

**Doing Research Together:**  
CIAT's Medium-Term Plan  
2001-2003

Submitted to the Consultative Group on  
International Agricultural Research (CGIAR)

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## Summary and Overview

This document is a third, and probably final, update of *Doing Research Together: CIAT's Medium-Term Plan 1998-2000*, which has provided the continuing basis of CIAT strategy since 1997. The reader is referred to the above-mentioned document for a fuller understanding of the background and strategy behind CIAT's current Medium Term Plan.

Although this *Medium-Term Plan 2001-2003* provides an apt description of CIAT's research plan through 2000, beyond 2000 the plan must be treated as highly provisional. First, the CGIAR is reconsidering its vision and strategy, which could lead to results with implications for the design and implementation of CIAT's program. Second, CIAT is currently undergoing an External Program and Management Review, which could lead to significant recommendations. Third, CIAT has initiated a process of developing a new Strategic Plan 2001-2010. Consequently, the description of CIAT's future program contained herein is only indicative and should be taken as more provisional than definitive.

Variations from the implementation of the planned MTP research program since 1997 have been due solely to changes in donor decisions about unrestricted and targeted funding. As total unrestricted funding persistently eroded over this period, CIAT tended more to constrain resources across the board to all research areas rather than alter the strategic decisions of the MTP1998-2000. The major exception is that special efforts have been made to reduce indirect costs in research support areas.

Likewise, exogenous donor decisions about targeted funding have not always been identical with the assumptions of the MTP1998-2000. Although these donor decisions have had some effects on the size, scope, and outputs of some CIAT projects, there has been no major strategic reassignment of unrestricted resources in the past year, nor at any time since 1997. Short-term variations in targeted funding are being treated as transitory phenomena. Consequently, there have been no significant reassignments of unrestricted resources to either compensate for or amplify external donor decisions about targeted funding.

### 1999 Research Highlights

- *Flora Map* was released. This geographical information system software is a tool for studying genetic variation and mapping crops and their pests.
- With the arrival of the whitefly vector of the African mosaic virus in Latin America, marker-assisted selection for resistance to this pathogen was initiated with the help of IITA.
- Biofertilizer potential of tropical forages is being assessed. Through understanding the nutrient release dynamics, a practical set of field indicators for use by farmers to evaluate potential biofertilizers was developed in collaboration with the TSBF.
- DNA extraction techniques were developed for bean pathogens to permit the study of pathogen diversity without the biosafety risk of shipping pathogens across borders.
- Management of forages and cover legumes has been found to greatly increase the rate of P cycling, thereby improving the effectiveness of P applications on low nutrient tropical soils.

- Field testing confirmed, for the first time, resistance to the spittlebug in *Brachiaria* hybrid grass pastures.
- Methods to enable communities identify and evaluate market opportunities were synthesized in a training manual that has been used for training trainers in seven workshops in Latin America and East Africa.

### **1999 Financial Outcomes**

Although CIAT maintained a regime of strict expenditure controls and also benefited from a favorable cost structure in Colombia, the targeted increase in reserves in 1999 was not attained, due to EC decisions about its 1999 investment in the CGIAR. In response, CIAT postponed a number of activities and imposed significant expenditure controls. Consequently, actual 1999 investment was less than initially planned and, overall, was almost 10% less than in 1998 or 1997. Despite this reduced spending, 1999 saw a serious depletion of reserves, which fell by US\$1.4 million, that is, by 33%.

### **2000 Developments**

CIAT foresees a more favorable outcome for 2000, particularly because of a special one-time support from the CGIAR, authorized by the Finance Committee. Moreover, CIAT expects the EC investment in the CGIAR will return to earlier levels. CIAT plans to increase reserves in 2000 by US\$1.5 million. This is contingent on achieving a package of cost controls; a continued favorable cost environment in Colombia; and no further significant erosion of CGIAR investment. Failure of any of these conditions would put at risk the planned recuperation of reserves, which, despite progress in the last few years will at best still remain below 1995 levels.

CIAT plans that actual research investment levels will recover to \$33.85 million, an increase above the depressed level of 1999 but comparable with the 1998 investment of \$33.5 million.

### **2001 Highlights**

Because major changes in CIAT's research program cannot be specified for 2001 at this time, this year is shown in this document as a continued implementation of the current plan. However, by 2001, CIAT will have prepared a new Strategic Plan in close consultation with stakeholders and have taken into account the current External Program and Management Review and the CGIAR 2010 Vision and Strategy. Thus, CIAT's strategy and research portfolio will most probably be revised by 2001.

### **Project Milestones**

Milestones have been updated and refined, and new milestones for 2003 have been specified. No major changes are involved

### **Collaboration Highlights**

The Ministers of Agriculture of Ecuador and Colombia inaugurated the Latin America Consortium for Cassava Research—CLAYUCA—a private and public-funded research partnership that aims to stimulate research on enabling cassava to penetrate new and growing markets.

Biotechnology scientists from the University of Valle, the Sugarcane Research Institute, the Colombian national program (CORPOICA), and the Ministry of Environment biodiversity institute (Instituto von Humboldt) have all established research partnerships that are being carried out on the CIAT campus.

The InfoDev Consortium, a network of data providers from the Ministries of Agriculture, Environment, and Census in Central America was launched. With funding from the World Bank, this Consortium will support decision makers about natural resource management and agricultural land use with GIS analyses and training.

### **Project Cost Components**

For the third consecutive year, indirect costs have been reduced. In 1999, these were \$9.3 million, compared with \$9.9 million in 1998. In 1999, indirect costs were 30.2% of total expenses. CIAT's target for indirect costs in 2000 is to lower them to 25.7% of total expenses, to be followed by a further reduction to 24.7% in 2001.

### **Staffing Highlights**

Total staff numbers in 1999 are little changed from the previous year. Increased use is being made of postdoctoral fellows and associate professionals as an important means of bringing in new scientists familiar with the most up-to-date techniques. The number of support staff has fallen slightly, and is projected to fall further in 2000.

### **Financial Indicators**

#### ***Income***

The value of investments in CIAT by Japan, Norway, and Sweden all rose substantially during 1999, while Thailand was able to resume its investment. Nevertheless, total income dropped sharply in 1999 to \$28.7 million from a 1998 level of \$32.0. Largely this was due to what are currently understood to be one-year factors, in particular the inability of the European Commission to finance its anticipated investment. In addition, targeted income in 1999 was below the previous year largely due to delays in starting up work covered under new contractual agreements.

For 2000, the Asian Development Bank, Germany, and USAID will provide significant new finance through targeted contributions. The European Commission is expected to resume its investment at historic levels. A one-time contribution from the CGIAR will be crucial to assisting CIAT recuperate from the effects of the 1999 lack of EC finance.

#### ***Reserves***

As noted earlier, reserves fell by 33% during 1999 because of an unexpected shortfall in the EC investment. CIAT expects to restore reserves in 2000 on the assumptions that (1) the EC investment will resume, (2) other unexpected decisions to reduce contributions will not occur, and (3) the cost environment in Colombia will continue being favorable. If these conditions were not to forthcome in 2000, the financial situation would then be serious.

## *Capital*

Modernization of CIAT's scientific and informatics infrastructure remains a high priority. The value of fixed assets is projected to rise further in 2000.

**Project Descriptions and  
Log Frames for  
2000-2003**

## PROJECT SB-1: GENETIC RESOURCES

### PROJECT DESCRIPTION

**Objective:** To ensure that FAO Designated Collections comply with international standards and are made available to users.

#### Outputs:

1. Mandated crops conserved and multiplied as per international standards.
2. Germplasm available, documented, restored, and safely duplicated.
3. Designated Collections made socially relevant.
4. Strengthen NARS for conservation and use of neotropical plant genetic resources.
5. Conservation of Designated Collections linked with conservation efforts on-farm and in protected areas.

**Gains:** Small farmers of Latin America, sub-Saharan Africa, and Southeast Asia will use hundreds of germplasm accessions conserved by the gene bank, as such or after improvement. Sources of disease and pest resistance will be identified for current and future efforts in germplasm enhancement and plant breeding. Conservation methods will be developed for other crops, and thus will strengthen agrobiodiversity conservation efforts by partners.

#### Milestones:

- 2001 Protocols for cryoconservation of seeds and tissue germplasm established. Germplasm collections regenerated. Safe duplication and restoration continued.
- 2002 Links with conservation efforts in protected areas and on farms established. Germplasm collections regenerated. Safe duplication and restoration continued.
- 2003 Links with conservation efforts in protected areas and on farms strengthened. Methods for germplasm conservation for other crops established. Germplasm collections regenerated. Safe duplication and restoration continued.

**Users:** Plant breeding and agronomy programs throughout the tropics and subtropics. Extension services. Farmers' associations. Universities and biodiversity institutes in research, development, and training.

**Collaborators:** *Research:* CATIE, CIMMYT, CIP, CORPOICA, EMBRAPA, IFPRI, INIAA, INIFAP, IPGRI, USDA, and Colombian NGOs, universities, and institutes.

*Distribution, safe duplication, and restoration:* CORPOICA, EMBRAPA, INIAA, INIAP, and INIFAP.

**CGIAR system linkages:** Saving Biodiversity (80%); Enhancement & Breeding (15%); Training (5%). Participates in the Systemwide Genetic Resources Program and SINGER.

**CIAT project linkages:** Works in methods with SB-2 and PE-4. Provides training products with SN-1. Provides conserved germplasm to breeding in IP-1, IP-2, IP-3, IP-4, and IP-5.



## LOG FRAME WORK PLAN, 2001-2003

Area: Genetic Resources Research  
 Manager: Daniel Debouck

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
<p><b>Goal</b>            To collect, conserve, enhance, and make available to NARSs and other partners germplasm of beans, cassava, tropical forages, rice, and their wild relatives.</p>	<ul style="list-style-type: none"> <li>• A sufficient number of accessions (of beans, cassava, and tropical forages), representing genetic diversity, are conserved and managed <i>ex situ</i>.</li> <li>• Strategies and guidelines for <i>in situ</i> management of biodiversity of beans, cassava, and tropical forages have been developed and tested with users.</li> <li>• Accessible germplasm of beans, cassava, tropical forages, and rice meet NARS' standards in terms of productivity, stability, agronomic traits, and user needs.</li> <li>• Techniques and relevant information for more efficient and reliable germplasm improvement are accessible to users.</li> </ul>	CIAT's germplasm bank inventories. Partners technical reports. Annual reports.	
<p><b>Purpose</b>            FAO Designated Collections comply with the international standards and are available to users.</p>	ICER '95 and '97 recommendations met.	Visits by FAO Commission experts.	
<p><b>Output 1</b>            Mandated crops conserved and multiplied according to international standards.</p> <p><b>Output 2</b>            Germplasm available, restored, and safely duplicated.</p>	<p>Germination rates for long stored materials.            Costs per accession and per year as compared with other gene banks.</p> <p>Number of germplasm requests received and satisfied annually.</p>	<p>Visits to GRU multiplication substations and conservation facilities.</p> <p>Checks of correspondence on MTAs.</p>	<p>Sustained and appropriate funding.            Staff security guaranteed.            Services delivered on time.            Documentation support delivered.</p> <p>Sustained and appropriate funding.            Agreement with FAO goes on.            Services delivered on time.            Documentation support delivered.</p>

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
<p><b>Output 3</b> Designate Collection made socially relevant.</p>	<p>Landrace diversity restored to farmers (e.g., Seeds of Hope project).</p>	<p>Comparisons of landrace diversity over time. Genes included in novel varieties.</p>	<p>Sustained and appropriate funding. Staff security guaranteed. International collecting possible. Documentation support delivered.</p>
<p><b>Output 4</b> Strengthen NARS in the conservation and use of neotropical plant genetic resources.</p>	<p>NARS' germplasm collections conserved. NARS scientists trained. Networks strengthened.</p>	<p>Visits to national GRUs. Country questionnaires. FAO/IPGRI surveys.</p>	<p>Sustained and appropriate funding. NARS and networks willing and enabled to cooperate.</p>
<p><b>Output 5</b> Conservation of Designate Collections linked with on-farm conservation efforts and protected areas.</p>	<p>Case studies and pilot <i>in situ</i> conservation projects.</p>	<p>Contacts with farmers' associations and Ministries of Environment.</p>	<p>Sustained and appropriate funding. International surveying possible. Documentation support delivered.</p>

## PROJECT SB-2: BIOTECHNOLOGY

### PROJECT DESCRIPTION

**Objective:** To apply modern biotechnology to identify and use genetic diversity for broadening the genetic base and increasing the productivity of mandated and selected nonmandated crops.

#### Outputs:

1. Improved characterization of genetic diversity of wild and cultivated species and associated organisms.
2. Genes and gene combinations used for broadening the genetic base.
3. Collaboration with public and private sector partners enhanced.

#### Milestones:

- 2001 Gene transfer used to broaden the genetic base and enhance germplasm of rice, cassava, and *Brachiaria*. Collaborative activities with CIAT partners implemented, with emphasis on private sector. Cassava cryopreservation implemented. Marker-assisted selection tested with cassava. Bioinformatic tools implemented.
- 2002 Marker-assisted selection implemented for rice, beans, cassava, and *Brachiaria*. ESTs generated for cassava starch and CBB. Efficient transformation system developed for bean. Transgenic cassava tested for resistance to stemborer. Bioreactor technology implemented for cassava. Collaboration with partners, public and private, strengthened.
- 2003 Integration of genotype  $\times$  environment GIS system with molecular characterization. High throughput screening of germplasm bank and breeding materials implemented, using microarray technology. Marker-assisted selection for ACMV and whitefly resistance initiated. Transgenic rice resistant to a spectrum of fungal disease.

**Users:** CIAT and NARS partners (public and private) involved in crop genetic improvement and agrobiodiversity conservation; AROs from DCs and LDCs, using CIAT technologies.

**Collaborators:** IARCs (IPGRI systemwide program, CIP, and IITA: root and tuber crops research); NARSs (CORPOICA, ICA, EMBRAPA, INIAs). AROs of DCs and LDCs. Biodiversity institutions (A. von Humboldt, INBIO, SINCHI, Smithsonian). Corporations and private organizations.

**CGIAR system linkages:** Saving Biodiversity (30%); Enhancement & Breeding (60%); Training (10%).

**CIAT project linkages:** *Inputs to SB-2:* Germplasm accessions from gene bank project. Segregating populations from crop productivity projects. Characterized insect and pathogen strains and populations from crop protection projects. GIS services from land use project. *Outputs from SB-2:* Genetic and molecular techniques for gene bank, crop productivity, and natural resources (soil microbial) projects. Identified genes and gene combinations for productivity and crop protection projects. Methods and techniques of propagation and conservation for gene bank and productivity projects. Interspecific hybrids and transgenic stocks for crop productivity and crop protection (IPM) projects.

## LOG FRAME WORK PLAN, 2001-2003

Area: Genetic Resources Research  
 Manager: Joe Tohme

Narrative Summary	Measurable Indicators	Means of Verification	Assumptions
<p><b>Goal</b>            To contribute to the sustainable increase of productivity and quality of mandated, and other priority crops, and the conservation of agrobiodiversity in tropical countries.</p>	<ul style="list-style-type: none"> <li>▪ CIAT scientists and partners using information and tools of biotechnology in crop research.</li> <li>▪ Genetic stocks available to key CIAT partners.</li> </ul>	CIAT and NARS publications, statistics on agriculture and biodiversity.	
<p><b>Purpose</b>            Characterized agrobiodiversity, improved crop genetic stocks, and modern molecular and cellular methods and tools are used by CIAT and NARS scientists for improving, using, and conserving crop genetic resources.</p>	<ul style="list-style-type: none"> <li>▪ Information on diversity of wild and cultivated spp.</li> <li>▪ Mapped economic genes, gene complexes.</li> <li>▪ Improved genetic stocks, lines, populations.</li> </ul>	Publications, reports, project proposals.	Pro-active participation of CIAT and NARS agricultural scientists and biologists.
<p><b>Output 1</b>            Genomes characterized of wild and cultivated species of mandated and nonmandated crops and associated organisms characterized.</p>	<ul style="list-style-type: none"> <li>▪ Molecular information on diversity of mandated and nonmandated crops species, and pathogenic and beneficial organisms.</li> <li>▪ Bioinformatic techniques.</li> </ul>	Publications, reports, project proposals, germplasm.	Availability of up-to-date genomics equipment, operational funding.
<p><b>Output 2</b>            Genomes modified: genes and gene combinations used to broaden the genetic base of mandated and nonmandated crops.</p>	<ul style="list-style-type: none"> <li>▪ Transgenic lines of rice and advances in cassava, beans, <i>Brachiaria</i>, and other crops.</li> <li>▪ Cloned genes and preparation of gene constructs.</li> <li>▪ Information on new transformation techniques.</li> </ul>	Publications, reports, project proposals, germplasm.	IPR management to access genes and gene promoters; biosafety regulations in place.
<p><b>Output 3</b>            Collaboration with public and private sector partners enhanced.</p>	<ul style="list-style-type: none"> <li>▪ CIAT partners in LDCs using information and genetic stocks.</li> <li>▪ New partnerships with private sector.</li> </ul>	Publications, training courses and workshops, project proposals.	Government and industry support national biotech initiatives.

## PROJECT IP-1: BEAN IMPROVEMENT

### PROJECT DESCRIPTION

**Objective:** To increase bean productivity through improved cultivars and management practices in partnership with NARS and regional networks.

#### Outputs:

1. High-yielding beans with less dependency on inputs: pesticides, fertilizers, and water.
2. Essential information on pathogen variability to develop and deploy stable resistance.
3. Essential information on nutritional value of beans.

**Gains:** Improved varieties grown on 20% of the area in Latin America by year 2000. Productivity stabilized and bean availability secured for poor rural and urban consumers in targeted areas. Pesticide use cut by 20% in targeted areas, thus reducing hazards to environment and health. Public and private researchers have access to beans with multiple resistance. Research capacity strengthened through regional networks.

#### Milestones:

- 2000 Parental materials with improved drought tolerance distributed. Strategy developed for stable angular leaf spot resistance. Molecular markers developed for P efficiency. IPM systems for whiteflies developed.
- 2001 Combined resistance to bean common mosaic virus, bean common mosaic necrosis virus, bean severe mosaic virus, and bean sterility virus will be available. Nutritional quality traits incorporated into cultivars.
- 2002 Marker-assisted selection developed for various biotic constraints. Lines with resistance to angular leaf spot, drought, and bean common mosaic virus developed. IPM systems for whiteflies tested. Specialty types developed in Andean beans.

**Users:** Small farmers in tropical America and Africa will obtain higher and more stable yields. Poor consumers, especially women and children, will benefit from low-cost protein and micronutrients. The environment and the community at large will benefit from reduced pesticide and fertilizer use. Food legume researchers will access an enhanced knowledge base and germplasm.

**Collaborators:** *Regional networks and institutions:* PROFRIJOL and PROFRIZA (Central and Andean America); PABRA (Africa). *International institutions* like CATIE and EAP-Zamorano (Central America). Universities and other institutions in Australia, Belgium, Canada, France, Spain, Switzerland, and USA. *Resistance breeding and gene tagging:* Bean/Cowpea CRSP.

**CGIAR system linkages:** Enhancement & Breeding (70%); Crop Production Systems (10%); Protecting the Environment (10%); Networks (5%); Training (5%).

**CIAT project linkages:** Germplasm conservation (SB-1), germplasm characterization (SB-2). IP-1 contributes to improved beans for Africa (IP-2), IPM (PE-1), fertilizer efficiency (PE-2), sustainable hillside systems (PE-5), and participatory research (SN-3). Its impact is assessed in BP-1.

## LOG FRAME WORK PLAN,

Area: Genetic Resources Research  
 Manager: César Cardona

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
<p><b>Goal</b>            To obtain a lasting increase in food availability and incomes of the poor through improved bean productivity.</p>	<p>Increased bean production with improved cultivars and management practices.</p>	<p>National production statistics.</p>	<p>Adoption continues at rates at least comparable with those in the past.</p>
<p><b>Purpose</b>            To increase bean productivity through improved cultivars and management practices in partnership with NARS and regional networks.</p>	<p>Improved cultivars and/or management practices are used by NARS and regional networks on 15% of the area in Latin America by year 2000.</p>	<p>Reports of NARS and regional networks.            Publications.            CIAT reports.</p>	<p>Core of bean researchers and operation budgets are maintained.            Continued donor support to regional networks.</p>
<p><b>Output 1</b>            Improved small-seeded mesoamerican bean germplasm with less dependence on inputs.</p>	<p>Improved parents, populations, and/or lines available to NARS and regional networks.</p>	<p>Reports from NARS and regional networks.            Annual reports and publications.</p>	<p>Continued donor support to PROFRIJOL and CIAT.            Continued input of full SS breeder.</p>
<p><b>Output 2</b>            Improved large-seeded Andean bean germplasm with less dependence on inputs.</p>	<p>Improved parents, populations, and/or lines available to NARS and regional networks.</p>	<p>Reports from NARS and regional networks.            Annual reports and publications.</p>	<p>Continued donor support to PROFRIZA, PROFRIJOL, and CIAT.            Continued input of full SS breeder.</p>
<p><b>Output 3</b>            Strategies developed for managing diseases and pests in bean-based cropping systems.</p>	<p>IPM strategies developed.            Gene combinations to control insects and pathogens determined.</p>	<p>Reports from NARS and regional networks.            Annual reports and publications.</p>	<p>Continued input of Pathologist, Entomologist, and Virologist.            Continued donor support to whitefly IPM project.</p>

<b>Narrative Summary</b>	<b>Measurable Indicators</b>	<b>Means of Verification</b>	<b>Important Assumptions</b>
<b>Output 4</b> Improved cultivars and management practices developed and tested in partnership with NARS and regional networks.	Bean productivity increased. Farmers' dependence on inputs reduced. Production costs reduced.	Trials on experiment stations and on-farm. National statistics. Publications.	Continued donor support. Active collaboration with all partners involved, including farmers.

## PROJECT IP-2: BEANS FOR AFRICA

### PROJECT DESCRIPTION

**Objective:** To increase the productivity and marketing of common bean through the adoption of sustainable production technologies developed in close collaboration with national research institutions and farmers in sub-Saharan Africa.

#### Outputs:

1. Stronger networks in Africa linking NARSs, IARCs, NGOs, and the private sector.
2. Germplasm with relevant traits developed and used widely in Africa.
3. More sustainable bean production systems developed with small farmers.
4. Higher rates of technology adoption achieved.

**Gains:** Varieties resistant to multiple stresses will occupy about 200,000 ha (5% of the bean-growing area) in network countries. Farmers growing the new varieties will see a 10% increase in their income from marketing beans. About 5% of the region's farmers will have adopted improved crop management practices. Regional networks will be fully devolved to local management, with CIAT participating as a research partner.

#### Milestones:

- |      |  |
|------|--|
| 2001 | Pan-Africa network integrates bean research of subregional NARS associations. Climbing beans widely adopted in Kenya and at least one other country. |
| 2002 | Lines resistant to bean fly available; multiple disease resistance developed.  |
| 2003 | Farmers have adopted new agronomic practices, including erosion control and use of green manure.   |

**Users:** Small-scale farmers (mainly women) in both marginal and favorable production areas in central, eastern, and southern Africa. Small-scale seed producers in countries that lack an effective formal seed sector for beans. African urban consumers who depend on beans as an inexpensive source of protein. Multi-institutional national programs in these regions who use germplasm and improved research methods.

**Collaborators:** *Reviewing priorities:* Steering committees of regional networks and of PABRA. *Developing improved germplasm:* NARSs and farmers for FPR. *Improving soil, pest, and disease management:* ICRAF, CIMMYT, IITA, CIP, TSBE, and national partners in the African Highlands Initiative (AHI). *Training in breeding and IPM:* Bean/Cowpea CRSP and ICIPE. *Diffusing new technology:* NGOs, churches, relief and governmental agencies, entrepreneurs, universities in the Netherlands, Switzerland, UK, and USA, and DFID (UK).

