

AGRICULTURAL HEALTH AND TECHNOLOGY PROGRAM

(CO-0190)

EXECUTIVE SUMMARY

BORROWER AND GUARANTOR: Republic of Colombia

EXECUTING AGENCIES: The Ministry of Agriculture and Rural Development (MAGDR) and the Instituto Colombiano Agropecuario [Agricultural Institute of Colombia] (ICA).

AMOUNT AND SOURCE:

IDB:	US\$ 87 million (OC)
Local contribution:	US\$ 58 million
Total:	US\$145 million

FINANCIAL TERMS AND CONDITIONS:

Amortization period:	20 years
Disbursement period:	5 years
Interest rate:	variable
Inspection and supervision:	1%
Credit fee:	0.75%
Currency:	U.S. dollars from the Single Currency Facility

OBJECTIVES: The purpose of the program is to improve the competitiveness of Colombia's farm and agroindustrial sector in the context of the challenges and opportunities created by the opening of the country's economy, through expansion and increased efficiency in the allocation of public resources to agricultural research and protection. The program will help consolidate the institutional reforms carried out within the National Agricultural Science and Technology System (SNCTA) and the National Agricultural Protection System (SINPAGRO).

DESCRIPTION: The program will comprise the following subprograms and components:

1. Technology subprogram (US\$58.5 million)

This subprogram will support the reorganization of agricultural production in Colombia by developing new technologies under priority research programs of interest to the public and private sectors.

This will include:

(a) Institutional strengthening of the SNCTA (US\$6.7 million). Studies will be financed to provide the basis for reorganization of the system and effective operation by the Agricultural Science and Technology Council of Colombia (CNCTA) and its Technical Secretariat. The Technical Secretariat will have the resources for carrying out the studies and other tasks required for periodically reviewing research priorities, determining a strategy for future development of the Corporación Colombiana de Investigación Agropecuaria [Agricultural Research Corporation of Colombia] (CORPOICA) and other regional research agencies, and analyzing methods for promoting greater private sector participation in the financing of technological advances, as well as for evaluation of projects to be financed (which will require the creation of panels and the payment of honoraria to evaluators), development and maintenance of the information network, and evaluation and supervision of the program.

(b) Agricultural Technology Development Fund (Fund) (US\$50 million). This fund will serve as an instrument for allocating public resources to finance research in agricultural production activities, fisheries and forestry, providing resources on a competitive basis to national and regional projects which seek solutions to critical problems and innovation priorities. The fund will be administered by the Ministry of Agriculture and Rural Development (MAGDR), which will use a fiduciary trust arrangement through a financial intermediary. The highest priority programs are as follows:

(i) National strategy programs to develop research capacity (US\$18 million). These programs have as their objective to develop generic technologies in four specific fields: biotechnology, genetic resources, comprehensive pest-control programs, and integrated water and soil management programs. This will involve consolidation of a network of specialized research centers with connections to national and international bodies. This component will also provide financing for links to research consortiums at the international level through the Regional Agricultural Technology Fund (FONTAGRO).

(ii) National strategy programs for innovation and technological development (US\$26 million). The objective of these programs is to support research on specific technology problems in the farm production

or agro-processing system. A preliminary selection has identified the following programs: (i) Agricultural products (coffee, oil palm, plantain, flowers, bananas, potatoes and sugarcane); (ii) Small farming systems (products of the campesino economy such as beans, peas, onions, panela cane, cassava, corn and minor species); (iii) Cattle (beef, dairy and dual-purpose cattle); (iv) Forestry research (studies on commercial plantations, natural forests and agrosilvopastoral systems); and (v) fishing and aquaculture.

(iii) Regional programs (US\$6 million). The objective under this heading is to support research aimed at finding solutions to specific technological problems in areas of major importance to regional agro-ecosystems.

2. Subprogram for agricultural health and quality
(US\$66.5 million)

This subprogram will support consolidation of the institutional reforms in SINPAGRO and introduce agri-food quality measures into Colombian policy for the sector. Its principal components are:

(a) Institutional strengthening of the Agricultural Institute of Colombia (ICA) (US\$18 million), in its role as policy-making body, regulatory agency and principal enforcement authority for quality standards and health protection, and control of agricultural inputs in Colombia. This will include upgrading its organizational structure and human resources, beginning in the first year with the reappointment of personnel financed by the program, establishment of the health information system, and strengthening in the areas of planning and socioeconomic and environmental analysis for projects dealing with health protection and quality standards in agriculture.

(b) Consolidation of ongoing plant and animal health activities (US\$45.5 million). This component will seek to strengthen the following areas: (i) consolidation of a disease reporting system to improve knowledge of the country's plant and animal health conditions; (ii) improvement of control and inspection procedures in quarantine facilities at entry points and collection sites for plants and animals in order to prevent the spread of pests and disease; (iii) upgrading of quality control for agricultural inputs sold in Colombia, and monitoring of chemical and biological residues in agri-food

products; (iv) establishment and/or strengthening of national reference laboratories for plant and animal health diagnostic services, as well as control of agricultural inputs and residues in plant and animal products, and creation of regional laboratory networks; (v) creation of specific projects for pest and disease control and eradication; and (vi) certification of breeders of new plant varieties, preservation of genetic resources and promotion of biosafety standards.

This component will also include purchase of the necessary field equipment and materials for the plant and animal health monitoring system, modernization and equipping of entry points and quarantine stations, construction and equipping of laboratories, and the training and extension programs required to support and enhance these activities.

(c) Quality control (US\$3 million). Resources will be provided to establish a coordinating group that can oversee standard-setting and training activities, and to promote the activities of quality certification laboratories that will contribute to gradual implementation of the hazard analysis critical control point (HACCP) evaluation system in the agroindustrial processing stage.

**ROLE OF THE
PROGRAM IN THE
BANK'S COUNTRY AND
SECTOR POLICY:**

The Bank has developed a strategy for Colombia, the objectives of which are to: (i) support the process of building and maintaining a peaceable society; (ii) reduce poverty and inequalities; (iii) reinforce decentralization; (iv) modernize government services; and (v) promote sustainable growth in sectors such as agriculture. The Bank has drawn up a work strategy for the agricultural sector to be reviewed with the new Colombian administration, which includes the following: (i) rationalization of trade policies and domestic marketing of agricultural products; (ii) reform of the principal institutions of the sector to adapt them to the newly liberalized and decentralized economy; (iii) carrying out the investments and making the changes in agricultural technology and health described in this program; and (iv) designing strategies for revitalizing the real estate market and promoting private investment in agroindustrial projects. The development of institutional reforms in agricultural technology and agricultural health proposed under this program will make a very real contribution to the modernization and decentralization of government services in Colombia. Moreover, the actions in these two fields will help ensure sustainable development of the

sector since the growth achieved as a result of this program will depend on increases in productivity more than on expansion of land under cultivation. At the same time, the increase in competitiveness as a consequence of the program will aid efforts to rationalize trade policy for the sector, increase yields and reduce the risks involved in adopting a strategy based on support for private investment in commodities for agroindustrial processing.

**ENVIRONMENTAL/
SOCIAL ASPECTS:**

The analysis of environmental and social matters concludes that the effects of the program are generally positive since its activities will tend to boost incomes of producers, relieve pressure to expand the agricultural frontier, and reduce pesticides usage. As a result of the environmental analysis, a decision was made to include in the operating regulations of the Fund the need to consider the requirements established by the Ministry of the Environment and the regional corporations on the environmental dimensions of projects eligible for financing. These aspects include the use of sustainable technologies throughout the agro-industrial chain and the consideration of the rights of communities in projects that use native genetic resources. The principal recommendations include: (i) implementation of environmental control systems in laboratories; (ii) review and revamping of legislation to control agricultural chemicals; (iii) formulation of national standards for maximum residue levels in food products; and (iv) drafting of regulations governing production and sale of transgenic organisms.

BENEFITS:

By financing institutional strengthening for the SNCTA, expanding its resource base, establishing international strategic alliances and introducing competition for the financing of projects, this program will improve the efficiency with which public resources are allocated for research, ensure that research focusses on high-priority national and regional programs, and boost capacity for innovation in the medium-term, thus producing a significant impact by improving the competitiveness of the sector's principal products. The results will include higher export levels, greater income for producers and increased employment in the sector.

The most important benefits from the agricultural health and quality subprogram will include: (i) reduced likelihood of exotic pests entering the country and leading to economic losses in agricultural production; (ii) savings resulting from

better control of pests already present in Colombia;
(iii) additional income generated by greater access to foreign markets, improved quality and therefore reduced losses due to seizure of affected products in international markets, higher prices and less damage to the environment.

RISKS:

Risk: The reform process which resulted in the splitting of the ICA and CORPOICA into separate bodies left a number of institutional problems which may hinder execution of the program: namely, lack of precision in the allocation of research functions between the two institutions, shortage of qualified personnel in both the ICA and CORPOICA, lack of clarity concerning the division of assets (experimental stations) between them, and lack of continuity in research funding. Reducing the risk: Prior to the first disbursement under the agricultural health and quality subprogram, the actions aimed at strengthening the ICA and CORPOICA and bolstering their separate areas of specialization must be under way. These actions will include the guidelines that the Ministry of Agriculture has been preparing for restructuring the staff of the ICA (reducing administrative staff and increasing the number of technical personnel), and provisions to permit the downsizing of experimental stations.

Risk: The government's fiscal position may hamper the allocation of adequate budgetary resources to the institutions acting as executing agencies. Reducing the risk: The research subprogram is designed for large-scale participation by the private sector under the Fund (providing 50% cofinancing) and will promote the process of accreditation and delegation of powers under the agricultural health and quality subprogram.

**SPECIAL
CONTRACTUAL
CONDITIONS:**

Conditions precedent to the first disbursement under the program. The borrower must present to the Bank evidence of: (i) the formation of the MAGDR and ICA Coordinating Groups (paragraphs 3.2 and 3.19); (ii) the existence of the first Annual Work Plan (AWP) for each subprogram (paragraph 3.29).

Conditions precedent for the technology subprogram: (i) evidence that the SNCTA has the appropriate makeup and functions to carry out the subprogram (paragraph 3.4); (ii) approval of the operations manual for the Fund, as well as its medium-term work plan (paragraph 3.7); (iii) a call for bids has been issued for a financial institution to administer Fund disbursements (paragraph 3.2); and (iv) appointment

of the specialist on the CNCTA's Technical Secretariat who will be responsible for managing environmental and social aspects of the program (paragraph 3.32).

Conditions precedent for the agricultural health and quality subprogram: (i) evidence that SINPAGRO's Executive Council has been placed in operation (paragraph 3.18); (ii) the actions seeking to modernize and strengthen the agricultural research and protection agencies and bolster their separate areas of specialization and to allow the ICA to work effectively as the country's agricultural health authority have been initiated (paragraph 3.18).

Other conditions: In the course of the operation: (i) the borrower, through the Coordinating Groups of each coexecuting agency, must submit an Annual Work Plan for each subprogram to the Bank before October 31 of each year, together with consolidated semiannual reports on the execution of the respective subprograms (paragraph 3.29); (ii) 30 months after the signing of the loan contract, or when 50% of the loan resources have been committed, whichever comes first, the Bank and the government will conduct an evaluation of the program's execution (paragraph 3.28); and (iii) in the months following the start of program execution, studies will have been contracted out to: assess and amend legislation on the control of agrochemical use; monitor and evaluate program impact; design standards for control of residues in food products and the publicity campaign for comprehensive pest-control programs (paragraph 3.32).

**POVERTY-TARGETING
AND SOCIAL
ASPECTS:**

The proposed program does not qualify as a poverty-targeted investment, either geographically or in terms of its beneficiaries.

PROCUREMENT:

The procurement of goods and the contracting of construction works and consulting services to be financed with program resources will be carried out in accordance with the Bank's current policies. Whenever resources from the Bank's loan are used, international competitive bidding will be compulsory for contracts valued at or above the following thresholds: US\$350,000 for the purchase of goods, US\$200,000 for consulting services, and US\$5,000,000 for construction works.

**EXCEPTIONS TO BANK
POLICY:**

None.

I. FRAME OF REFERENCE

A. Macroeconomic context

- 1.1 Colombia's economy has undergone profound changes in the 1990s, including trade reforms which have simplified procedures and reduced protectionism (average tariff levels dropped from 28% in 1991 to close to 11.5% in 1993) and eliminated the bulk of its non-tariff barriers. However, unlike in other countries, Colombia's reforms were not accompanied by drastic measures in its fiscal system, and as a result there have been substantial increases in both the public sector deficit and the balance-of-payments, deficit on current account, real interest rates have risen sharply (to levels of 20% and higher), and the effective bilateral exchange rate with the United States has shown a strong upward trend (appreciating by 31% between 1990 and 1996).
- 1.2 In the agricultural sector, the reforms have included eliminating import licenses, stripping Colombia's farm marketing board (IDEMA) of its monopoly over importation of agricultural products, and introducing a price band mechanism in 1991. As a result, average tariffs in the sector fell from 31.5% in 1991, to 14.9% in 1993. The combined lowering of nominal and effective protection rates, together with appreciating real exchange rates and the rise in real interest rates, seriously affected the agricultural sector, particularly in the case of annual crops. In 1992, overall agricultural production dipped by 1%, while annuals were down by some 12%.

