

1995 REGIONAL AGRICULTURAL TECHNOLOGY PROGRAM

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TC-95-05-10-0-RG, TC-95-05-12-6-RG, TC-95-05-13-4-RG, TC-95-05-14-2-RG

EXECUTIVE SUMMARY

1995 REGIONAL TECHNICAL COOPERATION

INTERNATIONAL RESEARCH CENTERS		AMOUNT (US\$000)	COF/IDB CURRENCY
CIAT	International Center for Tropical Agriculture	1,800	COLOMBIA
	Savanna pasture crop systems, stage two	1,200	
	Ecoregional research	600	
CIMMYT	International Center for Maize and Wheat Improvement	1,500	MEXICO
	Research and technology transfer: maize and wheat	1,500	
CIP	International Potato Center	1,500	PERU
	Production of potatoes with stable resistance to late blight	1,500	
IFPRI	International Food Policy Research Institute	1,000	ARGENTINA
	Policies on food, agriculture and the environment, and indicators and priorities for agricultural research	1,000	
IPGRI	International Plant Genetic Resources Institute	500	COLOMBIA
	<i>Musa</i> research and technology transfer network	500	
IICA	Inter-American Institute for Cooperation on Agriculture	450	MEXICO
	Training in plant production in Central America and the Caribbean	450	
UWI	University of the West Indies	250	MEXICO
	Protected marine areas and fishery management in coral reefs	250	
	TOTAL 1995	7,000	

EXECUTING AGENCIES:

CIAT - Savanna pasture crop systems, stage two (Execution: 2 years. Budget: US\$1,200,000 equivalent in Colombian pesos); and ecoregional research (Execution: 2 years. Budget: US\$600,000 equivalent in Colombian pesos).

CIMMYT - Research and technology transfer: maize and wheat (Execution: 2 years. Budget: US\$1,500,000 equivalent in Mexican pesos).

CIP - Production of potatoes with stable resistance to late blight (Execution: 2 years. Budget: US\$1,500,000 equivalent in Peruvian soles).

IFPRI - Policies on food, agriculture and the environment, and indicators and priorities for

agricultural research (Execution: 3 years. Budget: US\$1,000,000 equivalent in Argentine pesos).

IPGRI - *Musa* research and technology transfer network (Execution: 2 years. Budget: US\$500,000 equivalent in Colombian pesos).

IICA - Training in plant production in Central America and the Caribbean (Execution: 2 years. Budget: US\$450,000 equivalent in Mexican pesos).

UWI - Protected marine areas and management of coral reef fisheries (Execution: 2 years. Budget: US\$250,000 equivalent in Mexican pesos).

BENEFICIARIES: The Bank's borrowing member countries.

FINANCING: IDB (nonreimbursable): US\$7,000,000 (SF). Disbursements to be made in local currencies out of the net income of the Fund for Special Operations.

TERMS: **Projects with 2-year execution periods:**
Request for last disbursement: 27 months
Execution of last disbursement: 30 months

Projects with 3-year execution periods:
Request for last disbursement: 39 months
Execution of last disbursement: 42 months

ENVIRONMENTAL CLASSIFICATION: The Environment Committee, at its meeting of July 11, 1995, classified this as a Category II operation.

OBJECTIVES: To contribute to agricultural development, the sustainable management of natural resources and economic growth in the region through programs of research, technological development, training and the dissemination of agricultural technologies, carried out by international agricultural research centers.

DESCRIPTION: The program comprises research, technology transfer, and training projects in Latin America and the Caribbean in the following areas: tropical pasture crop systems; agroecoregional activities; the genetic improvement of corn and wheat; resistance to potato diseases; policies on food, agriculture and the environment; the genetic improvement of plantain-growing; vegetable production in Central America and the Caribbean; and the identification of protected marine areas and the management of coral reef fisheries.

BENEFITS: Based on the benefits already reaped from the Bank's investment in the research done by international centers in recent years, additional results of high significance for the economies in the region are expected from the investments described in this program.

RISKS: Given the experience that the Bank has acquired in the management of technical-cooperation projects with international agricultural research centers over the last 20 years, no major risks are expected to arise during execution of the operation.

RESPONSIBILITY: Basic: INT/RTC; technical: SDS/ENV. The Bank's country offices in Colombia, Mexico and Peru will be responsible for the administration and supervision on the ground of the projects to be executed by the CIAT, CIMMYT and CIP, respectively. The projects to be executed by IFPRI, IPGRI, IICA and UWI will be administered from the Bank's country offices in Argentina, Colombia, Mexico and Mexico, respectively.

