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INTERNATIONAL INSTITUTE FOR
AGRICULTURAL RESEARCH
CARRINGTON CAMPUS
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TRINIDAD AND TOBAGO
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PROJECT DOCUMENT

SUPPORT FOR THE GENERATION AND TRANSFER OF
AGRICULTURAL TECHNOLOGY IN JAMAICA

IICA .

November 1989



Comisión Interamericana de
Investigación e
Educativa Agrícola
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SUPPORT FOR THE GENERATION AND TRANSFER
OF AGRICULTURAL TECHNOLOGY IN JAMAICA

Centro de Estudios de
Económica e
Ingeniería Agrícola

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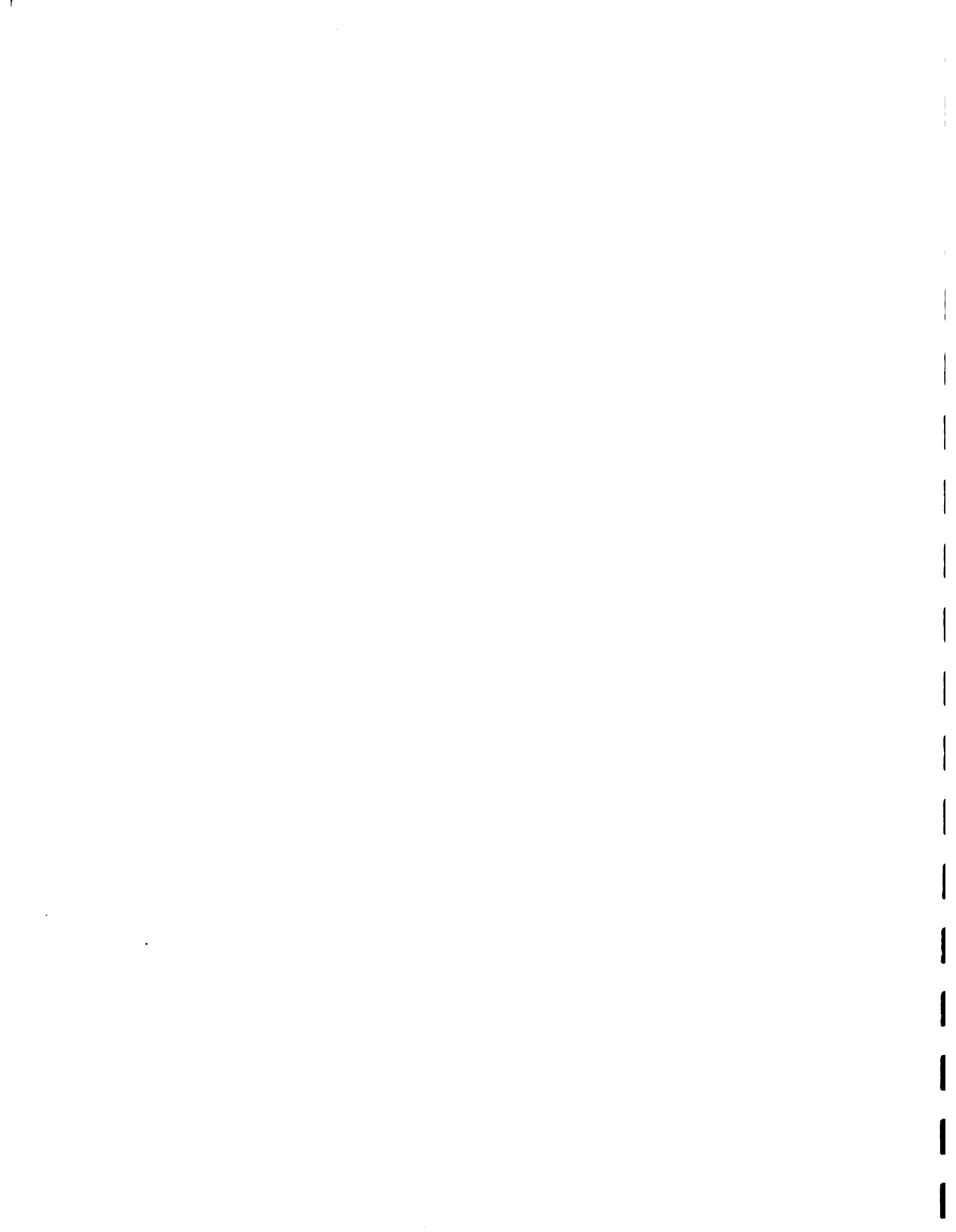
1. IDENTIFICATION

- 1.1 Program: II
- 1.2 Subject area dealt with by the project: Documentation and institutionalization of Cropping Systems methodology, and technical support to: (a) the Cropping Systems Project; (b) the Hillside Agriculture Sub-project.
- 1.3 Geographic scope: Jamaica
- 1.4 Type of Project: National
- 1.5 Date: Beginning 1/I/90 Concluding 31/XII/93
Duration: 4 years
- 1.6 Document version: Original_ Revised Date 15/XI/89
- 1.7 Financed with:
-Regular resources : Quotas US\$384,100
-External resources: US\$ 76,480 (IDRC)
US\$700,196 (USAID-GOJ)
US\$776,676 (Both sources)

-CATIs: US\$ 5,964 (IDRC)
US\$63,017 (USAID-GOJ)
US\$68,981 (Both sources)
- 1.8 Date prepared: November 15, 1989
Responsible Party: Vivian Chin

1.9 Approval*: Memorandum _____ Dated _____
Code _____

*DIPROE's Unit for Processing Instruments for Technical Cooperation is responsible for this information.



2. ANTECEDENTS

In Jamaica, a significant amount of agricultural research data and experience exists from work done on a wide variety of crops and cropping systems, for domestic use, in several locations island-wide. However, the majority of this technology was produced on research stations, and prior to 1985 little adaptive research had been done on farmers' holdings. In addition, there existed only a weak linkage between the Research & Development Division and the Production & Extension Division which resulted in relevant technology not effectively reaching the small-scale farming sector, which occupies primarily hillside lands and accounts for more than 80 percent of the farms in the country.

The Government of Jamaica (GOJ) has, during the past six years, re-emphasized the importance and urgency of identifying crops and livestock systems which will provide the bases for sustained agricultural production on hillside farms, while conserving the watershed resources and reducing hazards of pollution in the environment.