B. Performance and trends in the agricultural sector

1. The agricultural sector

- 1.3 Agriculture is the most important sector in Colombia's economy, accounting for almost 19% of the country's GDP and generating nearly 35% of its exports. Colombia has a total area of some 114 million hectares, of which close to 33 million (29%) are considered suitable for agricultural use (14 million ha in crops and 19 million ha for cattle). Of this total, close to 27 million hectares are being worked (4 million under cultivation and 23 million as pasturage).
- 1.4 The economic viability and competitiveness of Colombian agriculture have suffered a substantial decline in recent years as a result of changes in the relative prices earned by its products (owing to lowered levels of protection and drops in international prices and real exchange rates) and the slowing of technological development. Agricultural production grew by an annual average of 2.0% in the 1990s, which compares unfavorably with the 2.9% and 4.6% growth rates recorded in the two preceding decades. As well, overall productivity in agriculture (without including coffee) grew by an

annual average of 2.1% between 1970 and 1996, the greatest gains coming in permanent crops, where the average rise was 2.7% per year, versus annual crops where the annual productivity gain averaged only 0.8%.

- 1.5 This slowing of productivity is the result of the decline experienced among import-competing commodities (grains, cotton, oilseeds) where annual production fell by an average of 1.6% between 1990 and 1997, while export crops (coffee, sugar, bananas, flowers, cocoa) remained at a virtual standstill in terms of the value of their production. The sectors that showed the highest growth were those involving nontradables (tubers, garden vegetables, fruit) and animal products (the poultry sector in particular), which recorded annual growth rates of 3.4% and 3.8%, respectively, for the 1990-1997 period.

2. Restrictions on growth of the agricultural sector

a. Technology constraints

- 1.6 Low productivity is one of the factors which limits the competitiveness of Colombian agriculture. This constraint is particularly conspicuous in the case of annual crops, especially rice, corn, wheat and barley. Colombia has considerable potential for increasing its agricultural production by either expanding the acreage devoted to industrial farming or increasing yields. This potential is not being realized, in part because of the low level of investment and inefficiency in research and plant and animal health, and a shortage of qualified human resources in these fields.

b. The impact of the sector's trade policy

- 1.7 The sector's policies for protection of agricultural producers led to the development of distinctly different patterns of production and technology. One area of agriculture developed under the raw materials import substitution policy. Such is the case with the majority of the country's tradable annual crops: sorghum, soybeans, cotton, yellow corn and even rice. A second group of crops are those classified in the nontradable products sector, which were essentially ineligible for the benefits granted under agricultural sector policies. This was the case with fruit, vegetables, tubers and legumes. A third group was made up of products such as coffee and other permanent crops with obvious potential for the export market (bananas, flowers) or clear competitive advantages in the domestic market (sugarcane, oil palm), which also received various benefits under sector policies through specific measures designed to promote exports.

c. The uncertainty caused by violence in rural areas

- 1.8 The investments necessary for expansion of areas devoted to agriculture and introduction of technological and other advances required to increase productivity have been held back by the uncertainty resulting from the guerrilla attacks, political violence, ordinary criminal acts and growing of illegal crops that have wrought so much havoc in rural areas of the country.

3. The national technology development system

a. History and leading institutions in the sector

- 1.9 The tasks involving development of new agricultural technology in Colombia (research, transfer of technology and animal and plant health procedures) were overseen by the Instituto Colombiano Agropecuario [Agricultural Institute of Colombia] (ICA) for over 30 years, with the help of various private research centers, international institutions and universities.
- 1.10 During the last decade, Colombia has made a number of substantial changes to its institutions and policies in the fields of science and technology, and those in the agricultural sector have been particularly far-reaching. These changes began with enactment of the Science and Technology Act (Law 29 of 1989) and Decree-Law 585 of 1991, which created the National Science and Technology System under the direction of the Science and Technology Council of Colombia (CNCT), which coordinates programs for the various sectors.
- 1.11 The Agricultural Science and Technology Council of Colombia (CNCTA) is headed by the Minister of Agriculture, and is made up of three members from the private sector, one university representative, three members of the scientific community, and three representing the government. The Ministry of Agriculture and COLCIENCIAS serve jointly as the Council's Technical Secretariat. The mission and functions of the CNCTA are to help determine science and technology policy in the agricultural sector, and to make decisions on the allocation of public resources for research. At present, the CNCTA only takes part in the distribution of funding supplied by COLCIENCIAS.
- 1.12 In 1992, the ICA was split in two by Decree 2141 drafted under the special powers conferred by the Constitution of 1991: the ICA itself retained its mandate to oversee health protection and matters having to do with agricultural inputs; the new Corporación Colombiana de Investigación Agropecuaria [Agricultural Research Corporation of Colombia] (CORPOICA) was created in 1993 as a private corporation with public participation. CORPOICA has a General Assembly, a Board of Directors and an Executive Board which is responsible for managing the institution. At the regional level, CORPOICA is divided into 10 regional departments which are

responsible for coordinating 20 research centers and 69 regional extension, training and technology centers (CRECEDs).

- 1.13 Worth noting is the growing importance of private sector participation through a large number of private research centers: the National Coffee Research Center (CENICAFE), the National Sugarcane Research Center (CENICAÑA), the National African Oil Palm Research Center (CENIPALMA), and the National Aquaculture Research Center (CENIACUA). There are also various producers' associations (FENALCE, FEDEARROZ, FEDEPAPA) which carry out important research activities and work to adapt technology to Colombian conditions. When universities and agro-input companies are included, the private sector accounts for nearly 40% of Colombia's research funding.
- 1.14 To help strengthen the SNCTA, Colombia has been instrumental in creating the Regional Agricultural Technology Fund (FONTAGRO), whose current membership includes most of the region's countries and which is sponsored by the Bank. This Fund is supported by contributions from member countries and its objective is to finance regional (Latin American) competitive agricultural research projects in strategic fields, through consortiums of organizations from two or more countries so as to avoid duplication of effort and enhance the impact of research in each country.
- 1.15 As part of the political and administrative decentralization process, Decree-Law 77 of 1987 created the Municipal Technical Assistance Units (UMATAS), with a mandate to provide technical assistance for small farmers. Decree 1946 of 1988 created the National Technology Transfer System (SINTAP), which is headed by the Ministry of Agriculture and Rural Development (MAGDR). This system is currently carrying out an operation financed by the World Bank: the national program for the transfer of agricultural technology (PRONATTA).

b. Financing of the system

- 1.16 Colombia's public sector budget for agricultural research is low in both absolute terms and in relative terms in comparison with international averages. Estimated total public spending in this area was around 0.5% of the agricultural GDP during the period 1993-1996, falling to 0.4% in the latter year. In 1997, however, including resources provided by the MAGDR (Col\$41 billion), the Rural Investment Cofinancing Fund (IRD) (Col\$12 billion), and the quasi-fiscal funds (Col\$19 billion), this percentage rose to 0.8% of the agricultural GDP, which is comparable to the Latin American average (0.6%) although well below the figure for the developed countries where spending on research averages over 2% of agricultural GDP. Through its research and technology development program, COLCIENCIAS provided a total of around Col\$10 billion for a variety of projects relating to the agricultural sector in 1997. However, this program is due to end in the year 2000. Accordingly,

the contribution under the program proposed herein of close to US\$35 million over the five-year period (approximately US\$7 million per year) will serve on the one hand to replace the resources under the research and technology development program, and on the other hand to increase research funding in this area to around 1.0% of agricultural GDP.

c. Strengths and weaknesses of the system

- 1.17 The present circumstances afford the following advantages which provide a basis for reinvigorating the sector's structures and operations to create an integrated, modern and functional system for agricultural science and technology: (i) the basic legal framework is in place for the creation and structural design of the SCNTA and the CNCTA; (ii) private research centers are either in place or being planned which provide an important institutional framework in support of the system, and the quasi-fiscal funding scheme is an important mechanism for their support; (iii) the universities are playing an increasing role in the work of the SNCTA; (iv) COLCIENCIAS has made significant progress in revamping the system's institutional structure, and in improving its own organization, capacities and resources; and (v) an organizational plan has been created which will enable the regions to participate in agricultural research and transfer of technology.
- 1.18 The most important weaknesses of the system include: (i) little linkage between the system and the transfer of technology, health, and environmental activities; (ii) policy formulation, determination of priorities, most decision making and the mechanisms for allocating resources are all highly centralized; and (iii) lack of mechanisms enabling the SNCTA to promote competition - and hence efficiency - in the allocation of resources among the various institutions making up the system.

4. The national agricultural protection system

a. Animal and plant health

- 1.19 Colombia's greater economic openness, combined with the decline in its health protection agencies, has allowed entry to numerous plant health problems and reduced the country's plant health situation even further. At the same time, other problems have increased to the point where they interfere with efforts to develop Colombia's agricultural crops. Among the pests that have been introduced are the coffee cherry borer, chrysanthemum white rust and black Sigatoka disease of plantains and bananas. Among the pests that have grown worse are the potato tuberworm, the pink bollworm, and oil palm bud rot.
- 1.20 In the area of animal health, there are many problems that have already affected or may eventually hamper international trade in Colombian products, among the most important of which are:

(i) foot-and-mouth disease, which attacks both cattle and pigs; (ii) tuberculosis and brucellosis in cattle; (iii) classical swine fever; and (iv) both Newcastle disease and avian influenza in the case of poultry operations. According to the ICA, the losses caused by this problems – primarily due to reduced meat and dairy production – may be as high as US\$645 million.

b. Institutional and legal framework

- 1.21 Decree 2141 of 1992 authorized the restructuring of the ICA and ordered the separation of health protection activities from those of research and transfer of technology. Law 101 of 1993 (the Agriculture and Fisheries Development Act) defined the scope of the ICA as including animal and plant health protection activities, input control and protection of breeders of new plant varieties; and created the National Agricultural Protection Fund. Decree 1840 of 1994 sets out the basic provisions governing animal health and plant protection, and creates the National System for Agricultural Protection (SINPAGRO).

c. Animal health and plant protection activities

- 1.22 Health protection in the field of agriculture includes activities in the following areas: (i) plant and animal information and disease reporting; (ii) inspection and quarantine; (iii) laboratory testing; (iv) pest and disease control and prevention projects; (v) registration and control of agricultural and livestock inputs; (i) seed certification and protection for breeders; and (vii) plant genetic resources and biosafety.

d. Quality standards in agriculture

- 1.23 Despite growing economic globalization and the signing of numerous trade treaties, Colombia's agri-food sector has been slow to adapt to the need for greater attention to quality standards. Colombia is a signatory to the world trade agreement that contains these standards, and within the country the Ministry of Health has issued regulations making the HACCP system compulsory for the agri-food industry. However, the country has a shortage of qualified personnel and not enough accredited laboratories to certify the quality of food products, so that it is important to promote quality control and to strengthen Colombian institutions responsible for this area.

C. The Bank's country strategy

- 1.24 The Bank has developed a strategy for Colombia the objectives of which are to support: (i) reconciliation and continuation of the peace process; (ii) reduction of poverty and inequality; (iii) consolidation of the decentralization process; (iv) modernization of government services; and (v) promoting sustainable growth in sectors such as agriculture. The Bank has

developed a working strategy for this sector to be examined with the country's new administration, which includes: (i) rationalization of the country's trade policy and domestic marketing of agricultural products; (ii) reform of the principal institutions in the sector to adapt them to trade liberalization and decentralization of authority; (iii) investments and reforms in technology and health as provided for under this program; and (iv) design of strategies for revitalizing the real estate market and promoting private investment in the agribusiness sector. Reorganizing the institution responsible for agricultural technology and plant protection and animal health as proposed in the present program will make a clear contribution to the modernization and decentralization of government services. Also, the activities planned in these two fields will help to ensure sustainable development of the sector since the resulting growth will depend more on gains in productivity, than on expanding the amount of land under cultivation. At the same time, the increase in competitiveness as a result of the program's activities will make it easier to rationalize the sector's trade policy, raise profits and reduce the risks inherent in a strategy based on support for private investment in agroindustrial commodities.