SPECIAL CONDITIONS: The disbursements for the CIAT, CIMMYT and CIP projects will be made retroactively to January 1, 1995, following the signing of the agreement and upon fulfillment of all conditions precedent. Disbursements under all the projects in the 1995 Program will be in two stages: 60% of the total following approval of the conditions precedent to the first disbursement, and the remaining 40% following approval of the mid-term technical report (paragraphs 3.14 and 3.15).

I. BACKGROUND

A. System for the Generation and Transfer of Agricultural Technology in Latin America and the Caribbean

- 1.1 The agricultural sector is the foundation of economic development in most of the countries in the region. 1/ Research plays a key role in the development of the sector and of the economies in the region by generating technologies that raise the productivity of resources, which results in increased economic efficiency, improved social efficiency and, properly directed, better management and preservation of natural resources. Investment in agricultural technological innovation in Latin America and the Caribbean (LAC) has had a strong economic and social impact.
- 1.2 The basic institutional infrastructure for research in the region, which the Bank has been supporting for more than 20 years, is made up of national research systems and international agricultural research centers (IARCs). The national agricultural research institutes (NARIs) are the primary elements of the national systems, which consist of agricultural universities, foundations and other nongovernmental organizations, farmers' associations, and private enterprises. The components of the national systems complement one another by pursuing (or funding) different lines of research and producing different kinds of technology. The same complementarity obtains between IARCs and national systems, so that investment in either benefits agricultural technology in the region as a whole.
- 1.3 The role of each of these components is determined by the nature of the research to be done (basic, strategic, applied or adaptive), the nature of the technologies developed (chemical, mechanical, biological or agronomic), and whether the institutions involved in financing and conducting the research are public or private. By means of research of one or another of these four kinds, each component in the system is engaged in the production of different types of technology for different customers. For example, the multinational and local agricultural private sector in LAC concentrates on the production of proprietary chemical, mechanical and biological technologies for the largest commercial producers, whereas the international (IARCs) and local (NARIs) public sector produces biological and agronomic information and technologies in the public domain. 2/

1/ The term "agricultural sector" is used broadly to encompass areas of crop and livestock production, fish breeding, forestry, agroforestry and agroindustry. In addition, in most instances, the term research also includes the generation and transfer of technology.

2/ That is, activities in which most benefits are not proprietary, so that private sector investment in them is low.

B. The Consultative Group on International Agricultural Research (CGIAR)

- 1.4 The CGIAR is a group of research centers, international and regional development agencies, and bilateral and multilateral donors set up in 1971 to contribute to the sustained growth of food production in developing countries through agricultural research, technology transfer and training, with a view to improving the nutritional levels and general economic well-being of low-income populations.
- 1.5 The CGIAR consists of 1,500 scientists working in 16 IARCs that engage in research projects, technology transfer and training in 40 developing countries in conjunction with national organizations. The IARCs are funded by grants from more than 40 multilateral and bilateral organizations, and have a combined annual budget of about US\$300 million. The Bank has been a member of the CGIAR since 1971, and since 1974 has made yearly contributions totaling the equivalent of US\$173 million to finance activities for training and the generation and transfer of technology carried on by different IARCs in LAC. Table 1 summarizes the activities of the IARCs associated with the 1995 Regional Agricultural Technology Program.

TABLE 1
INTERNATIONAL RESEARCH CENTERS ASSOCIATED WITH THE 1995 PROGRAM

CENTER	ACTIVITIES
CIAT Colombia (1967)	Tropical agriculture. The improvement of crops and conservation of natural resources. Research in beans, cassava, forage plants, rice, and agriculture on mountain slopes and lowlands. Areas of research: genetic diversity, germ plasm development, disease and pest management, soil management and production systems, land use. Gene pools for beans, cassava and pasture crops. Training and socioeconomics program.
CIMMYT Mexico (1966)	Corn and wheat improvement. Research in corn, wheat, barley, triticale and socioeconomics. Areas of research: genetic improvement and agronomic management of corn and wheat, economics. Maintains two gene pools, one for corn and one for wheat. Work in biotechnology, analysis of soils and plants, seeds, natural resources, and training.
CIP Peru (1970)	The potato and other Andean crops. Research to improve the production of potatoes and sweet potatoes. Areas of research: production systems, genetic improvement, disease and pest management, post-harvest management, and management of natural resources in the Andean ecoregion. Program of training, technology transfer and socioeconomics.
IFPRI USA (1975)	Food policies. Identification and analysis of policies for meeting the food needs of developing countries, especially sustainable food production and land use. Areas of research: reform of markets for agricultural inputs and products, protection of natural resources, reform of policies on trade, food security and nutrition.
IPGRI (1984)	Management of phyto-genetic resources. Preservation of gene pools of current and potential crops. Associated since 1994 with the INIBAP (Banana and Plantain Research Institute), engages in exchanges of germ plasm and the selection of new species, and research and experimentation in pathologies (Regional office in Colombia).
IICA (1942)	Vegetable research. Genetic improvement, integrated pest control, technology transfer and training in the production and marketing of vegetables in tropical areas (Regional office in Costa Rica).
UWI	Management of living aquatic resources. Research and training in fish culture and aquaculture (Regional office in Jamaica).