**CGIAR system linkages:** Enhancement & Breeding (50%), Crop Production Systems (20%), Protecting the Environment (10%), Training (10%), Networks (10%). Participates in the AHI.

**CIAT project linkages:** Provision of germplasm and training toward resistance to multiple constraints (IP-1). Genetic markers and characterization of African germplasm (SB-2), and gene bank materials and databases (SB-1). Collaboration in methods development and case studies (PE-1, PE-5, SN-3, BP-1). Exchange of information on regional networks (SN-2).



## LOG FRAME WORK PLAN, 2001-2003

Area: Genetic Resources  
 Manager: Roger Kirkby

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
<p><b>Goal</b>            To enhance productivity of farms where beans are important, leading to improved livelihoods, especially for the poor and women farmers.</p>	<p>Family production, income distribution, and nutrition in important bean-growing areas.</p>	<p>National and regional statistics.</p>	<p>Peace, stability, and a favorable economic environment.</p>
<p><b>Purpose</b>            To increase the productivity and marketing of common bean through adoption of sustainable production technologies developed in close collaboration with national research institutions and farmers in sub-Saharan Africa.</p>	<p>Regional networks fully devolved to local management, with CIAT as research partner. Varieties resistant to multiple stresses occupy about 200,000 ha (7% area). Farmers growing new varieties see a 10% increase in income from marketing beans. The region's farmers start to adopt ecologically sustainable practices.</p>	<p>End-of-project and evaluation reports.</p>	<p>Regional bodies and national governments continue to give priority to beans.</p>
<p><b>Output 1</b>            Stronger networks in Africa linking NARSs, IARCs, NGOs, and the private sector.</p> <p><b>Output 2</b>            Germplasm with relevant traits developed and used widely in Africa.</p> <p><b>Output 3</b>            More sustainable bean production systems developed with small farmers.</p> <p><b>Output 4</b>            Higher rates of technology adoption achieved.</p>	<p>Pan-Africa network integrates bean research of subregional NARS associations by 1998.</p> <p>Lines with multiple disease resistance and resistance to stem maggot available by 1999.</p> <p>Participatory research practiced at sites in key countries by 1999, and options for crop, pest, and soil management available by 1999.</p> <p>Climbing beans widely adopted in Kenya and at least one other country by 1998. Poor people, including women, in at least four major bean-growing countries accessing new varieties rapidly through sustainable low-cost seed systems. Improved crop management practices adopted by 5% of farmers by 2001.</p>	<p>Annual reports of PABRA, ECABREN, and SABRN.</p> <p>Network and national program reports.</p> <p>Network and national program reports.</p> <p>Adoption survey reports.</p>	<p>Regional bodies and national governments continue to give priority to beans. Networks bring in nontraditional partners. Sources of resistance exist and adequate germplasm support received from Project IP-1. Adequate methods of interaction with NRM projects.</p>

<b>Inputs</b> Personnel. Research and travel funds. Computers and screenhouse.	FTE each in Systems Agronomy, Social Science, Pathology, Entomology, Coordination. FTE in Breeding.	Progress reports.	Two regional networks are also fully funded.
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## PROJECT IP-3: CASSAVA IMPROVEMENT

### PROJECT DESCRIPTION

**Objective:** To generate basic understanding, tools, and improved cassava germplasm for sustainable genetic improvement of cassava production and the diversification of end-uses.

#### Outputs:

1. Genetic base of cassava and other *Manihot* species evaluated and available for genetic improvement.
2. Genetic stocks and improved gene pools developed and transferred to national programs.
3. National programs in tropical and subtropical Latin America and Asia supported in adaptive selection and deployment of improved cassava varieties.

**Gains:** Cassava genotypes with resistance to major constraints and improved productivity selected from CIAT parental populations with an average superiority of 20% in root yield and 5% in higher starch contents. These genotypes would represent more than US\$100 million in additional income for small farmers in the tropics.

#### Milestones:

- 2001 Prototype molecular-marker-assisted selection applied for resistance to ACMV; genetic variants for novel cassava starch identified and incorporated into breeding populations. Novel plant type incorporated into intensive, mechanizable production systems. Farmer participatory selection incorporated in early stages of cassava breeding programs in Latin America. Genes responsible for resistance to whitefly and ACMV tagged and mapped. Population with resistance genes for different root rot pathogens made available to NARSs. Development of a pilot plant for artificial drying of cassava roots and leaves. Mechanized harvest of cassava leaves developed.
- 2002 Markers for ACMV used to combine resistance with key agronomic traits from LA sources; testing in Africa. Evaluation of new genetic variants for value-added starch traits. Advanced testing of mechanizable cultivars for industry. Biochemical bases of resistance to whitefly understood and selection criteria incorporated in breeding; resistant cultivars released. Identification of stemborer resistant cultivars. Elucidation of the genetic basis of inheritance to the most important agronomic traits.
- 2003 Preliminary testing of plants transformed for herbicide and insect resistance. Molecular markers identified for resistance to *Phytophthora* root rot, and heterologous gene probes applied to selection. Evaluation of new cultivars transformed for novel starch forms (i.e., "waxy" starch). Field evaluation of industrial clones with high-carotene content for human and animal consumption.

**Users:** Cassava breeders will be able to meet the requirements of crop improvement more efficiently. This work will benefit cassava producers, processors, and consumers through the development of improved cassava gene pools with higher frequency of desirable genes.

**Collaborators:** IITA; ORSTOM; CIRAD; DANIDA; CORPOICA; EMBRAPA; FCRI (Thailand); NARSs in Latin America and Asia. Works with specialized research institutions through the Cassava Biotechnology Network (CBN).

**CGIAR system linkages:** Saving Biodiversity (25%); Enhancement & Breeding (50%); Crop Production Systems (10%); Protecting the Environment (5%); Strengthening NARS (10%).

**CIAT project linkages:** Collaborates in methods and germplasm conservation with SB-1 and SB-2. Works with postharvest processing (SN-1), participatory research (SN-3), and IPM (PE-1).

## LOG FRAME WORK PLAN, 2001-2003

Area: Cassava: Genetic Resources  
 Manager: Hernán Ceballos

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
<p><b>Goal</b>            To collect, conserve, enhance, and make accessible to NARSs and other partners germplasm of beans, cassava, tropical forages, rice, and their wild relatives.</p>	<ul style="list-style-type: none"> <li>▪ A sufficient number of cassava accessions, representing genetic diversity, are conserved and managed <i>ex situ</i>.</li> <li>▪ Strategies and guidelines for <i>in situ</i> management of biodiversity of cassava have been developed and tested with users.</li> <li>▪ Accessible cassava germplasm meet NARSs' standards in terms of productivity, stability, agronomic traits, and user needs.</li> <li>▪ Techniques and relevant information for more efficient and reliable germplasm improvement are accessible to users.</li> </ul>	<p>CIAT's germplasm bank inventories.            Partners technical reports.            Annual reports.</p>	
<p><b>Purpose</b>            To generate basic understanding, tools, and improved cassava germplasm for sustainable genetic improvement of the cassava crop and the diversification of end-uses.</p>	<ul style="list-style-type: none"> <li>▪ Relative improvement in the most relevant traits.</li> <li>▪ Preference by final users (farmers and processors).</li> <li>▪ Broad-base network involving public and private sector.</li> </ul>	<p>End-of-project report.            Publications in refereed journals.            Proceedings from network meeting.            Adoption and impact studies.</p>	<p>Proper financial support.            Active collaboration with NARSs.            Active collaboration with advanced research organizations.            Support from public and private sectors.            Availability of representative sites.</p>
<p><b>Output 1</b>            Genetic base of cassava and <i>Manihot</i> species evaluated and made available for genetic improvement.</p>	<ul style="list-style-type: none"> <li>▪ Genotypes in different categories (e.g., tolerance or resistance and quality).</li> <li>▪ Description of mechanisms.</li> <li>▪ Genetic distances.</li> </ul>	<p>Project report.            Publications in refereed journals.</p>	<p>High heritability of traits.            Sufficient genetic diversity for desirable traits.            Adequate selection sites.</p>

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
<p><b>Output 2</b> Genetic stocks and improved gene pools developed and transferred to national programs.</p> <p><b>Output 3</b> National programs in tropical and subtropical Latin America and Asia supported in adaptive selection and deployment of improved cassava varieties.</p>	<ul style="list-style-type: none"> <li>▪ Number of recombinant seeds produced and transferred.</li> <li>▪ Number of elite genotypes selected.</li> <li>▪ Populations maintained.</li> <li>▪ Field trials established</li> </ul> <ul style="list-style-type: none"> <li>• Number of recombinant seeds transferred.</li> <li>• Number of farmers participating.</li> <li>• Number of varieties released.</li> <li>• Area under released varieties.</li> </ul>	<p>CIAT's main database; files on seed production and shipment, and elite genotypes. Field visits. Reports and publications.</p> <p>Project report Field day brochures. Publications. Country production reports.</p>	<p>Adequate interaction with other disciplinary scientists. Crossability with wild species. Heritability of traits Adequate laboratory-field integration.</p> <p>Usefulness and relevance of new cultivars. Adequate strength of NARSs Proper dissemination channels.</p>

## IP-4: RICE IMPROVEMENT

### PROJECT DESCRIPTION

**Objectives:** To increase rice genetic diversity and enhance gene pools for higher, more stable yields with lower unit production costs that propitiate lower prices to consumers and reduce environmental hazards.

**Outputs:**

1. Enhanced gene pools.
2. Physiological basis for rice traits understood.
3. Host-pest interactions in rice characterized.
4. Project priorities and research capacities enhanced.

**Gains:** Broader genetic base available and germplasm better characterized. New sources of resistance to diseases, viruses, and insects incorporated and available. Higher yielding advanced rice lines. Variability and stability of progenitors and of advanced materials available to increase breeding efforts. Rational pesticide use with fewer environmental hazards. Lower unit costs conducive to higher profits and lower rice prices to consumers.

**Milestones:**

- 2001 Near-isogenic lines with QTLs associated with yield developed for use in LAC breeding programs. Molecular markers associated with blast resistance genes identified and used in marker-assisted selection. Sources of blast resistance distributed to national breeding programs. Improved rice populations with broader genetic base developed by recurrent selection and distributed to national programs in LAC. Upland rice cultivars released for highlands and other ecosystems (Pucallpa). Epidemiological studies for the control of RHBV and its vector *Tagosodes orizicolus* completed. Potential use of transgenic plants with resistance to RHBV evaluated in the field. Rice germplasm with improved grain quality and milling developed together with FLAR. National scientists from LAC trained in new technologies used at CIAT.
- 2002 Improvement of yield potential in LAC rice cultivars, using wild rice genes and recurrent selection populations. Introgression of new plant type (IRRI) into LAC's gene pools. Evaluation and selection of improved rice populations with broader genetic base by national programs in LAC. Characterization of rice blast pathogen populations in LAC. Identification of relevant blast resistance genes for LAC blast populations. Identification of partial resistance to blast for use in breeding programs for durable resistance. Promotion of IPM strategies for controlling RHBV and its vector. RHBV-viral genes from transgenic plant introgressed into commercial rice cultivars. Rice germplasm with improved grain quality and milling developed together with FLAR. Selection of rice lines with tolerance of submergence for an improved weed control strategy.
- 2003 Genetic progress and gains in recurrent selection for different traits will be assessed in several LAC countries. Genetic gains for yield derived from interspecific crosses will be evaluated after introgression of wild genes into cultivated LAC rice varieties. Implementation of breeding methods for durable blast resistance in LAC based on population dynamics of pathogen populations and partial resistance. Molecular and virulence characterization of other rice pathogens. Management of RHBV and its vector based on epidemiological studies. Commercial rice cultivars with transgenes for RHBV tested in LAC.

**Users:** Breeders throughout Latin America and available elsewhere. Ultimate beneficiaries are poor urban consumers and rice farmers.

**Collaborators:** FLAR, IRRI, WARDA, NARSs (e.g., EMBRAPA, CORPOICA, FONALAP, IDIAP, INIAP, INIA, IIA), U.S. universities (Cornell, Purdue, LSU, Arkansas, Texas A&M, California, Florida State), CIRAD-CA, JIRCAS. Seed companies from private sector.

**CGIAR system linkages:** Enhancement & Breeding (60%); Crop Production Systems (5%); Protecting the Environment (5%); Saving Biodiversity (20%); Strengthening NARS (5%); Improving Policies (5%). Linked to IRRI global rice research.

**CIAT project linkages:** New methods from SB-1 and SB-2. Provide improved germplasm to PE-1, PE-2, and PE-3.

# LOG FRAME WORK PLAN, 2001-2003

Area: Genetic Resources Research  
 Manager: Fernando Correa

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
<p><b>Goal</b>            To collect, conserve, enhance, and make accessible to NARSs and other partners germplasm of beans, cassava, tropical forages, rice, and their wild relatives.</p>	<ul style="list-style-type: none"> <li>▪ A sufficient number of accessions (of beans, cassava, and tropical forages), representing genetic diversity, are conserved and managed <i>ex situ</i>.</li> <li>▪ Strategies and guidelines for <i>in situ</i> management of biodiversity of beans, cassava, and tropical forages have been developed and tested with users.</li> <li>▪ Accessible germplasm of beans, cassava, tropical forages, and rice meet NARSs' standards in terms of productivity, stability, agronomic traits, and user needs.</li> <li>▪ Techniques and relevant information for more efficient and reliable germplasm improvement are accessible to users.</li> </ul>	<p>CIAT's germplasm bank inventories.            Partners technical reports.            Annual reports.</p>	
<p><b>Purpose</b>            To increase rice genetic diversity and enhance gene pools for higher, more stable yields with lower unit production costs that propitiate lower prices to consumers and reduce environmental hazards.</p>	<ul style="list-style-type: none"> <li>▪ Evaluations of yield potential (interspecific, wide, elite crosses, and recurrent selection).</li> <li>▪ Continued use of improved germplasm by NARSs.</li> <li>▪ Monitoring rice production practices and markets.</li> <li>▪ IPM practices in place for stable production and cleaner environment.</li> <li>▪ Rice lines selected with desired gene traits.</li> <li>▪ Potential sources for high levels of biotic and abiotic stress resistance.</li> </ul>	<p>Databases.            Project, CIAT, and NARS annual reports.            Publications.            Promotional activities (conferences, training, workshops, field days)</p>	<p>Stability (internal and external).            National policies favor adoption of new technology.</p>
<p><b>Output 1</b>            Enhanced gene pools.</p> <p><b>Output 2</b>            Physiological basis for rice traits understood.</p>	<p>Rice populations developed, improved, and distributed to NARSs for line selection.</p> <p>Main agronomic and physiological traits measured and used in breeding populations.</p>	<p>Project progress report for 1998.</p> <p>Project progress report for 1998.            Publications.</p>	<p>Continued support from CIAT, CIRAD, and FLAR.</p> <p>Weed scientist in place.</p>

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
<p><b>Output 3</b> Host-pest interactions in rice characterized.</p> <p><b>Output 4</b> Project priorities and research capacities enhanced.</p>	<ul style="list-style-type: none"> <li>▪ Pathogen and pest variation and source of resistance identified.</li> <li>▪ IPM strategies.</li>   <li>• Workshops.</li> <li>• Training courses.</li> <li>• Farmers' surveys.</li> </ul>	<p>Progress reports. Publications.</p> <p>Project progress and workshop reports. Publications.</p>	<p>Continued adequate funding.</p> <p>Recommendations adopted by NARSs and implemented by farmers.</p>



## PROJECT IP-5: TROPICAL FORAGES

### PROJECT DESCRIPTION

**Objective:** To identify superior gene pools of grasses and legumes for sustainable agricultural systems in subhumid and humid tropics.

#### Outputs:

1. Genetic diversity for quality attributes, for host-parasite-symbiont interactions, and for adaptation to edaphic and climatic constraints, not only for legumes but also for selected grass species.
2. Selected grasses and a range of herbaceous and shrubby legumes evaluated with partners, available to farmers for ruminant production, and soil conservation and improvement.

**Gains:** Defined genetic diversity in selected grass and legume species for key quality attributes, disease and pest resistance, and environmental adaptation. Known utility in production systems of elite grass and legume germplasm. New grasses and legumes will contribute to increased milk for children and cash flow for small dairy farmers, while conserving and enhancing the natural resource base.

#### Milestones:

- 2001 New multipurpose legumes are available to NARSs for use in crop/livestock systems. Demonstrated under field conditions, benefits of endophytes in drought tolerance of *Brachiaria*.
- 2002 Defined potential of IPM components for managing spittlebug in lowland pastures. Known animal production potential of *Brachiaria* hybrids with combined resistance to spittlebug, tolerance of AI, and forage and seed quality.
- 2003 Methods and tools available to enhance targeting and adoption of multipurpose forage germplasm in smallholder production systems in the hillsides of Central America. *Brachiaria* hybrids with combined resistance to spittlebug, tolerance of AI, and forage and seed quality available to NARSs.

**Users:** Governmental, nongovernmental, and producer organizations throughout the subhumid and humid tropics that need additional grass and legume genetic resources with enhanced potential to intensify and sustain productivity of agricultural and livestock systems.

**Collaborators:** National, governmental, and nongovernmental agricultural research and/or development organizations. Specialized research organizations (U. Hohenheim, Cornell U., IGER, OFI, CSIRO).

**CGIAR system linkages:** Enhancement & Breeding (20%); Livestock Production Systems (15%); Protecting the Environment (15%); Saving Biodiversity (40%); Strengthening NARS (10%). Participates in the Systemwide Livestock Initiative (ILRI).

**CIAT project linkages:** Genetic resources conserved by SB-1 will be used to develop superior gene pools, using when necessary molecular techniques (SB2). Selected grasses and legumes evaluated in production systems (PE5) in collaboration with national partners (SN2).

## LOG FRAME WORK PLAN, 2001-2003

Area: Genetic Resources Research

Manager: Carlos Lascano

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
<p><b>Goal</b> To contribute to the improved welfare of small farmers and urban poor by increasing milk and beef production while conserving and enhancing the natural resource base.</p>	<p>New cultivars of grasses and legumes used by farmers and raise productivity of livestock and crops while protecting biodiversity and land in savannas, forest margins, and hillsides.</p>	<p>Statistics on income and natural resource conservation in smallholder livestock farms in LAC and SE Asia.</p>	<p>Policies are put in place by governments to favor sustainable livestock and forage development in marginal areas occupied by small farmers.</p>
<p><b>Purpose</b> NARSs use superior grasses and legumes to develop improved and sustainable livestock and crop production systems in humid and subhumid areas.</p>	<p>Demonstrated economic and ecological benefits of multipurpose grasses and legumes to livestock and crop farmers in savannas, forest margins, and hillside agroecosystems</p>	<p>Range of variation in desirable traits. Performance of forage components in systems.</p>	<p>Support from traditional and nontraditional donors. Effective collaboration from other CIAT projects, AROs, NARS, and NGOs.</p>
<p><b>Output 1</b> Grass and legume genotypes with high quality attributes developed.</p>	<p>New <i>Brachiarias</i> and <i>Colliandras</i> with superior forage quality are accessible to NARSs for improved animal performance by 2000.</p>	<p>On-farm demonstrations. Scientific publications. Annual reports. Theses.</p>	<p>Effective collaboration with CIAT projects (especially PE-2), AROs, NARSs, and farmer groups.</p>
<p><b>Output 2</b> Grass and legume genotypes with known reaction to pests and diseases, and interaction with symbiont organisms developed.</p>	<ul style="list-style-type: none"> <li>▪ Molecular map of <i>Brachiaria</i> developed for marker-assisted selection by 2001.</li> <li>▪ <i>Brachiaria</i> genetic recombinants with resistance to spittlebug are available to NARSs by 2002.</li> <li>▪ Known diversity of <i>Colletotrichum gloeosporioides</i> are used by NARSs to develop and select resistant genotypes of <i>Stylosanthes</i> by 2001.</li> <li>▪ Benefits of endophytes (biotic, against pests and diseases, and abiotic, against drought) demonstrated by 2001.</li> </ul>	<p>On-farm demonstrations. Scientific publications. Annual reports. Theses.</p>	<p>Effective collaboration with CIAT projects (SB-1 and SB-2), AROs, NARSs, and farmer groups.</p>

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
<p><b>Output 3</b> Grass and legume genotypes with superior adaptation to edaphic and climatic constraints developed.</p>	<p>New <i>Brachiaria</i>, <i>Paspalum</i>, <i>Leucaena</i>, <i>Calliandra</i>, and <i>Arachis</i> with adaptation to major abiotic constraints (infertile soils, drought, poor drainage, and cool temperatures) are accessible to NARSs by 2000.</p>	<p>On-farm demonstrations. Scientific publications. Annual reports. Theses.</p>	<p>Effective collaboration with CIAT projects (SB-1, PE-2, PE-4, and PE-5), AROs, NARSs, NGOs, farmer groups.</p>
<p><b>Output 4</b> Superior and diverse grasses and legumes delivered to NARS partners evaluated and released to farmers.</p>	<ul style="list-style-type: none"> <li>• New grass and legume cultivars released by NARSs are accessible to farmers by 2001.</li> <li>• Improved multipurpose grasses and legumes result in increased on-farm milk, beef, and crop production in benchmark sites (hillsides and forest margins) by 2001.</li> </ul>	<p>Surveys on adoption of new grasses and legumes in terms of seed sold, area planted, reduction parameters, and environmental and socioeconomic indicators.</p>	<p>Effective collaboration with CIAT projects (PE-2, PE-5, SN-2, SN-3, BP-1, and Ecoregional Program), NARSs, NGOs, and farmer groups.</p>

## PROJECT PE-1: INTEGRATED PEST AND DISEASE MANAGEMENT

### PROJECT DESCRIPTION

**Objective:** To develop and transfer knowledge systems and pest and disease management components for sustainable productivity and healthier environment.

**Outputs:**

1. Pest and disease complexes described and analyzed.
2. Pest and disease management components and IPM strategies and tactics developed.
3. NARS capacity to design and execute IPM research and implementation strengthened.
4. Global IPM networks and knowledge systems developed.

**Gains:** Increased crop yields and reduced environmental damage. Natural enemies of major pests and diseases evaluated. IPM developed, and tested and verified on-farm. Increased knowledge of biology and ecology behavior of pests and diseases and the damage they cause. Molecular characterization of major pathogens and diagnostic kits available. Whitefly biodiversity characterized. FPR methods for IPM developed and implemented. Biological control agents established in new regions.

**Milestones:**

- 2001 Whitefly parasites evaluated and selected species reared and released. IPM strategies and tactics developed for specified crops. Diagnostic surveys in NR ecosystems continued and recommendations made. Biological and thermotherapy control implemented for cassava virus and root rot diseases. Marker-assisted selection expanded to CBB and other problems. IPM control of fruit and other crops initiated. Use of heterologous genes applied to identification of resistant germplasm to *Phytophthora* root rot.
- 2002 A global network and website for information on tropical agroecosystems developed. Evaluation and dissemination of biological control agents of major pests of targeted crops. IPM projects developed for NR agroecosystems. Components of integrated pest management package for global whitefly project ready for diffusion. First crop viruses identified and diagnostic tools developed. Whitefly resistance mechanisms in cassava identified. IPM for cassava viruses and root rot diseases implemented. Resistant cassava germplasm to CBB identified by the use of molecular markers.
- 2003 Research on soil-borne arthropods and pathogens advanced and coordinated with systemwide programs. Research on invasive pests defined and underway. Use of cassava frogskin tolerant varieties in breeding and IPM programs. Biological control through entomopathogens developed for soil-borne pests. Whitefly natural enemies available for IPM programs. Leader in information and technologies for implementing phytosanitary certification programs for cassava and other crops. Molecular markers tagging resistance to CBB available. Germplasm screened for *Phytophthora* root rot resistance, using marker-assisted selection. Epidemiological validation of specified whitefly-transmitted geminiviruses.