During the past five years the GOJ has embarked on a process of institutional strengthening from the "bottom-up" by implementing a generation and transfer of technology project utilizing an on-farm research approach with a farming systems perspective. This "bottom-up" approach to institutional strengthening required national personnel to be trained to execute an on-farm research programme with a farming systems perspective through a process of "learning by doing", and resulted from the belief that relevant technologies would not reach the small-scale farming sub-sector until such time that technicians responsible for "hands-on" research and extension can be trained to become effective agents in generating and transferring technology. IICA has encouraged this effort toward institutional strengthening through technical support provided to the GOJ in the following areas:

(a) The preparation of project documents for Cropping Systems Phases I and II, Yam Regeneration/Cropping Systems Extension, and the Hillside Agriculture Sub-Project;

(b) Seeking and obtaining external resources for the operation of these projects;

(c) Guiding and interacting with Ministry of Agriculture personnel involved in project execution at all levels of the hierarchy;

(d) Project monitoring and reporting.



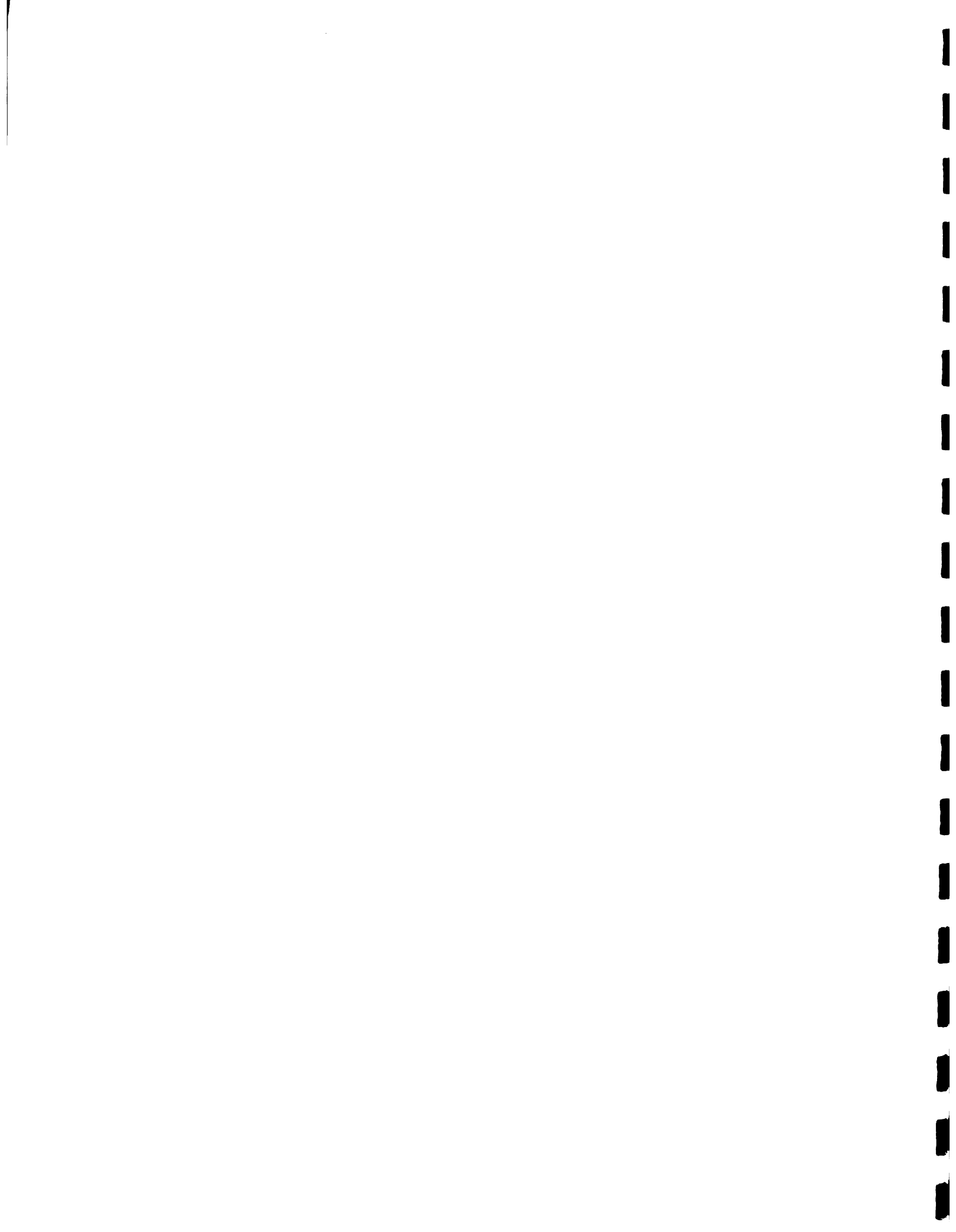
The interaction between IICA and Ministry of Agriculture (MINAG) personnel has contributed toward the process of evolving a strategy and methodology for generating technologies acceptable to small-scale farmers. To consolidate upon these initial gains, the GOJ has during the past two years arranged for:

- (a) The Director of the Research & Development Division (R&DD) of MINAG to make a study visit to the University of Florida to observe and learn about the organization and management of the Land Grant System. At the same time the Director had the opportunity to observe how the Farming System Research Programme was integrated in the Research & Extension Programme.
- (b) The Deputy Director of R&DD of MINAG and three other national personnel to participate in the USDA Technical Course on a Farming Systems Approach to Research & Extension for Small Farmers. The objective of the course was to enable the participants to develop further understanding of the concepts and methodologies of the farming systems approach and to become more adept at diagnosing farm (household and production) resources, problems, and opportunities for interventions.

The Cropping Systems Project, for which external funds from the International Development Research Centre (IDRC) was approved for the period August 24, 1984 to October 31, 1987, was executed by the R&DD of MINAG in the Guy's Hill and Watermount areas in the Parish of St. Catherine. The IICA Office in Jamaica provided technical support and administered the funding provided by IDRC.

The second phase of the Cropping Systems Project is being executed by the R&DD during the period November 1, 1987 to October 31, 1990, in the original two areas as well as in a third area, Hector's River/Grange Hill, in the Parish of Portland. IDRC has continued to provide external funding to enable the MINAG to execute this phase, and IICA provides technical support and administers the funding. Detailed background to this second phase is contained in the MINAG project document.

The Hillside Agriculture Sub-Project (HASP) is being funded by the Hillside Agriculture Project of USAID/MINAG. The R&DD of MINAG has commenced the execution of the sub-project. IICA, by Agreement will provide technical support and administer the external funds. Detailed background for HASP is contained in the MINAG project document.



3. THE SPECIFIC PROBLEM THAT THE PROJECT SEEKS TO SOLVE

Within the past fifteen years, the institutional framework within which the the Research & Development Division operates has been subjected to several unsuccessful exercises which have attempted to achieve or to channel efforts toward certain aspects of "institution-building". In 1975, successive missions from the FAO/ World Bank and FAO/IDB produced proposals for the reorganization of agricultural services / agricultural research in Jamaica. Subsequently the Agricultural Research Project (1980-83) funded by the IDB at a cost of J\$22 million was executed. This project aimed at ... "strengthening and developing the technical abilities of professional and technical staff involved in Research and Development" and also included the components -- Financial Management, Organization and Management, Programme Development, Training, and the provision of new research infrastructure (buildings and equipment). Outputs of that project, apart from the new research infrastructure cannot be easily discerned.