D. Activities of the Bank in the sector

- 1.25 The Bank has been working with the Colombian government on the financing of projects designed to overcome several of the problems detected in the diagnostic study. The country's land tenure problems are being addressed by means of titling programs and the registration of vacant land in rural and urban areas begun under loan 1027/OC-CO. The Bank has also provided a loan of US\$140 million to finance the national land management program. Execution of the alternative development program (984/OC-CO-PLANTE) began in 1997 in support of rural development in areas where programs for eradication of illicit crops are under way. The programs funded in this sector have encountered various problems related to the institutional capacity of the entities responsible for their execution and low levels of funding. Efforts will be made in the proposed program to correct both of these aspects. At present, the Bank and the government are studying ways to speed up execution of the earlier programs and ensure that their activities target areas and projects of major importance to the peace process. The Bank has supported rural development by means of three projects cofinanced with the World Bank and executed in their entirety through the Fondo de Cofinanciación para la Inversión Rural [Rural Investment Cofinancing Fund] (CDRI). In addition, the Bank has financed three stages of the technology research and development program (COLCIENCIAS-BID). In the third stage of that program (COLCIENCIAS-BID III), a number of technology research and development projects have been financed in the agricultural sector, achieving significant progress from the standpoint of their impact on the development of this sector.

E. Conceptual design of the program

- 1.26 The decline in earnings and competitiveness experienced by Colombia's agricultural sector in recent years is due in part to a lack of resources for generating new technology and improving health protection services for producers. This alone demonstrates the need to expand the resource base available for these types of activity. At the same time, because changes in the relative prices of different products have redirected the country's agriculture into areas where Colombia's farmers enjoy important comparative advantages, there are good reasons for allocating the added resources to these types of crops and species. Accordingly, the program's emphasis is on financing strategic plans for products which have a high priority from the national or regional viewpoint.
- 1.27 As part of its liberalization process, Colombia has made a major effort to introduce legal reforms affecting its science and technology institutions, including those in the agricultural sector. Yet a lack of adequate human and financial resources has kept the new institutions created under Law 29 of 1989 (the Science and Technology Act) from operating smoothly with the existing agencies in the sector. Hence the need to provide resources for strengthening interagency coordination bodies: the Agricultural Science and Technology Council of Colombia (CNCTA), as the supervising and policy-making body for the sector; its Technical Secretariat, to conduct the studies required for setting priorities and targeting technology development activities; the Fund, as a means of increasing the efficiency with which the additional resources are allocated; and the SINPAGRO Council, which will coordinate the activities of the different organizations in the area of health protection.
- 1.28 The other important development built into the design of the program is the growing importance of the private sector in developing new technology and providing health protection services. In the case of technology, the private research centers, foundations and universities must be encouraged to participate in both policy making and carrying out strategic programs of national concern. And in the case of health and quality standards in agriculture, the program must take account of the fact that notwithstanding their status as public goods, these areas are not the exclusive responsibility of the State. Accordingly, the latter must endeavor to delegate as many activities as possible to the private sector, retaining the right to supervise these where necessary.

II. DESCRIPTION OF THE PROGRAM

A. Objectives of the program

- 2.1 The aim of the program is to help Colombia's agricultural sector become more competitive through expansion and by increasing the efficiency with which public resources are allocated for agricultural research and protection. Within this general purpose, the program's primary objective is to consolidate the institutional reforms involving the National Agricultural Science and Technology System (SNCTA) and the National Agricultural Protection System (SINPAGRO).

B. Components of the program

- 2.2 The program thus consists of the technology subprogram and the agricultural health and quality subprogram.

1. Technology subprogram (US\$58.5 million)

a. Institutional strengthening of the SNCTA (US\$6.7 million)

- 2.3 This component will seek to coordinate SNCTA components, strengthen the Agricultural Science and Technology Council of Colombia (CNCTA) as the governing body of the system, and consolidate its Technical Secretariat. Funds will be provided to hire additional technical and administrative personnel for the Secretariat, and to pay any additional operating costs. The Technical Secretariat will have the resources to carry out the studies and other tasks required for periodically reviewing research priorities; designing a strategy for future development of CORPOICA and other regional technology development agencies, and analyzing methods for promoting greater private sector participation in financing technological progress; evaluating projects to be financed (which will require the creation of panels and the payment of honorariums to evaluators); and developing and maintaining the program information, evaluation and supervision network.

b. Agricultural Technology Development Fund (US\$50 million)

- 2.4 The Agricultural Technology Development Fund (Fund) will serve as an instrument for allocating public resources to finance research and indigenization of technology in both agricultural and forestry production activities. It will be used to finance programs of national or regional priority, through projects selected on a competitive basis and focussed on key innovations and finding solutions to critical problems. The resources of the Fund will be allocated by means of public calls for proposals, using the procedures set out in its operating regulations as described in chapter III.

- 2.5 The Fund may provide resources for the execution of projects under the following headings: infrastructure (modernizing of laboratories and small construction projects), computer hardware, laboratory equipment; incremental honorariums for advisors, consultants and research assistants, grants for masters, PhD and post-doctorate studies; training and refresher courses for researchers and selected operating costs, as defined in the operating regulations. The activities to be financed by the Fund include:

(i) Strategic programs to develop research capacity
(US\$18 million)

- 2.6 Their objective of the programs to develop the capacity to support the system is to develop generic technologies in four specific fields: biotechnology, genetic resources, comprehensive pest-control programs, and integrated water and soil management programs. The latter case involves the creation of a network of specialized research centers with connections to national and international bodies. In addition, the activities of this component will include partial financing to set up strategic cooperative research alliances with technology development organizations in other Latin American countries. This financing will be provided by means of a contribution to the Regional Agricultural Technology Fund (FONTAGRO) (US\$4 million).

(ii) National strategic technology development programs
(US\$26 million)

- 2.7 The objective of this component is to support research to solve specific technology problems in the agroindustrial or agri-food chain. A preliminary selection has been carried out, identifying the following programs: (i) agricultural products (coffee, African oil palm, plantain, flowers, bananas, potatoes and sugarcane); (ii) small farming projects designed to solve problems involving the competitiveness of products of the small-scale rural economy (beans, peas, onions, panela cane, cassava and corn, small ruminants); (iii) cattle; (iv) forestry research; and (v) fishing and aquaculture.

(iii) High-priority regional research programs
(US\$6 million)

- 2.8 The objective under this heading is to support research aimed at finding solutions to specific technological problems in areas of major importance to regional agroecosystems with promising potential in terms of national production. Resources will be provided for equipment and training of human resources, while beneficiary institutions must guarantee that they will cover the necessary operating costs.

2. Agricultural health and quality subprogram (US\$66.5 million)

- 2.9 The objective of this subprogram is to support consolidation of the institutional reforms involving the National System for Agricultural Protection (SINPAGRO), strengthen ongoing agricultural health activities, and introduce agri-food quality measures as a feature of Colombian policy for the sector. Its principal components are:

a. Institutional strengthening of the ICA (US\$18 million)

- 2.10 This will include modernizing the organizational structure and human resources of the ICA, beginning in the first year by placing in operation a process for restructuring its personnel roster, including provision of loan resources to finance compensation packages for retiring personnel and offer job retraining programs to other staff of the institution. This component will also include funds for the computer hardware and software required to establish the Health Information System, to which ICA and the other members of SINPAGRO will have access. Finally, support will be provided in the form of training (study-grants and short courses), consultants and specific studies to strengthen the areas of planning and socioeconomic and environmental analysis for health and quality projects.

b. Consolidation of ongoing animal and plant health protection activities (US\$45.5 million)

- 2.11 This component will include support for: (i) implementation of a disease reporting system to improve knowledge of the country's plant and animal health conditions, prepare studies and risk analyses on detection of pests and diseases, and provide a response mechanism for health emergencies; (ii) improvement of quarantine control and inspection at entry points and collection sites for plants and animals in order to prevent the spread of pests and disease; (iii) upgrading of quality control for agricultural inputs marketed in Colombia, and monitoring of chemical and biological residues in agri-food products; (iv) establishment and/or strengthening of national reference laboratories for plant and animal health diagnostic services, as well as control of agricultural inputs and residues in plant and animal products, and creation of the respective regional laboratory networks; (v) creation of specific projects for pest control and eradication of diseases, such as the application of comprehensive pest-control programs to combat fruit flies and potato tuberworms, and sponsoring of local animal health projects; and (vi) certification of breeders of new plant varieties, preservation of genetic resources, and promotion of biosafety standards. Execution of this component will be subject to the recommendations of the consultants hired for this purpose.

- 2.12 This component will finance the following headings:
- (i) refurbishing and equipping of 18 inspection stations and entry points in various regions of the country; construction and equipping of three post-entry animal health quarantine stations; construction and equipping of the National Reference Laboratory for Plant Health Diagnostic Services and eight regional phytosanitary diagnostic laboratories; maintenance of the National Reference Laboratory for Animal Health Diagnostic Services and 12 regional diagnostic laboratories (currently in operation); refurbishing of the National Livestock Input and Residue Inspection Laboratory (LANIP) (already in operation); construction of the National Agricultural Inputs Laboratory (LANIA); construction of the Germplasm Bank and the Biosafety Laboratory for the handling of transgenic material (a detailed description of plans, construction areas and costs is available);
 - (ii) field equipment (vehicles) and inputs, laboratory equipment and supplies, and office equipment necessary for inspection and quarantine procedures, disease reporting operations, monitoring of agricultural inputs and residues, health campaigns and preservation of genetic resources and biosafety (a detailed list of equipment, including their destination and unit costs, is contained in the technical document on the agricultural health and quality subprogram, and its annexes;
 - (iii) expenses related to training and consulting under each subcomponent, including grants for ICA professional staff (80 in all) to pursue studies in Colombia and abroad, short courses for ICA professionals (135 persons) and others, in-service training, and consulting and advisory services necessary for carrying out the subprogram (21 man-months for Colombian advisors, and 54 man-months for international consultants over the five years) - the detailed training schedule and terms of reference for the consultants and advisors are shown with their costs in the annexes of the technical documents for the subprogram); and
 - (iv) hiring of the additional personnel (financed with the counterpart contribution) needed to carry out essential health protection tasks required for execution of the program (disease reporting, quarantine stations, monitoring inputs and conducting health campaigns); purchase of services such as transportation, Internet access, production of videos and printing services.

c. Quality control (US\$3 million)

- 2.13 In the area of agri-food quality standards, the subprogram will finance the establishment of a coordinating group in charge of regulatory activities and training of human resources, and provide for activities to promote quality certification laboratories in institutions previously approved by SINPAGRO. Software, laboratory equipment, supplies, training and technical assistance, and the hiring of additional personnel and services will be financed. Of the total amount, US\$1 million will be allocated to the coordinating group and US\$2 million, *inter alia*, to the Corporación Colombiana Internacional, through an agreement with the ICA.

C. Cost and financing

- 2.14 The program will cost US\$145 million, which will be divided among the various subprograms and components as shown in the following table which also indicates the source of funds (see also Annex II-1 for a breakdown of the costs of each component).

TABLE OF COSTS
(in US\$000)

Category	Bank	Local counterpart	Total	%
Program total	87,000	58,000	145,000	100.0
A. <u>Technology subprogram</u>	41,900	16,600	58,500	40.3
1. Coordinating group for the subprogram	1,700	100	1,800	1.2
2. Strengthening of the SNCTA	5,200	1,500	6,700	4.6
3. Technology development fund	35,000	15,000 ^{1/}	50,000	34.5
a. Building capacity	12,600	5,400	18,000	12.4
b. National strategic programs	18,200	7,800	26,000	17.9
c. High-priority regional programs	4,200	1,800	6,000	4.1
C. <u>Subprogram for health protection and quality control</u>	44,230	22,270	66,500	45.8
1. Health	41,230	22,270	63,500	43.8
2. Quality	3,000		3,000	2.0
Subtotal	86,130	38,870	125,000	84.4
E. <u>Financial costs</u>	870	19,130	20,000	13.8
1. Interest	0	17,880	17,880	12.3
2. Credit fee	0	1,250	1,250	0.9
3. Inspection and supervision	870	0	870	0.6
Total	87,000	58,000	145,000	100%

^{1/} The beneficiaries of the Fund will provide US\$10 million and the national budget, US\$5 million.

1. The Bank's financing

- 2.15 The Bank will finance 60% of the total cost of the program (US\$87 million) with resources from the ordinary capital. The Bank's loan is subject to the following terms and conditions:

Fund:	IDB-OC
Amortization period:	20 years
Disbursement period:	5 years
Interest rate:	variable
Inspection and supervision:	1%
Credit fee:	0.75%
Currency:	U.S. dollars from the Single Currency Facility

2. Local counterpart

- 2.16 The local counterpart contribution for the equivalent of US\$58 million will cover 49% of the total cost of the program. These resources will be provided in part by the Republic of Colombia under its national budget (US\$48 million) and in part by the beneficiaries of the Fund (US\$10 million).