**Users:** Biodiversity of agroecosystems determined and available to researchers. NARS scientists, extension workers, and farmers trained in IPM methodologies. Crop yields for small producers increased and stable production systems identified.

**Collaborators:** IARCs (IITA, ICIPE, CIP). Advanced research institutes (e.g., CATIE, NRI, U. of Florida, Wisconsin, Cornell, São Paulo, John Innes Center, ETH, ORSTOM, CIRAD, Boyce Thompson Institute), NARSs (e.g., EMBRAPA, CORPOICA, ICA, INIAP, INIVIT, NARO), NGOs, private industries (CENIPALMA, Compañía Agrícola de Espárragos).

**CGIAR system linkages:** Increasing Productivity (30%); Saving Biodiversity (20%); Protecting the Environment (40%); Strengthening NARS (10%). Whitefly and Participatory Methods Projects in Systemwide IPM Program.

**CIAT project linkages:** Collaborates with breeding projects (IP-1, IP-2, IP-3, IP-4, and IP-5) in host-plant resistance. Provides biocontrol agents to project PE-5. Uses inputs from PE-4, SB-2, and SN-3.

## LOG FRAME WORK PLAN, 2001-2003

**Area:** Genetic Resources Research

**Manager:** Anthony Bellotti

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
<p><b>Goal</b> To increase crop yields and reduce environmental contamination through the effective management of major pests and diseases.</p>	<ul style="list-style-type: none"> <li>• Increased cassava yields.</li> <li>• Reduction in environmental degradation due to adoption of improved technology.</li> <li>• Reduced losses to several major diseases.</li> </ul>	<p>Production statistics. Adoption and impact studies. Project reports.</p>	<p>National policies favorable to adoption of IPM strategies (i.e., increased support to extension, reduction of subsidies to pesticides). National programs are active and strong in key countries.</p>
<p><b>Purpose</b> To develop and transfer knowledge systems and pest and disease management components for sustainable productivity and healthier environment.</p>	<ul style="list-style-type: none"> <li>• Adoption of germplasm with resistance to biological constraints.</li> <li>• Establishment of released natural enemies.</li> <li>• Use of environmentally friendly control strategies.</li> <li>• Improved understanding of major biotic constraints.</li> </ul>	<p>End of project reports. Refereed publications, book chapters. Adoption and impact studies.</p>	<p>Financial resources are mobilized. Active collaboration with NARSs. Active collaboration with other IARCs and developed country research organizations. Active collaboration with AROs.</p>
<p><b>Output 1</b> Pest and disease complexes described and analyzed.</p> <p><b>Output 2</b> Pest and disease management components and IPM strategies and tactics developed.</p>	<ul style="list-style-type: none"> <li>• Pests, diseases, natural enemies, and vectors characterized.</li> <li>• Host/pest/natural enemy/vector interactions analyzed.</li> <li>• Better diagnostic tools available.</li> <li>• Biological control agents established.</li> <li>• Better understanding of the influence of drought in host-pest interactions.</li> <li>• Identification of cassava with tolerance of diseases.</li> <li>• Pest and disease distribution (maps) determined.</li> <li>• Testing of components for effectiveness.</li> <li>• Control strategy recommendations clearly identified and crop management practices determined.</li> <li>• Farmer testing components.</li> <li>• Guides on IPM strategies published.</li> </ul>	<p>All areas: Project reports and refereed publications, book chapters.</p> <p>Reports with maps, economic damage, biological information. Analysis of experiments. Transfer of tools to seed health facilities.</p> <p>Analysis of experiments. Guidelines for IPM. Reports on field effectiveness and probability of adoption of components. Field oriented brochures.</p>	<p>NARSs have the needed resources. Adequate interaction with other disciplinary scientists. Successful experiments. Continued development of new varieties that are commercially acceptable. Farmers have adequate access to extension agents, credit lines, and other factors that impact adoption. Collaboration with NARSs possible. Evaluation, screening, and exploration sites accessible.</p>

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
<p><b>Output 3</b> NARSS' capacity to design and execute IPM research and implementation strengthened.</p> <p><b>Output 4</b> Global IPM networks and knowledge systems developed.</p>	<ul style="list-style-type: none"> <li>• Disease detection methods available.</li> <li>• Web site published.</li>   <li>• Training, especially in FPR.</li> <li>• Development of projects with NARSSs.</li> <li>• Training materials developed.</li>   <li>• Network of researchers established.</li> <li>• Preparation of web pages and databases with relevant IPM information.</li> </ul>	<p>Reports on training courses. Concept notes and projects prepared with partners.</p> <p>Electronically published web pages and databases.</p>	

## PROJECT PE-2: SOILS

### PROJECT DESCRIPTION

**Objective:** Develop and disseminate to clients strategic principles for protecting and improving soil quality through the efficient and sustainable use of soil, water, and nutrient resources in crop and livestock systems.

#### Outputs:

1. Soil, water, and nutrient management constraints assessed and plant components characterized for improved production and resource conservation.
2. Strategies developed to protect and improve soil quality.
3. Improved decision making for combating soil degradation and increased agricultural production.
4. Institutional capacity enhanced for strategic research on soil, water, and nutrient management through the dissemination of concepts, methods, tools, and training.

**Gains:** Guidelines for selecting productive and resource-use-efficient crop and forage components. Guidelines for managing nutrients, crop residues, and green manure, and for controlling erosion and improving soil structure. Soil-quality indicators to assist farmers and extension workers in assessing soil health. A decision-support system for resource conservation and productivity enhancement. Strengthened capacity of NARSs for strategic research on soil, water, and nutrient management.

#### Milestones:

- 2001 Indicators of soil fertility, biological health, and physical quality identified for hillside and savanna agroecosystems; demonstrated benefits of crop rotations and pasture systems on soil quality and productivity; guidelines for maintaining soil structure produced.
- 2002 List of soil quality indicators available to NARSs to monitor land degradation. Decision-making tools available for managing soil erosion, nutrient degradation, and maintenance of an arable layer. Erosion and nutrient degradation risk assessment maps available. Correlations established between local soil quality indicators and scientific measurements.
- 2003 A soil quality monitoring system developed and tested by partners. Farmers adopting improved system components, including crops and soil management technologies.

**Users:** Principally crop and livestock producers and extension workers (advisors) in acid-soil agroecosystems of LAC. Relevant also to farmers on similar soils in tropical Africa and Asia.

**Collaborators:** CORPOICA; EMBRAPA; IFDC; ICRAF; ORSTOM, CIRAD; ETH (Switzerland); CIPASLA (Colombia); and universities: Uberlândia (Brazil), Nacional (Colombia), Paris (France), Bayreuth (Germany), Complutense de Madrid (Spain), Cornell (USA), and Ohio State (USA).

**CGIAR system linkages:** Enhancement & Breeding (15%); Crop Production Systems (20%); Protecting the Environment (40%); Saving Biodiversity (5%); Strengthening NARS (20%). Co-convenor with IBSRAM of Systemwide Program on Soil, Water, and Nutrient Management (SWNM), and contributes to the Ecoregional Program for Tropical Latin America.

**CIAT project linkages:** Diversity in systems of Rhizobia and Mycorrhizae populations (SB-1), acid-soil adapted components received and adaptive attributes identified for compatibility in systems (IP-1 to IP-5), strategies to mitigate soil degradation (PE-5), and strengthening NARSs via participation (SN-2).

## LOG FRAME WORK PLAN, 2001-2003

Area: Natural Resources  
 Manager: Richard Thomas

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
<p><b>Goal</b>            Develop and apply knowledge, tools, technologies, skills, and organizational principles that contribute to improved land management</p>	<ul style="list-style-type: none"> <li>▪ Use of CIAT NRM Research outputs in at least 3 reference sites in 5 years related to changes in land management associated with increases in per capita income and food availability; improved soil-water-nutrient use efficiency; increased biodiversity in production systems; and stakeholder participation in land use planning.</li> <li>▪ Use of the CIAT NRM research outputs beyond the 3 reference sites in the 3 targeted agroecosystems (savannas, hillsides, forest margins) by stakeholders within 5 years.</li> <li>▪ CIAT NRM research outputs applied by at least 3 other institutions outside the LAC region by the end of the 5th year.</li> </ul>	<p>Projects, plans, and reports of national public sector agencies, donors, NGOs, and community-based organization in the 3 reference sites and mandated agroecosystems, which refer to use of CIAT NRM research outputs.</p>	<p>Land survey data available.            Farmers adopt new technologies.            Socioeconomic conditions are favorable for achieving impact.</p>
<p><b>Purpose</b>            Develop and disseminate to clients, strategic principles for protecting and improving soil quality through the efficient and sustainable use of soil, water, and nutrient resources in crop and livestock systems.</p>	<ul style="list-style-type: none"> <li>▪ Technologies for soil improvement and management developed.</li> <li>▪ Limiting soil-plant-water processes identified.</li> <li>▪ Compatible plant components identified for low fertile soils in crop-livestock systems.</li> <li>▪ Guidelines, manuals, and training materials for soil management produced.</li> </ul>	<p>Scientific publications.            Soil and crop management guidelines published.            Decision support systems developed.</p>	<p>Economic analysis of options available.            Effective linkages within CIAT and to partners in the region.</p>



Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
<p><b>Output 1</b> Soil, water, and nutrient management constraints assessed and plant components characterized for improved production and resource conservation.</p>	<ul style="list-style-type: none"> <li>▪ Soil and water management constraints identified with farmer and NARS participation.</li> <li>▪ Literature reviewed and summary document prepared.</li> <li>▪ Questionnaire produced and farmers interviewed in at least two agroecosystems.</li> <li>▪ Tables of constraints in the three agroecosystems. First AES will be savannas, then hillsides.</li> </ul>	<p>Annual report. Reviews published. Document of synthesized results. Detailed tables published in annual report.</p>	<p>Literature available. Farmers continue to participate. Projects SN-2, PE-3, and PE-5 actively participate. Collaboration of Project PE-4 and NARSS. At least one assistant is assigned to the activity in Honduras/Nicaragua SN-3 (IPRA).</p>
<p><b>Output 2</b> Strategies to protect and improve soil quality</p>	<ul style="list-style-type: none"> <li>▪ Plant components identified and matched to edaphic and climatic constraints.</li> <li>▪ Recommendations of practices and plant components for efficient N and P management in systems.</li> <li>▪ Data of N cycles and budgets determined in at least four differing production systems.</li> <li>▪ Soil properties, management practices, and plant components that affect N capture and fluxes identified.</li> </ul>	<p>Project reports and publications</p>	<p>Sufficient operational funds available for chemical analyses. Continuity of long-term experiments. Modeling expertise available from partners e.g. IFDC, Michigan State Univ. USA Soil biology expertise from ORSTOM/Univ. of Paris available.</p>
<p><b>Output 3</b> Diagnostic and predictive tools developed to combat soil degradation.</p>	<ul style="list-style-type: none"> <li>▪ List of soil quality indicators prepared and available to monitor degradation in reference sites of the 3 AES.</li> <li>▪ Tools designed for estimating soil erosion, and training manual written.</li> <li>▪ Decision-making kit for soil and water management produced.</li> <li>▪ Map of risk assessment of soil degradation (erosion, soil nutrients) for hillsides and forest margins produced.</li> </ul>	<p>Annual reports and publications. Training manual for use with tools. Kit available to farmers and NARSS. Maps published. Pamphlet published, detailing decision tree.</p>	<p>Collaboration from partners. Information from questionnaires synthesized and comparisons made with available PE-3 results. Collaboration with PE-3 on soil erosion in Central America. Collaboration with SN-2, PE-4, PE-3, TSBF, and SWNM Program. Laboratory facilities available for staff in Pucallpa (with ICRAF). Collaboration with PE4 (UNEP) on</p>

	<ul style="list-style-type: none"> <li>▪ Decision-making tools for use of organic materials produced.</li> <li>▪ Decision tree to create and maintain an arable layer produced.</li> <li>▪ Correlations established between local soil quality indicators and objective measurements.</li> </ul>		land quality indicators at reference sites. Collaboration with GH in FM and GL in HS/CA and NB for Sav.
<p><b>Output 4</b> Institutional capacity enhanced for strategic research on soil, water, and nutrient management.</p>	<ul style="list-style-type: none"> <li>▪ Nine undergraduate, three Master's, and one Ph.D. theses submitted.</li> <li>▪ Workshop held on soil physics.</li> <li>▪ Workshop on C sequestration held.</li> <li>▪ At least three projects with partners submitted to donors.</li> </ul>	<p>Theses available in library. Reprints available. Workshop report on C sequestration. Project documents</p>	<p>Continuing interest and participation of NARS and ARO partners. Continued support for collaborative activities, e.g. , systemwide SWNM program.</p>

## PROJECT PE-3: HILLSIDES

### PROJECT DESCRIPTION

**Objectives:** To improve the standard of living and food security of hillside farmers in tropical America, and make their interaction with the environment more sustainable.

**Outputs:**

1. Improved production systems.
2. More sustainable landscapes.
3. Strengthened organizations.
4. Decision makers supported.
5. Efficient and participatory management system of the project.

**Gains:** Farmers and locally organized producers use technologies, tools, and methodologies developed by CIAT and its partners at the level of reference sites. Results are sustainable, production systems profitable, land use improved, and natural resource preserved at the landscape level. Partner organizations use technologies, tools, and methodologies developed by or with the project for their planning and activities at local, national, and regional levels. Decision makers at different levels have more information, tools, and methodologies, provided by the project, to support their planning, monitoring, and decisions.

**Milestones:**

- 2001 *Impact:* Sustainable and profitable production systems, improved land use, and natural resource preservation on farms, spreading to the landscape within reference sites. *Strategic research:* Partner organizations use the project's outputs for their activities at local, national, and regional levels.
- 2002 *Impact:* Sustainable and profitable production systems, improved land use, and natural resource preservation at the landscape level within reference sites. *Strategic research:* Decision makers at local, national, and regional levels use the project's results for their activities.
- 2003 *Impact:* Sustainable and profitable production systems, improved land use, and natural resource preservation on farms, spreading to the landscape beyond the reference sites. *Strategic research:* Decision makers at local, national, and regional levels use new results from the project for their activities.

*Beyond:* Landscapes transformed by sustainable systems, using CIAT's research results.

**Users:** Farming families and rural communities of the Andean and Central American hillsides. Project sites profit from increased community action aimed at sustaining the productivity of the resource base. As a result, off-site stakeholders benefit. National and international development organizations involved in priority setting and investments in development.

**Collaborators:** SDC, IDRC, DGIS, CIMMYT, CIP, IFPRI, IWMI, IICA, PASOLAC, CARE; universities of Florida, Wageningen, Edinburgh, Guelph, Nacional Agraria (Nicaragua); CURLA (Honduras); DICTA, INTA, CONDESAN, CIPASLA, Campos Verdes, CLOs, CIALs, individual farmers.

**CIAT project linkages:** Collaboration with the Ecoregional Program for Tropical Latin America, soils (PE-2), land use (PE-4), smallholder systems (PE-5), agroindustries (SN-1), participatory methods (SN-3), forages (IP-5), and impact assessment (BP-1) projects.

## LOG FRAME WORK PLAN, 2001-2003

Area: Hillsides  
 Manager: José Ignacio Sanz

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
<p><b>Goal</b>            To improve the standard of living and food security of hillside farmers in tropical America and make their interaction with the environment more sustainable.</p>	<ul style="list-style-type: none"> <li>▪ Reduced infant mortality.</li> <li>▪ Reduced maternal mortality.</li> <li>▪ Reduced soil erosion.</li> <li>▪ Improved water quality in rivers and streams.</li> <li>▪ Increased income (monetary and/or in kind).</li> </ul>	<p>National and local statistics.            Local research.</p>	<p>The environmental, social, economic, and political conditions, on a macro level, are maintained.</p>
<p><b>Purpose</b>            To strengthen local processes of sustainable rural development in the hillsides of tropical America, based on the experiences of natural resource management at benchmark sites.</p>	<ul style="list-style-type: none"> <li>▪ Groups residing at five work sites in Honduras and Nicaragua successfully implement land management initiatives consistent with those ones validated by the project and its partners.</li> <li>▪ At least 15 key entities of the region have access to at least three tools and methods developed by the project.</li> </ul>	<p>Field verification.            Institutional reports.</p>	<p>Local partners continue project-related activities. Donors remain interested in the proposed project objectives and continue to give support.</p>
<p><b>Output 1</b>            Improved production systems. Farmers use technologies developed by CIAT and its partners to establish sustainable and profitable production systems.</p>	<ul style="list-style-type: none"> <li>▪ Screening alternatives in demonstration parcels in San Dionisio, Yorito, and Cabuyal ("supermarket of options for hillsides").</li> <li>▪ Validating alternatives in at least 25 Committees for Local Agricultural Research (CIAL, its Spanish acronym) in San Dionisio and Yorito.</li> <li>▪ Alternatives adopted by at least 100 farmers at project work sites.</li> <li>▪ Successful alternatives being transferred to at least 12 sites other than the initial work sites.</li> </ul>	<p>Field verification.            Project reports.            CIAL reports.</p>	<p>That climate variability is normal.</p>
<p><b>Output 2</b>            More sustainable landscapes. Land use has improved across the landscape because locally organized farmers are using the tools and methods developed by the Project and its partners.</p>	<ul style="list-style-type: none"> <li>▪ Three local consortia of natural resource management operating at work sites in Honduras, Nicaragua, and Colombia.</li> <li>▪ Five local consortia of natural resource management in formation at other sites of Central and South America.</li> <li>▪ Stable water quality (sediments and contaminants) as integrating indicator of the status of natural resources in at least three microwatersheds at the</li> </ul>	<p>Consortia reports.            Monitoring reports.</p>	

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
	<p>work sites.</p> <ul style="list-style-type: none"> <li>▪ Environmental monitoring initiated in at least two work sites in Honduras and Nicaragua.</li> </ul>		
<p><b>Output 3</b> Strengthened organizations. Local and national organizations involved in sustainable rural development at various levels (site, national, regional) use the technical and methodological resources developed by the project in their decision making and other activities. Interinstitutional coordination is enhanced.</p>	<ul style="list-style-type: none"> <li>▪ At least 25 CIALs operating at project work sites.</li> <li>▪ At least 30 CIALs in formation at other work sites in the region.</li> <li>▪ At least 20 national technicians trained and promoting CIALs.</li> </ul>	<p>CIAL reports. Training reports. Institutional reports.</p>	
<p><b>Output 4</b> Decision makers supported. Decision makers at various levels use and have access to more information, tools, and methods to use in decision making, planning, and monitoring.</p>	<ul style="list-style-type: none"> <li>▪ At least two technicians of each collaborating institution trained and using tools developed by the project and its partners.</li> <li>▪ Digital information (CD-ROM and Web site) available and accessible in Honduras and Nicaragua, and in process in other countries.</li> <li>▪ Local decision makers at the level of three municipalities with access to site-specific information on natural resources and trained to use this information.</li> </ul>		
<p><b>Output 5</b> Efficient, participatory project management. Different internal and external partners directly participate in project management to ensure adequate and efficient use of the project's resources.</p>	<ul style="list-style-type: none"> <li>▪ Plans and reports opportunely prepared and approved by previously established authorities.</li> <li>▪ Partners are well informed and actively participate in fieldwork at project sites (local consortia) or elsewhere.</li> <li>▪ National hillside consortia operating in Honduras and Nicaragua.</li> <li>▪ Regional hillside consortium operating.</li> <li>▪ Experiences and lessons learned by the project and its partners disseminated in Latin America through different channels (e.g., networks, publications, meetings).</li> <li>▪ New projects adopt methods, techniques, and experiences generated by the project and its partners.</li> </ul>	<p>Planning documents and reports. Proceedings of the meetings of the Consultative Group and the Executive Committee. Reports of members and consortia. Dissemination materials and project reports. Direct verification through networks and consortia.</p>	

## PROJECT PE-4: LAND USE

### PROJECT DESCRIPTION

**Objective:** To improve policy and decision making for sustainable land and environmental management in Latin America through the scientific analysis of land and environmental patterns, anticipated dynamics, and policy indicators improved.

#### Outputs:

1. Extrapolation and upscaling tools developed for a variety of purposes related with rural development (i.e., germplasm targeting, plants and pests distribution, biodiversity collection).
2. Baseline and time series information of CIAT priority for the analysis of land use and environmental patterns, and dynamics compiled and distributed.
3. Limitations and potential of land use in the hillsides, savannas, and forest margins agroecosystems analyzed.
4. Frameworks for analyzing land use dynamics and for using indicators of sustainability in the CIAT priority agroecosystems developed.
5. Developed and defined policy relevant environmental and sustainable indicators.

**Gains:** Detailed georeferenced databases on land use, ecological, and socioeconomic factors. Environmental and sustainability indicators of land use, networking on the environment, land use, sustainable agriculture, and indicators. A blend of theoretical, methodological, and field-based inquiry for decisions on sustainable agriculture. Upscaling and extrapolation tools available for a variety of uses.

#### Milestones:

- 2001 Decision-support tools developed for natural resource management in the Colombian savannas. Indicators for sustainability at the municipality level published for Central America. Rainfall interpolation software (MarkSim) distributed. Major analysis on poverty–natural resources relations in Pucallpa, Peru.
- 2002 Germplasm targeting tool completed (Beta version). World climate surfaces upgraded to 1-km grid. Flora Map 2.0 released. Dynamic Land Use Model (Beta version) released. Indicators for sustainability at the municipality level published for Andean countries.
- 2003 Strategic databases on agricultural, environmental, social, and economic issues maintained and updated. Environmental and sustainability indicators routinely distributed to decision makers in the region at different levels. Remote sensing information on land use changes in tropical America routinely collected and available for different purposes. Integrated GIS and mathematical models to support land management decisions by national organizations. National and local institutions from tropical America strengthened to use information, analysis, and tools. Data, analyses, and tools for natural resources management disseminated throughout tropical America and other tropical areas of the world.

**Collaborators:** ICRAF, CIP, ILRI, ECLAC, University of Guelph (Canada), IICA (Costa Rica), IILA (Italy), IIASA (Austria), WRI (USA), RIVM (the Netherlands), TCA (Amazonian Cooperation Treaty), the Earth Council (Costa Rica), the World Bank. NARSs, GOs, and NGOs in Latin America = DNP, IGAC, MinAmbiente, IDEAM, CARDER (Colombia); Ministry of the Environment, EMBRAPA (Brazil); IVITA, INIA (Peru); INIAP (Ecuador).

**CGIAR system linkages:** Protecting the Environment (60%); Improving Policies (20%); Enhancement & Breeding (10%); Saving Biodiversity (10%). Contributes to the Ecoregional Program for Tropical Latin America.