In 1988, a FAO Mission produced a report entitled "Jamaica: Reorganization and Strengthening of the Agricultural Research System" which was accepted by the Ministry of Agriculture. The main problems detected were:

"There is no overall national programme for agricultural research, nor an adequate mechanism for efficient allocation of resources to research"

"The Ministry of Agriculture's research group, R&DD, is lacking in well-defined work programmes, and with budgetary and staff restrictions".

"Research output is spotty, but on the whole it is scarce and sometimes of dubious relevance in terms of farmers' needs".

"Although in total Jamaica devotes a reasonable amount of funds to agricultural research, the lack of adequate organization and programmes reduces significantly the pay-off of investments in this area. Similarly, the national research institutions seem to have been unable to absorb and make sound use of the sizeable external funds for agricultural research that are available in Jamaica".

In MINAG, the R&DD and the Production, Extension and Marketing Division (PE&MD) are responsible for generating and transferring agricultural technologies which will benefit the small-farm sub-sector.

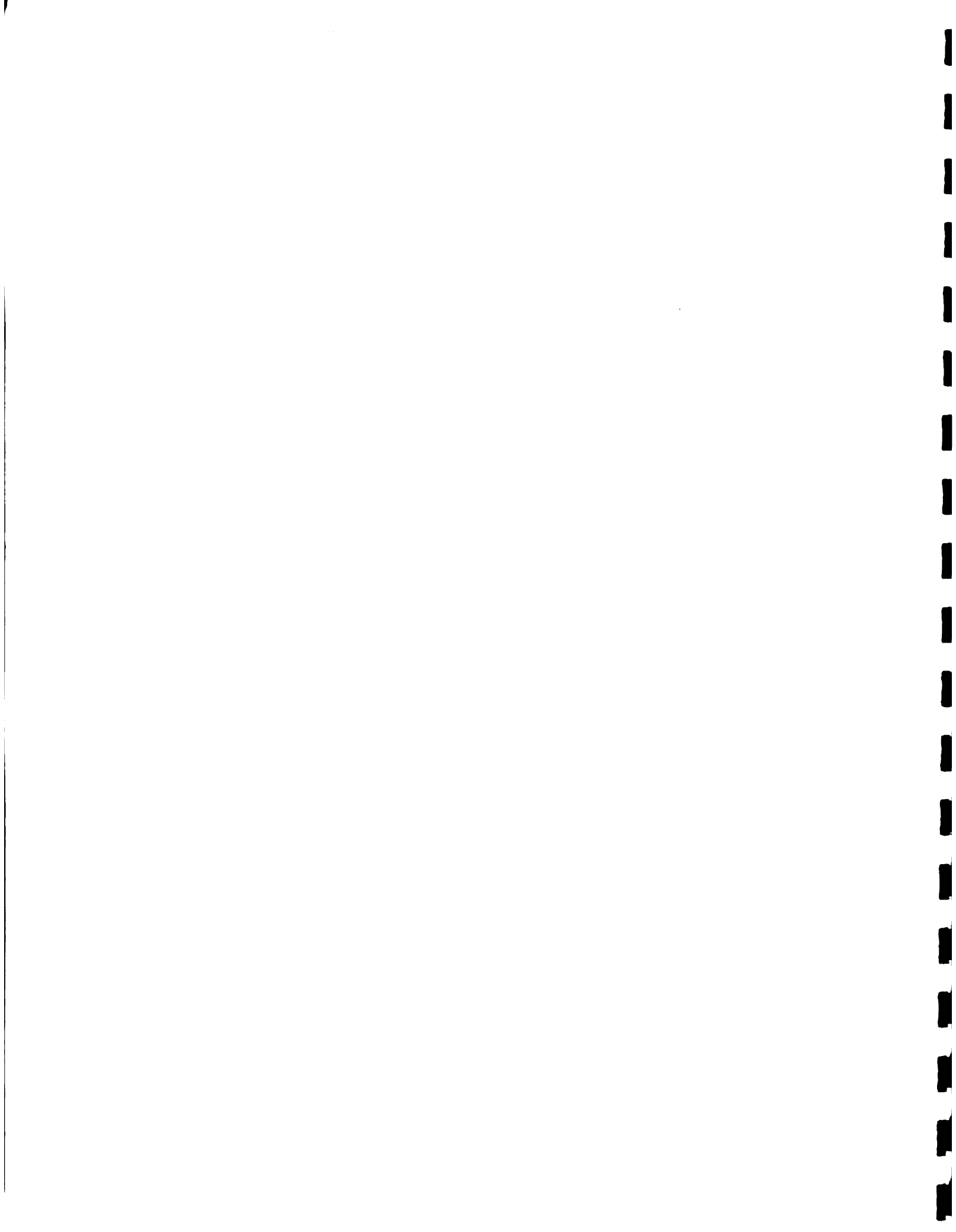


Both Divisions need to be strengthened in order to discharge their responsibilities effectively. This is the specific problem that IICA can assist MINAG to solve through actions stated within the scope of Programme II of the Medium Term Plan. This project seeks to support and strengthen the R&DD and PE&MD of MINAG to the extent that they will be able to effectively manage and execute projects for the generation and transfer of technology. The project also seeks to stimulate the institutionalization of research and extension with a farming systems perspective within the two Divisions of MINAG.

In general, because the problems faced by small-scale farmers in their complex farming systems have not been addressed by the R&DD and the PE&MD until recently, relevant technologies have not been generated for or been transferred to most of the small-scale farming sub-sector. Over the years this has led to low agricultural productivity and production.

The main limitations of the environment in which the R&DD and the PE&MD operate are:

1. Insufficient relevant technology for improving the farming systems on small farms.
2. Ineffective ways and means of transferring available technology to the majority of small-scale farmers.
3. Inadequacy of linkages between the R&DD, PE&MD, Farm Management Division, and Training Division in MINAG, and between these units and IARCs and local and regional institutions of higher education and agricultural research.
4. Inadequacy of existing organization and management of national technology generation and transfer systems and institutions.
5. Inadequate assistance and encouragement for the use of research findings for policy making decisions at the national level.
6. Inadequate marketing and storage arrangements for small-farmers produce.
7. Low level of ability of final users of technology (small-scale farmers) to manage enterprises having high credit input.