III. EXECUTION OF THE PROGRAM

A. Outline of execution

- 3.1 The program will have two coexecuting agencies: the Ministry of Agriculture and Rural Development (MAGDR), which will carry out the technology subprogram, and the Agricultural Institute of Colombia (ICA), which will carry out the agricultural health and quality subprogram. The technology subprogram will be carried out under the SNCTA, which COLCIENCIAS is involved in coordinating. The latter is a public institute which operates at the national level, reporting to the National Planning Department (DNP) and acting as the Technical and Administrative Secretariat of the Science and Technology Council of Colombia. In conjunction with the respective ministries, COLCIENCIAS also manages the sector science and technology programs (including those of the agriculture sector) and the regional science and technology committees. The agricultural health and quality subprogram will be carried out by the ICA directly. The ICA heads the National System for Agricultural Protection (SINPAGRO) and is the national authority in matters of animal health, plant health and supervision of agricultural inputs. The ICA's present organizational status is defined under Decree 2645 of 1993 as that of a decentralized agency attached to the MAGDR, autonomous with respect to technical, administrative and financial operations, including the power to set rates charged for the services it renders. (See Annex III-1.)

B. Technology subprogram implementation mechanisms

1. Organization for distribution of the resources

- 3.2 The resources provided under this subprogram will be divided between two components: (i) institutional strengthening for the CNCTA; and (ii) the Agricultural Technology Development Fund. Responsibility for carrying out this subprogram rests with the MAGDR, which - prior to the first disbursement under the subprogram - will have issued a call for proposals to hire a financial intermediary to administer Fund disbursements to beneficiary institutions. Prior to the first disbursement under the program, the MAGDR will form a Coordinating Group for execution of the technology subprogram which will report to the Deputy Minister for Policy and be responsible for: (i) drawing up the annual work plans (AWP) for the subprogram; (ii) overseeing bidding competitions and procurements; and (iii) preparing and submitting the respective disbursement requests to the Bank.
- 3.3 In carrying out this subprogram, the MAGDR will make use of the mechanisms established under Law 29 of 1989, the Science and Technology Act. The two mechanisms in question are the CNCTA and its Technical Secretariat.

- 3.4 The Agricultural Science and Technology Council of Colombia (CNCTA) was created under Decree 585 of 1991 and given a mandate which includes the following: (i) formulation of policy governing technology development and supervision/evaluation of research projects; (ii) analysis of strategic areas of scientific and technological development in the agricultural sector; and (iii) development of an overall strategy for financing technology research and development in the sector, using not only the financing available under the Fund but also the other resources managed by COLCIENCIAS and the MAGDR for the generation and transfer of technology. In order to simplify the decision-making process and make its membership move, prior to the first disbursement under the subprogram, the authorities will provide evidence that the CNCTA has the appropriate functions and makeup to execute the subprogram. The Council will be headed by the Minister of Agriculture and Rural Development, and will be made up of the following: the head of the DNP or his representative; the Directors of COLCIENCIAS, the ICA and the SENA [National Apprenticeship Service] or their representatives; a representative of Colombia's universities; representatives of the SAC [Farmers' Society of Colombia], FEDEGAN [National Federation of Cattle Raisers]; a representative of the campesino organizations; a representative from the agribusiness sector proposed by the ANDI [Columbian Manufacturers' Association]; a representative of the research centers; and a representative from the regional science and technology organizations. The CNCTA will have the final word in approving the design of the national strategic programs and the research capacity development programs. In addition, the CNCTA will give final approval of proposals deemed eligible for financing from the Fund.
- 3.5 The MAGDR and COLCIENCIAS will share the duties of Technical Secretariat for the CNCTA, and will be assisted in this by three consultants and six experts assigned to carry out the following functions: (i) conduct policy analysis and set research priorities; (ii) design and evaluate strategic research programs and the information system; (iii) allocate financial resources under the national agricultural science and technology program; and (iv) evaluate projects to be funded.
- 3.6 The Secretariat will be responsible for preparing technical, financial and administrative documents used for project bids; receiving the projects; verifying that they meet the Fund's requirements; issuing an assessment of technical and financial aspects of proposals and forwarding them to the CNCTA for its decision; drawing up contract documents to be signed; and monitoring technical and financial details of projects.

2. National Agricultural Technology Development Fund

- 3.7 The National Agricultural Technology Development Fund (Fund) acts as a mechanism for the allocation of public resources - on a

competitive basis - to key national regional programs for research adoption of technology. The Fund will provide financing for projects in high-priority areas to be determined by the CNCTA. As a condition precedent to the first disbursement under the technology subprogram, the CNCTA must show that the Fund's operating regulations and medium-term work plan have been placed in effect.

a. Operation of the Fund

- 3.8 The operating regulations of the Fund contain specific guidelines for the submission of proposals, together with criteria for their evaluation and monitoring. Among other relevant aspects, the regulations determine: (i) the priorities for national and regional programs and their projects (in the case of national programs, these priorities have been determined by panels of experts established for this purpose and relying on criteria of competitiveness, fairness and sustainability); (ii) the treatment of intellectual property; and (iii) aspects of the evaluation process itself. (See paragraphs 3.16 and 3.17.)

b. Potential beneficiaries and eligible costs

- 3.9 All national entities in either the public or private sector, and any consortium of institutions (including international entities associated with Colombian institutions) will be eligible for financing under the Fund if they fall into one of the following categories: (i) institutes or centers for science and technology research in agriculture, forestry or related areas; (ii) agroprocessing or commercial farming industries, agroforestry and fish-farming service providers; (iii) centers for technological development; (iv) universities and other institutes of higher learning; (v) business incubators; (vi) nongovernmental organizations active in the sector; and (vii) producers' associations and cooperatives. The amount of financing for projects may not exceed US\$350,000.
- 3.10 To receive support from the Fund, eligible institutions must respond to a public call for proposals by submitting research projects with transfer of technology, drawn up in accordance with project preparation instructions.
- 3.11 Institutions may submit proposals individually or form consortiums among themselves or with international, regional or foreign research entities for this purpose, in which case they must indicate which participant will act as the lead institution responsible for directing execution of the project. In all cases, the lead institution must be a Colombian entity.
- 3.12 As far as possible, these consortiums or groupings of entities must try to include companies, producers or their respective associations (e.g. producer federations, UMATAS, producers'

cooperatives), in order to facilitate subsequent adoption and transfer of the new technologies developed. In such cases, proposals must explicitly state the contributions, responsibilities, rights and obligations pertaining to or exercised by these partner companies or producers.

- 3.13 The Fund may finance the following: (i) infrastructure (small-scale construction projects), upgrading of laboratories, purchase and installation of computer hardware, purchase and installation of laboratory equipment; (ii) human resource expenses such as incremental honorariums, advisors, consultants, study grants and training for personnel; and (iii) operating costs.

c. Financing arrangements

- 3.14 The Fund will participate in projects which are cofinanced by the beneficiary. In the case of key national or regional projects related to the production and agroindustrial chains, in all cases a company, trade association or producers' cooperative, on the one hand, and a university, research center or technology center, on the other hand, must participate financially, while the Fund contributes up to 50% of the cost of the project.

d. Project selection

- 3.15 Applications for funding will be invited by means of a public call for proposals specifying how projects are to be submitted, analyzed and chosen under each program, and setting out the general terms and conditions that applicants must meet. Each project will undergo a technical-scientific, economic-financial and social-environmental evaluation to be carried out by the panel of experts established for each program using the criteria set out in the Fund's operating regulations and the respective guidelines, after which projects will be forwarded by the Technical Secretariat to the CNCTA for approval or denial of the application.
- 3.16 The technical evaluation will consider criteria such as: the scientific and technological validity of the proposal, the quality of its design and the potential for transfer, dissemination and adoption of its outputs. The economic and social evaluations will take account of criteria such as economic feasibility (net present value, internal rate of return) and the effects on income and employment, particularly among small producers. For the institutional evaluation, the panels will look at the experience of the executing entity and the proposed team personnel, work plan and management and control systems. The weighting factors to be assigned to each area of evaluation will be determined by the CNCTA.
- 3.17 In the case of the strategic programs for the development of research capacity, financing will be awarded by the Fund based on an assessment of: (i) the research priorities, plans and strategic

programs of the system and the centers; (ii) the diagnostic study of the current resources, working methods and primary lines of research of the center; and (iii) the examination of existing mechanisms for interagency coordination. To be eligible under the national strategic programs for technology development, applicants must submit a strategic plan for a research center or network, an endorsement by a producers' organization, and proof of future availability of resources to guarantee the sustainability of the projects financed.

C. Agricultural health and quality subprogram

- 3.18 Proper execution of this subprogram will require implementing the measures needed for efficient operation of SINPAGRO, and of the ICA as the national agricultural health protection authority. Accordingly, prior to the first disbursement under this subprogram, the government will provide evidence that SINPAGRO's Executive Council has been placed in operation, and that the actions needed to strengthen and modernize the plant and animal health protection and research institutions and allow them to specialize are under way together with such actions that will allow the ICA to operate effectively as the country's agricultural health authority. The government, through the MAGDR and the ICA, is in the process of preparing guidelines that will make it possible to separate protection and research functions, issue the regulations concerning the organization and functions of the ICA, and restructure the personnel of the ICA.
- 3.19 The organizational structure proposed for execution of this subprogram calls for the ICA to carry out all components directly, using its current organization - which will be duly reinforced. Accordingly, the ICA will take direct charge of all stages relating to execution of the subprogram, acting through its Coordinating Group which will oversee all aspects along with the other units of the institute taking part in the execution process. The Coordinating Group must be created prior to the first disbursement under the program. The organizations and units participating in the execution of this subprogram are listed below.
- 3.20 The Coordinating Group for the subprogram will be responsible for its programming, coordination, monitoring and administration. This unit - which is attached to the Planning Office of the ICA but reports for operational purposes to the General Manager's Office - will coordinate activities with the IDB, the Public Credit Directorate of the Ministry of Finance, and the other units of the ICA involved in the subprogram (the Finance and Administration Division, legal affairs, executing units for the components and projects, regional sections of the ICA and the Corporación Colombia Internacional).
- 3.21 As part of the agricultural inspection and quarantine components of this subprogram, the ICA must review the standards, manuals and

interagency agreements needed for carrying out this function, as well as authorize the individuals and entities that can perform these tasks. For the execution of the information and disease reporting subcomponent, the ICA will depend on a network of producers, professionals, laboratories, commercial firms and regional units. In the case of the inspection and registration of inputs, the ICA will be required to review and update the respective laws, and prepare a national plan for monitoring and control of residues. With regard to laboratories, ICA activities will be based on a national network of laboratories, supported by private laboratories duly accredited for this purpose. Additional laboratories, will be built on land belonging to the ICA, using plans drawn up during the preparation stage of the program by the Construction Office of the ICA. In carrying out specific health campaigns, the ICA will have the help of regional and local producers' groups, departmental Ministries of Agriculture, and local municipal technical assistance units (UMATAS).

D. Sustainability of the program

- 3.22 The investments financed under this program are designed to create new health protection and research capacity in Colombia, and to replace some of its existing facilities. Maintaining these capacities in future will require the investment of some US\$10-12 million per year, primarily for equipment and training. Given the existence of quasi-fiscal funds, the private sector involved in research will have sufficient resources to cover the most pressing investments. In the case of the public sector, in addition to national budget resources, the government is studying the possibility of creating an endowment fund to finance investments in research with resources obtained from the sale of surplus land in certain experimental stations. Progress in this direction will be examined as part of the midterm evaluation of the program. The sustainability of the investments in agricultural health and quality will depend on the ICA's own efforts to generate revenues, and on its success with accreditation and delegation of certain tasks to the private sector and other regional institutions.

E. Disbursement schedule

- 3.23 The disbursement schedule for the program has been projected over a period of five years on the basis of the execution of each component, the MAGDR's expected budgetary performance, and the timely provision of counterpart resources.

DISBURSEMENT SCHEDULE
(US\$000)

Year	IDB-OC	Local	Total	%
1	19,975	5,375	25,350	17.5
2	26,236	14,822	41,058	28.3
3	20,653	12,985	33,638	23.2
4	12,059	12,508	24,567	17.0
5	8,077	12,310	20,387	14.0
Total	87,000	58,000	145,000	100.0
	60%	40%	100%	

F. Tendering procedures

- 3.24 The Bank's standard procedures will be applied in purchasing machinery, equipment and other goods and services related to the execution of the program, and in awarding contracts for construction works using program resources. International competitive bidding will be mandatory for the procurement of goods valued in excess of US\$350,000, consulting services costing over US\$200,000, and construction works whose value is more than US\$5 million. Annex III-4 contains the proposed schedules for procurement and calls for proposals required to carry out the program, as well as the specific limits that apply under Colombian legislation. Below the above thresholds, procurements will be in accordance with the laws of Colombia.