- 1.6 The research agendas of IARCs have diversified greatly since the beginning of the decade, including (in addition to traditional work on the genetic improvement of strategic food crops) research on the conservation and management of natural and genetic resources; the development and management of production systems; institutional strengthening, and research in socioeconomics, food policies and the management of research; activities geared primarily for the benefit of low-income groups.
- 1.7 The importance of the work of the IARCs for the region stems from: (i) the development of "generic" technologies in the public domain, of use in different agroecologic areas; (ii) economies of scale in strategic agricultural research and in exchanges of information and the ability to bring together a critical mass of researchers; and (iii) the development and maintenance of germ plasm banks. The generation and dissemination of knowledge produced by the IARCs in conjunction with NARIs in the region have increased food production, genetic security and the conservation and management of

natural resources, and has created a mechanism for effective cooperation for the development of the agricultural sectors and economies in the region.

C. The Bank's contribution to regional technological innovation

- 1.8 The IDB's investment in the strengthening of national research systems (by means of loans) and in regional and international research organizations (by means of nonreimbursable technical cooperation) has been, on the whole, quite effective, and has complemented its work to promote other areas of agricultural, economic and social development, thereby serving to ensure the successful development of the sector and the economies in the region.
- 1.9 The background and rationale for the Bank's contribution to agricultural research in the region have been examined on several occasions in the recent past. For instance, a paper entitled "The IDB's Role in Strengthening Agricultural Research in Latin America and the Caribbean", of 1993, summarizes the main conclusions drawn from two years of work, including an international workshop organized by the Bank. A 1995 document proposing the creation of a regional fund for agricultural technology also (in paragraph 1.13) examines the Bank's contribution to the regional system of research.
- 1.10 The impact of the Bank's investment in IARCs has been felt in increases of production and productivity in lines of utmost importance for LAC (corn, wheat, potatoes, cassava, rice, pastures), the improved management of natural resources, and the implementation of new agricultural policies, as also in the generation of income and employment in those lines of activity. The substantial multiplier effect of these activities, financed on a nonreimbursable basis, has increased the returns on technological innovation projects at the national level financed by IDB loans.
- 1.11 For example, based on the fact that the work of the IARCs concerns 8 of the 15 primary products that generate the greatest flow of benefits from the application of new technologies in the region (milk, meat, corn, rice, wheat, banana and plantain, legumes, potatoes, and cassava), the economic benefit from the work done by the IARCs and national research programs in recent years has been estimated in excess of US\$1 billion a year (*El Papel del CIAT, el CIMMYT, y el CIP en la Investigación Agrícola de América Latina y el Caribe* [The Role of CIAT, CIMMYT and CIP in Agricultural Research in Latin America and the Caribbean], Cali, Colombia, October 1992).
- 1.12 The Bank has supported the regional operations of the IARCs since 1974, mainly by means of annual contributions to the core budgets of the centers located in the region. Since the early 1990s the Bank has financed specific research projects by several CGIAR

member centers operating in the region and has cut back its contributions to core budgets. From almost US\$12 million in 1990 the Bank's contribution to the IARCs fell to US\$7 million in 1993. The direct impact of this reduction has been dramatic, including the closure of training and research programs and the layoffs of researchers at IARCs located in the region. This critical situation prompted the Bank, on the one hand, to increase, as an exceptional measure, its contribution to the IARCs in 1994 (to US\$8 million), and on the other hand to seek alternative ways to continue financing regional research without aggravating those negative effects, recognizing that the elimination of IARC programs would be very costly for the region.

- 1.13 In line with this, a group of countries has drawn up, with the Bank's technical support, a proposal for financing to complement the annual technical-cooperation programs. This proposal is based on the creation of a **Regional Agricultural Technology Fund** to ensure the availability of resources to finance strategic, priority regional activities for the development of agricultural technology. In addition to ensuring the continuity and stability of financing for priority lines of activity of shared interest to the countries of LAC, this course is designed to strengthen the part played by those countries in setting the region's research agenda. Over a period of three years (1995-1997) the Fund would accumulate approximately US\$200 million, and earn annual interest for investment in research. The Fund's financial resources would be provided chiefly by contributions from the countries in the region that would themselves benefit from the research to be financed. The Bank's contribution to the regional agricultural technology program could diminish as the Fund generated its own resources.