**CIAT project linkages:** GIS studies assist SB-1, SB-2, IP-1, and PE-2; model development with PE-3, PE-5, and BP-1.

# LOG FRAME WORK PLAN, 2001-2003

Area: Natural Resource Management  
 Manager: Alejandro Imbach

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
<p><b>Goal</b>            Develop and apply knowledge, tools, technologies, skills, and organizational principles that contribute to improved land management.</p>	<ul style="list-style-type: none"> <li>▪ Use of CIAT NRM research outputs in at least 3 reference sites in 5 years related to changes in land management associated with increases in per capita income and food availability; improved soil-water-nutrient use efficiency; increased biodiversity in production systems; and stakeholder participation in land use planning.</li> <li>▪ Use of the CIAT NRM research outputs beyond the 3 reference sites in the 3 targeted agroecosystems (savannas, hillsides, forest margins) by stakeholders within 5 years.</li> <li>▪ CIAT NRM research outputs applied by at least 3 other institutions outside the LAC region by the end of the 5th year.</li> </ul>	<p>Projects, plans, and reports of national public sector agencies, donors, NGOs, and community-based organization in the 3 reference sites and mandated agroecosystems that refer to use of CIAT NRM research outputs.</p>	
<p><b>Purpose</b>            To improve policy and decision making for sustainable land and environmental management in Latin America through the scientific analysis of land and environmental patterns, anticipated dynamics, and policy indicators improved.</p>	<p>Number and importance of instances of use of generated understanding by decision makers at various levels.</p>	<p>Consultation and documented responses.</p>	
<p><b>Output 1</b>            Baseline and time series information of CIAT priority for the analysis of land use and environmental patterns and dynamics compiled and distributed.</p>	<ul style="list-style-type: none"> <li>▪ New versions of climate, population, crop, and livestock distribution and other strategic databases (1998).</li> <li>▪ Documented databases on Inter-American Geospatial Data Network node in CIAT 1998.</li> <li>▪ Rainfall model Beta tested (1998) and distributed to crop modelers in the tropics (1999).</li> </ul>	<p>Information on CIAT WWW site.            Annual report.            Information available on CD-ROM.</p>	<p>Continued collaboration with universities, UNEP, IGDN, and our partners in the benchmark sites.</p>

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
<p><b>Output 2</b> Limitations and potential of land use in the hillsides, savannas, and forest margins agroecosystems analyzed.</p>	<ul style="list-style-type: none"> <li>▪ Information gathered and analyses completed.</li> <li>▪ Key variables indicating potential land use analyzed and mapped for three CIAT priority agroecosystems.</li> </ul>	<p>Annual report. CIAT report to Colombian Government. Working documents, field verification, student intern reports, land use plans.</p>	<p>Sustained funding from Colombian Government. Continued collaboration with CIAT soils group, University of Guelph, and others in complex systems group.</p>
<p><b>Output 3</b> Frameworks for analyzing land use dynamics and for using indicators of sustainability in the CIAT priority agroecosystems developed.</p>	<ul style="list-style-type: none"> <li>▪ Indicator sets and frameworks developed in consultation with our partners and stakeholders.</li> <li>▪ Data interfaces developed for analyzing indicators of sustainability.</li> </ul>	<p>Beta version Compact Disk for CIAT priority agroecosystems. New models incorporated in <i>Indicators CD</i>. Workshop reports and proceedings, peer reviewed papers.</p>	<p>Continuation of the planned collaboration with CIAT researchers working in benchmark sites. Data availability. Collaboration with NARSs as planned</p>
<p><b>Output 4</b> Developed and defined relevant policies. Environmental and sustainable indicators.</p>	<ul style="list-style-type: none"> <li>▪ <i>Continental Indicators CD</i> released (1998) with 300 users—new and improved version (1999).</li> <li>▪ Beta version biodiversity toolbox 1999—new release 2000.</li> <li>▪ Data dictionary (1998) for Pucallpa indicators, GIS lab developed in Pucallpa.</li> <li>▪ Honduras workshop to define indicators.</li> </ul>	<p>Latin American CD and manual. Data dictionary repor. CIAT report to the Colombian Government. Reports on CIAT WWW page. Workshop proceedings, peer reviewed papers.</p>	<p>Continued collaboration with universities, UNEP, ICRAF, IPGRI, CIFOR, and our partners in the benchmark site. External funding for Pucallpa Land Use Laboratory. Relationships discovered that permit broad-scale extrapolation.</p>
<p><b>Output 5</b> Analysis and development of scenarios and options for sustainable land use in Latin America in general and in the CIAT priority agroecosystems in particular.</p>	<ul style="list-style-type: none"> <li>▪ Indicators product developed (2000).</li> <li>▪ Full analyses reporting of rural poverty and the agricultural land use developed for CIAT Web page (1999).</li> <li>▪ Scenarios identified and developed.</li> </ul>	<p>CIAT poverty Intranet page. Oterpretive maps. CIAT report to the Colombian Government. Annual report.</p>	<p>Data availability. Continued collaboration from poverty experts, indicators stakeholders. Collaboration from national programs.</p>
<p><b>Output 6</b> Establishment of stakeholder networks at multiple scales within the CIAT priority agroecosystems for dialogue about land use options and scenarios.</p>	<p>Agricultural and NRM professionals attending workshops in Central America.</p>	<p>Beta compact disk developed. Workshop proceedings. Activities with institutions. Web page traffic.</p>	<p>Participation and cooperation from partners.</p>



<p><b>Output 7</b>  Training of professionals in the use of decision support tools and scenario building methods.</p>	<ul style="list-style-type: none"> <li>▪ Indicators technology by NRM professionals trained in Central America.</li> <li>▪ GIS-NRM-AG-based information product.</li> <li>▪ Development training (19 persons in Central America).</li> <li>▪ Germplasm mapping tool tested, refined, and distributed to national programs in Africa and Latin America.</li> <li>▪ Training workshops in Colombia.</li> </ul>	<p>Training workshop proceedings.  DS toolbox, training materials, web pages.</p>	<p>Funding obtained.  NARSs' collaboration.  Software licensing for germplasm tool worked out.  Training manuals and tutorials.</p>
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## PROJECT PE-5: SUSTAINABLE SYSTEMS

### PROJECT DESCRIPTION

**Objective:** To collaborate with national organizations in developing integrated crop, livestock, and arboreal technologies that are adoptable, productive, and sustainable.

#### Outputs:

1. Alternative land use options for agricultural systems assessed.
2. Component technologies for sustainable production developed.
3. Models and frameworks developed to integrate results, target research, and assess impact.
4. Partnerships facilitated for participants' development of alternative land use options.
5. Enhanced capacity of NARSs to promote adoption of productive and sustainable practices.

**Gains:** Integration of commodity and natural resource research. New approaches to the development of environmentally sound technologies. Indicators for measuring economic and environmental impact of improved technology at the farm and watershed levels. Methodology to extend results beyond benchmark sites.

#### Milestones:

- 2001 New crop and livestock technologies for smallholder systems in Latin America and Southeast Asia. New rice and banana varieties identified for forest margins. Forage alternatives for dry-season feeding. Increased cassava production in mixed cropping systems with demonstrated impact of technologies on increased welfare of poor rural families. Methodology for assessing socioeconomic and environmental impact at farm level. Improved fallow systems for forest margins. Model for multi-institutional and participatory research.
- 2002 Model for community-based natural resource management in Southeast Asia. New approaches to up-scaling technologies developed through participatory research.
- 2003 Capacity building with partners in at seven NARSs is producing impact at farm and watershed level with improved forage and fallow systems.

**Users:** The research will benefit low-income farmers in Latin America, Asia, and Africa by increasing available food and cash flow to rural households while providing a basis for more sustainable production systems. Adoption of environmentally sound farming practices will benefit society as a whole.

**Collaborators:** ICRAF, ILRI, IRRI; linkages with national R&D organizations and specialized research organizations.

**CGIAR system linkages:** Protecting the Environment (50%); Crop Production Systems (20%); Livestock Production Systems (15%); Training (10%); Networks (5%).

**CIAT project linkages:** Conservation of genetic resources; germplasm enhancement in beans, cassava, and tropical forages; natural resource management in areas of land use dynamics, soil processes, and watershed management; strengthening NARS through developing partnerships, participatory research, and impact assessment.

## LOG FRAME WORK PLAN, 2001-2003

Area: Natural Resource Management  
 Manager: Jacqueline Ashby

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
<p><b>Goal</b>            To ensure that knowledge, tools, technologies, skills, and organizational principles that contribute to the improved management of natural resources are accessible to NARS and beneficiaries.</p>	<ul style="list-style-type: none"> <li>▪ Use of CIAT NRM research outputs in 3 reference sites in 5 years, related to changes in land management and associated with increases in per capita income and food availability; improved soil-water-nutrient use efficiency; increased biodiversity in production systems; stakeholders participating in land use planning.</li> <li>▪ Use of the CIAT NRM research outputs beyond the 3 reference sites in the 3 targeted agroecosystems (savannas, hillsides, forest margins) by stakeholders in 5 years.</li> <li>▪ CIAT NRM research outputs applied by at least 3 other institutions outside LAC by the end of the 5th year.</li> </ul>	<p>Projects, plans, and reports of national sector agencies, donors, NGOs, and community-based organizations in the 3 reference sites in LAC mandated agroecosystems, which refer to use of CIAT's NRM research outputs.</p>	<p>CIAT's partners are willing to use these research outputs to improve NRM.</p>
<p><b>Purpose</b>            To collaborate with national organizations in developing integrated crop, livestock, and arboreal technologies that are adoptable, productive, and sustainable.</p>	<ul style="list-style-type: none"> <li>▪ Percentage increase in smallholders' income.</li> <li>▪ Number of new component technologies.</li> <li>▪ Percentage decrease in soil loss, and increase in soil fertility and water retention.</li> <li>▪ Changes in functional aspects of biodiversity.</li> <li>▪ Decreases in deforestation and burning.</li> <li>▪ Widespread adoption of sustainable practices.</li> </ul>	<p>Impact evaluation studies.</p>	<p>Donor and client support for sustainable land use research.</p>
<p><b>Output 1</b>            System components assessed to provide alternative land use options.</p>	<ul style="list-style-type: none"> <li>▪ Synthesis of research outputs available for local and national planners.</li> <li>▪ Land use alternatives assessed for use in local and national planning for the forest margins.</li> <li>▪ Community involved in improving productivity and management of resources</li> </ul>	<p>Workshop and technical reports.             Technical report.</p>	<p>Collaboration and integration of research activities in Pucallpa.             Continued donor support.</p>

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
	<p>at a mountainous site, central Vietnam.</p> <ul style="list-style-type: none"> <li>▪ Options and incentives necessary to develop and use feed resources in a sustainable manner in dual-purpose cattle systems in Latin America.</li> <li>▪ Determinants of health and nutritional status in the Aguaytia watershed.</li> <li>▪ Community action plans developed in relation to health goals of individuals and communities in the Aguaytia watershed.</li> <li>▪ Synthesis of results of research on health and nutrition conveyed to national health authorities.</li> <li>▪ Synthesis of options for an integrated approach to improving feed resources for livestock in SE Asia.</li> <li>▪ A synthesis of options for sustainable management of cassava-based systems in Thailand, Vietnam, and China.</li> </ul>	<p>Workshop and technical report.</p> <p>Final report to donor.</p> <p>Operational plans of governmental agencies.</p> <p>Final report to donor.</p>	<p>Continued collaboration with NARS partners</p> <p>Additional financial support obtained.</p> <p>Maintenance of close relationships with NARSs.</p> <p>IP-3 continues to support R&amp;D in Asia.</p>

## PROJECT SN-1: AGROENTERPRISES

### PROJECT DESCRIPTION<sup>1</sup>

**Objective:** To develop methodologies for designing and establishing small-scale, rural agroindustries that link market opportunities and processing technologies with environmentally sound production practices.

#### Outputs:

1. Methods for identifying viable market opportunities that incorporate small-scale farmer selection criteria.
2. Decision-making tools and institutional models for organizing rural agroenterprises and complementary support services.
3. Diagnostic and priority setting methods for postharvest technology development.
4. Information and technology for the postharvest processing of selected commodities.
5. National personnel trained in the design and execution of agroenterprise development projects.

**Gains:** Inhabitants of the Central American and Andean Region hillsides and forest margins gain enhanced capacity to establish small-scale agroprocessing enterprises. Linkages improved between conservation, production, added-value processing, markets, and consumers. Sustainable production practices catalyzed and adopted more widely. Through strategic alliances, experiences extended to eastern and southern Africa and Southeast Asia.

#### Milestones:

- 2001 At least three pilot production, processing, and marketing projects established in targeted regions. International workshop on rural agroenterprise development.
- 2000 Case studies on rural enterprise development completed. Guidelines available for designing institutional support structures for rural agroindustry.
- 2001 Conceptual framework developed and methodological options defined for organizing and integrating production, processing, and market functions for the establishment and/or strengthening of rural agroenterprises.

**Users:** Immediate beneficiaries are the technical personnel of organizations in rural agroindustrial R&D and rural policy makers. Ultimate beneficiaries are the inhabitants of rural areas, especially female small farmers, and entrepreneurs, who benefit from training and information on postharvest processing technologies, market analysis, and support services.

**Collaborators:** *Development of methods and technology components:* CIRAD, NRI, PRODAR (Costa Rica), IDRC, CIP, IFPRI, and IITA. *Execution of pilot projects:* CIPASLA (Colombia), CLODEST (Honduras), and CODESU (Peru). *Training and networking:* PRODAR-IICA (Peru), members of the Global Collaborative Post-Production Research Network, CORPOICA, Univalle, Fundación Carvajal, Univ. Nacional Agraria—Nicaragua.

**CGIAR system linkages:** Protecting the Environment (20%); Crop Production Systems (20%); Training (10%); Information (10%); Networks (10%); Organization and Management (30%). Participates in the Global Collaborative Post-Production Network and the Working Group on Root and Tuber Post Harvest Technology and Marketing.

**CIAT project linkages:** Provides information on market opportunities in targeted ecosystems of PE-3 and PE-5. Information on agronomic adaptation and economic viability of specific crops provided by PE-3 and PE-5. Receives support from PE-4, SN-2, SN-3, and BP-1 in GIS tools, participatory methods, network development, and impact assessment.

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1. As presented in CIAT. 1998. *Doing Research Together: An Update of CIAT's Medium-Term Plan, 1999-2001*. Cali, Colombia.

**LOG FRAME WORK PLAN, 2001-2003**

**Area:** Rural Agroenterprises  
**Manager:** Rupert Best

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
<p><b>Goal</b>                      Develop and apply knowledge, tools, technologies, skills, and organizational principles that contribute to improved land management.</p>	<ul style="list-style-type: none"> <li>▪ Use of CIAT NRM research outputs in at least 3 reference sites in 5 years related to changes in land management associated with increases in per capita income and food availability; improved soil-water-nutrient use efficiency; increased biodiversity in production systems; and stakeholder participation in land use planning.</li> <li>▪ Use of the CIAT NRM research outputs beyond the 3 reference sites in the 3 targeted agroecosystems (savannas, hillsides, forest margins) by stakeholders within 5 years.</li> <li>▪ CIAT NRM research outputs applied by at least 3 other institutions outside the LAC region by the end of the 5th year.</li> </ul>	<p>Projects, plans, and reports of national public sector agencies, donors, NGOs, and community-based organizations in the 3 reference sites and mandated agroecosystems, which refer to use of CIAT NRM research outputs.</p>	
<p><b>Purpose</b>                      To develop in collaboration with our partners, methods, tools, and institutional models for the design and execution of successful rural agroenterprise projects that integrate market opportunities and postharvest technologies with environmentally sound production and processing practices.</p>	<p>By the end of year 2000, a set of methods, tools, and institutional models are being used by partner institutions in the reference sites in Latin America, and are being adapted by partners in Asia and Africa.</p>	<p>Reports and project documents of our partner institutions.</p>	<p>Political and institutional support for sustainable rural and agricultural development at the reference sites and targeted countries is maintained. Natural disasters and civil strife do not impede progress toward contributing to the project's goal.</p>

<p><b>Output 1</b> Tools, methods, and information for the identification and development of market opportunities (as an input for the design of economically viable and sustainable rural agroenterprises).</p>	<p>By the end of the year 2000:</p> <ul style="list-style-type: none"> <li>▪ Training materials for market opportunity identification available and being used by partners in LA and Asia.</li> <li>▪ Market opportunities identified and in the process of being developed in the reference sites.</li> <li>▪ Information system on alternative trade available.</li> <li>▪ Training materials for the design of market plans and strategies for small agroenterprises available.</li> </ul>	<p>Manual published.</p> <p>Annual reports and project proposals.</p> <p>Project home page.</p> <p>Training materials in draft.</p>	<p>Collaborating institutions have adequate resources to use the materials and tools developed.</p> <p>Natural disasters or civil strife do not impede progress toward achieving the project's goal.</p>
<p><b>Output 2</b> Tools, methods, and information for the development of appropriate postharvest technologies for small-scale rural agroenterprises.</p>	<ul style="list-style-type: none"> <li>▪ Information system on products and postharvest processes for cassava, selected fruits, and milk products available on the project's WWW home page.</li> <li>▪ Series of manuals on techniques for the participatory development of postharvest technology for improving the efficiency of existing rural agroindustry.</li> <li>▪ Manuals in preparation on techniques for the participatory development of new rural agroindustrial products and processes.</li> </ul>	<p>Project home page.</p> <p>Manuals published.</p> <p>Annual reports and working documents.</p>	
<p><b>Output 3</b> Information, options, and recommendations for the design of efficient and effective organizational schemes for small-scale rural agroenterprise and their support services.</p>	<ul style="list-style-type: none"> <li>▪ Case studies of small rural agroenterprises, documenting best practices, key success factors, and lessons learned, completed for Latin America and Asia.</li> <li>▪ Different options for the organization of enterprises, their links in the agri-food chain, and the organization of support services are being tested in the reference sites</li> </ul>	<p>Case studies published.</p> <p>Project proposals and annual reports.</p>	

<p><b>Output 4</b> Institutional models and policy options for the establishment and strengthening of rural agroenterprises and their support systems at the microregional level.</p>	<ul style="list-style-type: none"> <li>▪ Two or more agroenterprise projects in execution in each of the reference sites in Latin America.</li> <li>▪ Manual on the identification and development of integrated R&amp;D rural agroenterprise projects completed.</li> <li>▪ Guidelines for the design of local support systems for promoting agroenterprises at the microregional level.</li> </ul>	<p>Project proposals and reports.</p> <p>Manual in final draft.</p> <p>Working document.</p>	
<p><b>Output 5</b> Enhanced capacity to design and develop successful agroenterprise projects among partner institutions and within CIAT .</p>	<ul style="list-style-type: none"> <li>▪ 50 trained NARS personnel in aspects related to agroenterprise development in Latin America.</li> <li>▪ Case studies on the adoption and impact of agroenterprise R&amp;D completed.</li> <li>▪ Project WWW home page operational and updated periodically with project outputs.</li> <li>▪ Strategic alliances with research and development partners.</li> </ul>	<p>Training documents, course evaluations, and annual reports.</p> <p>Case studies published.</p> <p>Project home page.</p> <p>Letters of Understanding, project contracts, and interinstitutional agreements.</p>	



## PROJECT SN-2: LINKAGES WITH NARS

### PROJECT DESCRIPTION

**Objective:** To help increase the effectiveness of national, regional, and global agricultural research and development systems by building partnerships, sharing information, developing human resources, and promoting collaboration between countries and institutions.

#### Outputs:

1. Local and regional consortia and networks that integrate the R&D plans of private and public sectors for selected commodities and agroecosystems.
2. Trained national program personnel.
3. Global agricultural R&D networks for sharing information, prioritizing research issues, and promoting horizontal collaboration.
4. Regional agricultural research projects identified and formulated in cooperation with NARSs.

**Gains:** Information exchange, sharing of results, and research prioritization will lead to more effective and efficient use of the human and financial resources dedicated to agricultural R&D. Farmers, processors, and consumers will have better and quicker access to new knowledge, research tools and methodologies, and technology components.

#### Milestones (2001-2003):

1. The implementation of a training strategy that contributes to the integration of agricultural research agendas and rural development projects within the NARSs.
2. Institutional information and documentation services will be supplied through modern electronic systems, which have been developed in cooperation with NARSs and sister CGIAR research centers.
3. The international community—research partners, donors, and NARSs—will be informed of the institutional mission, research capacity and capabilities, and available research outputs through the implementation of a communication and public awareness strategy.
4. The CGIAR's new mission and vision will be shared with national governments and partners to get their political support and technical cooperation. Consultations on CIAT's research agenda will be done to meet its global mandates and regional demands.

**Users:** Direct beneficiaries include developing country institutions (both public and private) engaged in research and development related to CIAT's mandated responsibilities. International and regional organizations. Developed country agencies that dedicate resources to basic and applied research and to technical cooperation in developing countries. Donors that finance bilateral and multilateral R&D activities.

**Collaborators:** Public and private-sector institutions involved in agricultural R&D, principally in Latin America but also in Asia and Africa, for consortium and network development, and training and communication. Specialized research institutes in both developed and developing countries. CIAT's donors. IARCs collaborating with CIAT projects.

**CGIAR system linkages:** Strengthening NARS (i.e., Training, Information, Organization and Management, and Networks) (100%).

**CIAT project linkages:** Coordinate training and conferences carried out by all other research projects. Coordinate joint resource mobilization efforts of CIAT projects and NARSs oriented toward strengthening NARS.

## LOG FRAME WORK PLAN, 2001-2003

Area: Regional Cooperation  
 Manager: Rafael Posada

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
<p><b>Goal</b>            Knowledge and expertise for enhancing performance of decision making in the agricultural and development sectors is made accessible to appropriate users.</p>	<p>Performance of NARS and regional programs improved.</p>	<p>Impact studies by CIAT and partners.            NARS technical reports.</p>	
<p><b>Purpose</b>            Transfer and adoption of research deliverable outputs facilitated by consultation with all partners strengthening NARSs, developing public awareness strategies, and setting up training, documentation, and information activities.</p>	<ul style="list-style-type: none"> <li>▪ Adoption of CIAT deliverable outputs.</li> <li>▪ Recognition of the contribution and impact of CIAT's research.</li> </ul>	<p>NARSs' technical reports.            Donor publications and public recognition.</p>	<p>NARS willing to adopt CIAT's outputs.</p>
<p><b>Output 1</b>            Institutional cooperation strategy in place.</p> <p><b>Output 2</b>            Relationships with key regional programs, CGIAR members, NGOs, research institutes, and universities strengthened.</p> <p><b>Output 3</b>            Information routinely available to NARSs.</p> <p><b>Output 4</b>            Document collections and databases established.</p> <p><b>Output 5</b>            Electronic delivery and/or publishing methods in place.</p> <p><b>Output 6</b>            Technical and promotional materials developed.</p> <p><b>Output 7</b>            Formal and informal training carried out.</p>	<ul style="list-style-type: none"> <li>▪ Fulfillment of the commitments set in annual work plans and responsibility performance agreements.</li> <li>▪ Publications of technical and scientific materials.</li> <li>▪ Number of consultations and reference distribution.</li> <li>▪ Number of training and conference events.</li> <li>▪ Number of agreements with current activities.</li> <li>▪ NARSs' use of CIAT's research agenda and deliverable outputs.</li> <li>▪ CIAT's research projects aware of agricultural sector's needs</li> </ul>	<p>Staff annual evaluations.            Directorship annual reports.            CIAT's active participation in major regional planning, priority setting, and negotiation events.            CIAT's participation in major regional agricultural research initiatives.</p>	<p>CIAT's deliverable outputs are available.</p>

## PROJECT SN-3: PARTICIPATORY RESEARCH

### PROJECT DESCRIPTION

**Objective:** To develop and disseminate participatory research principles, approaches, analytical tools, indigenous knowledge, and organizational principles that strengthen the capacity of R&D institutions to respond to the demands of stakeholder groups for improved levels of human well-being and agroecosystem health.

#### Outputs:

1. Participatory research approaches, analytical tools, and indigenous knowledge that lead to the incorporation of farmers' and other users' priorities in R&D agendas developed for interested institutions.
2. Organizational strategies and procedures for participatory research (PR).
3. Professionals and others trained as facilitators of PR.
4. Material and information on participatory research approaches, analytical tools, indigenous knowledge, and organizational principles developed.
5. Impact of SN-3 activities documented.
6. CIAT projects and other institutions supported and strengthened in conducting PR.
7. Capacity of the SN-3 team strengthened.