G. Retroactive financing

- 3.25 For purposes of retroactive financing, the Bank will recognize costs of US\$430,000 equivalent incurred in preparing this loan since January 1998, which amount was administered by the IICA and used to hire consultants.

H. Maintenance of works and equipment

- 3.26 The borrower, through each of the executing agencies, will undertake to include a commitment in the financing agreements to the effect that the works and equipment financed with the resources of this program will be operated and maintained in accordance with generally accepted technical standards, and that trained personnel and the necessary materials for their efficient operation will be made available.

I. External auditing

- 3.27 The financial statements of the program and the ICA will be audited by a firm of independent auditors acceptable to the Bank. These statements must be submitted within 120 days following the close of

the government's fiscal period (December 31) each year during the execution of the program.

J. Program monitoring

- 3.28 The program will be carried out over a period of five years (60 months). Either 30 months after the loan contract takes effect or when 50% of the resources of the loan have been committed, whichever occurs first, the Bank and the government will conduct an evaluation of the program's execution and the mechanisms for ensuring its sustainability. For the subprogram on health and quality, this will include evaluating its performance in terms of the institutional reforms carried out, the standards and manuals issued, achievement of the goals set for each component and subcomponent, and the allocation of the resources provided under the loan. For the technology component, they will evaluate the implementation of the requested institutional reforms, the number and quality of the projects approved, the extent to which they have been carried out, and the degree of interest on the part of the private sector in obtaining additional resources from the Fund.
- 3.29 Acting through the Coordinating Groups of each coexecuting agency, the borrower will submit to the Bank by October 31 of each year a separate annual work plan (AWP) for each project, plus semiannual consolidated reports on the execution of the program. Submission of the first AWP is a condition precedent to the first disbursement under the program. The specific targets and parameters that will be used to evaluate progress are set out in detail in the logical framework of the program and the Targets table (Annexes III-2 and III-3). Nevertheless, in the case of research projects there will be continuous monitoring of all approved programs, their disbursements and impact on agricultural production. As well, monitoring of the ICA's ongoing activities must be maintained, including such variables as the volume of goods imported and checked; the number of pharmaceutical products, agrochemicals, seeds and inputs in general recorded and inspected; number of reports of health problems dealt with; number of professional staff and laboratories accredited; number of specimens received and analyzed; number of persons receiving training; and the number of publications and events carried out.
- 3.30 The main variables to be monitored under each component of the subprogram for animal and plant health and quality control are shown in the table in Annex III-3.

K. Environmental and social feasibility

- 3.31 The studies carried out generally indicate that the environmental and social effects of the two subprograms will be positive. In both cases, they will tend to increase competitiveness and earnings from agricultural activities, raising the incomes of producers (including small farmers) and generally reducing the pressure to

expand into environmentally fragile areas. The research into comprehensive pest-control programs and other health protection activities will reduce the use of pesticides, relieving pressure on the environment and improving public health conditions. The water and soil management programs will help to improve the handling of these natural resources.

3.32 Nevertheless, to ensure that the identified environmental risks resulting from the program's activities are lessened, and its benefits maximized, the following measures will be included in the operation:

- (a) Prior to the first disbursement, an environmental expert will be appointed on the staff of the CNCTA's Technical Secretariat to manage the environmental and social aspects of the program.
- (b) Within the first 12 months of the start of execution, contracts will be let for studies to evaluate and amend legislation to control the use of agrochemicals, studies on monitoring and evaluation of the program's impact, drafting of standards for control of residues in food products, and a publicity campaign for comprehensive pest-control programs.
- (c) The operating regulations of the Fund will take into account the requirements established by the Ministry of the Environment and regional corporations, on environmental aspects of projects eligible for financing. This examination will include the use of technologies which are sustainable throughout the chain, including in the processing of agricultural products. In projects which utilize native genetic resources, this examination will assess the extent to which applicants take into consideration the rights of indigenous communities.

3.33 The program will include resources to carry out the following activities: (i) implementation of environmental control systems in those laboratories that are modernized (US\$250,000); (ii) an ex post environmental and social evaluation of the loan project (US\$200,000); (iii) review and updating of environmental and health legislation governing importation, production, sale and use of veterinary pharmaceuticals and agrochemicals in Colombia (US\$250,000); (iv) development of national standards on the maximum residue levels for agrochemicals and pharmaceutical products in foods, and design of the monitoring and control systems (US\$200,000); (v) design and development of the publicity campaign to promote adoption of comprehensive pest-control programs (US\$150,000); and (vi) drafting of the legislation which will regulate the production and sale of transgenic organisms (US\$70,000).

IV. THE BORROWER AND EXECUTING AGENCIES

A. The borrower and coexecuting agencies

- 4.1 The borrower under this operation is the Government of Colombia. The program will have two coexecuting agencies: the MAGDR will execute the technology subprogram, and the ICA will execute the health and quality subprogram.

B. Agricultural technology subprogram

1. The Ministry of Agriculture and Rural Development (MAGDR)

a. Organization and functions

- 4.2 Colombia's Ministry of Agriculture was restructured under Decree 1729 of July 1994, under which it was given a primarily regulatory role with authority to coordinate and shape policies in agriculture, fisheries and rural development; to supervise and enforce agricultural regulations; and to promote participation by private investors in developing the sector. The following public agencies attached to the MAGDR are responsible for carrying out the above functions: the Agricultural Institute of Colombia (ICA), the Land Management Institute of Colombia (INAT), the Agrarian Reform Institute of Colombia (INCORA), the Rural Investment Cofinancing Fund (DRI) and the National Institute for Fisheries and Aquaculture (INPA). The ministry has a further dozen or so entities and enterprises reporting to it, among which are CORPOICA and the Corporación Colombia Internacional (CCI).
- 4.3 Decentralization efforts in the sector have focused on the creation and placement in operation of the municipal technical assistance units (UMATAS) and municipal rural development councils. The UMATAS, created under Decree 077 of 1977, were subsequently incorporated into the national technology transfer system (SINTAP). At the subnational level, it is worth noting that the departmental Ministries of Agriculture could also play an important role in the program.

b. Budget performance

- 4.4 The MAGDR's expenses are financed through appropriations from the national budget, primarily from general revenues and external credits for specific projects. In general terms, both its operating and investment expenses are explained by the transfers it makes to other entities in the sector, and therefore vary in magnitude from year to year: (cash) transfers to the Farm Marketing Board, IDEMA, for payment of benefits; to CORPOICA in accordance with the agreement signed between the two institutions, or to the Campesino Solidarity Fund (debts-Agrarian Fund).

- 4.5 Its operating expenses represent a small percentage of total spending (2.75% in 1996, and 4.5% in 1997) and have high performance indices (95%). The substantial increase in the last two years is due to the inclusion of the above-mentioned transfers for IDEMA and CORPOICA.
- 4.6 Investments by the Ministry are executed via transfers to other entities, such as those made to CORPOICA (16% of its budget in 1997); the National Program for the Transfer of Agricultural Technology (PRONATTA) (3.4% of the 1997 budget), executed under agreements with third parties; and the transfers to various rural communities. This has enabled it to achieve high levels of performance (99.83% in 1996, and 99.85% in 1997). An important item in the Ministry's budgets for the last two years is the amount devoted to administering the Agricultural Solidarity Fund, which corresponded to 25% in 1997 and 10% in 1998. An important aspect to bear in mind is the execution from the Programa Anual de Caja (PAC) [mechanism by which the Ministry of Finance indicates the amount that can actually be spent] to meet outstanding commitments in an area where the country's fiscal circumstances indicate the possibility of delays which could affect execution of the Bank's program during the next year. The financial contribution from beneficiaries under the technology subprogram, along with the generation of own resources by the ICA, will help to improve availability of resources for the program.

c. Financial projections

- 4.7 The Ministry's budget projections for the 1998-2003 period are as follows: (i) the MAGDR's budget, which totals US\$146.9 million for 1998, will drop to US\$125.7 million in 1999, to US\$123 million in the year 2000, and to US\$117 million in 2002 and 2003; (ii) its operating expenses, which totaled US\$48.7 million in 1998, will be reduced to US\$29.7 million in 1999 when certain transfers will no longer be included, such as those for IDEMA benefits. Operating expenses for the year 2000 are projected at US\$29.1 million, after which they are expected to remain at US\$28 million for the rest of the period under consideration; and (iii) investments will diminish from US\$98.3 million in 1998 to US\$96 million in 1999, thereafter dropping to US\$90 million. In conclusion, the resources of the program will represent some 20.3% of the Ministry's investment budget during this period. Of this total, the MAGDR will directly execute the resources for the technology subprogram, whereas those provided under the health and quality subprogram will be transferred to the ICA.

C. Agricultural health and quality subprogram

1. Agricultural Institute of Colombia (ICA)

a. Institutional and legal aspects

4.8 The ICA, in its role as a public agency which reports to the MAGDR, will act as the executing agency of the agricultural health protection and quality subprogram. The ICA performed both the research and the health protection functions from 1968 to 1992. However, far-reaching structural changes were carried out between 1992 and 1994 in which the ICA specialized in animal and plant health protection, while the Agricultural Research Corporation of Colombia (CORPOICA) was created in 1993 as a private mixed-capital nonprofit organization to manage research and technology transfers in the agricultural sector.

4.9 The guidelines and legal mandates for the ICA following the split are set out in Law 101 of 1993 and include its specialization in animal and plant health and creation of the National Health Protection Fund. Its present powers and functions were laid out in Decree 1840 of 1994, which defines the basic principles for managing plant and animal health, inspection of inputs and management of genetic resources and seeds. The decree also empowers the MAGDR to regulate the functions that may be delegated to Departmental Ministries of Agriculture; creates the means for coordinating efforts with the Ministries of Health and Environment; creates the Departmental or Regional Councils for Health Protection and Control of Inputs; and defines the basic instruments (e.g. for accreditation) to be used in delegating functions to the private sector. The ICA has established regulations in reference to the latter mandate having created the Accreditation System under Resolution 4017 of 1994. The ICA has also issued regulations for its regional structure, establishing Regional Directorates, 36 local agencies and 12 inspection stations. One of the key functions of the ICA is to serve as Technical Secretariat of SINPAGRO's Council, with responsibility for promoting and coordinating its actions.

b. Functions and organizational structure of the ICA

4.10 The ICA is responsible for developing the policies and plans of the MAGDR to: (i) protect the country's agricultural production and productivity from the health standpoint; (ii) minimize risks to the food supply and the environment stemming from the use of agricultural inputs; and (iii) help ensure access for national products to international markets. These functions are carried out by the Institute's technical areas, including its Animal Health and Plant Health Divisions, each of which operates a variety of disease reporting, inspection and quarantine units, and health control and prevention projects. The ICA also has Agricultural Inputs,

Livestock Inputs and Seed Divisions, each of which contains units for managing the respective laboratories.

- 4.11 The ICA had a total staff of 2,000 in 1996. However, its present personnel roster is the result of three partial restructuring operations that the Institute has undergone in recent years. With the creation of the UMATAS, technical assistance duties were transferred to the municipalities, yet a large number of personnel specializing in this area remain with the ICA. The 1992 restructuring which created CORPOICA to handle research tasks also permitted part of the research staff to remain with the ICA. Finally, Decree 1840 of 1994, which sought to have the ICA specialize in the health protection field, did nothing to alleviate its personnel problem. For this reason, the ICA is left with a surplus of administrative staff working out of its central offices, while the makeup of its technical personnel no longer corresponds to its present duties.

c. Financial aspects

- 4.12 The resources for the agricultural health and quality subprogram will be budgeted each year during the execution period under the ICA's budget, including contributions from the government, resources from the IDB's loan, and resources generated by the ICA itself.
- 4.13 The ICA's budget is divided into two parts: one corresponding to the general operations of the Institute, and the other earmarked for specific programs, which in turn have headings for operating expenses and physical investments. The budget performance under operating expenses (personnel, overhead, debt servicing, transfers) has shown acceptable indexes of around 95% for the 1994-1997 period. After accounting for 33.6% of the ICA's total budget in 1994, operating expenditures have grown to represent 62% in 1997. Conversely, the share earmarked for specific programs (research, extension, health protection, training, works maintenance, construction of laboratories) dropped from 65.7% in 1994, to 37.9% in 1997, due in large part to the splitting up of the entity. The share of investments in these programs is minimal, with operating expenses ranging from about 90% to 95%. This is due to the fact that the majority of the resources are used to pay technical personnel. However, this has resulted in deterioration and obsolescence of laboratory infrastructure and equipment. In terms of constant 1998 dollars, the growth in the budget for these programs was -24.7% between 1994 and 1997.
- 4.14 Except for 1995, the budget performance achieved by the ICA under own resources has considerably exceeded the sums appropriated under its overall budget. As a result, in 1997 additional revenues from own resources amounted to Col\$804.4 million. Own resources as a percentage of the ICA's total resources rose from 11.7% in 1994, to 24% in 1997, owing to increases in sales of products and services

which generated close to US\$6 million in 1997. For their part, contributions from the federal government fell by an average rate of 8.7% between 1994 and 1997.