II. PURPOSES

- 2.1 The purpose of this technical-cooperation program is to contribute to agricultural development, to the sustainable management of the natural resources of the countries in the region and to their economic growth through programs of research, technological development, training and dissemination of agricultural technologies, conducted by IARCs. The proposed research, the types of technologies to be developed, and the transfer and training activities are such that this technical-cooperation program would complement the research done by national components (public and private) of the agricultural technological system of LAC.

III. PROGRAM DESCRIPTION

- 3.1 The proposed 1995 technology program continues the Bank's investment in the regional system to generate and transfer technology, which has shown high returns after two decades, taking into account in particular the key role played by research in economic and social development through income generation and job creation, conservation of natural resources, and poverty alleviation. The program reflects the diversity and complexity of demand for research on a regional agenda, seeking a thematic and geographical balance, which explains why a significant number of activities are covered despite the scarcity of available resources.

A. Activities

- 3.2 The 1995 program would finance priority research and technology transfer projects by IARCs and regional research organizations in beans, cassava, tropical pastures, natural resources, corn, wheat and potatoes; institutional strengthening in the assignment of priorities to research activities at the national level; the analysis of food, agricultural and environmental policies; the genetic improvement of plantain production; training in vegetable production; and training in the identification of protected marine areas and the management of coral reef fisheries. 3/
- 3.3 All the activities proposed for execution by IARCs and regional organizations under this Program will be carried out jointly with regional and national research organizations. Indeed, most of these activities will be cofinanced by the international centers and the regional and national organizations themselves, and in some cases by bilateral agencies. The identification and selection of the projects included in this document and the priorities assigned to them are based on the technical analysis done by SDS/ENV and INT/RTC with the collaboration of RE1/EN1, RE2/EN2 and RE3/EN3.
- 3.4 **INTERNATIONAL CENTER FOR TROPICAL AGRICULTURE (CIAT)**
PROJECT: SAVANNA PASTURE CROP SYSTEMS, STAGE TWO
TC-95-05-06-9-RG. Duration: 2 years. Budget: US\$1,200,000.
The project will develop technologies to improve the productivity and sustainability of agricultural production in the tropical savannas of South America, an area of utmost strategic importance for food production and economic development in the region. These activities are part of the CIAT core program, and are going forward in collaboration with national research organizations of Colombia (CORPOICA, Universidad Tecnológica del Llano, Universidad Nacional, and the Ministry of Agriculture), Brazil (EMBRAPA, Universidade

3/ See Annexes I to VII for detailed descriptions of each of the projects under the 1995 program.

Federal de Uberlândia), Venezuela (Ministry of the Environment and Natural Resources, and Universidad Experimental de los Llanos), and Bolivia (CIAT); and the Cooperative Technology Research and Transfer Program for the South American Tropics (PROCITROPICOS). The project has four components: analysis of land use in the savanna region; analysis of the nutrient balance in several pasture crop situations with a view to improving soil fertility, especially through nutrient recycling; the development of pasture crop systems capable of supplanting the traditional monoculture; and the genetic improvement of rice for cultivation in savanna soils.

3.5 **INTERNATIONAL CENTER FOR TROPICAL AGRICULTURE (CIAT)**

PROJECT: ECOREGIONAL RESEARCH

TC-95-05-09-3-RG. Duration: 2 years. Budget: US\$600,000.

Given the diversity of tropical agroecosystems in LAC, CIAT is coordinating a regional research effort on a variety of problems that are causing the degradation of natural resources and depressing the yields of staple crops. As coordinating center for the tropical ecoregional zone of LAC, CIAT is collaborating with several regional and international organizations. The project has two components: (i) the development of regional geographical information systems and data bases on land use and resource degradation, the classification of land uses and environmental variables in different agroecosystems, and the development of socioeconomic models for the identification of research priorities; and (ii) the development of a research network for sustainable sorghum production. The first component will include collaboration by IFPRI, PROCIANDINO and PROCITROPICOS, and the second will be carried out in collaboration with ICRISAT.

3.6 **INTERNATIONAL CENTER FOR MAIZE AND WHEAT IMPROVEMENT (CIMMYT)**

PROJECT: RESEARCH AND TECHNOLOGY TRANSFER IN CORN AND WHEAT, AND ECONOMICS

TC-95-05-07-7-RG. Duration: 2 years. Budget: US\$1,500,000.