**Gains:** Users involved at early stages in decisions about innovation development. Methods available for incorporating user preferences. Participatory methods applied on a routine basis in CIAT research. At least three Latin American universities with capacity to teach PR methods. At least 1000 trainees and 40 trainers able to apply these methods in the region. Contribution of PR to technology adoption rates measured in targeted areas. Lessons learned, methodologies, and materials disseminated globally, jointly with the Systemwide Program on Participatory Research and Gender Analysis (SP-PRGA), convened by CIAT, and through the Farmer Participatory Research for IPM project of the Systemwide IPM Program (SP-IPM).

#### Milestones:

- 2001 CIAT approach scaled up over a large geographic region, incorporating at least three NARSs. CIAT approach tested in Africa and Asia. Strategies for complementary application of CIAT approach with other participatory research and learning platforms developed. Pilot testing of participatory approaches for rural agroenterprise development in at least one site.
- 2002 Watershed organizational models replicated in at least two countries beyond the three pilot sites. Participatory plant breeding approaches institutionalized in at least three NARSs (one in each of Africa, Asia, and LAC) on a national scale. At least 15 CGIAR and NARS IPM project leaders trained in participatory approaches. Pilot organizational model for rural telecenters established in one site. Methods for participatory research on NRM at the landscape scale applied in at least one site.
- 2003 Associations of community-based farmer research services formed in at least 4 countries. Participatory projects for integrated management of agroecosystem health established in at least 5 CGIAR and NARS centers.

**Users:** This work will benefit poor farmers, processors, traders, and consumers in rural areas, especially in fragile environments. Farmer researchers will have improved capacity for innovation. Researchers will receive more accurate and timely feedback from users about acceptability of production technologies and conservation practices. Researchers and planners will profit from methods for conducting adaptive research and implementing policies on natural resource conservation at the micro level.

**Collaborators:** NARS, NGOs, universities, CGIAR SP-PRGA members, SP-IPM members.

**CGIAR system linkages:** Organization and Management (70%); Training (30%); Convener of SP PRGA; Coordinator of FPR-IPM project of SP-IPM.

**CIAT project linkages:** Inputs to PE-1, PE-3; PE-4, PE-5, IP-1, IP-2, IP-3, IP-5, SN-1, BP-1; Outputs from: PE-3, PE-4, IP-3, BP-1, SN-1.

## LOG FRAME WORK PLAN, 2001

Area: Natural Resource Management  
 Manager: Ann Braun

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
<p><b>Goal</b>            Develop and apply knowledge, tools, technologies, skills, and organizational principles that contribute to improving human well-being and agroecosystem health.</p>	<ul style="list-style-type: none"> <li>▪ Application of participatory methods, analytical tools, and organizational principles by R&amp;D organizations that result in incorporating farmers' and other end-users' needs in IMA</li> <li>▪ Use of project products at additional reference sites in two agroecosystems (hillsides and forest margins) of CIAT's mandate in 5 years.</li> <li>▪ Use of project products by a minimum of 3 institutions outside the LAC region at the end of year 5.</li> <li>▪ Improvement in end-users' well-being at the respective reference sites.</li> </ul>	<p>Projects, plans, and reports of public sector entities, donors, NGOs, grassroots organizations at reference sites and in the agroecosystems of CIAT's mandate, which refer to the use of project products.</p>	
<p><b>Purpose</b>            Develop and disseminate participatory approaches, analytical tools, indigenous knowledge, and organizational principles that strengthen the capacity of R&amp;D institutions to respond to the demands of stakeholder groups and to improve human well-being and agroecosystem health.</p>	<ul style="list-style-type: none"> <li>▪ Number of R&amp;D organizations applying participatory methods, analytical tools, and organizational principles.</li> <li>▪ Number of entities in the LAC region teaching participatory methods.</li> <li>▪ Number of meetings among stakeholder groups.</li> <li>▪ Number of participatory projects implemented by R&amp;D institutions.</li> </ul>	<p>Impact study.            Institutional reports.            Publications.            Proceedings.</p>	<p>Institutional economic stability.            Financing for training activities and publication and dissemination of materials.            Institutions willing to prepare and support facilitators and to share information.            End-users—above all, farmers—willing to participate.</p>
<p><b>Output 1</b>            Participatory research approaches, analytical tools, and indigenous knowledge that lead to the incorporation of farmers' and other users' priorities in R&amp;D agendas developed for interested institutions.</p>	<p>Number of methodological approaches developed or adapted and analytical tools developed for IMA.</p>	<p>Project reports.            Publications.</p>	<p>Good coordination and integration among collaborators.            Minimal conflicts for meeting demands.            Full participation of stakeholder groups.            Field staff fulfilling true facilitator role.            Data available from reference sites.            Internet system functioning well.</p>
<p><b>Output 2</b>            Organizational strategies and procedures</p>	<p>Number of strategies and organizational</p>	<p>Project reports.</p>	

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
for PR developed.	procedures for PR adopted and adapted.	Publications.	
<b>Output 3</b> Professionals and others trained as facilitators of PR.	Number of professionals, technicians, and farmer-researchers trained in PR methodology.	Project reports.	Institutions willing to prepare and support facilitators. Funding available.
<b>Output 4</b> Material and information on participatory approaches, analytical tools, indigenous knowledge, and organizational principles developed.	<ul style="list-style-type: none"> <li>▪ Number of visits to Web sites.</li> <li>▪ Number of requests for materials and information.</li> <li>▪ Number of materials published.</li> </ul>	Project reports. Publications.	
<b>Output 5</b> Impact of SN-3 project activities documented.	Dependent on nature of study, e.g., in CIALs: number (n) of host countries, total n of initiated, n of inactive, n of mature, research capacity, self-management capacity, n and diversity of institutions facilitating CIALs, gender composition, diversity of research themes, n of people benefited, n of microenterprises formed, n of community service actions performed, n of facilitators and trainers trained, n of 2nd-order organizations formed, n of requests for publications and training materials.	Case studies, M&E reports and databases, impact studies.	Staff have time, suitable methodologies, and funds available.
<b>Output 6</b> Internal projects and other institutions supported and strengthened in conducting PR.	<ul style="list-style-type: none"> <li>▪ Number of internal projects supported.</li> <li>▪ Number of external entities strengthened.</li> <li>▪ Number of participatory projects carried out by internal projects and other institutions.</li> </ul>	Project reports. Publications of internal projects and of other institutions.	
<b>Output 7</b> Capacity of the SN-3 team strengthened.	<ul style="list-style-type: none"> <li>▪ Number of team meetings.</li> <li>▪ Number of team-organized seminars and workshops.</li> </ul>	Project reports.	

## PROJECT BP-1: IMPACT ASSESSMENT

### PROJECT DESCRIPTION

**Objective:** To generate and disseminate information and tools to improve the capacity of CIAT and partner organizations to allocate research resources efficiently.

#### Outputs:

1. Expected impact of future research estimated.
2. Impact of past CIAT research monitored.
3. Tools developed to assess the impact of research, *ex ante* and *ex post*.
4. Institutional capacity for estimating, monitoring, and evaluating research impacts improved.

**Gains:** Improved allocation of resources can increase the rate of return on investment in agricultural research. Project target is 2%.

#### Milestones:

- 2001 Two field studies on technology adoption and acceptability completed. Two new field studies on technology adoption and acceptability initiated. Impact monitoring system developed and implemented in one agroecological site. Aggregate productivity impact of CIAT germplasm estimated. Expected benefits of four potential CIAT research outputs appraised.
- 2002 Impact monitoring system developed and implemented for all agroecological sites and CIAT projects. Expected benefits of four CIAT research outputs appraised. Two new field studies on technology adoption and acceptability initiated. Two new field studies on technology adoption and acceptability completed.
- 2003 Two studies on technology adoption completed. Impact of investments in social capital on natural resource management estimated. Two new field studies on technology adoption initiated. Impact of CIAT research on poverty reduction estimated.

**Users:** Research planners in NARSs and the CGIAR who make decisions on resource allocation. Stakeholders who need to measure expected returns to investment in agricultural and resource management research.

**Collaborators (1999):** *Future impact of research:* Ministry of Agriculture (Colombia); Health Ministry (Nicaragua); CIAT projects-Forages, Rice, Cassava, Beans, Hillsides, Soils. *Impact of past research monitored:* Impact Assessment and Evaluation Group (CGIAR); Yale Univ.; Universidad Autonoma "Gabriel Rene Moreno" (Bolivia); CORPOICA (Colombia); Univ. California—Berkeley; CNPMF (EMBRAPA, Brazil); Secretary of Rural Development (Ceará, Brazil); ARI (Tanzania); CIAT projects-Beans, Beans in Africa, Cassava, Rice, Forages, IPM, Hillsides, Land Use, Agroenterprises. *Tools to assess impact:* IFPRI. *Institutional capacity:* COLCIENCIAS (Colombia); all CIAT projects.

**CGIAR system linkages:** Improving Policies (100%).

**CIAT project linkages:** All CIAT projects.

## LOG FRAME WORK PLAN, 2001-2003

Area: Strategic Planning  
 Manager: Douglas Pachico

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
<p><b>Goal</b>            Knowledge and expertise for enhancing performance of decision making in the agricultural and development sectors is made accessible to appropriate users.</p>	<p>Performance of investment in tropical agricultural research improved.</p>	<p>Research project portfolios in tropical agricultural research.</p>	
<p><b>Purpose</b>            Generation and dissemination of information and tools to improve the capacity of CIAT and partner organizations to allocate research resources efficiently, and document the impact of research investments.</p>	<ul style="list-style-type: none"> <li>▪ Research resources allocated more efficiently (expected rate of return to CIAT research portfolios increased).</li> <li>▪ Results of impact analysis used in decision making and priority setting.</li> <li>▪ Economic and environmental impact of selected past research identified and quantified.</li> </ul>	<p>Scientific publications from BP-1 and other projects.            Published planning documents of CIAT and partner organizations.            Published minutes of planning meetings in CIAT (BoT, MT, Project Managers) and partner organizations.            External reviews of CIAT.            Data on use of CIAT-developed tools.</p>	<p>Adequate funding to agricultural research and extension.            Decision makers willing to use economic analysis in research priority setting.</p>
<p><b>Output 1</b>            Expected impact of future research estimated.</p>	<ul style="list-style-type: none"> <li>▪ Expected rate of return for potential research projects estimated.</li> <li>▪ Expected economic, distributional, and environmental impact identified and quantified.</li> </ul>	<p>CIAT technical publications.            CIAT published planning documents.</p>	<p>Willingness of decision makers to use the information.            No external shocks that invalidate the results.</p>
<p><b>Output 2</b>            Impact of selected past CIAT research documented.</p>	<p>Economic, social, and environmental impact of CIAT research outputs identified and quantified.</p>	<p>CIAT technical publications.</p>	

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
<p><b>Output 3</b> Tools developed to assess the impact of research, <i>ex ante</i> and <i>ex post</i>.</p>	<ul style="list-style-type: none"> <li>• Methodologies generated.</li> <li>• Databases compiled and maintained.</li> </ul>	<p>Scientific publications and other technical publications such as manuals and guidelines. Databases available on BP-1 sites on Internet, on CIAT's internal network, and in BP-1's data library. Site flow data from web sites. Data on registered users of BP-1 software. Citations of project publications and tools in technical publications.</p>	<p>Analysts willing to use the tools in their impact analyses. Data available to use the tools.</p>
<p><b>Output 4</b> Institutional capacity for estimating, monitoring, and evaluating research impacts improved.</p>	<p>Appropriate and well-designed impact assessment components included in the work plans and budgets of CIAT projects and projects of partner organizations.</p>	<p>CIAT project log frames and budgets. Work plans of CIAT researchers. Research proposals submitted by projects. Similar documentation from partner organizations.</p>	<p>Institutional and financial support for impact assessment.</p>



# PROJECT SW-1: ECOREGIONAL PROGRAM FOR TROPICAL LATIN AMERICA

## PROJECT DESCRIPTION

**Objective:** To enhance the effectiveness of research in tropical America by (1) improving the capacity to define and understand productivity and natural resource problems in agriculture and their relationships with rural poverty, (2) developing, adapting, and implementing suitable solutions to these problems through joint work with different partners at different levels, and (3) extrapolating results within and among agroecosystems.

### Outputs:

1. Enhanced ability to undertake cross-country and agroecosystem analysis and to extrapolate results from reference sites.
2. Methodology for prioritizing and undertaking resource management research at the local (i.e., watershed) level.
3. Local consortia using research results to effectively address development problems at the local level.
4. National and regional consortia exchanging information and extracting lessons from their experience.
5. Improved capacities to self-assess impact and performance.

**Gains:** Effective impact on rural development achieved by local consortia. Enhanced capacity of regional consortia (CONDESAN network for the high Andes, Alternatives to Slash and Burn in the forest margins, Central American Hillside and the Savannas Consortium) to address agroecosystem problems. Strategic alliances among advanced, international, and national organizations (governmental, NGOs, grassroots) to solve specific problems will make more efficient use of complementary capacities and abilities. New models for partnerships will ensure that priority problems are addressed and experience is systematized and exchanged.

### Milestones:

- 2001 Ecoregional consortia at all levels (local, national, regional) working actively. Extrapolation of activities validated at the ecoregional reference sites in progress.
- 2002 Decision tools developed for analyzing impacts of technology and policy across different scales. National capacity for agroecosystem research and action increased and active in the field in several regions
- 2003 Joint ecoregional research and action mainstreamed. Impact assessment refined and mainstreamed.

**Users:** Researchers in the four consortia will have more complete information in agroecosystem research. Policy makers will have more useful tools for prioritizing research. National programs will have new models of partnership between stakeholders. Conservation and development organizations and projects will have access to experiences, lessons, tools, and methods resulting from research.

**Collaborators:** National organizations from tropical Latin America; international organizations (CATIE, CIAT, CIFOR, CIMMYT, CIP, CIRAD, ICRAF, ICRISAT, IFDC, IFPRI, ILRI, OSTROM), PROCITROPICOS, and specialist organizations from Germany, Netherlands, and USA.

**CGIAR system linkages:** Protecting the Environment (40%), Saving Biodiversity (10%), Crop and Livestock Production Systems (25%), Training (5%), Organization and Management (10%), Improving Policies (10%). Linkages with systemwide programs: Alternatives to Slash and Burn Agriculture; Soils, Water, and Nutrient Management; Livestock Initiative; and Participatory Research and Gender Analysis.

**CIAT project linkages:** Will receive input from all CIAT projects at the benchmark sites: forest margins (Pucallpa, Peru), hillsides (Honduras, Nicaragua, and Colombia), savannas (Puerto López, Colombia).

## LOG FRAME WORK PLAN, 2001

Area: Systemwide Program  
 Manager: Alejandro Imbach

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
<p><b>Purpose</b>            CGIAR centers participate actively in rural development processes in different ecoregions of tropical Latin America (TLA).</p>	<ul style="list-style-type: none"> <li>▪ CGIAR centers involved actively in at least 6 local rural sustainable development initiatives (LoRSDI), other than the reference sites.</li> <li>▪ At least 10 specific CGIAR research outputs being used to solve specific problems of LoRSDIs.</li> </ul>	<p>Reports from the organizations active in LoRSDIs.            Field verification.            CGIAR project research reports.</p>	<p>Availability of funds.            Acceptance of the Ecoregional approach by CGIAR centers.</p>
<p><b>Output 1</b>            Partnerships. Local and national organizations operating in rural areas of different ecoregions are supported by CGIAR centers in implementing research and development with an ecoregional approach.</p>	<ul style="list-style-type: none"> <li>▪ Local and national individual or consortium partnerships including at least 25 organizations supporting LoRSDIs established in at least 6 places in TLA.</li> <li>▪ At least 15 partner organizations supported on planning, assessment, and fund searching out of the reference sites.</li> <li>▪ Ecoregional Network operational and active.</li> <li>▪ Collaboration with at least 3 ecoregional consortia.</li> <li>▪ Partnerships developed in at least 3 strategic ecoregional issues<sup>a</sup>.</li> </ul>	<p>Reports from partner organizations.            Field verification.</p>	<p>Availability of funds.            Agroecosystem consortia (CONDESAN, Hillsides, PROCIs) perform the stakeholder consultation function effectively.</p>
<p><b>Output 2</b>            Exchange. CGIAR centers, rural development organizations, and national and regional networks actively exchange methods, products, and experiences.</p>	<ul style="list-style-type: none"> <li>▪ Training materials on ecoregional issues<sup>a</sup> developed, tested, and available for use.</li> <li>▪ At least 50 members of partner organizations trained on ecoregional issues<sup>a</sup>.</li> <li>▪ Regional experiences on at least four ecoregional issues<sup>a</sup> systematized through practitioner workshops, and emerging lessons available through the Ecoregional Network and publications.</li> </ul>	<p>Reports from partner organizations.            Training materials.            Workshop proceedings.            Publications.            Ecoregional Network Web site contents.</p>	
<p><b>Output 3</b>            Research. CGIAR centers, international, national, and local organizations implement joint research activities on ecoregional issues<sup>a</sup>.</p>	<p>Joint research in at least five ecoregional issues<sup>a</sup>.</p>	<p>Research reports.            Papers.            Presentations in meetings.</p>	<p>Funding available.</p>

<p><b>Output 4</b> International projection. Rural development organizations working in regions other than TLA benefit from the experiences and expertise developed in TLA.</p>	<ul style="list-style-type: none"> <li>▪ At least one meeting and three exchanges with non-TLA ecoregional programs.</li> <li>▪ Participation in at least 2 non-TLA initiatives on ecoregional issues<sup>a</sup>.</li> </ul>	<p>Meeting proceedings. Non-TLA partners' reports. Trip reports. Publications.</p>	
<p><b>Output 5</b> CIAT activities. CIAT management requirements are fulfilled by the Ecoregional Program.</p>	<ul style="list-style-type: none"> <li>▪ Preparation of annual report.</li> <li>▪ Preparation of annual work plan.</li> <li>▪ Fulfillment of staff performance evaluation.</li> <li>▪ Program management.</li> <li>▪ Participation in other planning, review, and evaluation activities.</li> </ul>	<p>Annual report. Annual work plan. Performance evaluation forms. Other documents.</p>	

- a. Ecoregional issues = relevant issues for every ecoregion. These issues are identified annually by the Program and added to this list. To prevent dispersion, the number of ecoregional issues will not exceed 5. For 1999, the ecoregional issues were:
- Analysis and synthesis of landscape and ecoregional units.
  - Project and impact assessment.
  - Sustainable use of biological diversity.
  - Stakeholder-based approaches to resource management at the watershed (local) scale.
  - Upscaling processes.

## **PROJECT SW-2: SOIL, WATER, AND NUTRIENT MANAGEMENT (SWNM)**

### **PROJECT DESCRIPTION**

**Objective:** To contribute to long-term increases in agricultural productivity, poverty reduction, and the conservation and enhancement of land and water resources.

#### **Outputs:**

1. Economically viable SWNM technologies that are socially acceptable and ecologically sound.
2. Improved methods and diagnostic tools for participatory research.
3. Indicators to monitor the environmental and economic impact of land use systems.
4. Decision support systems, such as models and geographic information systems, for generating and extrapolating options.
5. Stronger institutional capacity to implement SWNM programs and policies.
6. A framework for partnerships between stakeholder groups.
7. Information on appropriate policies to promote sustainable practices.

**Gains:** Linkages of research on SWNM at key sites within the CGIAR ecoregional programs. Improved research efficiency through collaboration among NARSs, IARCs, and SROs (specialized research organizations rather than AROs) through capacity building. Avoidance of duplication of efforts in SWNM and increased rate of technology development. A core group of resource management scientists. Accelerated scientific progress through sharing of experience, common methods, databases, and models across regions. Strengthened research projects already in place through an integrated approach. Complementation of ongoing research where knowledge gaps exist and provision of new knowledge is required to improve natural resource management worldwide.

#### **Milestones:**

- 2001 Guidelines available for optimizing soil water use. Water and nutrient fluxes determined in watersheds under different land use management practices. Recommendations available for management of natural resources in areas of high risk from land degradation. Validation of soil quality indicators.
- 2002 Cadre of local scientists, farmer groups, and extension workers trained to develop local solutions to SWNM constraints in the four consortia. Independent community-based investigations established by four consortia in benchmark areas.

**Users:** Farmers and other land users, NARSs, extension workers, NGOs, and community-based groups.

**Collaborators:** IARCs: TSBF, IBSRAM, IFDC, ICRISAT, ICARDA, IITA, ICRAF; ORSTOM, NARSs, universities, and advanced research organizations of the four SWNM consortia.

**CGIAR system linkages:** Saving Biodiversity (5%), Increasing Productivity (35%), Protecting the Environment (35%), Strengthening NARS (15%), Improving Policies (10%).

**CIAT project linkages:** Confronting soil degradation (PE-2); Watershed resource management (PE-3); Land use studies (PE-4); Smallholder systems (PE-5); Participatory methods (SN-3).

## LOG FRAME WORK PLAN, 2001-2002

The SWNM program's log frame, presented below, is still under development, pending contributions from the four research consortia.

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
<p><b>Goal</b> To contribute to long-term increases in agricultural productivity, poverty reduction, and the conservation and enhancement of land and water resources.</p>	<ul style="list-style-type: none"> <li>▪ Agricultural production increased in benchmark sites.</li> <li>▪ Farmers' income increased.</li> <li>▪ Land degradation halted or decreased.</li> </ul>	<p>Agricultural census data Human welfare statistics</p>	
<p><b>Purpose</b> Effective, ecologically sound technologies and systems for sustainable land management and conservation developed, disseminated, and implemented by land users.</p>	<ul style="list-style-type: none"> <li>▪ 20% of farmers in targeted areas adopt at least one new SWNM technology per consortium through individual and community-based actions.</li> <li>▪ Information on SWNM technologies published.</li> </ul>	<p>Surveys of land use practices. Lists of publications, web pages. Bulletins and brochures.</p>	<p>Policy environment is favorable for the adoption of improved SWNM technologies. Farmers are reached through NARES and IARCs. NARES have the means to disseminate technologies and information.</p>
<p><b>Output 1</b> Technologies and tools for improved soil, water, and nutrient management developed.</p>	<p>At least two new or improved SWNM technologies developed by each of the 4 research consortia.</p>	<p>Publications in international journals. Manuals and decision support tools. Annual reports.</p>	<p>External funding levels are maintained. Benchmark sites established and maintained with partners.</p>
<p><b>Output 2</b> Community-based institutional mechanisms that encourage use of sustainable land management practices developed, tested, and promoted.</p>	<p>Each consortium has established at least one community-based organization in each targeted area or study site.</p>	<p>Annual reports, newsletters, and bulletins.</p>	<p>Community-based groups continue with their own resources. Institutions within each consortium maintain their matching support for the SWNM program.</p>
<p><b>Output 3</b> Capacity of stakeholders to plan and implement research programs on sustainable land management enhanced.</p>	<ul style="list-style-type: none"> <li>▪ X number of farmers, NARES personnel, and policy makers trained.</li> <li>▪ At least four training manuals and guidelines for SWNM produced.</li> </ul>	<p>Numbers of training courses, field visits held. Number of personnel trained. Institutional reports.</p>	<p>NARES have means to execute programs.</p>
<p><b>Output 4</b> Policies that address equity issues, access to resources, and land tenure developed.</p>	<p>Guidelines and decision support systems developed.</p>	<p>Policy guideline documents. Publications in international journals.</p>	<p>Policy makers are open to dialogue with SWNM program.</p>

## **PROJECT SW-3: SYSTEMWIDE PARTICIPATORY RESEARCH AND GENDER ANALYSIS**

### **PROJECT DESCRIPTION**

**Objective:** To assess and develop methodologies and organizational innovations for gender-sensitive participatory research, and operationalize their use in plant breeding, and crop and natural resource management.