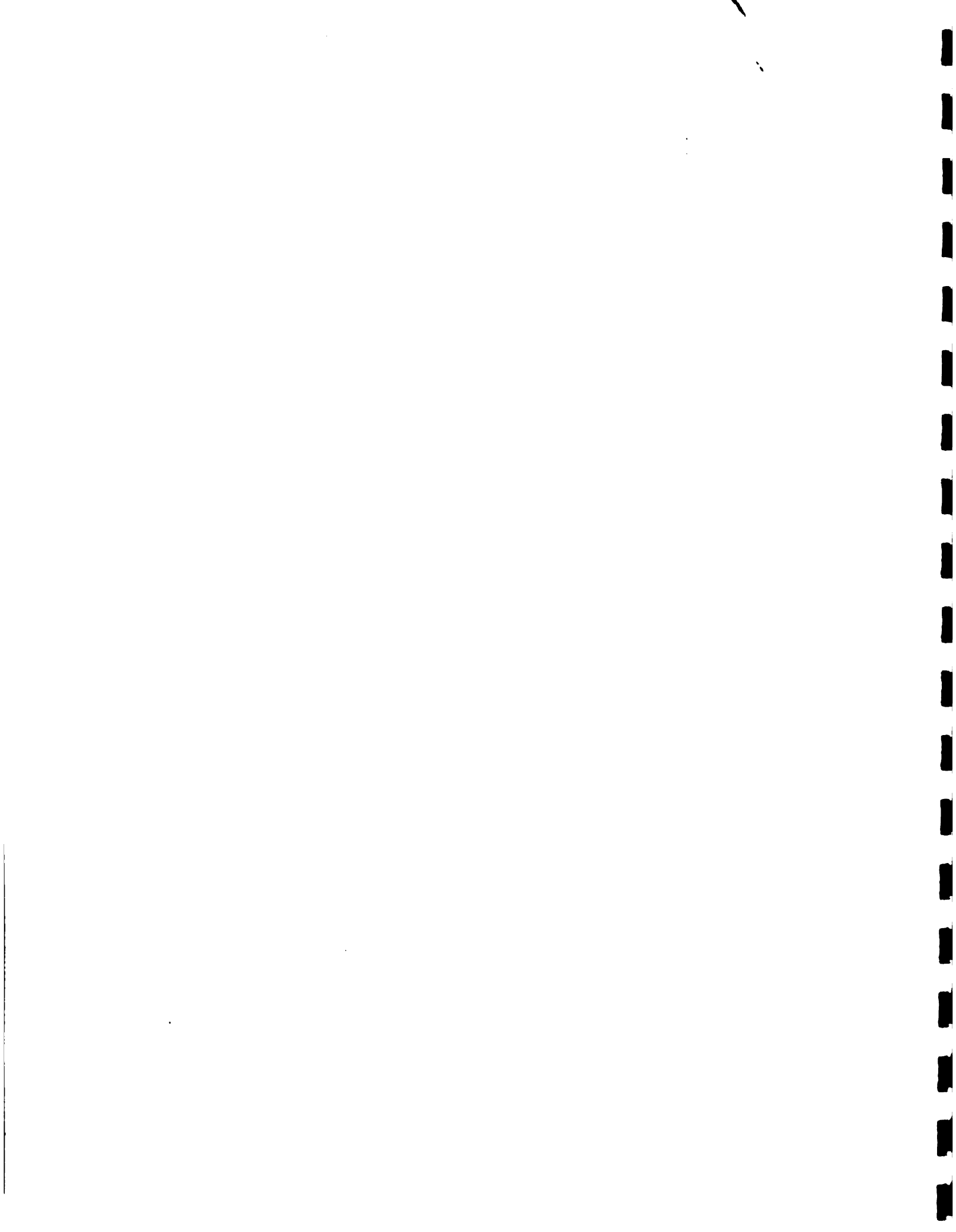
The potential of the environment in which R&DD and PE&MD operate is such that limitations 1, 2, 3, 5, 6, and 7 can be addressed in the course of providing IICA's technical support to MINAG for the generation and transfer of technology. Limitation 4 is planned to be addressed partly by the creation of the National Agricultural Research and Development Institute of Jamaica.

4. THE GENERAL PROBLEM

Low agricultural productivity, production and profitability of Jamaican hillside farming systems are considered to be the general problem for the purpose of this project. An analysis of the production levels of eleven major agricultural commodities produced in Jamaica during the period 1981 to 1985 indicates that 1985 production levels for eight commodities (sugar cane, banana, citrus, spices, coffee, meat fish and eggs) were from 7.5% to 40.3% below 1980 production levels. Cacao, copra, and domestic food crops production exceeded 1980 production levels by 43.6%, 20.3% and 10.8% respectively. Within the domestic food crops group most of the increased production was contributed by cucumber, pumpkin, condiments, pineapple, plantain, yams, and rice. The external cause of the general problem has been the shift of emphasis in agricultural development away from the small-farm sub-sector to the large-scale investor sector, and the consequent reduction of resources made available to MINAG for research and development, production and extension, training, and marketing activities. This shifting of emphasis appears to have been necessary in order that the Government of Jamaica (GOJ) could fulfill the terms of the structural adjustment loan. Within MINAG the reduction of available resources resulted in a massive reduction of extension personnel from approximately 350 to about 150 persons. In the R&DD permanent positions which became vacant through staff resignations remain unfilled.

The GOJ recognizes that the reduced output of the small-farm sub-sector (and its consequences) and the general feeling of discontent in the sub-sector are costs of the programme for setting the country's economy back on the road to recovery, and it has stated that the small-farm sub-sector will now receive the attention it deserves.

As a result of these factors the process of generating and transferring agricultural technology lost the momentum gained during the 1960's and early 1970's. Inadequate budgetary provisions in the 1980's did not stimulate an appropriate change in the policy for research and development. The R&DD continued to spread its limited resources thinly and did not make a serious attempt to prioritize its research objectives until 1987 when IICA assisted in guiding the exercise.



5. TECHNIQUES AND METHODS AVAILABLE FOR SOLVING THE SPECIFIC PROBLEM

The approach which IICA used in providing technical support to MINAG in their execution of the first phase of the Cropping Systems Project (1984 - 1987) was to promote and develop a spirit of cooperation and collaboration at both the personal (technician) and institutional levels. This resulted in the development and growth of mutual trust and respect between technicians of the two institutions, as well as between the two institutions, which later permitted the discussion of problems in sensitive areas.