The project has three components: corn, wheat, and economics. The corn component includes activities in plant improvement for the development of varieties and hybrids that are higher-yielding and more resistant to biotic and abiotic stresses (acid soils, drought, cold, heat, rusts, helminthosporium, stunt, downy mildew, and insects); the maintenance of biosecurity and rejuvenation of native materials; and training for researchers in Mexico and Brazil. The ecological working areas are low-lying and tropical corn-growing areas in South America, low-lying tropical corn-growing areas in Mexico, subtropical areas in Mexico and Brazil, uplands in Mexico, Guatemala and the Andean zone, and Central America and the Caribbean. In the wheat component work will be done for the genetic improvement of bread and durum wheats and of triticales for increased yields and quality and with resistance to adverse biotic and abiotic factors in the wheat-growing areas of LAC (acid soils, salinity, drought, cold, heat, rust, glume blotch, fusarium, mildew, and leaf rust). The project includes support for CIMMYT's

economics program through the analysis and discussion of policies for the adoption of technologies that increase productivity and conserve natural resources in Central America and Mexico in systems for growing corn on hillsides.

3.7 INTERNATIONAL POTATO CENTER (CIP)

PROJECT: PRODUCTION OF POTATOES RESISTANT TO LATE BLIGHT

TC-95-05-08-5-RG. Duration: 2 years. Budget: US\$1,500,000.

The project will develop and advance the program of genetic improvement to achieve stable horizontal resistance to late blight, the most economically significant disease of potatoes in LAC. At present, about 20% of the cost of growing this crop goes for the chemical control of blight. The purpose of the project is to make the disease less important and reduce the use of chemicals for its control. The principal lines of activity will be the transfer of resistant varieties already developed by the CIP in regionwide collaborative research and training to strengthen the capabilities of the countries for the development of resistant varieties.

3.8 INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE (IFPRI)

PROJECT: FOOD, AGRICULTURE AND ENVIRONMENTAL POLICIES, AND RESEARCH INDICATORS AND PRIORITIES

TC-95-05-10-0-RG. Duration: 3 years. Budget: US\$1,000,000.

The project has two components: (i) analysis of food, agriculture and environmental policies, and (ii) development of indicators and methodologies for the identification of research priorities. The purpose of the food policy analysis component is to learn more about the contribution of the agro-food system to alleviating poverty and the lack of food security and malnutrition, and to the proper management of the region's natural resources. The work will be done at the regional level, involve a variety of research organizations, and include the development of specific strategies in three countries.

3.9 The component of indicators and methodologies for the identification of priorities will generate an inventory of the institutions and resources involved in research at the national level and use this information in conjunction with agroecological and economic data to explore alternative investments in research. It will also compile an inventory of investments in irrigation in the region and develop a methodology for the socioeconomic evaluation of the impact of research on the management of natural resources.

3.10 INTERNATIONAL PLANT GENETIC RESOURCES INSTITUTE (IPGRI)

PROJECT: MUSA RESEARCH AND TECHNOLOGY TRANSFER NETWORK

TC-95-05-12-6-RG. Duration: 2 years. Budget: US\$500,000.

Bananas and plantains (known collectively by their generic name *Musa*) are of great socioeconomic and nutritional significance for about 185 million persons in LAC. Most *Musa* growers are small and middle-scale subsistence farmers who exploit the quasi-perennial nature of these crops to grow beans, peanuts and coffee in

association with them. The project will develop disease-resistant banana and plantain varieties and promote collaborative *Musa* research in the region. At the national level, training will be provided to enhance the capabilities of national research systems in evaluating natural and improved germ plasm for its resistance to diseases and conformity to the standards of local markets.

3.11 **INTER-AMERICAN INSTITUTE FOR COOPERATION ON AGRICULTURE (IICA)**
PROJECT: TRAINING IN VEGETABLE PRODUCTION IN CENTRAL AMERICA AND THE CARIBBEAN

TC-95-05-13-4-RG. Duration: 2 years. Budget: US\$450,000.

The project includes support to Panama and the Dominican Republic for their inclusion in the Central American Vegetable Network (REDCAHOR), which includes Costa Rica, Guatemala, Honduras, Nicaragua and El Salvador. This network has financing from the Central American Bank for Economic Integration and technical assistance from the Asian Vegetable Research and Development Center (AVRDC) and the IICA. The project objective is training in adaptive vegetable research, seed production, integrated pest control, vegetable production systems, disease identification and management, and the genetic improvement of vegetables.

3.12 **UNIVERSITY OF THE WEST INDIES (UWI)**
PROJECT: PROTECTED MARINE AREAS AND THE MANAGEMENT OF CORAL REEF FISHERIES

TC-95-05-14-2-RG. Duration: 2 years. Budget: US\$250,000.

The purpose of the project is to develop criteria for the identification of protected marine areas for use in the management of fishery resources in coral reef ecosystems. The project will develop methods for the identification of sites that are optimal as protected areas for the implementation of fishery resource management strategies. Coral reefs are traditionally locales of highly productive fishing, essentially by artisanal means. Most of these ecosystems, especially in the Caribbean, are being degraded apace by high concentrations of fishermen and pollution from inappropriate land use. Though the results of the project are regional, the specific activities will be concentrated in Jamaica, and will be based on the work done by the Discovery Bay Marine Laboratory of the University of the West Indies. The project will receive technical assistance from eligible consultants from the International Center for Living Aquatic Resources Management (ICLARM).