#### **Outputs:**

1. Methods for participatory plant breeding (PPB) developed.
2. Methods for participatory research on natural resource management (NRM) developed.
3. Gender-sensitive methodologies suitable for pre-adaptive participatory research developed.
4. Evaluation and functioning of innovations for institutionalizing participatory approaches.
5. Innovative approaches to capacity building functioning.
6. New partnerships among the IARCs, NARSs, NGOs, and farmer groups developed.

**Gains:** Accelerated learning from existing experience and generation of new, widely applicable, methodologies for pre-adaptive participatory research and gender analysis. The CGIAR and NARSs will access a worldwide exchange of expertise on PR and GA among a wide range of institutions. Considerable savings and increased impact from NARSs generated by better designed technologies. Indigenous systems of crop development and NRM will be strengthened and integrated in a mutually reinforcing way with formal research. Poor rural women will be important participants in and beneficiaries of research. The development and adoption of diverse germplasm will be greatly accelerated in major food crops.

**Duration:** Five years.

#### **Milestones:**

- 2001 Evidence available that PB products are more user-differentiated. Synthesis of case studies on how to strengthen local seed systems. Guidelines prepared on methods for scaling up of NRM options and participatory NRM methods. Ten experiments conducted and evaluated on how resource user and research experimentation fit together. A comparison of costs and benefits in participatory NRM compiled and published as a working paper. Synthesis and case studies on the effectiveness of GA and methods for including different users across technology development in PB and NRM published.
- 2002 Published guidelines on the costs and benefits of different approaches to involving and targeting differentiated users. Guidelines for PR/GA methods and strategies in NRM published. Three case studies of organizational change for improving the effective participation of different stakeholders completed and synthesized. The costs and benefits of including PB and NRM in GA assessed.
- 2003 At least three CGIAR centers with partners incorporate PPB into core (mainstream) plant breeding programs; at least two CGIAR centers incorporate participatory methodologies resulting from the program's work into their NRM research.

**Users:** Poor rural women farmers, poor farmers in general, CGIAR centers, NARIs, NGOs, and rural grassroot organizations.

**Collaborators:** IARCs, NARSs, NGOs, grassroot organizations, universities.

**CGIAR system linkages:** Enhancement & Breeding (25%); Crop and Livestock Production Systems (25%); Protecting the Environment (30%); Strengthening NARS (100%), that is, Training (40%), Organization and Management (20%).

**CIAT project linkages:** SB-1, IP-2, IP-3, PE-2, SN-3, BP-1.

## LOG FRAME WORK PLAN, 2001-2003

Area: Systemwide Program  
 Manager: Jacqueline Ashby

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
<p><b>Goal</b>            Improve the ability of the CGIAR system and collaborating institutions to develop technology that alleviates poverty, improves food security, and protects the environment with equity.</p>	<ul style="list-style-type: none"> <li>Capacity to use participatory research (PR) and gender analysis (GA) in at least 50% of the CGIAR centers has increased at the end of 5 years.</li> <li>Impact of PR/GA on technology development processes and research organization has been documented in at least 10 case studies as a result of appropriate use of PR and GA, from which improved benefits for rural poor and women can be projected.</li> </ul>	<p>Published results of the Program's impact studies.            Program monitoring and assessment of capacity building in the centers.            External review reports.</p>	<p>CGIAR centers and partner institutions are willing to commit staff and budget to using PR and GA, to contribute to capacity building, and to collaborate in impact assessment.</p>
<p><b>Purpose</b>            Assess and develop methodologies and organizational innovations for gender-sensitive PR and operationalize their use in plant breeding, and crop and natural resource management.</p>	<ul style="list-style-type: none"> <li>The use of PR/GA is integrated into the CGIAR system and partners institutions' core research.</li> <li>Effective methods for PR/GA in technology development and institutional innovation are developed and disseminated; methods are recognized and understood by relevant senior management and staff; and are being applied appropriately by at least 50% of CGIAR centers supported by Program research and capacity building by the end of 5 years.</li> <li>Center projects collaborating with the Program have gender-sensitive stakeholder/farmer participation in the organization and management of the research process.</li> <li>The Program's planning and evaluation organs are stakeholder-based and include active farmer representation.</li> </ul>	<p>Program publications.            Center annual reviews, reports, and publications.            Program monitoring and assessment of the use of these approaches in the centers and their partners and the results of the small grant programs.            External review reports.</p>	<p>Donor commitment to the Program remains steady over the 5-year period.            Center staff collaborating with the Program is able to include results in their center's reports and annual reviews.            Stakeholders are willing to contribute actively to planning and evaluation of the Program.</p>
<p><b>Overall Output I</b>            Methods and organization for PPB developed.</p>			
<p><b>Specific Output 1</b>            Effective participatory methods in plant breeding assessed and</p>	<ul style="list-style-type: none"> <li>Methodology guidelines published for all three approaches.</li> <li>Methods in use in at least four cases involving national pro-</li> </ul>	<p>Program publications, journal and book publications, Program home page.</p>	<p>Method development and assessment can be advanced quickly</p>

<b>Narrative Summary</b>	<b>Measurable Indicators</b>	<b>Means of Verification</b>	<b>Important Assumptions</b>
developed with focus on farmer breeding; plant selection (segregating lines); variety selection (fixed lines).	grams and NGOs (at least one case) for each type of breeding. <ul style="list-style-type: none"> <li>• Publications disseminated on the results of the methods.</li> <li>• Workshops held to exchange results.</li> </ul>	Impact assessment studies.  Annual reports and workshop proceedings.	in some "model" crops. Analysis of effectiveness in farmer breeding, plant selection, and variety selection.
<b>Specific Output 2</b> Beneficiary groups more accurately involved and targeted in participatory breeding through methods development for involving direct and indirect stakeholders.	<ul style="list-style-type: none"> <li>• Published guidelines on cost-benefits of different approaches to involving and targeting differentiated users.</li> <li>• Synthesized findings on how to involve hidden and indirect stakeholders and how to resolve conflicts among diverse groups.</li> <li>• Evidence available that PB products are more user-differentiated.</li> <li>• Evidence available that indirect stakeholders, such as extension have been involved.</li> </ul>	Program publications; PhD dissertations. Impact assessment studies.	CGIAR , NARSs, and farmer researchers are willing to collaborate in studies, using stakeholder/beneficiary differentiation.
<b>Specific Output 3</b> Effective organizational forms for operationalizing participatory breeding identified and developed in the research process.	<ul style="list-style-type: none"> <li>▪ Ways existing breeding programs organize and fund links with farmers reviewed and documented.</li> <li>▪ Reports available on organizational options for participatory breeding along with cost-benefit analyses.</li> <li>▪ Guidelines for decision makers on promising forms of organization.</li> <li>▪ Capacity building through training and consultancies provided.</li> </ul>	Program publications.  Annual reports and reports on training courses and workshops; consultancy reports. Interviews with farmers, researchers, and research managers participating in Program workshops, training, and collaborative research projects.  Annual reports.	CGIAR , NARSs (including NGOs), and farmer researchers are willing to collaborate in studies of organization.
<b>Specific Output 4</b> User access to products of participatory breeding ensured through identification of effective organizational forms and links to supporting seed services.	<ul style="list-style-type: none"> <li>▪ Synthesis of case studies on how to strengthen local seed production system.</li> <li>▪ Published analysis on the role of the formal seed system in PB approaches.</li> <li>▪ At least 2 channels identified that move PB products rapidly to different users.</li> </ul>	Program publications, journal articles, and books. Interviews with farmers participating in Program-sponsored research on PPB.	PPB experience is sufficiently advanced in the 5-year planning period for seed multiplication and distribution issues to be studied.



Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
<p><b>Overall Output II</b> Methods and organization for participatory NRM research developed.</p>			
<p><b>Specific Output 1</b> Synthesis of the state of the art in applying PR/GA approaches in NRM research completed.</p>	<ul style="list-style-type: none"> <li>▪ Methods and approaches for participatory NRM available and continuously updated as a WWW tool box or CD-ROM.</li> <li>▪ Up to four regional workshops held to compare currently used PR/GA methods in LAC in 2000.</li> <li>▪ One global workshop held to identify the constraints and gaps in PR/GA approaches and to define the focus and determine priorities for next phase of research, beginning 1999.</li> </ul>	<p>Journal and PR/GA home page; publication on typology of NRM participatory approaches. Annual report on regional workshops.</p> <p>Proceedings of Global Workshop; Web bibliography, tool box site, and CD-ROM.</p>	<p>National institutions are willing to collaborate in the organization.</p>
<p><b>Specific Output 2</b> Improved crop and NRM strategies, incorporating better use of existing and new PR/GA methods, developed and disseminated.</p>	<ul style="list-style-type: none"> <li>▪ Workshops conducted with at least 6 collaborative research projects to incorporate GA and gender-sensitive participatory methods into ongoing activities.</li> <li>▪ Materials accessible on approaches for up-scaling participatory NRM in 2000.</li> <li>▪ Up to 10 experiments conducted and evaluated on how farmer and researcher experimentation fit together.</li> <li>▪ Up to 3 community-based and 3 researcher-based resource monitoring tools tested and compared, and results ready for dissemination in 2000.</li> <li>▪ Up to 4 regional trained groups in PR/GA actively supply training in 1999.</li> </ul>	<p>Program annual reports, workshop reports.</p> <p>Published guidelines for PR/GA methods and organizational strategies. Working paper on web site.</p> <p>Results disseminated via NRM working group and network.</p> <p>Proceedings and reports are available on Web site.</p>	<p>At least 6 projects, with 5-6 years experience, exist that are willing to conduct action research. Projects are conducting studies of impact or are willing to do so. Projects are selected that have accomplished some measurable impact.</p>
<p><b>Specific Output 3</b> Organizational capacity to use PR/GA methods in NRM research improved with a focus on farmers, local institutions, scientists, extension workers, and research and extension institutions.</p>	<ul style="list-style-type: none"> <li>▪ New options for organizational innovation for participatory approaches to NRM research identified from at least 3 case studies at different management scales.</li> <li>▪ Up to 3 case studies of collective resource monitoring.</li> <li>▪ Farmer representation in NRM research decision making</li> </ul>	<p>Comparative analysis and case studies of organizational options published on the PR/GA home page. NRM small grant annual reports; PhD dissertations. Farmer representatives on collaborating</p>	<p>Cooperating projects are willing to test a range of methods and indicators. Cooperating projects comply with small grant conditions to set up stakeholder committees.</p>

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
	<p>increased.</p> <ul style="list-style-type: none"> <li>▪ Training of trainers and research partners in GA or user analysis conducted for existing and new NRM research partnerships.</li> </ul>	<p>projects' stakeholder committees and on PR/GA planning committee. Directory of trainers for training in GA or user and impact analysis in NRM on the PR/GA home page.</p>	<p>Training in PR/GA and impact analysis is of interest to cooperating institutions.</p>
<p><b>Specific Output 4</b> Effective methods for involving gender differentiated and other direct and indirect stakeholders in NRM developed.</p>	<ul style="list-style-type: none"> <li>▪ Working paper is compiled and published on comparison of costs and benefits to technology design, adoption of different levels of participation, inclusion of different types of users across types of NRM, and scales of management.</li> <li>▪ Guides for involving different stakeholder groups in participatory NRM are accessible.</li> </ul>	<p>Working paper, PhD dissertations on costs and benefits on PR/GA home page. Published resources on methods for stakeholder participation on PR/GA home page.</p>	<p>Reliable data can be obtained at a meaningful scale for estimating costs and projecting benefits. This compilation of resource materials is seen as needed by PR/GA networks</p>
<p><b>Overall Output III</b> Use of GA is "mainstreamed".</p>			
<p><b>Specific Output 1</b> Effective methods and capacity for using gender/stakeholder analysis developed.</p>	<ul style="list-style-type: none"> <li>▪ A guideline is available from the GWG on special methods for effective stakeholder and/or user participation in PB and NRM technology development oriented at including the illiterate, poor, women, and other disadvantaged people.</li> <li>▪ Approaches to using gender and stakeholder analysis and information on their likely outcomes and costs are integrated into published PBG and NRMG participatory research guidelines.</li> <li>▪ Program workshops and training support integrate gender and stakeholder analysis.</li> <li>▪ Gender and stakeholder analysis is being applied appropriately to target technology designed for specific kinds of users, particularly, poor rural women, by at least 50% of the centers and/or their partners collaborating in the PR/GA small grant programs.</li> <li>▪ Program organization uses appropriate procedures for ensuring representation of gender-differentiated stakeholders at project steering committee and Program Planning Group levels.</li> </ul>	<p>GWG guidelines; PR/GA home page. PBG and NRMG published guidelines. Annual reports, PR/GA home page. Annual reports on training events. Small grant annual reports; site visits to collaborating centers; interviews with small grant recipients. Reports of small grant steering committee and Program Planning Group participation.</p>	<p>Projects are interested in implementing innovations as regards gender and/or user analysis and involvement in research steering committees. Projects are willing to monitor costs and share historical data on costs.</p>

<b>Narrative Summary</b>	<b>Measurable Indicators</b>	<b>Means of Verification</b>	<b>Important Assumptions</b>
<p><b>Specific Output 2</b> Effects of using gender and/or stakeholder analysis in technology development assessed.</p>	<ul style="list-style-type: none"> <li>▪ Results of research on effects of differentiating users by gender and other characteristics on adoption of PPB and NRM technologies by different groups are disseminated and being used by centers and/or partners.</li> <li>▪ Results of research on effects of differentiating users by gender and other characteristics on design of PB or NRM technologies is disseminated and being used by centers and/or partners.</li> </ul>	<p>Working papers; PhD dissertations; PR/GA home page; small grant annual reports; site visits.</p>	<p>PB and NRM guidelines are published.</p>

## **Financial Tables**

**Table 1. CIAT -- Research Agenda Requirements, by CGIAR Outputs<sup>v</sup>, 2001**

(expenditure in \$ million)

<b>Center Projects</b>	<b>Germplasm Improvement</b>	<b>Germplasm Collection</b>	<b>Sustainable Production</b>	<b>Policy</b>	<b>Enhancing NARS</b>	<b>PROJECT TOTALS</b>
01. SB - 1 : Genetic Resources	0,17	0,93	0,00	0,00	0,06	1,16
02. SB - 2 : Agrobiodiversity	1,66	1,21	0,00	0,00	0,15	3,01
03. IP - 1 : Beans	1,67	0,00	0,44	0,00	0,11	2,22
04. IP - 2 : Beans in Africa	1,67	0,00	1,34	0,00	0,33	3,34
05. IP - 3 : Cassava	0,66	0,33	0,28	0,00	0,04	1,31
06. IP - 4 : Rice	1,56	0,52	0,31	0,13	0,08	2,60
07. IP - 5 : Tropical Grasses and Legumes	0,50	0,67	0,40	0,00	0,10	1,68
08. PE - 1: IPM	0,00	0,29	1,16	0,00	0,00	1,45
09. PE - 2: Soils	0,29	0,10	1,54	0,00	0,00	1,92
10. PE - 3: Hillsides	0,00	0,11	1,65	0,44	0,00	2,20
11. PE - 4: Land Use	0,26	0,26	1,57	0,52	0,00	2,61
12. PE - 5: Sustainable Systems for Smallholders	0,00	0,00	2,30	0,00	0,26	2,55
13. SN - 1: Rural Agroenterprises	0,00	0,00	0,62	0,00	0,62	1,24
14. SN - 2: Linkages with NARS	0,00	0,00	0,10	0,00	1,98	2,09
15. SN - 3: Farmer Participatory Research	0,17	0,00	0,33	0,00	0,17	0,67
16. BP - 1: Impact Assessment	0,00	0,00	0,00	0,59	0,00	0,59
17. SW - 1: Ecoregional Program for Tropical Latin America	0,00	0,03	0,20	0,03	0,05	0,30
18. SW - 2: Soil, Water, and Nutrient Management (SWNM)	0,00	0,00	0,68	0,08	0,00	0,76
19. SW - 3: SW Program on Participatory Research & Gender Analysis	0,55	0,00	1,25	0,00	0,39	2,19
<b>UNDERTAKING TOTALS</b>	<b>9,15</b>	<b>4,44</b>	<b>14,17</b>	<b>1,79</b>	<b>4,34</b>	<b>33,90</b>

<sup>v</sup> Please refer to Table 2 for the crosswalk between CGIAR Activities and the new CGIAR Outputs.

**Table 2. CIAT RESEARCH AGENDA - ALLOCATION OF RESOURCES , 1999-2003**

(expenditure in \$ million)

**Allocation of Resources by Outputs  
Logical Framework Format**

<b>Outputs:</b>	<b>1999 (actual)</b>	<b>2000 (estimate)</b>	<b>2001 (proposal)</b>	<b>2002 (plan)</b>	<b>2003 (plan)</b>
<b>Germplasm Improvement</b> <i>(Activity: Germplasm Enhancement &amp; Breeding, plus Networks, as appropriate)</i>	<b>8,18</b>	<b>9,14</b>	<b>9,15</b>	<b>9,18</b>	<b>9,18</b>
<b>Germplasm Collection</b> <i>(Activity: Saving Biodiversity, plus networks, as appropriate)</i>	<b>3,96</b>	<b>4,44</b>	<b>4,44</b>	<b>4,46</b>	<b>4,46</b>
<b>Sustainable Production</b> <i>(Activity: Production Systems Dev &amp; Mgmt, Protecting the Environment and Networks, as appropriate)</i>	<b>12,51</b>	<b>14,15</b>	<b>14,17</b>	<b>14,21</b>	<b>14,21</b>
<b>Policy</b> <i>(Activity: Improving Policies, plus Networks, as appropriate)</i>	<b>2,22</b>	<b>1,79</b>	<b>1,79</b>	<b>1,80</b>	<b>1,80</b>
<b>Enhancing NARS</b> <i>(Activity: Strengthening NARS - the three sub-activities, plus Networks, as appropriate)</i>	<b>3,43</b>	<b>4,33</b>	<b>4,34</b>	<b>4,35</b>	<b>4,35</b>
<b>TOTAL</b>	<b>30,31</b>	<b>33,85</b>	<b>33,90</b>	<b>34,00</b>	<b>34,00</b>

**Allocation of Resources by CGIAR Activity**

	<b>1999 (actual)</b>	<b>2000 (estimate)</b>	<b>2001 (proposal)</b>	<b>2002 (plan)</b>	<b>2003 (plan)</b>
<b>Increasing Productivity</b> <i>of which:</i>	<b>12,36</b>	<b>14,01</b>	<b>14,03</b>	<b>14,07</b>	<b>14,07</b>
Germplasm Enhancement & Breeding	8,18	9,14	9,15	9,18	9,18
Production Systems Development & Management	4,18	4,87	4,88	4,89	4,89
<b>Protecting the Environment</b>	<b>6,63</b>	<b>7,41</b>	<b>7,42</b>	<b>7,44</b>	<b>7,44</b>
<b>Saving Biodiversity</b>	<b>3,96</b>	<b>4,44</b>	<b>4,44</b>	<b>4,46</b>	<b>4,46</b>
<b>Improving Policies</b>	<b>2,22</b>	<b>1,79</b>	<b>1,79</b>	<b>1,80</b>	<b>1,80</b>
<b>Strengthening NARS</b> <i>of which:</i>	<b>5,14</b>	<b>6,21</b>	<b>6,22</b>	<b>6,23</b>	<b>6,23</b>
Training and Professional Development	1,44	1,77	1,77	1,78	1,78
Documentation, Publications, Info. Dissemination	1,48	1,92	1,92	1,92	1,92
Organization & Management Counselling	0,52	0,65	0,65	0,65	0,65
Networks	1,70	1,87	1,88	1,88	1,88
<b>TOTAL</b>	<b>30,31</b>	<b>33,85</b>	<b>33,90</b>	<b>34,00</b>	<b>34,00</b>

**Table 3. CIAT RESEARCH AGENDA PROJECT & COST SUMMARY, 1999-2003**

(in \$ million)

	1999 (actual)	2000 (estimate)	2001 (proposal)	2002 (plan)	2003 (plan)
01. SB - 1 : Genetic Resources	1,04	1,16	1,16	1,17	1,17
02. SB - 2 : Agrobiodiversity	2,61	3,01	3,01	3,02	3,02
03. IP - 1 : Beans	2,24	2,22	2,22	2,23	2,23
04. IP - 2 : Beans in Africa	3,07	3,33	3,34	3,35	3,35
05. IP - 3 : Cassava	1,20	1,31	1,31	1,31	1,31
06. IP - 4 : Rice	2,56	2,60	2,60	2,61	2,61
07. IP - 5 : Tropical Grasses and Legumes	1,50	1,68	1,68	1,68	1,68
08. PE - 1: IPM	1,07	1,45	1,45	1,46	1,46
09. PE - 2: Soils	1,51	1,92	1,92	1,93	1,93
10. PE - 3: Hillside	2,79	2,19	2,20	2,20	2,20
11. PE - 4: Land Use	2,10	2,61	2,61	2,62	2,62
12. PE - 5: Sustainable Systems for Smallholders	2,46	2,55	2,55	2,56	2,56
13. SN - 1: Rural Agroenterprises	1,03	1,24	1,24	1,24	1,24
14. SN - 2: Linkages with NARS	1,61	2,08	2,09	2,09	2,09
15. SN - 3: Farmer Participatory Research	0,53	0,67	0,67	0,67	0,67
16. BP - 1: Impact Assessment	1,00	0,59	0,59	0,60	0,60
17. SW-1: Ecoregional Program for Tropical Latin America	0,27	0,30	0,30	0,30	0,30
18. SW-2: Soil, Water, and Nutrient Management (SWNM)	0,83	0,76	0,76	0,76	0,76
19. SW-3: Systemwide Program on Participatory Research & Gender Analysis	0,87	2,19	2,19	2,19	2,19
<b>Total</b>	<b>30,31</b>	<b>33,85</b>	<b>33,90</b>	<b>34,00</b>	<b>34,00</b>

**Summary by Undertaking:**

	1999 (actual)	2000 (estimate)	2001 (proposal)	2002 (plan)	2003 (plan)
Increasing Productivity	12,36	14,01	14,03	14,07	14,07
Protecting the Environment	6,63	7,41	7,42	7,44	7,44
Saving Biodiversity	3,96	4,44	4,44	4,46	4,46
Improving Policies	2,22	1,79	1,79	1,80	1,80
Strengthening NARS	5,14	6,21	6,22	6,23	6,23
<b>Total:</b>	<b>30,31</b>	<b>33,85</b>	<b>33,90</b>	<b>34,00</b>	<b>34,00</b>

**Summary by Output:**

	1999 (actual)	2000 (estimate)	2001 (proposal)	2002 (plan)	2003 (plan)
Germplasm Improvement	8,18	9,14	9,15	9,18	9,18
Germplasm Collection	3,96	4,44	4,44	4,46	4,46
Sustainable Production	12,51	14,15	14,17	14,21	14,21
Policy	2,22	1,79	1,78	1,80	1,80
Enhancing NARS	3,43	4,33	4,34	4,35	4,35
<b>Total:</b>	<b>30,31</b>	<b>33,85</b>	<b>33,90</b>	<b>34,00</b>	<b>34,00</b>

**Institutional Cost Components:**

	1999 (actual)	2000 (estimate)	2001 (proposal)	2002 (plan)	2003 (plan)
Direct Project Costs	21,03	25,15	25,60	25,67	25,66
Indirect Project Costs (Overhead)	9,28	8,70	8,30	8,33	8,35
<b>Total Project Costs</b>	<b>30,31</b>	<b>33,85</b>	<b>33,90</b>	<b>34,00</b>	<b>34,00</b>