- 4.15 The ICA's rate structure consists at present of close to 700 different fee schedules, grouped under 35 resolutions. Fees are established by means of resolutions issued by the Institute's Board of Directors in accordance with the respective cost studies, and are supposed to increase to reflect changes in the consumer price index. Recent studies show that there are grounds for modifying and raising a number of fees, which would increase the ICA's internal cash generation.

d. Financial projections

- 4.16 In carrying out this projection, income in constant 1998 dollars from technical services is set to increase from US\$6.3 million in 1998, to US\$6.6 million in 2003. Allocations from the federal government, which total US\$39.6 million in 1998, would drop to US\$37 million beginning in 1999.
- 4.17 Operating costs, which are US\$28.1 million in 1998, will fall to US\$27.7 million in 1999, and are projected to remain at US\$26 million per year for the remainder of the period. Government contributions cover 95% of operating expenses.
- 4.18 Total investment will remain at US\$11 million throughout the period. It is important to underscore the role of own resources in the area of investments, since its allocation of US\$6.3 million in 1998 will remain unchanged throughout the period and thus represents a continuing contribution under this heading. The government's contribution for investments, which will total US\$4.8 million in 1998, will level off at a level of US\$4.4 million beginning in the year 2000. This exercise shows that the resources of the proposed program will represent some 51.4% of total investments by the ICA during the period of its execution.

V. PROGRAM FEASIBILITY AND RISKS

A. Institutional and technical feasibility

1. Institutional feasibility

- 5.1 The viability of the program is based on the institutional reforms carried out by the country since 1990, culminating in the creation of the SNCTA and SINPAGRO. In addition, the activities undertaken in research and the health protection field will have the support of the institutions working on technology transfer (SINTAP, PRONATTA, UMATAS) and those tied to the Ministry of the Environment. Another element which is important for the program's institutional feasibility is the growing participation of the private sector, both in the case of technology and in that of health protection efforts. The creation of private research centers, as well as the participation of universities in the field of research, will make an important contribution to the success of the technology subprogram. Similarly, the participation of private associations (such as the Cattle Raisers Association) in health protection campaigns is vital to the success of the agricultural health and quality subprogram.
- 5.2 In the case of agricultural research, the main institutional and legal development was the promulgation of Law 29 of 1989 governing science and technology. This law made possible the creation of the National Science and Technology System (SNCT) and the National Science and Technology Council, with the respective sectoral bodies (the SNCTA and CNCTA). Similarly, the creation of National Programs, the Technical Secretariat, the Technical Councils for each program, and the Regional Science and Technology Committees are all developments which will help to guarantee proper operation of the proposed program. The law also gave research entities the right to come together and form consortiums with broad powers to let contracts and administer funds. Under a national technology development program financed by the Bank, COLCIENCIAS has designed and is now successfully administering mechanisms similar to those proposed under the present program.
- 5.3 Another important institutional development affecting both subprograms was the division of the ICA, which made it possible to create CORPOICA as a private mixed-capital organization with broad private-sector participation in its governing bodies. Although it is still being consolidated, this development will provide a solid scientific basis for drawing up the strategic research and technology development plans. However, while CORPOICA may compete for funds under the program, it will be necessary to carry out the studies required for development of its strategic plan, and to adjust its structure to the newly created SNCTA in the medium term.

- 5.4 The feasibility of the agricultural health subprogram is based on the existence of the ICA as the nation's animal and plant health protection authority, with the power to control and regulate the health and quality standards for agricultural products in national and international commerce; propose standards in its area of expertise for adoption by the MAGDR; and plan, organize and carry out specific projects. These characteristics will enable the ICA to function as the nucleus for the organization and establishment of SINPAGRO.

2. Technical feasibility

- 5.5 The technical feasibility of the technology subprogram is based on both the existing infrastructure in terms of research centers and human resources, and the work that has been carried out in preparation for the program. COLCIENCIAS, the MAGDR and the private sector have worked well together in recent years to organize a National Agricultural Science and Technology Program, as well as in the discussions on agricultural science and technology policy. At the same time, efforts have been made through national and regional panels to draw up priorities for organizing the respective programs. Meanwhile, the private research centers have developed their medium- and long-term strategic plans, and CORPOICA is in the process of reviewing its own plans. In addition, these institutions contain the basic minimum of human resources, equipment and infrastructure which, when suitable strengthened, will provide a solid foundation for developing the subprogram.
- 5.6 The preparation and analysis carried out in the health protection area has made it possible to identify the technical requirements for accomplishing the goals of the project, as well as defining the basic designs, equipment and specifications required for this purpose. Activities to be undertaken in both technology and health protection will be closely coordinated with other public and private-sector organizations at the planning, execution and evaluation stages, with clearly-defined responsibilities for each of them. At the same time, the efficiency and continuity of support tasks will be ensured through possible cost recovery for services rendered, in particular those relating to health inspection and laboratory services.

B. Financial feasibility

- 5.7 The financial feasibility analysis carried out for the program indicates its viability in terms of the volume of resources to be invested in technology and health protection under the program, since these represent only 20% of the total resources to be invested by the MAGDR over the next five years. However, the fiscal difficulties confronting the country at present point to certain short-term difficulties that must be taken into account in designing the program. The medium-term feasibility of the operation rests in part upon the contributions which beneficiaries

will make through the cofinancing arrangement under the technology subprogram and the payment of fees for services and for accreditation as part of the agricultural health and quality subprogram. The fees charged by ICA are designed to cover the cost of the respective services and are adjusted annually according to changes in the inflation rate.

C. Economic feasibility

1. Technology subprogram

- 5.8 The benefits from the research to be carried out with financial support from the program on nine selected products (African oil palm, fattening of cattle, coffee, plantain, banana, potato, sugarcane, rice and flowers) have been estimated by calculating the increased profits of producers in each case over a 10-year period, using as a baseline current levels of technology and the respective production costs, versus the new technology parameters to be achieved through adoption of program outputs, and the corresponding production costs associated with these advances.
- 5.9 These additional earnings, multiplied by the probability of success and the percentage share of the program estimated for each technology in the research and transfer process, are deemed the profit produced by the subprogram. The costs pertain to the total costs incurred for the subprogram.
- 5.10 The economic parameters are based on estimates of growth rates for the area in both crop yields and prices paid to the producer. The technical coefficients and research costs which are associated with the technologies and which affect the supply of the selected products are: yields with the new technologies versus existing methods; time required for the benefits of the research to appear; rate of adoption of the new technologies; the research activities required to obtain a given technology, and their level of priority; estimated probability of a successful outcome in the research process and the program's percentage share in the profits obtained by the producer; and research cost flows per activity/technology. This highly technical information was established in working sessions with the experts and researchers responsible for these crops in CORPOICA and other research centers. This evaluation was carried out for the following products: oil palm, cattle, coffee, plantain, sugarcane and rice. The projections made for these products gave the following rates of return: coffee, from 90% to 110%; oil palm, 23-35%; plantain, 12-23%; banana, 10-19%, potato, 57-70%; sugarcane, 16-30%; rice, 69-88%; and cattle, 26-41%.

2. Agricultural health and quality subprogram

- 5.11 To estimate the return on investments under this subprogram, a cost-benefit analysis was carried out in which total benefits were calculated as the sum total of economic losses avoided by reducing

the likelihood of various exotic pests and diseases entering the country, such as the coffee cherry borer, khapra weevil, carambola fly, African swine fever and avian influenza. Another benefit taken into account was the reduction in damage caused by certain pests and diseases already present in the country: fruit flies, brucellosis and bovine tuberculosis. The benefits may have been underestimated since those attributable to greater market access and improvements to public health and the environment are not considered. The cost estimate takes in all costs incurred for the subprogram.

- 5.12 In order to quantify incremental benefits attributable to the plant health program, the estimated loss coefficients are calculated for the "without-project" and "with-project" scenarios, and the difference is applied to the volume of production under the selected headings. Benefits under the animal health component are based on adequate control of diseases that have the potential to cause major losses in livestock production.
- 5.13 As in the case of the research and technology transfer component, benefits under the agricultural health project have been calculated for a period of 10 years, based on current data for the year 1998. The economic internal rate of return for the subprogram has been estimated at 39.6%. The NPV (discounted at 12%) of the net flow of profits is US\$117.7 million.

D. Benefits of the program

- 5.14 By financing institutional strengthening for the SNCTA, expanding its resource base, establishing international strategic alliances and introducing the competitive financial mechanism to be financed under this program, the efficiency with which public resources are allocated for research will improve, the focus will be placed on high-priority national and regional programs, and the capacity for innovation in the medium-term will be increased, thus producing a significant impact in terms of improving the competitiveness of the sector's principal products. The results will include higher export levels, greater income for producers and increased employment in the sector.
- 5.15 The most important benefits from the agricultural health and quality subprogram will include: (i) reduced likelihood of exotic pests entering the country and leading to economic losses in agricultural production; (ii) savings resulting from better control of pests already present in Colombia; (iii) additional income generated by greater access to foreign markets and improved quality and by improved quality of affected products, higher sales prices and less damage to the environment.
- 5.16 The program is national in scope and its primary beneficiaries will be agricultural producers and livestock raisers, whose production levels will rise through the avoidance of losses caused by diseases

or pests. Also, the population as a whole will benefit from the added production volume and better quality of the country's food products, and the reduced risk of contracting those diseases transmissible from animals to humans, such as bovine brucellosis and tuberculosis. The program will clearly benefit the environment thanks to less reliance and tighter controls on pesticide use, and Colombia's overall economy will benefit as a result of greater access to foreign markets for its agricultural exports.

- 5.17 By developing the concept of food quality, the program will take the first steps toward bringing Colombia's regulations into line with international standards. This will increase the competitiveness of Colombian products on foreign markets and national consumers, including those in middle- and low-income groups, will soon begin to perceive the benefits in higher quality agri-food products.

E. Risks of the project

- 5.18 Risk: The institutional problems suffered by the ICA and CORPOICA, namely those involving their organization, personnel and financial resources, may affect proper execution of the program. Reducing the risk: Prior to the first disbursement under the health and quality subprogram the actions needed to strengthen the agricultural protection and research institutions and allow them to specialize must be under way, including a formalized agreement for the restructuring of ICA staff and implementation of the recommendations made in the study on consolidation of CORPOICA.

Risk: The government's fiscal position may hamper the allocation of adequate budgetary resources to the institutions acting as executing agencies. Reducing the risk: The research subprogram is designed for large-scale participation by the private sector under the Fund (providing 50% cofinancing) and will promote the process of accreditation and delegation of powers under the health subprogram which will result in savings in health protection campaigns and laboratory analyses.