B. Organization and execution

- 3.13 Each executing agency will be responsible to the IDB for execution of the activities financed by the Bank. The **basic responsibility** for this program will lie with the Regional Technical Cooperation Division of the Integration and Regional Programs Department (INT/RTC). The **technical responsibility** will be borne by the Environment Division of the Social Programs and Sustainable

Development Department (SDS/ENV). The projects under both subprograms will be administered in the field by the following Country Offices: COF/CGO (CIAT and IPGRI), COF/CPE (CIP), COF/CME (CIMMYT, IICA and UWI), and COF/CAR (IFPRI).

C. Reports

3.14 CIAT, CIMMYT and CIP are to present to the Bank the following reports:

- (i) a **technical summary** (5-10 pages) of the work done by the Center in LAC in 1994 (*condition precedent to the first disbursement*), spelling out the accomplishments produced by the research, technology transfer and training activities financed by the Bank;
- (ii) a **financial summary** of the uses made of the Bank's contribution in 1994 (*condition precedent to the first disbursement*);
- (iii) a **mid-term technical report** (*condition precedent to the second disbursement*), to be presented halfway through the project execution period, summarizing the gains made and proposing the work to be done in the second phase;
- (iv) a **final technical report**, to be presented within the three months following the end of the execution period, containing information on the work done and results obtained, the socioeconomic impact of the project, and the action taken toward the application and dissemination of those results in the countries, and
- (v) a **final financial report** within the three months following the last disbursement, to be audited by a firm of independent public accountants or independent public account acceptable to the Bank.

3.15 IFPRI, IPGRI, IICA and UWI are to present to the Bank:

- (i) an **initial work plan** (*condition precedent to the first disbursement*) setting out the objectives, activities, and expected impact of the project (see Annex VIII);
- (ii) a **mid-term technical report** (*condition precedent to the second disbursement*), to be presented halfway through the project execution period, summing up the accomplishments produced and proposing the work to be done in the second phase;

- (iii) a final technical report, to be presented within the three months following the end of the execution period, containing information on the work done and results obtained, the socioeconomic impact of the project, and the action taken toward the application and dissemination of those results in the countries, and
- (iv) a final financial report within the three months following the last disbursement, to be audited by a firm of independent public accountants or independent public accountant acceptable to the Bank.

D. Cost and financing

- 3.16 The resources to finance this program, totalling the equivalent of US\$7 million, will be provided from the net income of the Fund for Special Operations on a nonreimbursable basis, disbursed in local currencies (Table 2). In all cases, disbursement items are under heading 1.1, for fees.

TABLE 2
1995 REGIONAL TECHNICAL COOPERATION

EXECUTING AGENCIES		AMOUNT (US\$000)	COF/IDB CURRENCY
CIAT	International Center for Tropical Agriculture	1,800	COLOMBIA
	Savanna pasture crop systems, stage two	1,200	
	Ecoregional research	600	
CIMMYT	International Center for Maize and Wheat Improvement	1,500	MEXICO
	Research and technology transfer: maize and wheat	1,500	
CIP	International Potato Center	1,500	PERU
	Production of potatoes with stable resistance to late blight	1,500	
IFPRI	International Food Policy Research Institute	1,000	ARGENTINA
	Policies on food, agriculture and the environment, and indicators and priorities for agricultural research	1,000	
IPGRI	International Plant Genetic Resources Institute	500	COLOMBIA
	<i>Musa</i> research and technology transfer network	500	
IICA	Inter-American Institute for Cooperation on Agriculture	450	MEXICO
	Training in plant production in Central America and the Caribbean	450	
UWI	University of the West Indies	250	MEXICO
	Protected marine areas and fishery management in coral reefs	250	
TOTAL 1995		7,000	

1. Disbursements and special conditions precedent

- 3.17 The disbursements for the CIAT, CIMMYT and CIP projects will be made retroactively to January 1, 1995 (when the agreement has been signed) upon fulfillment of the conditions precedent referred to in paragraph 3.13. Those for the IFPRI, IPGRI, IICA and UWI projects will be made after the agreement has been signed and once the conditions precedent referred to in paragraph 3.14 have been fulfilled. The disbursements for all the projects under the 1995 program will be made in two stages: the **first disbursement** (60% of the total) upon approval of the applicable conditions precedent, and the **second disbursement** (40% of the total) upon approval of the mid-term technical report (paragraphs 3.13 and 3.14).
- 3.18 Under both subprograms the executing agency must keep in its possession the originals and/or copies of the contracts, orders, invoices, receipts, payment vouchers, suppliers' certificates and other documents attesting to expenditures paid with resources of the contribution. This documentation must be properly identified, filed and available for review by the Bank and external auditors at the project headquarters. It must be held in an active file for a period of not less than three years running from the date of the last disbursement of the Bank's contribution.