Table 4. CIAT Allocation of Project Costs to CGIAR Activities, 1999-2003

(In \$ million)

Project	Activity	1999 (actual)	2000 (estimate)	2001 (proposal)	2002 (plan)	2003 (plan)	
01. SB - 1 : Genetic Resources	Enhancement and Breeding (Beans)	0.05	0.06	0.06	0.06	0.06	
	Enhancement and Breeding (Cassava)	0.05	0.06	0.06	0.06	0.06	
	Enhancement and Breeding (Livestock)	0.05	0.06	0.06	0.06	0.06	
	Saving Biodiversity	0.84	0.93	0.93	0.93	0.93	
	Strengthening NARS--Training	0.04	0.05	0.05	0.05	0.05	
	Strengthening NARS--Information	0.01	0.01	0.01	0.01	0.01	
		1.04	1.16	1.16	1.17	1.17	
02. SB - 2 : Agrobiodiversity	Enhancement and Breeding (Bean)	0.36	0.41	0.41	0.42	0.42	
	Enhancement and Breeding (Cassava)	0.36	0.41	0.41	0.42	0.42	
	Enhancement and Breeding (Rice)	0.36	0.41	0.41	0.42	0.42	
	Enhancement and Breeding (Livestock)	0.36	0.41	0.41	0.42	0.42	
	Saving Biodiversity	1.04	1.20	1.21	1.21	1.21	
	Strengthening NARS--Training	0.10	0.12	0.12	0.12	0.12	
	Strengthening NARS--Information	0.03	0.03	0.03	0.03	0.03	
		2.61	3.01	3.01	3.02	3.02	
03. IP - 1 : Beans	Enhancement and Breeding (Bean)	1.88	1.88	1.87	1.87	1.87	
	Production Systems (Bean)	0.22	0.22	0.22	0.22	0.22	
	Protecting the Environment	0.11	0.11	0.11	0.11	0.11	
	Strengthening NARS--Training	0.09	0.09	0.09	0.09	0.09	
	Strengthening NARS--Information	0.02	0.02	0.02	0.02	0.02	
	Strengthening NARS--Networks	0.11	0.11	0.11	0.11	0.11	
			2.24	2.22	2.22	2.23	2.23
04. IP - 2 : Beans In Africa	Enhancement and Breeding (Bean)	1.53	1.67	1.67	1.68	1.68	
	Production Systems (Bean)	0.61	0.67	0.67	0.67	0.67	
	Protecting the Environment	0.31	0.33	0.33	0.34	0.34	
	Strengthening NARS--Training	0.21	0.23	0.23	0.23	0.23	
	Strengthening NARS--Information	0.09	0.10	0.10	0.10	0.10	
	Strengthening NARS--Networks	0.31	0.33	0.33	0.34	0.34	
			3.07	3.33	3.34	3.35	3.35
05. IP - 3 : Cassava	Enhancement and Breeding (Cassava)	0.80	0.85	0.85	0.86	0.86	
	Production Systems (Cassava)	0.12	0.13	0.13	0.13	0.13	
	Protecting the Environment	0.06	0.07	0.07	0.07	0.07	
	Saving Biodiversity	0.30	0.33	0.33	0.33	0.33	
	Strengthening NARS--Training	0.04	0.04	0.04	0.04	0.04	
	Strengthening NARS--Networks	0.08	0.09	0.09	0.09	0.09	
		1.20	1.31	1.31	1.31	1.31	
06. IP - 4 : Rice	Enhancement and Breeding (Rice)	1.54	1.56	1.56	1.56	1.56	
	Production Systems (Rice)	0.13	0.13	0.13	0.13	0.13	
	Protecting the Environment	0.13	0.13	0.13	0.13	0.13	
	Saving Biodiversity	0.51	0.52	0.52	0.52	0.52	
	Improving Policies	0.13	0.13	0.13	0.13	0.13	
	Strengthening NARS--Training	0.05	0.05	0.05	0.05	0.05	
	Strengthening NARS--Information	0.03	0.03	0.03	0.03	0.03	
	Strengthening NARS--Networks	0.05	0.05	0.05	0.05	0.05	
			2.56	2.60	2.60	2.61	2.61
07. IP - 5 : Tropical Grasses and Legumes	Enhancement and Breeding (Livestock)	0.45	0.50	0.50	0.51	0.51	
	Production Systems (Livestock)	0.23	0.25	0.25	0.25	0.25	
	Protecting the Environment	0.08	0.08	0.08	0.08	0.08	
	Saving Biodiversity	0.60	0.67	0.67	0.67	0.67	
	Strengthening NARS--Training	0.08	0.08	0.08	0.08	0.08	
	Strengthening NARS--Information	0.02	0.02	0.02	0.02	0.02	
	Strengthening NARS--Networks	0.06	0.07	0.07	0.07	0.07	
			1.50	1.68	1.68	1.68	1.68
08. PE - 1: IPM	Production Systems (Cassava)	0.32	0.43	0.44	0.44	0.44	
	Protecting the Environment	0.43	0.58	0.58	0.58	0.58	
	Saving Biodiversity	0.21	0.29	0.29	0.29	0.29	
	Strengthening NARS--Networks	0.11	0.14	0.15	0.15	0.15	
		1.07	1.45	1.45	1.46	1.46	
09. PE - 2: Soils	Enhancement and Breeding (Rice)	0.07	0.09	0.09	0.09	0.09	
	Enhancement and Breeding (Livestock)	0.16	0.20	0.20	0.20	0.20	
	Production Systems (Rice)	0.09	0.12	0.12	0.12	0.12	
	Production Systems (Livestock)	0.21	0.27	0.27	0.27	0.27	
	Protecting the Environment	0.60	0.77	0.77	0.77	0.77	
	Saving Biodiversity	0.08	0.10	0.10	0.10	0.10	
	Strengthening NARS--Networks	0.30	0.38	0.38	0.39	0.39	
		1.51	1.92	1.92	1.93	1.93	
10. PE - 3: Hillside	Production Systems (Bean)	0.03	0.03	0.03	0.03	0.03	
	Production Systems (Cassava)	0.03	0.03	0.03	0.03	0.03	
	Production Systems (Livestock)	0.07	0.05	0.05	0.06	0.06	
	Protecting the Environment	1.67	1.32	1.32	1.32	1.32	
	Saving Biodiversity	0.14	0.11	0.11	0.11	0.11	
	Improving Policies	0.58	0.44	0.44	0.44	0.44	
	Strengthening NARS--Networks	0.28	0.22	0.22	0.22	0.22	
		2.79	2.19	2.20	2.20	2.20	
11. PE - 4: Land Use	Enhancement and Breeding (Beans)	0.05	0.07	0.07	0.07	0.07	
	Enhancement and Breeding (Cassava)	0.05	0.07	0.07	0.07	0.07	
	Enhancement and Breeding (Rice)	0.05	0.07	0.07	0.07	0.07	
	Enhancement and Breeding (Livestock)	0.05	0.07	0.07	0.07	0.07	
	Protecting the Environment	1.26	1.56	1.57	1.57	1.57	
	Saving Biodiversity	0.21	0.26	0.26	0.26	0.26	
	Improving Policies	0.42	0.52	0.52	0.52	0.52	
		2.10	2.61	2.61	2.62	2.62	
12. PE - 5: Sustainable Systems for Smallholders	Production Systems (Bean)	0.41	0.43	0.43	0.43	0.43	
	Production Systems (Cassava)	0.41	0.43	0.43	0.43	0.43	



	Production Systems (Livestock)	0.41	0.43	0.43	0.43	0.43
	Protecting the Environment	0.89	0.89	0.89	0.90	0.90
	Strengthening NARS-Training	0.12	0.13	0.13	0.13	0.13
	Strengthening NARS-Information	0.12	0.13	0.13	0.13	0.13
	Strengthening NARS-Networks	0.12	0.13	0.13	0.13	0.13
		<b>2.48</b>	<b>2.55</b>	<b>2.55</b>	<b>2.56</b>	<b>2.56</b>
13. SN - 1: Rural Agroenterprises	Production Systems (Cassava)	0.21	0.25	0.25	0.25	0.25
	Protecting the Environment	0.21	0.25	0.25	0.25	0.25
	Strengthening NARS-Training	0.10	0.12	0.12	0.12	0.12
	Strengthening NARS-Information	0.10	0.12	0.12	0.12	0.12
	Strengthening NARS-Org & Mgt	0.31	0.37	0.37	0.37	0.37
	Strengthening NARS-Networks	0.10	0.12	0.12	0.12	0.12
		<b>1.03</b>	<b>1.24</b>	<b>1.24</b>	<b>1.24</b>	<b>1.24</b>
14. SN - 2: Linkages with NARS	Strengthening NARS-Training	0.48	0.62	0.63	0.63	0.63
	Strengthening NARS-Information	0.97	1.25	1.25	1.26	1.26
	Strengthening NARS-Org & Mgt	0.08	0.10	0.10	0.10	0.10
	Strengthening NARS-Networks	0.08	0.10	0.10	0.10	0.10
		<b>1.61</b>	<b>2.08</b>	<b>2.08</b>	<b>2.09</b>	<b>2.09</b>
15. SN - 3: Farmer Participatory Research	Enhancement and Breeding (Beans)	0.04	0.06	0.06	0.06	0.06
	Enhancement and Breeding (Cassava)	0.04	0.06	0.06	0.06	0.06
	Enhancement and Breeding (Livestock)	0.04	0.06	0.06	0.06	0.06
	Production Systems (Bean)	0.04	0.06	0.06	0.06	0.06
	Production Systems (Cassava)	0.04	0.06	0.06	0.06	0.06
	Production Systems (Livestock)	0.04	0.06	0.06	0.06	0.06
	Protecting the Environment	0.13	0.17	0.17	0.17	0.17
	Strengthening NARS-Training	0.03	0.03	0.03	0.03	0.03
	Strengthening NARS-Information	0.03	0.03	0.03	0.03	0.03
	Strengthening NARS-Org & Mgt	0.08	0.10	0.10	0.10	0.10
		<b>0.53</b>	<b>0.67</b>	<b>0.67</b>	<b>0.67</b>	<b>0.67</b>
16. BP - 1: Impact Assessment	Improving Policies	1.00	0.59	0.59	0.60	0.60
		<b>1.00</b>	<b>0.59</b>	<b>0.59</b>	<b>0.60</b>	<b>0.60</b>
17. SW - 1: Ecoregional Program for Tropical Latin America	Production Systems (Bean)	0.02	0.02	0.02	0.02	0.02
	Production Systems (Cassava)	0.02	0.02	0.02	0.02	0.02
	Production Systems (Rice)	0.02	0.02	0.02	0.02	0.02
	Production Systems (Livestock)	0.02	0.02	0.02	0.02	0.02
	Protecting the Environment	0.11	0.12	0.12	0.12	0.12
	Saving Biodiversity	0.03	0.03	0.03	0.03	0.03
	Improving Policies	0.03	0.03	0.03	0.03	0.03
	Strengthening NARS-Training	0.01	0.02	0.02	0.02	0.02
	Strengthening NARS-Networks	0.03	0.03	0.03	0.03	0.03
		<b>0.27</b>	<b>0.30</b>	<b>0.30</b>	<b>0.30</b>	<b>0.30</b>
18. SW - 2: Soil, Water, and Nutrient Management (SWNM)	Production Systems (Bean)	0.02	0.02	0.02	0.02	0.02
	Production Systems (Cassava)	0.02	0.02	0.02	0.02	0.02
	Production Systems (Rice)	0.03	0.02	0.02	0.02	0.02
	Production Systems (Livestock)	0.17	0.16	0.16	0.16	0.16
	Protecting the Environment	0.41	0.39	0.39	0.39	0.39
	Improving Policies	0.08	0.08	0.08	0.08	0.08
	Strengthening NARS-Networks	0.08	0.08	0.08	0.08	0.08
		<b>0.83</b>	<b>0.78</b>	<b>0.78</b>	<b>0.78</b>	<b>0.78</b>
19. SW - 3: Systemwide Program on Participatory Research and Gender Analysis	Enhancement and Breeding (Beans)	0.05	0.14	0.14	0.14	0.14
	Enhancement and Breeding (Cassava)	0.05	0.14	0.14	0.14	0.14
	Enhancement and Breeding (Rice)	0.05	0.14	0.14	0.14	0.14
	Enhancement and Breeding (Livestock)	0.05	0.14	0.14	0.14	0.14
	Production Systems (Bean)	0.05	0.14	0.14	0.14	0.14
	Production Systems (Cassava)	0.05	0.14	0.14	0.14	0.14
	Production Systems (Rice)	0.05	0.14	0.14	0.14	0.14
	Production Systems (Livestock)	0.05	0.14	0.14	0.14	0.14
	Protecting the Environment	0.28	0.68	0.68	0.66	0.66
	Strengthening NARS-Training	0.07	0.18	0.18	0.18	0.18
	Strengthening NARS-Information	0.07	0.18	0.18	0.18	0.18
	Strengthening NARS-Org & Mgt	0.02	0.04	0.04	0.04	0.04
	Strengthening NARS-Networks	0.02	0.04	0.04	0.04	0.04
		<b>0.87</b>	<b>2.19</b>	<b>2.19</b>	<b>2.19</b>	<b>2.19</b>

Summary by Undertaking:	1999	2000	2001	2002	2003
	(actual)	(estimated)	(proposal)	(plan)	(plan)
Increasing Productivity	12.36	14.01	14.03	14.07	14.07
Protecting the Environment	6.63	7.41	7.42	7.44	7.44
Saving Biodiversity	3.96	4.44	4.44	4.46	4.46
Improving Policies	2.22	1.79	1.79	1.80	1.80
Strengthening NARS	5.14	6.21	6.22	6.23	6.23
<b>Total:</b>	<b>30.31</b>	<b>33.85</b>	<b>33.90</b>	<b>34.00</b>	<b>34.00</b>

Summary by Output:	1999	2000	2001	2002	2003
	(actual)	(estimated)	(proposal)	(plan)	(plan)
Germplasm Improvement	8.18	9.14	9.15	9.18	9.18
Germplasm Collection	3.96	4.44	4.44	4.46	4.46
Sustainable Production	12.51	14.15	14.17	14.21	14.21
Policy	2.22	1.79	1.79	1.80	1.80
Enhancing NARS	3.43	4.23	4.34	4.35	4.35
<b>Total:</b>	<b>30.31</b>	<b>33.85</b>	<b>33.90</b>	<b>34.00</b>	<b>34.00</b>

**Table 5. CIAT RESEARCH AGENDA, 1999-2003**

Investments by Sector, Commodity, and Region (In \$ million)

PRODUCTION SECTORS & COMMODITIES	1999 (actual)	2000 (estimated)	2001 (proposal)	2002 (plan)	2003 (plan)
<b>1/ <i>Germplasm Enhancement &amp; Breeding</i></b>					
Crops	7,02	7,70	7,72	7,74	7,74
Beans	3,78	4,08	4,07	4,08	4,08
Cassava	1,18	1,38	1,38	1,39	1,39
Rice	2,07	2,26	2,26	2,27	2,27
Livestock	1,17	1,44	1,44	1,44	1,44
Trees					
Fish					
<b>TOTAL</b>	<b>8,19</b>	<b>9,14</b>	<b>9,15</b>	<b>9,18</b>	<b>9,18</b>
<b>1/ <i>Production Systems Dev. &amp; Management</i></b>					
Crops	2,97	3,50	3,50	3,52	3,52
Beans	1,42	1,58	1,58	1,58	1,58
Cassava	1,23	1,50	1,50	1,51	1,51
Rice	0,31	0,42	0,42	0,43	0,43
Livestock	1,21	1,37	1,38	1,38	1,38
Trees					
Fish					
<b>TOTAL</b>	<b>4,18</b>	<b>4,87</b>	<b>4,88</b>	<b>4,89</b>	<b>4,89</b>
<b>2/ <i>Total Research Agenda</i></b>					
Crops	24,5	27,1	27,1	27,2	27,2
Beans	12,75	13,62	13,64	13,68	13,68
Cassava	5,88	6,97	6,98	7,00	7,00
Rice	5,85	6,48	6,49	6,51	6,51
Livestock	5,83	6,78	6,79	6,81	6,81
Trees					
Fish					
<b>TOTAL</b>	<b>30,31</b>	<b>33,85</b>	<b>33,90</b>	<b>34,00</b>	<b>34,00</b>
<b>REGION</b>	<b>1999 (actual)</b>	<b>2000 (estimate)</b>	<b>2001 (proposal)</b>	<b>2002 (plan)</b>	<b>2003 (plan)</b>
Sub-Saharan Africa (SSA)	6,66	6,20	6,27	6,29	6,29
Asia	2,91	3,67	3,77	3,78	3,78
Latin American and the Caribbean (LAC)	20,14	21,33	21,20	21,27	21,27
West Asia and North Africa (WANA)	0,40	0,68	0,66	0,68	0,68
<b>TOTAL</b>	<b>30,31</b>	<b>33,85</b>	<b>33,90</b>	<b>34,00</b>	<b>34,00</b>

1/ Includes overheads, and must add up to the sum of the individual sectors/commodities from the project portfolio.

2/ Equals the sum of sectors/commodities in Increasing Productivity, scaled up to total investments for the Research Agenda.

Loading Calculation

<i>Total Research Agenda</i>	1999	2000	2001	2002	2003
Beans	12,75	13,62	13,64	13,68	13,68
Cassava	5,88	6,97	6,98	7,00	7,00
Rice	5,85	6,48	6,49	6,51	6,51
Livestock	5,83	6,78	6,79	6,81	6,81
<b>TOTAL</b>	<b>30,31</b>	<b>33,85</b>	<b>33,90</b>	<b>34,00</b>	<b>34,00</b>

**Table 6. CIAT RESEARCH AGENDA, 1999 - 2003**

Expenditure by Functional Category, and Capital Investments (In \$ million)

<b>OBJECT OF EXPENDITURE</b>	<b>1999 (actual)</b>	<b>2000 (estimate)</b>	<b>2001 (proposal)</b>	<b>2002 (plan)</b>	<b>2003 (plan)</b>
Personnel	16,00	16,70	16,80	16,90	17,00
Supplies and Services	10,56	13,70	13,65	13,65	13,55
Operational Travel	2,30	2,30	2,30	2,30	2,30
Depreciation	1,45	1,15	1,15	1,15	1,15
<b>TOTAL</b>	<b>30,31</b>	<b>33,85</b>	<b>33,90</b>	<b>34,00</b>	<b>34,00</b>
<b>CAPITAL INVESTMENTS</b>	<b>1999 (actual)</b>	<b>2000 (estimate)</b>	<b>2001 (proposal)</b>	<b>2002 (plan)</b>	<b>2003 (plan)</b>
<i>Physical Facilities</i>					
Research	0,18	0,20	0,18	0,18	0,18
Training	0,01	0,05	0,05	0,05	0,05
Administration		0,05	0,05	0,05	0,05
Housing					
Auxiliary Units					
sub-total	0,19	0,30	0,28	0,28	0,28
<i>Infrastructure &amp; Leasehold</i>	0,27	0,20	0,15	0,10	0,10
<i>Furnishing &amp; Equipment</i>					
Farming	0,17	0,10	0,10	0,10	0,10
Laboratory & Scientific	0,68	0,30	0,15	0,15	0,15
Office	0,01	0,02	0,02	0,02	0,02
Housing					
Auxiliary Units	0,06	0,05	0,05	0,05	0,05
Computers	0,93	0,40	0,35	0,35	0,35
Vehicles	0,34	0,45	0,42	0,42	0,42
Aircraft					
sub-total	2,19	1,32	1,09	1,09	1,09
<b>TOTAL</b>	<b>2,65</b>	<b>1,82</b>	<b>1,52</b>	<b>1,47</b>	<b>1,47</b>
<b>CAPITAL FUND CASH RECONCILIATION</b>	<b>1999 (actual)</b>	<b>2000 (estimate)</b>	<b>2001 (proposal)</b>	<b>2002 (plan)</b>	<b>2003 (plan)</b>
<i>Balance, January 1</i>	1,28	0,58	0,25	0,20	0,20
plus: annual depreciation charge	1,45	1,15	1,15	1,15	1,15
plus / minus: disposal gains/(losses)	0,39	0,32	0,30	0,30	0,30
plus / minus: other	0,11	0,02	0,02	0,02	0,02
minus: asset acquisition costs	-2,65	-1,82	-1,52	-1,47	-1,47
<i>equals: Balance, December 31</i>	<b>0,58</b>	<b>0,25</b>	<b>0,20</b>	<b>0,20</b>	<b>0,20</b>

Table 7. CIAT AGENDA FINANCING & SUMMARY STATEMENT OF ACTIVITY, 1999-2000

(in \$ million)

Member	1999		2000	
	(\$ actual)	(net currency)	(\$ estimated)	(net currency)
<b>Unrestricted Contributions</b>				
AUSTRALIA	0.16	0.25	0.16	0.25
BELGIUM	0.12	4.87	0.12	4.87
BRAZIL	0.13	0.13	0.13	0.13
CANADA	0.75	1.13	0.77	1.13
COLOMBIA	1.64	3096.94	1.63	3341.00
DENMARK	0.36	2.46	0.37	2.60
EU	0.00	0.00	2.94	3.00
GERMANY	0.44	0.80	0.36	0.36
JAPAN	3.86	395.00	4.00	415.00
MEXICO	0.01	0.01	0.01	0.01
NETHERLANDS	0.11	0.20	0.09	0.20
NORWAY	0.74	5.80	0.73	5.80
PERU	0.05	0.05	0.04	0.04
SOUTH AFRICA	0.02	0.02	0.02	0.02
SPAIN	0.06	0.06	0.06	0.06
SWEDEN	0.36	3.00	0.38	3.00
SWITZERLAND	1.14	1.50	0.91	1.46
THAILAND	0.01	0.01	0.01	0.01
USA	2.39	2.30	2.30	2.30
WORLD BANK	3.40	3.40	3.50	3.50
UNITED KINGDOM	0.64	0.39	0.67	0.41
<b>subtotal</b>	<b>18.28</b>		<b>19.20</b>	

	1999		2000	
	(\$ actual)	(net currency)	(\$ estimated)	(net currency)
<b>Treated Contributions</b>				
ADB	0.00		0.37	
AUSTRALIA	0.31		0.18	
BELGIUM	0.09		0.21	
CANADA	0.74		0.60	
CGIAR	0.07		0.08	
CLAYUCA	0.05		0.10	
COLOMBIA	0.42		0.65	
DENMARK	0.27		0.39	
EU	0.07		0.02	
FAO	0.03		0.02	
FLAR	0.42		0.47	
FORD FDN	0.06		0.47	
FRANCE	0.82		0.84	
GERMANY	0.07		1.32	
HUMBOLDT INSTITUTE	0.03		0.03	
ICRAF	0.16		0.07	
IDB	0.51		0.58	
IDRC	0.51		0.93	
IFAD	0.16		0.05	
IFPRI	0.07		0.10	
ICA	0.11		0.30	
ILRI	0.21		0.13	
INFODEV	0.10		0.08	
IRAN	0.01		0.05	
ISNAR	0.23		0.15	
ITALY	0.14		0.14	
JAPAN	0.41		0.00	
KELLOGG FDN	0.00		0.15	
NESTLE	0.02		0.00	
NETHERLANDS	0.22		0.34	
NEW ZEALAND	0.20		0.24	
NIPPON FDN	0.22		0.14	
NORWAY	0.14		0.00	
NOVARTIS	0.10		0.23	
NRI	0.01		0.05	
OFI	0.01		0.00	
OTHERS	0.10		0.30	
POLAR FDN	0.00		0.03	
POVERTY ALLEVIATION WORKSHOP	0.36		0.04	
ROCKEFELLER FDN	0.39		0.45	
SWITZERLAND	2.80		2.49	
UNITED KINGDOM	0.52		0.40	
USA	0.79		1.45	
WORLD BANK	0.11		0.35	
WRI	0.02		0.00	
<b>subtotal</b>	<b>12.12</b>		<b>15.80</b>	

