPER

Introduction

1. The status of the Eastern Caribbean fisheries resources and their potential for development was sensitively investigated by the Island Resources Foundation (IRF) in their 1985 report to AID: Fisheries Sector Assessment. IRF recommended a cautious approach to fisheries development that fully considers the socioeconomic context; they rejected as inappropriate the capital intensive model of fisheries development that maximizes sustainable resource exploitation or economic fisheries yields. Their approach seems sensible; the real size of the fisheries resource is essentially unknown but thought to be too small for industrial fisheries exploitation. The fish landings only partially meet the local demand and are characterized by seasonal gluts and scarcities. Fish trading and marketing is a complex set of social interactions rather than the straightforward economic transactions that characterize trading patterns in more industrial economies.

2. Despite the credible analysis done by IRF on the resource poor and socially delicate fishery, the assessment did not address the potentials for private investment in fisheries, nor did their recommendations have any immediate link to commercial investment possibilities in the Eastern Caribbean.

3. The HIAMP goal of establishing export-oriented private sector agribusiness in the Eastern Caribbean is initially constrained by:

a. The small unit size of the target islands.

b. Limited natural resources.

c. A lack of entrepreneurial tradition and a culture based on monocrop plantation agriculture.

d. High local labor costs.

e. High transport costs for both inputs and marketable export products.

4. Given these limitations, successful fisheries development might best focus on the natural competitive advantages of the Eastern Caribbean. These are few: warm, clean seawater all year, but sufficient to encourage investment in those areas requiring that set of conditions. The above constraints would limit investment to high value specialty marine products with small market volumes that can be produced in the small areas available and can, by their value, overcome the high costs of transportation. The product that seems to best meet these criteria is fish and shellfish seed production for export to mariculture firms in regions with more advantageous conditions for commercial cultivation, but lacking sufficient and reliable quantities of seed for stocking.

5. Investment in high value, low volume fisheries production would suggest fresh whole fish and shellfish. For these specialty markets quality must be impeccable, handling and processing must be immaculate, service and delivery must be exceptional and transportation connections must be precise and continuously reliable. This set of criteria may require management skills not readily available in the existing Caribbean fishing industry. Quality control, processing and storage facilities on many of the islands lack the sophistication usually associated with high value high quality fresh fish production.

6. Despite the above context, several bankable investment projects have been identified that hold high promise for success. These projects, in varying states of development, require intervention of capital and/or technical assistance for completion. They are identified in Appendix I at the pre-feasibility level with as much quantification as available from very brief visits.

7. Possibilities for Private Investment in Capture Fisheries in the Eastern Caribbean

There is a constelleation of competitive disadvantages in the capture fisheries sector that all but discourage joint venture investment in the region.

a. Paucity of resources. The high value species: spiny lobster, conch, and red fish have been exploited to what many believe to be beyond their capacity for sustained production. Wherever small quantities exist they are captured and exported by local traders. The large seasonal pelagic fish are not considered sufficiently abundant to warrant investment in capital intensive exploitation. High value bottom fish such as snapper are perceived to be too expensive to fish profitably. The deep (+200 m) sea bottom is not well known; bottom long lines and deep trap fishing have been unsuccessful due to snags, loss to sharks, and low catch rates. A follow-up study to the FAO Caribbean fisheries resource survey of about 1970 is being planned by CIDA to begin in 1986/87.

b. High cost of raw materials, infrastructure, power and transportation. Fishermen are accustomed to sell fish at retail prices; they distrust outside investors whom they see as profiteering on local resources and efforts. Prices for raw fish are uncompetitive with industrial catches of the same species in other parts of the world. The costs of establishing infrastructure and operating costs (especially electric power) are higher than most other venues. Since production volumes are small, storage costs while awaiting shipment drive operating costs into the range of uncompetitiveness. Transportation from the islands to any developed market is unreliable and very expensive.

c. Small regional markets. The hard currency markets of Guadeloupe, Martinique, St. Maartin and the U.S. Virgin Islands import only

about 3,000 tons of fresh fish per annum from the OECS countries. Virtually all this trade is in small lots of about half ton, or over-the-side sales from fishermen. Even regular traders only sell small lots each of several hundred pounds, while tied to the wharf for several days until the fish is no longer saleable. Often fish is traded at a loss to buy consumer goods for reimportation (read: smuggle) into OECS ports to sell at high profits that more than make up for losses on the fish. Most trading takes place through a complex network of social and economic ties that is unlikely to be broken by outside investors and does not have the dollar volume to be worth the effort.

8. Having pointed out the disadvantages of capital intensive capture fisheries investment in the Eastern Caribbean, there are some areas where small profits could be made by local investors, where costs of support infrastructure are underwritten or investments highly leveraged by low cost loans and grants. There is a high demand for fish on all OECS islands. This demand is glutted during the pelagic fishing season and unfilled during the summer. A processing plant that could buy cheap fish during the glut and store it to sell during the scarce period should be profitable on some islands, if amortization of capital costs could be minimized and if a reliable source of fish were available. In St. Lucia this model is a marginal success; in Antigua it was a failure. In St. Lucia raw material costs were too high; in Antigua management was poor. Both firms were too big and overcapitalized for their small markets. Neither had a reliable source of fish from plant controlled boats.

9. The following sections provide background to the commercial fisheries sector in each island of the OECS States and are on file in LAC/DR and RDO/C. Several export-oriented investment opportunities are suggested, especially in the mariculture sector where the Eastern Caribbean may hold some competitive advantage due to the year round tropical temperatures and abundance of stable clean seawater. These opportunities provide the basis for the proposed major subproject in mariculture.