2. Selection and hiring of consultants and procurement of goods and services

- 3.19 In the selection and hiring of consultants and the procurement of goods the Bank's procedures must be followed. Goods and services may be acquired only from member countries of the Bank. Only actual direct expenses incurred in the execution of the project will be eligible; indirect expenses and general operating services not included in the budgets may not be charged.

IV. BENEFITS AND RISKS

- 4.1 Results of high significance for the region are expected from the activities included in subprograms A and B. It is estimated that the research, technology transfer and training activities now in progress at the three IARCs in the region alone (cassava, forage crops, rice, natural resources, corn, wheat and potatoes) will benefit the economies in the region by US\$500 million a year over the next 15 years.
- 4.2 Specifically, substantial benefits are projected from the investment in research in savanna pasture crop systems; the generation of new varieties of corn and wheat; the production of potato varieties resistant to late blight; support for the ex ante evaluation of research in the national systems; the analysis of different food,

agriculture and environmental policies; the genetic improvement of the plantain; training in vegetable production in Central America and the Caribbean; and the identification of protected marine areas and management of coral reef fisheries.

- 4.3 No risks are involved in this operation, the executing agencies having demonstrated their capacity to meet their commitments on both the technical and the administrative sides. The activities under the 1994 program are proceeding satisfactorily.

V. MONITORING AND EVALUATION

- 5.1 The technical monitoring of program execution will consist in evaluations of the progress made on the projects based on the initial work plan, the mid-term technical reports, and the final technical reports prepared by executing agencies. The technical monitoring will be done by SDS/ENV, RE1/EN1, RE2/EN2, RE3/EN3, and by the country offices taking part in the program.
- 5.2 In addition to the final technical report prepared by the executing agency, a technical evaluation report will be prepared for each of the projects within six months after execution is complete, by means of consulting services hired by the executing agencies. The purpose of the report is to perform an independent technical review of the project accomplishments with an eye to possible future projects to be financed on similar matters, or to be carried out by the same executing agency. The cost of this evaluation will be included in the budget for each project. The executing agency will deliver to the Bank a copy of the evaluation documentation upon its completion.
- 5.3 The evaluation report will cover, among others, the following aspects: accomplishment of the objectives, degree of execution of the scheduled activities, including the strengthening of the national research institutions involved in the project, new knowledge and technologies generated by the project and its impact, limitations encountered in conducting the project and suggestions and/or recommendations for dealing with them, and expected continuity of research done during execution of the project.

PROPOSED RESOLUTION

REGIONAL. NONREIMBURSABLE TECHNICAL COOPERATION FOR THE REALIZATION
OF THE 1995 PROGRAM OF REGIONAL AGRICULTURAL TECHNOLOGY

The Board of Executive Directors

RESOLVES:

1. That the President of the Inter-American Development Bank, or such representative as he shall designate, is authorized, in the name and on behalf of the Bank, to enter into such agreements as may be necessary and to take such additional measures as may be pertinent for the execution of the plan of operations referred to in Document AT- with respect to a nonreimbursable technical cooperation with the International Center for Tropical Agriculture (CIAT), for the execution of the 1995 Program of Regional Agricultural Technology.

2. That up to the equivalent of US\$1,800,000, in pesos colombianos, is authorized for the purpose of this resolution, chargeable to the net income of the Fund for Special Operations.

3. That the above-mentioned sum is to be provided on a nonreimbursable basis.

PROPOSED RESOLUTION

REGIONAL. NONREIMBURSABLE TECHNICAL COOPERATION FOR THE REALIZATION
OF THE 1995 PROGRAM OF REGIONAL AGRICULTURAL TECHNOLOGY

The Board of Executive Directors

RESOLVES:

1. That the President of the Inter-American Development Bank, or such representative as he shall designate, is authorized, in the name and on behalf of the Bank, to enter into such agreements as may be necessary and to take such additional measures as may be pertinent for the execution of the plan of operations referred to in Document AT- with respect to a nonreimbursable technical cooperation with the International Maize and Wheat Improvement Center (CIMMYT), for the execution of the 1995 Program of Regional Agricultural Technology.

2. That up to the equivalent of US\$1,500,000, in nuevos pesos mexicanos, is authorized for the purpose of this resolution, chargeable to the net income of the Fund for Special Operations.