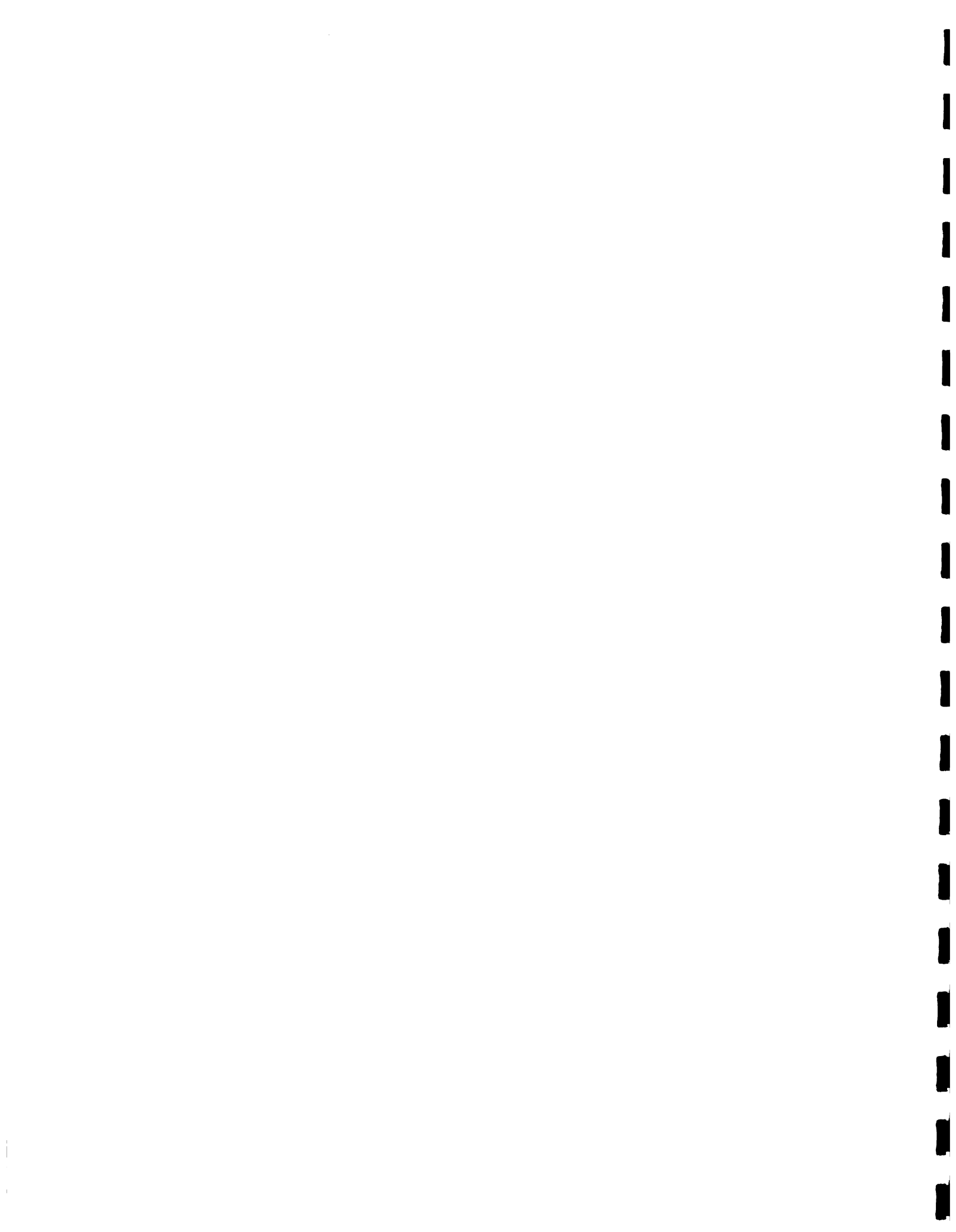
The limitation of the environment in which the R&DD operated necessitated a wide range of IICA technical support actions to enable MINAG to achieve the specific objective of Cropping Systems Project Phase I. The support actions planned for the remaining period of the Cropping Systems Project (CSP) Phase II and the Hillside Agriculture Sub-Project (HASP) incorporate actions relevant to the recommendations of the Evaluation Mission.

IICA will concentrate its technical support actions by integrating specific aspects of the Farm management Project in the technical actions for providing support to MINAG's Cropping Systems Project and Hillside Agriculture Sub-Project as indicated hereunder:

- (a) The training of extensionists and personnel assigned to the CSP and HASP in farm planning and record-keeping;
- (b) The testing of cost of production methodology for crop associations, permanent crops and livestock with HASP farmers;
- (c) the implementation of a record-keeping system with selected CSP and HASP farmers;
- (d) the development and testing of representative farm models in the CSP and HASP areas;
- (e) Conducting field days to present, to farmers, economic information on the impact of improved technologies on small farmers' income, crop mix, land and labour utilization, and cash flow.

In order to ensure that data relevant to both the Program II and Program III projects are collected, the collaboration between the two Programs in Jamaica has already begun.

A single joint projects meeting is now being held each month to plan on-going coordination and concentration of actions. At this meeting the Office Management is also represented so that the necessary administrative support actions can be discussed and decisions made to facilitate the technical support actions.



Already agreed at the joint projects meeting are the joint development of a standard on-farm and farm household data collection format and the joint design of the farmers' register questionnaire and of the baseline survey questionnaire for the HASP.

Regarding the Evaluation Mission's recommendation to fully include the planned farming systems element in this project, IICA has commenced its actions by guiding the Cropping Systems Project towards initiating work which, on four farms in each of the three CSP areas, combines the use of technology packages for the production of yam, *Solanum* potato, cabbage and corn, along with the other crops and livestock managed on those farms. The standard on-farm and farm household data collection format will be used to collect data for these farms, and the economic costs and benefits of utilizing specific cropping systems which include the use of one or more of the improved technology packages developed in the CSP will be assessed.