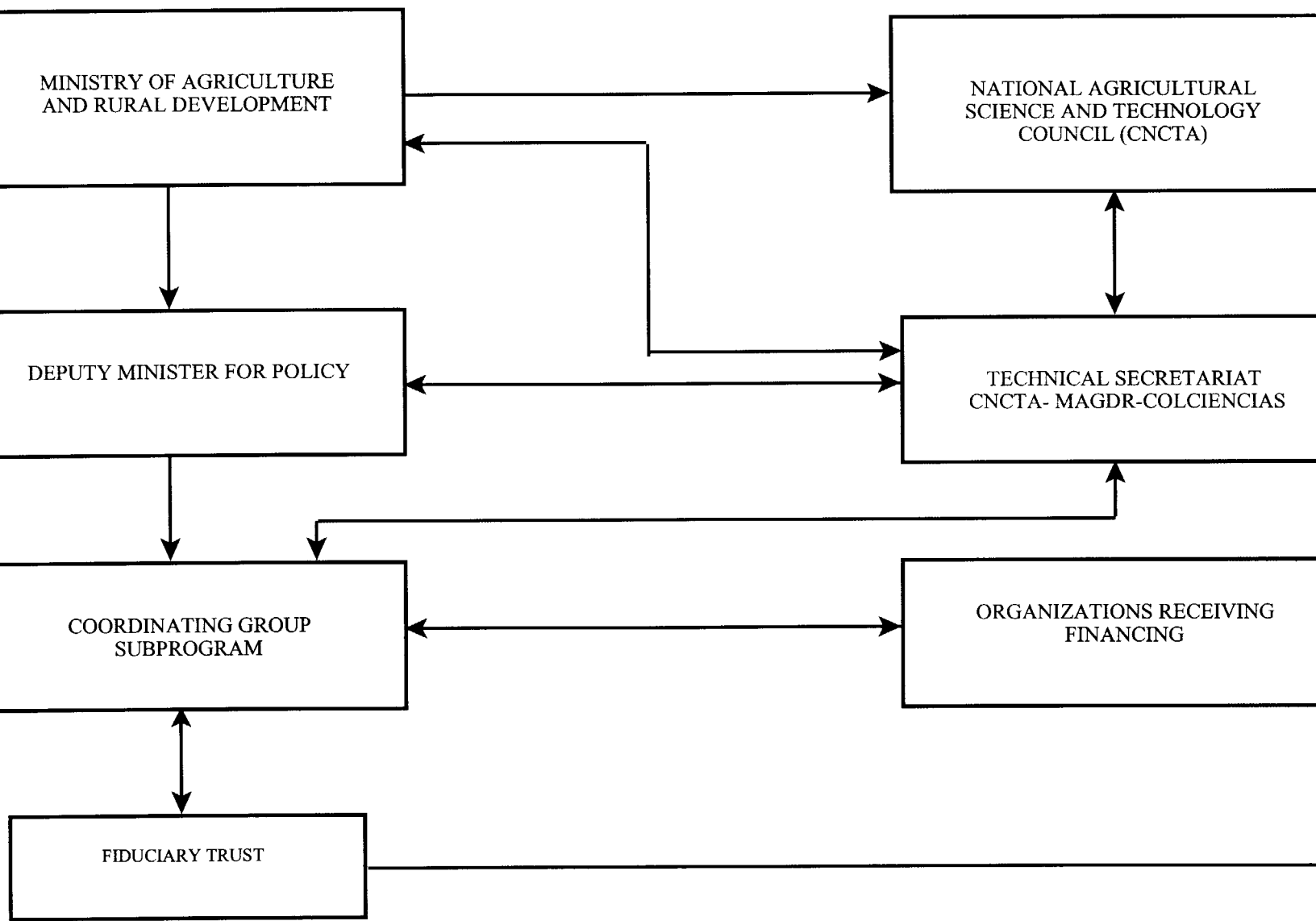
**Agricultural Health and Technology Program
MAGDR/ICA/IICA**

**COST TABLE
(in thousands of U.S. dollars)**

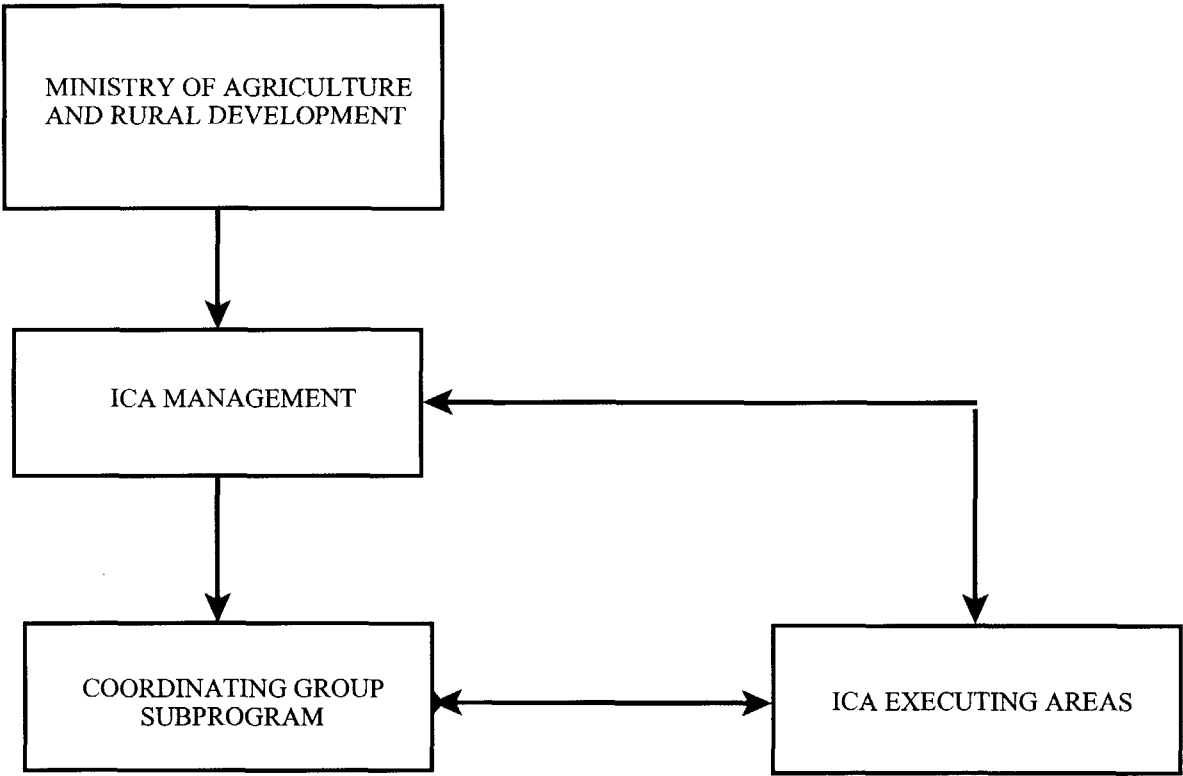
Subprogram and components	IDB	Local ^{1/}	Total	%
I. Agricultural technology subprogram				
A. Coordination, Ministry of Agriculture	1,700	100	1,800	1,2
1. Subprogram coordinating group	1,000	100	1,100	0,8
2. Environmental and monitoring studies	700	-	700	0,5
B. Strengthening SNCTA	5,200	1,500	6,700	4,6
1. Consulting services	2,656	520	3,176	2,2
2. Computer and office equipment	45	-	45	0,0
3. General support and services	2,499	980	3,479	2,4
C. Agricultural technology development fund	35,000	15,000	50,000	34,5
1. National strategic programs	18,200	7,800	26,000	17,9
2. Regional priority programs	4,200	1,800	6,000	4,1
3. Capacity building (networks)	12,600	5,400	18,000	12,4
Subtotal — technology subprogram	41,900	16,600	58,500	40,3
II. Agricultural health and quality subprogram				
A. Institutional consolidation — SINPAGRO	12,370	5,629	18,000	12,4
1. Lab equipment, vehicles, computers	4,280	840	5,120	3,5
2. Training and technical assistance	1,304	854	2,159	1,4
3. Reorganization of ICA staff	5,570	-	5,570	3,8
4. General support and services	1,216	3,935	5,151	3,6
B. Strengthening of ongoing activities	28,860	16,640	45,500	31,4
1. Construction and refurbishing of laboratories	6,664	1,836	8,500	5,9
2. Lab and computer equipment and vehicles	14,172	4,778	18,950	13,1
3. Training and technical assistance	6,522	-	6,522	4,5
4. General support and services	1,502	10,026	11,528	8,0
C. Quality control	3,000	-	3,000	2,1
1. Software	84	-	84	0,1
2. Training and technical assistance	1,986	-	1,986	1,4
3. General support and services	930	-	930	0,6
Subtotal — Health and quality subprogram	44,230	22,270	66,500	45,9
III. Financial costs				
A. Interest	-	17,883	17,883	12,3
B. Credit fee	-	1,247	1,247	0,9
C. Inspection and supervision	870	-	870	0,6
Subtotal — financial costs	870	19,130	20,000	13,8
Program total	87,000	58,000	145,000	100,0
By source	60%	40%	100%	

^{1/} Includes local taxes

**AGRICULTURAL HEALTH AND TECHNOLOGY PROGRAM
EXECUTION OF RESOURCES UNDER THE TECHNOLOGY SUBPROGRAM**



**AGRICULTURAL HEALTH AND TECHNOLOGY PROGRAM
EXECUTION OF RESOURCES UNDER THE HEALTH AND
QUALITY SUBPROGRAM**



Agricultural Health and Technology Program
Agricultural technology subprogram
Ministry of Agriculture and Rural Development
(CO-0190)
Logical Framework

OBJECTIVES	GOALS	MEANS OF VERIFICATION	MAJOR ASSUMPTIONS
Colombia's agricultural sector competitive through expansion and efficiency in the allocation of public for developing new technology.			<ul style="list-style-type: none"> - Willingness on the part of m system to work in close coo - The different organizations i strategic plans.
the development and adoption of technologies, generating surpluses for and consumers.	<ul style="list-style-type: none"> - Consolidation of institutional reforms made to the National Agricultural Technology System. - Establishment of the Fund for financing of high-priority national and regional programs. - Support for the establishment of strategic alliances at the international level. 	<ul style="list-style-type: none"> - Approval by the CNCTA of the operating regulations and medium-term plan for the Fund. - Implementation of the projects under international strategic alliances. - Reports on technical progress and financial execution. - Progress reports and evaluation of projects financed. 	<ul style="list-style-type: none"> - There is sufficient interest in projects for financing by the skills needed to devise adeo projects. - The Technical Secretariat ha established and supplied w and human resources neede its tasks. - The means for coordination components of the SNCTA properly.
Agricultural Technology Development Fund component			
g of high-priority national or al programs designed to solve key ms and develop crucial tions, through projects selected on petitive basis.	<ul style="list-style-type: none"> - Improvements in the competitiveness of high-priority agroindustrial products; cattle; small-farm and forestry production. - Support for research to improve competitiveness under headings of regional importance. - Creation of technology development capacity in four specific fields: biotechnology, genetic resources, water and soils, and ecophysiology. 	<ul style="list-style-type: none"> - Evaluation of the impact of new technologies on productivity, equity, and sustainability. 	<ul style="list-style-type: none"> - The technology transfer meo proposed in each project an properly.

OBJECTIVES	GOALS	MEANS OF VERIFICATION	MAJOR ASSUMPTIONS
Component for strengthening management of the National Agricultural Science and Technology System (SNCTA)			
<p>will be provided for review and on of the institutional reforms in Colombia's agricultural science ology sector in order to: ensure is an harmonious and dynamic between the entities participating em; and strengthen the ons that formulate policies and sions in the sector.</p>	<ul style="list-style-type: none"> - Reorganization of the Agricultural Science and Technology Council. - Strengthening of the Technical Secretariat through the hiring of three consultants and six experts, and provision of the resources necessary for its proper operation. - Performance of the studies necessary for the identification and establishment of priorities at both the national and the regional level. - Establishment of the monitoring system. 	<ul style="list-style-type: none"> - Guidelines for restructuring the Council. - Hiring of consultants and experts to assist the Technical Secretariat. 	<ul style="list-style-type: none"> - Adequate capacity for supervision and review of the policies and programs of the Technical Secretariat.

Logical Framework - Summary
Agricultural Health and Technology Program
Agricultural health and quality subprogram

OBJECTIVES	GOALS	MEANS OF VERIFICATION	MAJOR ASSUMPTIONS
development of the agricultural sector in the country, promoting and improving the export process.	The sector's status at the end of the execution of the program (5 years).		
<p>to increase the levels of crop and livestock production through specific projects, continuous improvement of health protection services, and activities of SINPAGRO, with an emphasis on private sector participation and export.</p>	<ul style="list-style-type: none"> - The ICA acts effectively as the country's agricultural health protection authority. - The private sector and communities are participating actively in health protection activities in the agricultural sector. - Disease reporting and pest-control system has been strengthened. - Increase in the number of seizures of agricultural products that fail to meet existing standards. - 100% of agricultural and livestock inputs have been registered. - Agricultural products free of toxic residues, at least in part. - Development of the capacity to manage and preserve the country's genetic resources and register applications from breeders of new plant varieties. - Adoption of policies and quality standards that meet the requirements for international trade. 	<ul style="list-style-type: none"> - Evaluations, statistical analyses and progress reports. 	<ul style="list-style-type: none"> - The government provides support for the consolidation of SINPAGRO, strengthening of the ICA in the national agricultural health authority. The legal provisions of its functions and organization and the regional structure is being improved which will enable it to manage effectively.

Component/subcomponent Institutional strengthening			
Validation of SINPAGRO through the placement in operation of its Council and strengthening of the ICA as the country's protection authority.	<ul style="list-style-type: none"> - Placement in operation of SINPAGRO's Executive Council. - Modernization of the legal and organizational framework, and the functions of the ICA through amendment of decrees 2141 of 1992 and 2645 of 1993. - Plan for restructuring the personnel roster of the ICA. - Training and development of human resources at the national and international level: seminars attended by 1,480, short courses (135), graduate programs (80). Hiring of Colombian (21 man-months) and international (54.5) consultants. Design and implementation of SINPAGRO's information system. - Review and adjustment of fees for services. 	<ul style="list-style-type: none"> - Enactment of the pertinent legal provisions. - Evaluation and progress reports. - Report on the restructuring of personnel roster. 	<ul style="list-style-type: none"> - Enactment of the pertinent legal procedures.