3. That the above-mentioned sum is to be provided on a nonreimbursable basis.

PROPOSED RESOLUTION

REGIONAL. NONREIMBURSABLE TECHNICAL COOPERATION FOR THE REALIZATION
OF THE 1995 PROGRAM OF REGIONAL AGRICULTURAL TECHNOLOGY

The Board of Executive Directors

RESOLVES:

1. That the President of the Inter-American Development Bank, or such representative as he shall designate, is authorized, in the name and on behalf of the Bank, to enter into such agreements as may be necessary and to take such additional measures as may be pertinent for the execution of the plan of operations referred to in Document AT- with respect to a nonreimbursable technical cooperation with the International Potato Center (CIP), for the execution of the 1995 Program of Regional Agricultural Technology.

2. That up to the equivalent of US\$1,500,000, in nuevos soles, is authorized for the purpose of this resolution, chargeable to the net income of the Fund for Special Operations.

3. That the above-mentioned sum is to be provided on a nonreimbursable basis.

PROPOSED RESOLUTION

REGIONAL. NONREIMBURSABLE TECHNICAL COOPERATION FOR THE REALIZATION
OF THE 1995 PROGRAM OF REGIONAL AGRICULTURAL TECHNOLOGY

The Board of Executive Directors

RESOLVES:

1. That the President of the Inter-American Development Bank, or such representative as he shall designate, is authorized, in the name and on behalf of the Bank, to enter into such agreements as may be necessary and to take such additional measures as may be pertinent for the execution of the plan of operations referred to in Document AT- with respect to a nonreimbursable technical cooperation with the International Food and Policy Research Institute (IFPRI), for the execution of the 1995 Program of Regional Agricultural Technology.

2. That up to the equivalent of US\$1,000,000 in pesos argentinos, is authorized for the purpose of this resolution, chargeable to the net income of the Fund for Special Operations.

3. That the above-mentioned sum is to be provided on a nonreimbursable basis.

PROPOSED RESOLUTION

REGIONAL. NONREIMBURSABLE TECHNICAL COOPERATION FOR THE REALIZATION
OF THE 1995 PROGRAM OF REGIONAL AGRICULTURAL TECHNOLOGY

The Board of Executive Directors

RESOLVES:

1. That the President of the Inter-American Development Bank, or such representative as he shall designate, is authorized, in the name and on behalf of the Bank, to enter into such agreements as may be necessary and to take such additional measures as may be pertinent for the execution of the plan of operations referred to in Document AT- with respect to a nonreimbursable technical cooperation with the International Plant Genetic Resources Institute (IPGRI), for the execution of the 1995 Program of Regional Agricultural Technology.

2. That up to the equivalent of US\$500,000 in pesos colombianos, is authorized for the purpose of this resolution, chargeable to the net income of the Fund for Special Operations.

3. That the above-mentioned sum is to be provided on a nonreimbursable basis.

PROPOSED RESOLUTION

REGIONAL. NONREIMBURSABLE TECHNICAL COOPERATION FOR THE REALIZATION
OF THE 1995 PROGRAM OF REGIONAL AGRICULTURAL TECHNOLOGY

The Board of Executive Directors

RESOLVES:

1. That the President of the Inter-American Development Bank, or such representative as he shall designate, is authorized, in the name and on behalf of the Bank, to enter into such agreements as may be necessary and to take such additional measures as may be pertinent for the execution of the plan of operations referred to in Document AT- with respect to a nonreimbursable technical cooperation with the Inter-American Institute for Cooperation on Agriculture, for the execution of the 1995 Program of Regional Agricultural Technology.

2. That up to the equivalent of US\$450,000 in nuevos pesos mexicanos, is authorized for the purpose of this resolution, chargeable to the net income of the Fund for Special Operations.

3. That the above-mentioned sum is to be provided on a nonreimbursable basis.

PROPOSED RESOLUTION

REGIONAL. NONREIMBURSABLE TECHNICAL COOPERATION FOR THE REALIZATION
OF THE 1995 PROGRAM OF REGIONAL AGRICULTURAL TECHNOLOGY

The Board of Executive Directors

RESOLVES:

1. That the President of the Inter-American Development Bank, or such representative as he shall designate, is authorized, in the name and on behalf of the Bank, to enter into such agreements as may be necessary and to take such additional measures as may be pertinent for the execution of the plan of operations referred to in Document AT- with respect to a nonreimbursable technical cooperation with the University of the West Indies, for the execution of the 1995 Program of Regional Agricultural Technology.

2. That up to the equivalent of US\$250,000 in nuevos pesos mexicanos, is authorized for the purpose of this resolution, chargeable to the net income of the Fund for Special Operations.

3. That the above-mentioned sum is to be provided on a nonreimbursable basis.