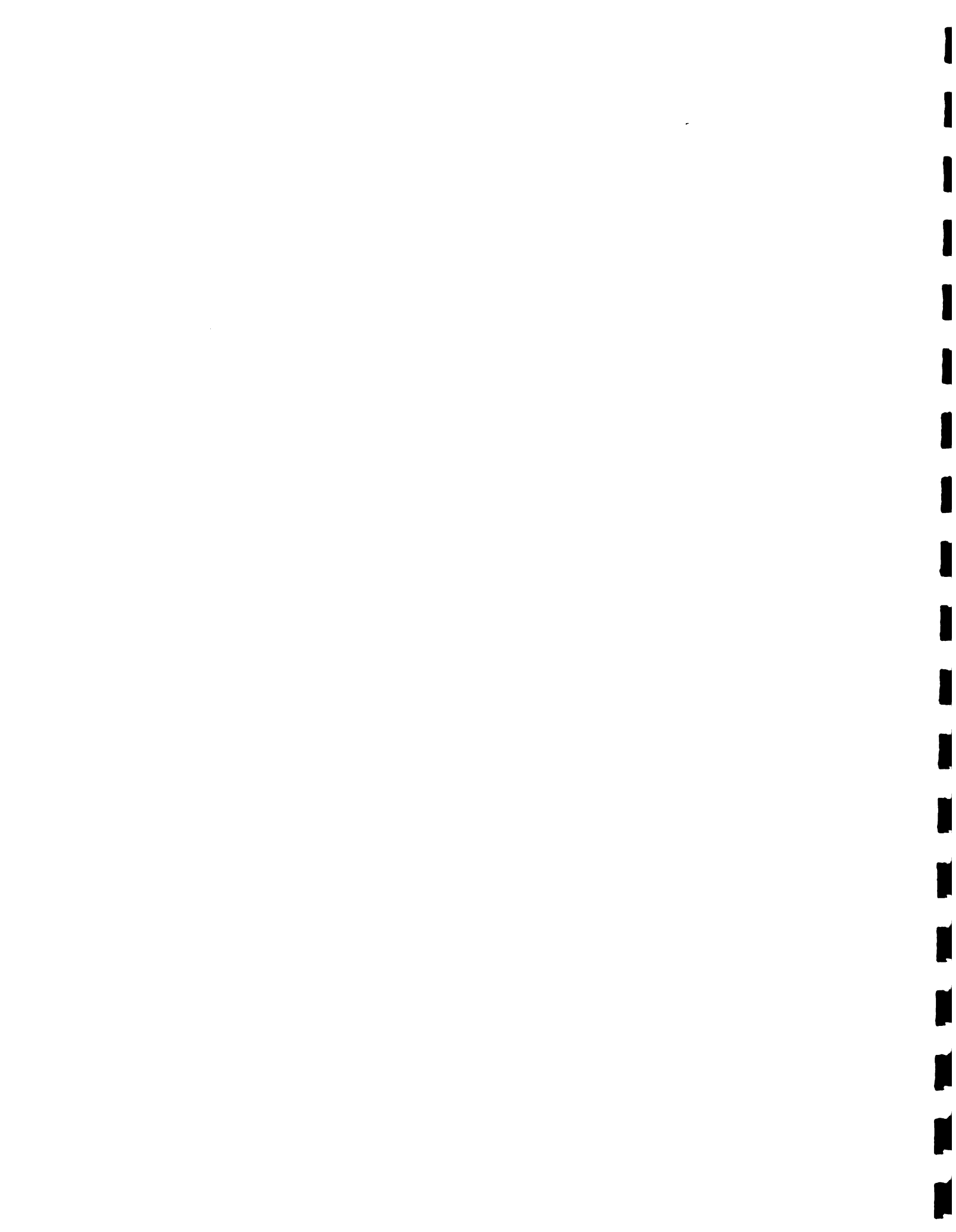
IICA will also guide the planning of work with tree crops and livestock to concentrate initially on the rehabilitation of tree crop cultivations, and to move towards integrating crops and livestock management on small hillside farms.

Cognizance is given to the Evaluation Mission's recommendations concerning an IICA study of the research and development and extension (R&D&E) components of the institutional structure to determine how best the Program II and Program III projects can be advanced so that on the cessation of IICA's particular intervention these activities become self-sustaining in the counterpart institution. When the Government of Jamaica completes its reorganization of the R&D&E components of the institutional structure which it is now in the process of doing, IICA will determine an operational strategy to work toward achieving the objective of this recommendation.

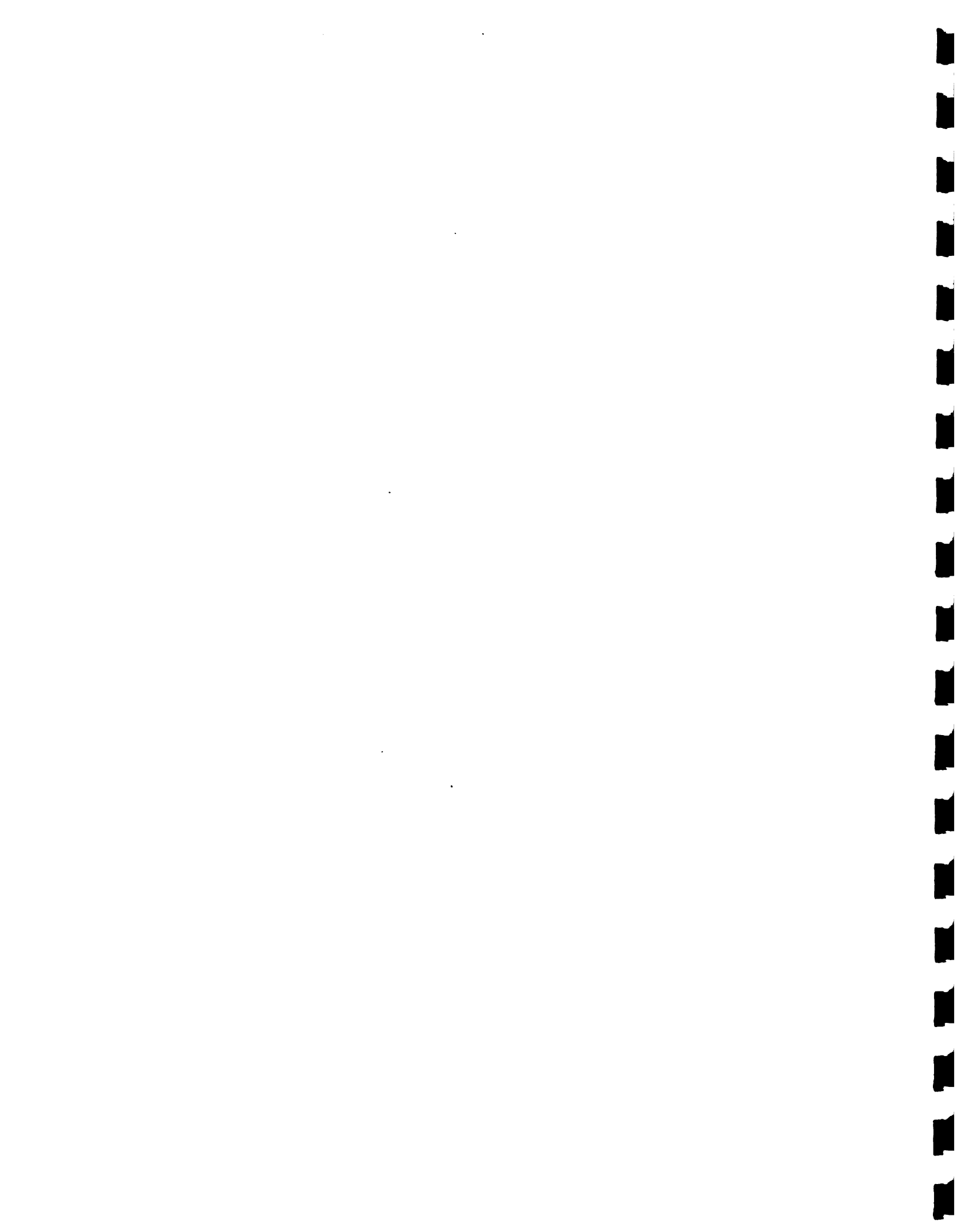
6. GOALS AND IMPACT

Specific Objective

The specific objective is to strengthen MINAG's institutional capability for generating and transferring technologies that are acceptable to small-scale farmers.