Component/Subcomponents Inspection and quarantine			
Minimize the probability that exotic pests and diseases will enter the country by strengthening the standards governing trade in agricultural products; strengthening border controls, entry points and inspection sites for plants and animals; thorough certification of animal and plant products and byproducts. Strengthen the post-entry quarantine system to prevent phytosanitary problems from entering the country.	<ul style="list-style-type: none"> - Year 1: inspect 100% of agricultural goods entering the country legally, and detect 100% of those that do not meet the applicable standards. - Year 1: have the standards and procedural manuals needed to carry out inspections and institute controls. - Years 1 and 2: modernize 18 inspection stations and entry points in various regions of the country. - Years 1 and 2: build three post-entry animal health quarantine stations. 	<ul style="list-style-type: none"> - Evaluations, statistical analyses and progress reports. 	<ul style="list-style-type: none"> - Close cooperation with institutions in international trade.

Component/Subcomponents Disease Reporting			
<p>updated information on the incidence, prevalence, rate and location of the principal diseases, in order to optimize decision-making under the systems for prevention and control or eradication of diseases.</p> <p>Establishment of a disease reporting system based on pilot farms to permit systematic gathering of information on the presence of pests.</p> <p>Organize an emergency health protection system able to respond quickly and efficiently to the presence of pests or diseases.</p>	<ul style="list-style-type: none"> - Beginning in year 1, establish a national network for reporting plant health problems, to be led by the ICA and with the participation of as many different institutions as possible. - Year 1: prepare a procedural manual on disease reporting. - Year 1 and 2: design and establish an emergency warning system for efficient response to emergencies. - Year 2: organize a team of experts in risk analysis. 	<ul style="list-style-type: none"> - Evaluation and progress reports. 	<ul style="list-style-type: none"> - Inclusion of and participation of the private sector and local communities in the network.

Component/Subcomponents Registration and inspection of agricultural inputs			
<p>to ensure the quality (safety, effectiveness, efficacy and reliability) of inputs for use in agriculture and raising of livestock.</p> <p>Monitor and, endeavor to prevent or reduce the presence of undesirable residues in agricultural products of animal or plant origin.</p>	<ul style="list-style-type: none"> - Update regulations and procedures for the control of inputs and residues. - Register 100% of agricultural inputs intended for use in Colombia. - Establish a dissemination system for efficient and proper use of agricultural inputs. - Prepare a National Residue Monitoring and Control Plan. 	<ul style="list-style-type: none"> - Manuals prepared and regulations revised. - Samples being entered in the monitoring system. - Statistical report on the number of products registered. - National Residue Control Plan drawn up. 	<ul style="list-style-type: none"> - Close cooperation with the private sector and local communities.

Component/Subcomponents
Diagnostic and input control laboratories

<p>sh and strengthen national ice laboratories in animal and plant enabling them to issue standards, a, control and supervise a national k of diagnostic laboratories and inputs and residues. p and establish mechanisms for itation of laboratories.</p>	<ul style="list-style-type: none"> - Years 2 and 3: establishment of the National Reference Laboratory for Plant Health, and regional diagnostic laboratories in Palmira, Medellín, Pasto, Ibagué, Villavicencio, Cúcuta, Valledupar and Montería. - Years 1-3: construction and equipping of laboratories for agricultural inputs and residue control (LANIA). - Strengthening of the capacity for zoosanitary diagnosis and analysis at the regional level under 12 Regional Laboratories in year 2 of the project, located in Villavicencio, Montería, Bucaramanga, Medellín, Valledupar, Florencia, Cali, Pasto, Cúcuta, Manizales, Ibagué and Barranquilla. - Reinforcing the National Reference Laboratory for Animal Health. - Reinforcing the National Livestock Inputs Laboratory (LANIP). - Establishment of the regional plant and animal health diagnostics network. - Preparation and placement in use of the manual of operations and technical manual for the laboratory system. - Design and establishment of the laboratory accreditation system. 	<ul style="list-style-type: none"> - Infrastructure and equipment of the National Laboratories System in operation. - Manuals of operations and technical manual prepared. - Number of laboratories duly accredited and included in the network. - Statistical reports on the number of samples analyzed and the results obtained. 	<ul style="list-style-type: none"> - Efficient coordination with the sector for the establishment of networks.
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Component/Subcomponents Specific projects			
<p>the country's animal and plant protection levels through the and possible eradication of pests and diseases.</p>	<ul style="list-style-type: none"> - Include the regions of Boyacá, Sabana de Bogotá, Huila, Tolima and Santa Marta in the activities of the pilot plan for control and reporting of fruit flies within the first three years of the project. - Include the regions of Boyacá, Antioquia, Cundinamarca and Nariño in the activities of the pilot plan for integrated health management for potato production within the first three years of the project. - Prepare and implement plans and programs for control and/or eradication of animal diseases at the local level. - Define and establish the necessary coordination bodies with the Municipal Technical Assistance Units (UMATAS). 	<ul style="list-style-type: none"> - Reduce the presence of fruit flies in the pilot areas by (%). - Reduce the presence of diseases affecting potatoes, including the potato tuberworm, in the selected pilot area by (%). - No. of outbreaks of prevalent animal diseases such as classical swine fever, Newcastle disease, equine encephalomyelitis, foot-and-mouth disease and vesicular stomatitis per year. - No. of UMATAS working in coordination with the ICA. 	<ul style="list-style-type: none"> - Increase the ICA's capacity local coordination.
Component/Subcomponents Protection of Plant Breeders, Genetic Resources and Biosafety			
<p>dition and protection of the rights of breeders of new plant varieties. ve and make proper use of the y's genetic resources, and provide d develop the capacity to manage cal risks deriving from the use of enics.</p>	<ul style="list-style-type: none"> - Respond to 100% of the applications submitted by breeders of new plant varieties. - Modernization of seven regional seed laboratories suitable for this type of work. - Construction and equipping of germplasm banks and biosafety laboratories. 	<ul style="list-style-type: none"> - Laboratory infrastructure built and in operation. - Reports on the number of applications from plant breeders registered. - Number of enquiries received by the germplasm banks. 	<ul style="list-style-type: none"> - Qualified human resources this type of work.
Component/Subcomponents Agri-food Quality Standards			
<p>te the adoption by Colombia of a control policy in line with tional standards.</p>	<ul style="list-style-type: none"> - Establishment of a coordinating group responsible for promoting and organizing training programs. - Provision of training in aspects of quality control. - International certification of laboratories. 	<ul style="list-style-type: none"> - Coordination established in the area. - Statistical reports on training for human resources. - Number of laboratories certified. 	<ul style="list-style-type: none"> - Establishment of means of c with the private sector and t industry. - Establishment of links with n international organizations (

TIMETABLE OF PROGRAM TARGETS BY AREA OF ACTIVITY

COMPONENT	GOALS	YEARS					
		1	2	3	4	5	Total
1. Insp. and Quarantine							
a. Plant health	Inspections						
b. Animal health	Inspections	23,105	26,416	27,957	30,753	33,828	142,059
2. Oversight							
a. Plant health	Farm network	400	600	800	1,500	2,000	5,300
b. Animal health	Farm network	300	400	600	900	1,000	3,100
3. Control/Inputs							
a. Plant health	Specimens	4,500	4,500	4,500	4,500	4,500	22,500
b. Animal health	Specimens	1,000	1,500	2,000	2,000	2,000	8,500
4. Gen. resources							
a. Collection	Specimens	10	100	200	400	400	1,700
b. Description	Specimens	10	50	100	200	360	720
5. Prot. for breeders	Certificates	200	300	400	400	400	1,700
6. Laboratory							
a. Plant health	Analysis	8,000	8,000	8,000	8,000	8,000	40,000
b. Animal health	Analysis	53,800	59,180	55,098	71,507	78,768	328,454
7. Specific projects							
a. Plant health	Reading traps	1,700	2,000	2,200	2,400	2,400	10,700
b. Animal health	Integrated UMATAS	3	5	10	15	20	53

PROCUREMENT SCHEDULE

	Value (US\$000)	No.of lots			Method	Quarter/ year
			IDB %	Local %		
A. Purchase of goods						
1. Laboratory equipment	5,630	Several	99	1	DC-LCB- ICB	II 99, II 00, II 01, II 02, II 03
2. Field equipment	383	Several	85	15	DC-LCB	III 99
3. Computer hardware & software	4,840	Several	83	17	ICB	II 00
4. Pub. & communications equip.	1,679	Several	87	13	DC	III 99, III 00, III 01, III 02
5. Office equip. & furniture	234	Several	96	4		
6. Vehicles	4,787	Several	6	94	LCB, ICB	II 00, II 01, II 02
7. Laboratory supplies	4,730	Several	92	8	LCB, ICB	II 99, II 00, II 01, II 02, II 03
8. Other inputs, publications	1,788	Several	98	2	P, DC, LCB	II 99, I 00, I 01, I 02, I 03
B. Construction works						
1. Plant Health Ref. Lab.	759	1	100		LCB	II 99
2. LANIA	554	1	100		LCB	II 99
3. National Biosafety Lab.	347	1	100		LCB	I 00
4. Germplasm Bank	665	1	100		LCB	I 00
5. Admin. Center	430	1	50	50	LCB	II 00
6. Refurbish Animal Health	4,868	Several	50	50	LCB	I 00
7. Quarantine Stations	1,143	3	80	20	LCB	II 99, III 99, I 00
8. Refurbish LANIP	346	1	50	50	LCB	I 00
9. Refurbish Plant Health	558	Several	10		LCB	II 99, I 00
10. Refurb. Seed Breeders	592	Several	50	50	LCB	II 99, I 00, III 00
11. Refurb. Quar. Control Stations	250	Several	80	20	LCB	II 99, III 99, I 00, II 00, III 00
12. Studies & works supervision	238	Several	100		DC	II 99, III 99, I 00, II 00, III 00

	Value (US\$000)	No.of lots			Method	Quarter/ year
			IDB %	Local %		
C. Consultancies						
1. On computers	70		100		DC	I 99, I 00
2. For reorganization	150		100		DC	I 99, I 00
3. Colombian consultants	255		100		DC	III 99, I 00, III 00, I 01, III 01, I 02, III 02
4. International consultants	1,008		99	1	DC	III 99, I 00, III 00, I 01, III 01, I 02, III 02

National regulations governing procurement of goods and services

1. Informal purchase (P) at values below US\$4,400 (Col\$6,114,780) (30 times the current minimum monthly legal wage – "SMLM")
2. Direct contracting (DC) at values between US\$4,400 (Col\$6,114,780) (30 SMLM) and US\$58,300 (Col\$ 81,530,400) (400 SMLM).
3. Local competitive bidding (LCB) at values above US\$58,300 (Col\$ 81,530,400), (400 SMLM) but less than US\$350,000.
4. International competitive bidding (ICB) at values in excess of US\$350,000.

Construction works:

1. Direct contracting (DC) at values between US\$4,400 (Col\$6,114,780) (30 SMLM) and US\$58,300 (Col\$ 81,530,400) (400 SMLM).
2. Local competitive bidding (LCB) at values above US\$58,300 (Col\$ 81,530,400) (400 SMLM), but less than US\$350,000.
3. International competitive bidding (ICB) at values in excess of US\$350,000.

Consultancies:

1. Informal purchase (P) at values less than US\$4,400 (Col\$6,114,780) (30 SMLM).
2. Direct contracting (DC) at values between US\$4,400 (Col\$6,114,780) (30 SMLM) and US\$58,300 (Col\$ 81,530,400) (400 SMLM).
3. Local competitive bidding (LCB) at values above US\$58,300 (Col\$ 81,530,400) (400 SMLM), but less than US\$200,000.
4. International competitive bidding (ICB) at values in excess of US\$200,000.

PROPOSED RESOLUTION

COLOMBIA. LOAN ____/OC-CO TO THE REPUBLIC OF COLOMBIA

Agropecuarian Health and Technology Program

The Board of Executive Directors

RESOLVES:

That the President of the Bank, or such representative as he shall designate, is authorized, in the name and on behalf of the Bank, to enter into such contract or contracts as may be necessary with the Republic of Colombia, the purpose of which is to cooperate in the financing of the execution of an Agropecuarian Health and Technology Program. Such financing will be for the amount of up to US\$87,000,000, which are part of Single Currency Facility of the Ordinary Capital resources of the Bank, and will be subject to the "Terms and Financial Conditions" and the "Special Contractual Conditions" of the Executive Summary of the Loan Proposal.