DESCRIPTION	VERIFIABLE INDICATORS AND GOALS	EXTERNAL CONDITIONING FACTORS
<u>Specific Objective</u>		
Strengthened MINAG institutional capability for generating and transferring technologies acceptable to small-scale farmers.	By 1993 MINAG has at least nine R&DD personnel capable of effectively executing research with a farming systems perspective and developing technologies acceptable to small-scale farmers. By 1993 MINAG has a technical team of two professionals capable of designing and managing an on-farm research and extension programme relevant to the needs of small-scale farmers. By 1993 MINAG has achieved the technical integration of externally funded R&D&E projects in the institution and is becoming less dependent on external budget support.	Agricultural policy continues to focus on research and extension for small-scale farmer development. Agricultural policy focus is supported by adequate budgets. Strong linkages exist between MINAG and other agricultural sector agencies enabling effective coordination and collaboration.
<u>Final Products</u>		
The documentation of the methodology for possible replication in other countries.	Document produced in 1991.	Appropriate GOJ and external budget support continues.
R&DD and PE&ND professionals are capable of designing, managing, and implementing a structured on-farm research and extension programme for generating and transferring technologies to small-scale farmers throughout the country.	In 1990 the R&DD and IICA assist the PE&ND in preparing the proposal for a Hillside Agriculture Extension Sub-Project. In 1992-1993 the R&DD and the PE&ND prepare a joint project for USAID funding to follow up their respective on-going projects.	Suitable trained personnel are recruited to staff sub-projects.
The experiences gained by MINAG professionals are used to support administrators and policy-makers in their decision-making process.	R&DD and PE&ND operate joint project management and implementation committee which manages and guides implementation of the Hillside Agriculture Sub-Project initially, and the Hillside Agriculture Extension Sub-Project when it comes on-stream.	



DESCRIPTION	VERIFIABLE INDICATORS AND GOALS	EXTERNAL CONDITIONING FACTORS
<u>Impact</u>		
Strengthened R&DD and PE&ND in MINAG with increased technical and financial resources.		
<u>Institutional</u>		
MINAG's R&DD and PE&ND have the technical, administrative, and financial capacity to design, manage, and implement a programme to generate and transfer technology that is acceptable to the Jamaican small-scale farmer.	24 Field Team members, 4 professional personnel, and 2 managers are trained to design, manage, and implement a generation and transfer of technology programme relevant to the needs of the small-scale farming sub-sector, and have the capacity to train other National Personnel.	
<u>Sectoral</u>		
The agricultural sector's ability to effectively address problems which face the small-scale farming sub-sector is improved.	Jamaican small-scale farmers participate on an extensive scale in the generation and transfer of technology.	
<u>In IICA</u>		
Successful and unsuccessful methodologies for supporting the generation and transfer of agricultural technology programmes in Jamaica documented and can be used to guide the initiation of similar Program II projects in other Caribbean countries.	Methodologies documented. Analysis of possible Caribbean countries applications.	



7. STRATEGY

The strategy for this project will be to support MINAG and other national agencies in their efforts to implement externally funded generation and transfer of agricultural technology projects by assisting and guiding them in their efforts to design, manage, and implement such projects, and to:

- a) formulate research and development, production, extension and marketing policies, working from the "bottom-up", for consideration by the Government;
- b) identify clear objectives and priorities for the total generation and transfer of agricultural technology effort;
- c) upgrade the managerial and technical capability of national personnel engaged in the generation and transfer of agricultural technology;
- d) prepare project proposals and seek funding from international funding agencies and Governments of supportive countries;
- e) identify specialists and institutions having the capacity to help solve special problems for which local expertise does not exist or is insufficient;
- f) mobilize technical cooperation in order to benefit from the knowledge and experience which exist in IICA and other institutions;
- g) disseminate to member countries through other IICA units information on successful interventions of policy and technical advancements related to problems which have regional significance in the field of agriculture and rural development.

This project to support the generation and transfer of agricultural technology in Jamaica will end when the Hillside Agriculture Sub-project activity comes to an end in 1993.



8. BASIC ACTIVITIES

Title of Basic Activities	Description of the content of the Activity	Institutional Pre-requisites
1. Documentation and institutionalization of Cropping Systems methodology.	Document IICA methodology for providing technical support. Document Cropping Systems methodology. Develop in collaboration with MINAG a model for phasing the institutionalization of Cropping Systems methodology and promote implementation through support for institutional development.	MINAG has the desire and the resources to institutionalize the Cropping Systems methodology. Increased participation of regular personnel.
2. Technical support to Cropping Systems Project Phase II.	Guiding and training MINAG personnel in the management and implementation of the Cropping Systems Project Phase II.	Cooperation and collaboration of MINAG personnel.
3. Technical support to Hillside Agriculture Sub-Project.	Guiding and training MINAG personnel in the management and implementation of the Hillside Agriculture Sub-Project.	Cooperation and collaboration of MINAG personnel.

9. RESPONSIBILITIES DURING PROJECT IMPLEMENTATION

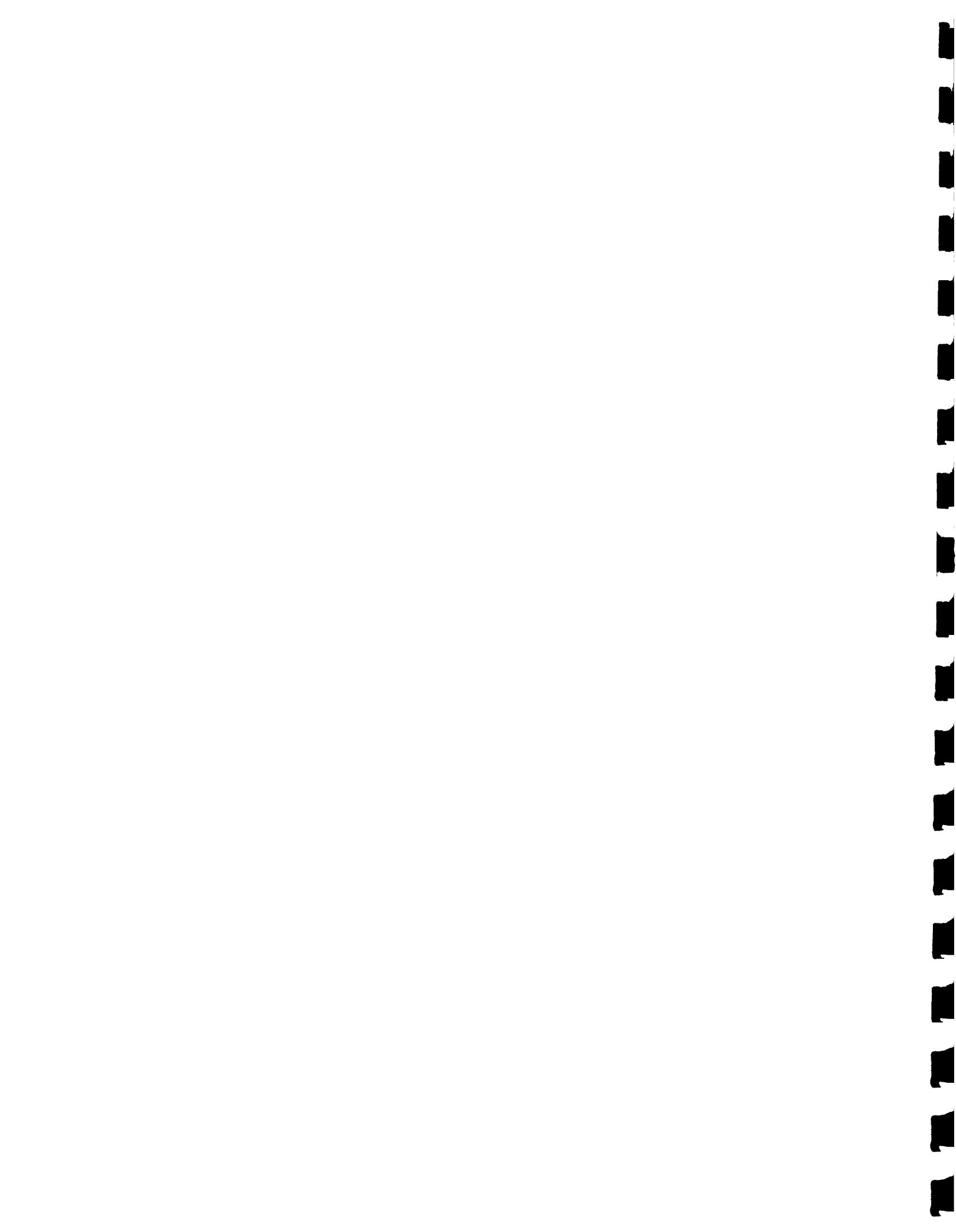
Basic Activities	Institutions		
	IICA	MINAG	Commodity Boards
1. Documentation and institutionalization of Cropping Systems methodology.	Promotes; participates.	Responsible; participates.	Participate.
2. Technical support to Cropping Systems Project Phase II.	Responsible; participates.	Approves; participates.	Participate.
3. Technical support to Hillside Agriculture Sub-Project.	Responsible; participates.	Approves; participates.	Inform; Participate.



10. BENEFICIARIES

The main beneficiaries of activities of IICA technical support will be:

- a) MINAG R&DD and PE&MD personnel whose technical and managerial capability will be improved with reference to the design, management, and implementation of transfer and generation of technology programmes.
- b) Commodity Boards' personnel who participate in Activities 2 and 4, who will be exposed to Cropping Systems methodology particularly with reference to intercropping of tree crops.
- c) Several thousand farmers engaged in small-scale farming in the project areas, who will benefit directly and indirectly from the results of MINAG's execution of the respective projects.
- d) IICA and other Caribbean countries that stand to benefit from Activity 1.



11. TOTAL COSTS

Year and Source of Funding	MAJOR OBJECT OF EXPENDITURE (US\$)										
	1	2	3	4	5	6	7	8	9	(3-9)	TOTAL
<u>1990</u>											
Quotas	62,204	28,709	2,000	1,160	0	0	0	1,527	0	4,687	95,600
External (IDRC)	0	23,426	0	0	7,834	1,000	14,690	27,930	1,600	53,054	76,480
External (USAID)	0	86,203	4,640	1,386	16,147	1,024	13,529	28,900	2,515	68,141	154,344
CATIs (USAID)	0	7,085	0	0	400	1,000	2,000	2,000	1,406	6,806	13,891
CATIs (IDRC)	0	0	0	0	964	2,000	1,000	1,000	1,000	5,964	5,964
1990 SUB-TOTAL	62,204	145,423	6,640	2,546	25,345	5,024	31,219	61,357	6,521	138,652	346,279
<u>1991</u>											
Quotas	62,439	29,365	2,000	0	0	0	0	2,696	0	4,696	96,500
External (USAID)	0	89,020	4,640	1,386	44,712	715	13,529	38,867	2,515	106,364	195,384
CATIs	0	7,128	0	0	500	5,000	500	3,000	1,456	10,456	17,584
1991 SUB-TOTAL	62,439	125,513	6,640	1,386	45,212	5,715	14,029	44,563	3,971	121,516	309,468
<u>1992</u>											
Quotas	60,778	30,045	2,000	0	0	0	0	2,677	0	4,677	95,500
External (USAID)	0	92,571	4,640	1,386	16,563	188	13,529	41,040	2,515	79,861	172,432
CATIs	0	7,409	0	0	2,738	1,665	2,324	1,074	309	8,110	15,519
1992 SUB-TOTAL	60,778	130,025	6,640	1,386	19,301	1,853	15,853	44,791	2,824	92,648	283,451
<u>1993</u>											
Quotas	61,275	30,796	2,000	0	0	0	0	2,429	0	4,429	96,500
External (USAID)	0	96,189	4,640	1,386	16,344	0	13,529	43,433	2,515	81,847	178,036
CATIs	0	7,807	0	0	2,820	1,700	2,400	900	396	8,216	16,023
1993 SUB-TOTAL	61,275	134,792	6,640	1,386	19,164	1,700	15,929	46,762	2,911	94,492	290,559
1990-93 TOTAL	246,696	535,753	26,560	6,704	109,022	14,292	77,030	197,473	16,227	447,308	1,229,757

(IDRC) -- Cropping Systems Phase II
 (USAID) -- Hillside Agriculture Sub-Project

PHASING OF EXTERNAL FINANCING BY YEAR AND SOURCE

The following chart shows the phasing of external financing by year and source. The amount in each cell represents the total external funds including the total CATIs by year and source. CATIs included in the project budget represents 60 percent of the total CATIs.

YEAR	IDRC Cropping Systems US\$	USAID HASP US\$	TOTAL including 100% of CATIs US\$
1990	86,420	177,495	263,915
1991		224,691	224,691
1992		198,297	198,297
1993		204,741	204,741
TOTAL	86,420	805,224	891,644