**TOTAL GRANTS** 28,40 34,20

Summary Statement of Activity	1999 (\$ actual)	2000 (\$ estimated)
Member Grants	28,40	34,20
+ Center Income (other revenues)	0,61	1,00
= Total Revenues	29,01	35,20
Less:		
Total Expenses	30,31	33,85
Surplus (Deficit) of total revenues over total expenses	-1,31	1,35

Table 8a. CIAT ALLOCATION OF 1999 MEMBER FINANCING TO PROJECTS BY UNDERTAKING

(In \$ million)

Project	Member	Total	Undertakings						
			Increase Productivity		Protect Environ	Saving Biodivers	Improve Policies	Strengthen NARS	
			Breeding	Systems				Training	Other
01. SB - 1 : Genetic Resources	Others-SINGER	0,03	0,01				0,03	0,00	0,00
	Unrestricted + center inc	1,01	0,15				0,81	0,04	0,01
	<b>Total Project Cost</b>	<b>1,04</b>	<b>0,16</b>				<b>0,84</b>	<b>0,04</b>	<b>0,01</b>
02. SB - 2 : Agrobiodiversity	Colombia	0,04	0,02				0,01	0,00	0,00
	France	0,15	0,08				0,06	0,01	0,00
	Germany	0,02	0,01				0,01	0,00	0,00
	Humbolt Institute	0,03	0,02				0,01	0,00	0,00
	ILRI	0,01	0,00				0,00	0,00	0,00
	Netherlands	0,03	0,02				0,01	0,00	0,00
	Novartis	0,01	0,00				0,00	0,00	0,00
	NRI	0,01	0,00				0,00	0,00	0,00
	Others	0,03	0,02				0,01	0,00	0,00
	Rockefeller Fdn	0,34	0,19				0,14	0,01	0,00
	United Kingdom	0,07	0,04				0,03	0,00	0,00
	USA	0,06	0,03				0,02	0,00	0,00
	Unrestricted + center inc	1,83	1,01				0,73	0,07	0,02
<b>Total Project Cost</b>	<b>2,61</b>	<b>1,43</b>				<b>1,04</b>	<b>0,10</b>	<b>0,03</b>	
03. IP - 1 : Beans	Australia	0,01	0,01	0,00	0,00			0,00	0,00
	Belgium	0,09	0,06	0,01	0,00			0,00	0,01
	IFPRI	0,03	0,02	0,00	0,00			0,00	0,00
	Iran	0,01	0,01	0,00	0,00			0,00	0,00
	Others	0,03	0,03	0,00	0,00			0,00	0,00
	Switzerland	0,75	0,56	0,07	0,04			0,03	0,04
	Unrestricted + center inc	1,32	0,99	0,13	0,07			0,05	0,08
	<b>Total Project Cost</b>	<b>2,24</b>	<b>1,68</b>	<b>0,22</b>	<b>0,11</b>			<b>0,09</b>	<b>0,13</b>
04. IP - 2 : Beans in Africa	Canada	0,65	0,33	0,13	0,07			0,05	0,03
	ICRAF	0,12	0,06	0,02	0,01			0,01	0,02
	IDRC	0,02	0,01	0,00	0,00			0,00	0,00
	Rockefeller Fdn	0,92	0,01	0,00	0,00			0,00	0,00
	Switzerland	0,87	0,43	0,17	0,09			0,06	0,11
	United Kingdom	0,07	0,04	0,01	0,01			0,01	0,01
	USA	0,40	0,20	0,08	0,04			0,03	0,05
	Unrestricted + center inc	0,92	0,46	0,18	0,09			0,06	0,12
	<b>Total Project Cost</b>	<b>3,07</b>	<b>1,53</b>	<b>0,61</b>	<b>0,31</b>			<b>0,21</b>	<b>0,40</b>
05. IP - 3 : Cassava	CLAYUCA	0,05	0,02	0,03	0,00	0,01		0,00	0,00
	Colombia	0,06	0,03	0,01	0,00	0,01		0,00	0,00
	IDB	0,09	0,04	0,01	0,00	0,02		0,00	0,01
	IFAD	0,16	0,08	0,02	0,01	0,04		0,01	0,01
	IFPRI	0,04	0,02	0,00	0,00	0,01		0,00	0,00
	IICA	0,11	0,05	0,01	0,01	0,03		0,00	0,01
	Unrestricted + center inc	0,71	0,35	0,07	0,04	0,18		0,02	0,05
	<b>Total Project Cost</b>	<b>1,20</b>	<b>0,60</b>	<b>0,12</b>	<b>0,06</b>	<b>0,30</b>		<b>0,04</b>	<b>0,08</b>
06. IP - 4 : Rice	Colombia	0,02	0,01	0,00	0,00	0,00	0,00	0,00	0,00
	FLAR	0,42	0,26	0,02	0,02	0,08	0,02	0,01	0,01
	France	0,27	0,16	0,01	0,01	0,05	0,01	0,01	0,01
	United Kingdom	0,05	0,03	0,00	0,00	0,01	0,00	0,00	0,00
	Unrestricted + center inc	1,81	1,09	0,09	0,09	0,38	0,09	0,04	0,05
	<b>Total Project Cost</b>	<b>2,56</b>	<b>1,54</b>	<b>0,13</b>	<b>0,13</b>	<b>0,51</b>	<b>0,13</b>	<b>0,05</b>	<b>0,08</b>
07. IP - 5 : Tropical Grasses and Legumes	Australia	0,02	0,00	0,00	0,00	0,01		0,00	0,00
	Colombia	0,09	0,03	0,01	0,00	0,04		0,00	0,00
	Germany	0,00	0,00	0,00	0,00	0,00		0,00	0,00
	Japan	0,41	0,12	0,08	0,02	0,17		0,02	0,02
	OFI	0,01	0,00	0,00	0,00	0,00		0,00	0,00
	United Kingdom	0,01	0,00	0,00	0,00	0,01		0,00	0,00
	Unrestricted + center inc	0,95	0,29	0,14	0,05	0,38		0,05	0,05
	<b>Total Project Cost</b>	<b>1,50</b>	<b>0,45</b>	<b>0,23</b>	<b>0,08</b>	<b>0,60</b>		<b>0,08</b>	<b>0,08</b>
08. PE - 1 : IPM	Colombia	0,04		0,01	0,02	0,01			0,00
	Denmark	0,15		0,04	0,08	0,03			0,01
	France	0,11		0,03	0,04	0,02			0,01
	New Zealand	0,09		0,03	0,04	0,02			0,01
	USA	0,04		0,01	0,01	0,01			0,00
	Unrestricted + center inc	0,65		0,19	0,26	0,13			0,06
<b>Total Project Cost</b>	<b>1,07</b>		<b>0,32</b>	<b>0,43</b>	<b>0,21</b>			<b>0,11</b>	
09. PE - 2 : Soils	Colombia	0,05	0,01	0,01	0,02	0,00			0,01
	Germany	0,02	0,00	0,00	0,01	0,00			0,00
	Switzerland	0,02	0,00	0,00	0,01	0,00			0,00
	United Kingdom	0,15	0,02	0,03	0,06	0,01			0,03
	Unrestricted + center inc	1,27	0,19	0,25	0,51	0,06			0,25
	<b>Total Project Cost</b>	<b>1,51</b>	<b>0,23</b>	<b>0,30</b>	<b>0,60</b>	<b>0,08</b>			<b>0,30</b>

10. PE - 3: Hillsides	Canada	0,09		0,00	0,06	0,00	0,02		0,01
	IDRC	0,11		0,01	0,07	0,01	0,02		0,01
	ISNAR	0,23		0,01	0,14	0,01	0,05		0,02
	Switzerland	0,67		0,03	0,40	0,03	0,13		0,07
	USA	0,28		0,01	0,17	0,01	0,06		0,03
	Unrestricted + center inc	1,40		0,07	0,84	0,07	0,28		0,14
	<b>Total Project Cost</b>	<b>2,79</b>		<b>0,14</b>	<b>1,67</b>	<b>0,14</b>	<b>0,56</b>		<b>0,28</b>
11. PE - 4: Land Use	CGIAR	0,02	0,00		0,01	0,00	0,00		
	Colombia	0,02	0,00		0,01	0,00	0,00		
	EU	0,07	0,01		0,04	0,01	0,01		
	IDB	0,03	0,00		0,02	0,00	0,01		
	Infodev	0,10	0,01		0,08	0,01	0,02		
	Novartis	0,09	0,01		0,05	0,01	0,02		
	World Bank	0,11	0,01		0,07	0,01	0,02		
	WRI	0,02	0,00		0,01	0,00	0,00		
	USA	0,02	0,00		0,01	0,00	0,00		
	Unrestricted + center inc	1,63	0,16		0,98	0,16	0,33		
	<b>Total Project Cost</b>	<b>2,10</b>	<b>0,21</b>		<b>1,28</b>	<b>0,21</b>	<b>0,42</b>		
12. PE - 5: Sustainable Systems for Smallholders	Australia	0,28		0,14	0,10			0,01	0,03
	ICRAF	0,04		0,02	0,01			0,00	0,00
	IDB	0,23		0,11	0,08			0,01	0,02
	IDRC	0,08		0,04	0,03			0,00	0,01
	ILRI	0,21		0,10	0,07			0,01	0,02
	Nestle	0,02		0,01	0,01			0,00	0,00
	Nippon Fdn	0,29		0,15	0,10			0,01	0,03
	Switzerland	0,01		0,01	0,00			0,00	0,00
	Unrestricted + center inc	1,31		0,65	0,46			0,07	0,13
	<b>Total Project Cost</b>	<b>2,46</b>		<b>1,23</b>	<b>0,86</b>			<b>0,12</b>	<b>0,25</b>
13. SN - 1: Rural Agroenterprises	France	0,29		0,06	0,06			0,03	0,15
	IDRC	0,13		0,03	0,03			0,01	0,06
	Unrestricted + center inc	0,81		0,12	0,12			0,06	0,31
	<b>Total Project Cost</b>	<b>1,03</b>		<b>0,21</b>	<b>0,21</b>			<b>0,10</b>	<b>0,52</b>
14. SN - 2: Linkages with NARS	Colombia	0,09						0,03	0,06
	FAO	0,03						0,01	0,02
	Unrestricted + center inc	1,49						0,45	1,04
	<b>Total Project Cost</b>	<b>1,61</b>						<b>0,48</b>	<b>1,13</b>
15. SN - 3: Farmer Participatory Research	Denmark	0,07	0,02	0,02	0,02			0,00	0,01
	Unrestricted + center inc	0,46	0,11	0,11	0,11			0,02	0,09
	<b>Total Project Cost</b>	<b>0,53</b>	<b>0,13</b>	<b>0,13</b>	<b>0,13</b>			<b>0,03</b>	<b>0,11</b>
16. BP - 1: Impact Assessment	CGIAR	0,05					0,05		
	PAW	0,36					0,36		
	Rockefeller Fdn	0,03					0,03		
	Unrestricted + center inc	0,57					0,57		
	<b>Total Project Cost</b>	<b>1,00</b>					<b>1,00</b>		
17. SW - 1: Ecoregional Program for Tropical Latin America	IDB	0,17		0,04	0,07	0,02	0,02	0,01	0,02
	Switzerland	0,10		0,03	0,04	0,01	0,01	0,01	0,01
	Unrestricted + center inc								
	<b>Total Project Cost</b>	<b>0,27</b>		<b>0,07</b>	<b>0,11</b>	<b>0,03</b>	<b>0,03</b>	<b>0,01</b>	<b>0,03</b>
18. SW - 2: Soil, Water, and Nutrient Management (SWNM)	Germany	0,14		0,04	0,07		0,01		0,01
	Netherlands	0,09		0,03	0,05		0,01		0,01
	Norway	0,08		0,02	0,04		0,01		0,01
	Switzerland	0,29		0,09	0,15		0,03		0,03
	United Kingdom	0,16		0,05	0,08		0,02		0,02
	Unrestricted + center inc	0,06		0,02	0,03		0,01		0,01
	<b>Total Project Cost</b>	<b>0,83</b>		<b>0,25</b>	<b>0,41</b>		<b>0,08</b>		<b>0,08</b>
19. SW - 3: Systemwide Program on Participatory Research and Gender Analysis	Denmark	0,05	0,01	0,01	0,02			0,00	0,01
	Ford Fdn	0,06	0,02	0,02	0,02			0,01	0,01
	Germany	-0,10	-0,03	-0,03	-0,03			-0,01	-0,01
	IDRC	0,17	0,04	0,04	0,05			0,01	0,02
	Italy	0,14	0,03	0,03	0,04			0,01	0,02
	Netherlands	0,10	0,02	0,02	0,03			0,01	0,01
	New Zealand	0,10	0,03	0,03	0,03			0,01	0,01
	Norway	0,06	0,01	0,01	0,02			0,00	0,01
	Switzerland	0,10	0,03	0,03	0,03			0,01	0,01
	Unrestricted + center inc	0,19	0,05	0,05	0,06			0,02	0,02
	<b>Total Project Cost</b>	<b>0,87</b>	<b>0,22</b>	<b>0,22</b>	<b>0,26</b>			<b>0,07</b>	<b>0,10</b>

1/ Individual members providing targeted funding to pay specific project costs.

Center Totals	Total	Undertakings						
		Increase Productivity		Protect Environ	Saving Biodivers	Improve Policies	Strengthen NARS	
		Breeding	Systems				Training	Other
<b>Total Targeted Funding</b>	12,12	3,34	2,08	2,93	1,07	0,94	0,49	1,26
<b>Total Unrestricted Funding</b>	16,28	4,34	1,87	3,31	2,58	1,14	0,85	2,18
<b>Total Center Income + CIAT Reserves <sup>v</sup></b>	1,92	0,51	0,22	0,39	0,30	0,13	0,10	0,26
<b>Total Allocations</b>	<b>30,31</b>	<b>8,18</b>	<b>4,18</b>	<b>6,63</b>	<b>3,96</b>	<b>2,22</b>	<b>1,44</b>	<b>3,70</b>

1/ CIAT use US\$1.31 million from its reserves to finance the 1999 deficit originated by the EU contribution default.

Table 8b. CIAT ALLOCATION OF 2000 MEMBER FINANCING TO PROJECTS BY UNDERTAKING

(in \$ million)

Project	Member	Total	Undertakings						
			Increase Productivity		Protect Environ	Saving Biodivers	Improve Policies	Strengthen NARS	
			Breeding	Systems				Training	Other
01. SB - 1: Genetic Resources	Unrestricted + center inc	1,16	0,17			0,93		0,05	0,01
	Total Project Cost	1,16	0,17			0,93		0,05	0,01
02. SB - 2: Agrobiodiversity	Belgium	0,05	0,03			0,02		0,00	0,00
	Colombia	0,04	0,02			0,02		0,00	0,00
	Denmark	0,02	0,01			0,01		0,00	0,00
	France	0,19	0,10			0,07		0,01	0,00
	Germany	0,13	0,07			0,05		0,01	0,00
	Humbolt Institute	0,03	0,02			0,01		0,00	0,00
	Inst. Techn. Polar	0,03	0,02			0,01		0,00	0,00
	Netherlands	0,13	0,07			0,05		0,01	0,00
	NRI	0,05	0,03			0,02		0,00	0,00
	Others	0,01	0,01			0,00		0,00	0,00
	Rockefeller Fdn	0,27	0,15			0,11		0,01	0,00
	Switzerland	0,06	0,03			0,02		0,00	0,00
	United Kingdom	0,01	0,00			0,00		0,00	0,00
	USA	0,05	0,03			0,02		0,00	0,00
	Unrestricted + center inc	1,96	1,06			0,78		0,08	0,02
	Total Project Cost	3,01	1,66			1,20		0,12	0,03
03. IP - 1: Beans	Belgium	0,16	0,12	0,02	0,01			0,01	0,01
	IFPRI	0,04	0,03	0,00	0,00			0,00	0,00
	Iran	0,05	0,03	0,00	0,00			0,00	0,00
	Others	0,08	0,05	0,01	0,00			0,00	0,00
	Switzerland	0,77	0,58	0,08	0,04			0,03	0,05
	Unrestricted + center inc	1,14	0,88	0,11	0,06			0,05	0,07
	Total Project Cost	2,22	1,66	0,22	0,11			0,09	0,13
04. IP - 2: Beans in Africa	Canada	0,51	0,26	0,10	0,05			0,04	0,07
	ICRAF	0,04	0,02	0,01	0,00			0,00	0,00
	Novartis	0,15	0,08	0,03	0,02			0,01	0,02
	Rockefeller Fdn	0,10	0,05	0,02	0,01			0,01	0,01
	Switzerland	0,77	0,39	0,15	0,08			0,05	0,10
	United Kingdom	0,07	0,04	0,01	0,01			0,01	0,01
	USA	0,56	0,27	0,11	0,05			0,04	0,07
	Unrestricted + center inc	1,14	0,57	0,23	0,11			0,06	0,15
Total Project Cost	3,33	1,67	0,67	0,33			0,23	0,43	
05. IP - 3: Cassava	CLAYUCA	0,10	0,05	0,01	0,01	0,03		0,03	0,01
	Colombia	0,24	0,12	0,02	0,01	0,06		0,01	0,02
	IDB	0,10	0,05	0,01	0,01	0,03		0,00	0,01
	IFPRI	0,06	0,03	0,01	0,00	0,02		0,00	0,00
	IICA	0,30	0,15	0,03	0,02	0,06		0,01	0,02
	Switzerland	0,05	0,03	0,01	0,00	0,01		0,00	0,00
	Unrestricted + center inc	0,46	0,23	0,05	0,02	0,11		0,02	0,03
	Total Project Cost	1,31	0,66	0,13	0,07	0,33		0,04	0,09
06. IP - 4: Rice	Colombia	0,02	0,01	0,00	0,00	0,00	0,00	0,00	0,00
	FLAR	0,47	0,28	0,02	0,02	0,09	0,02	0,01	0,01
	France	0,34	0,21	0,02	0,02	0,07	0,02	0,01	0,01
	Others	0,06	0,03	0,00	0,00	0,01	0,00	0,00	0,00
	Unrestricted + center inc	1,71	1,03	0,09	0,06	0,34	0,09	0,03	0,05
	Total Project Cost	2,60	1,56	0,13	0,13	0,52	0,13	0,05	0,06
07. IP - 5: Tropical Grasses and Legumes	Australia	0,01	0,00	0,00	0,00	0,01		0,00	0,00
	Canada	0,02	0,01	0,00	0,00	0,01		0,00	0,00
	Colombia	0,10	0,03	0,02	0,01	0,04		0,01	0,01
	Germany	0,20	0,08	0,03	0,01	0,08		0,01	0,01
	Unrestricted + center inc	1,34	0,40	0,20	0,07	0,54		0,07	0,07
Total Project Cost	1,68	0,50	0,25	0,08	0,67		0,08	0,08	
08. PE - 1: IPM	Colombia	0,00		0,00	0,00	0,00			0,00
	Denmark	0,10		0,03	0,04	0,02			0,01
	France	0,18		0,05	0,07	0,04			0,02
	New Zealand	0,14		0,04	0,05	0,03			0,01
	Switzerland	0,03		0,01	0,01	0,01			0,00
	USA	0,26		0,08	0,10	0,05			0,03
	Unrestricted + center inc	0,75		0,22	0,30	0,15			0,07
Total Project Cost	1,45		0,43	0,58	0,29			0,14	
09. PE - 2: Soils	Australia	0,02	0,00	0,00	0,01	0,00			0,00
	Colombia	0,04	0,01	0,01	0,02	0,00			0,01
	Germany	0,11	0,02	0,02	0,04	0,01			0,02
	Switzerland	0,02	0,00	0,00	0,01	0,00			0,00
	United Kingdom	0,07	0,01	0,01	0,03	0,00			0,01
	USA	0,10	0,02	0,02	0,04	0,01			0,02
	Unrestricted + center inc	1,56	0,23	0,31	0,62	0,08			0,31
	Total Project Cost	1,92	0,29	0,36	0,77	0,10			0,38

10. PE - 3: Hillside	Canada	0,04	0,00	0,02	0,00	0,01	0,00	0,00	
	Denmark	0,15	0,01	0,09	0,01	0,03	0,01	0,02	
	IDRC	0,04	0,00	0,02	0,00	0,01	0,00	0,00	
	ISNAR	0,15	0,01	0,09	0,01	0,03	0,01	0,02	
	Switzerland	0,35	0,02	0,21	0,02	0,07	0,01	0,04	
	USA	0,24	0,01	0,14	0,01	0,05	0,01	0,02	
	Unrestricted + center inc	1,22	0,06	0,73	0,06	0,24	0,01	0,12	
	<b>Total Project Cost</b>	<b>2,19</b>	<b>0,11</b>	<b>1,32</b>	<b>0,11</b>	<b>0,44</b>	<b>0,02</b>	<b>0,22</b>	
	11. PE - 4: Land Use	Canada	0,03	0,00	0,02	0,00	0,01	0,00	0,00
		CGIAR	0,05	0,00	0,03	0,00	0,01	0,00	0,00
Denmark		0,05	0,01	0,03	0,01	0,01	0,00	0,00	
EU		0,02	0,00	0,01	0,00	0,00	0,00	0,00	
Infodev		0,08	0,01	0,05	0,01	0,02	0,00	0,00	
Novartis		0,08	0,01	0,05	0,01	0,02	0,00	0,00	
Others		0,08	0,01	0,05	0,01	0,02	0,00	0,00	
Rockefeller Fdn		0,08	0,01	0,05	0,01	0,02	0,00	0,00	
World Bank		0,35	0,04	0,21	0,04	0,07	0,01	0,04	
USA		0,04	0,00	0,02	0,00	0,01	0,00	0,00	
Unrestricted + center inc		1,75	0,18	1,05	0,18	0,35	0,01	0,04	
<b>Total Project Cost</b>		<b>2,81</b>	<b>0,28</b>	<b>1,56</b>	<b>0,26</b>	<b>0,53</b>	<b>0,02</b>	<b>0,08</b>	
12. PE - 5: Sustainable Systems for Smallholders		ADB	0,17	0,19	0,13	0,00	0,02	0,01	0,04
	Australia	0,15	0,09	0,05	0,00	0,01	0,00	0,02	
	ICRAF	0,03	0,02	0,01	0,00	0,00	0,00	0,00	
	IDB	0,29	0,15	0,10	0,00	0,01	0,00	0,03	
	IDRC	0,11	0,06	0,04	0,00	0,01	0,00	0,01	
	IFAD	0,03	0,01	0,01	0,00	0,00	0,00	0,00	
	ILRI	0,13	0,07	0,05	0,00	0,01	0,00	0,01	
	Nippon Fdn	0,14	0,07	0,05	0,00	0,01	0,00	0,01	
	Unrestricted + center inc	1,29	0,65	0,45	0,00	0,06	0,00	0,13	
	<b>Total Project Cost</b>	<b>2,55</b>	<b>1,29</b>	<b>0,99</b>	<b>0,00</b>	<b>0,13</b>	<b>0,00</b>	<b>0,26</b>	
	13. SN - 1: Rural Agroenterprises	Colombia	0,03	0,01	0,01	0,00	0,00	0,00	0,02
France		0,16	0,03	0,03	0,00	0,02	0,00	0,08	
IDRC		0,37	0,07	0,07	0,00	0,04	0,00	0,19	
IFAD		0,02	0,00	0,00	0,00	0,00	0,00	0,01	
United Kingdom		0,09	0,02	0,02	0,00	0,01	0,00	0,04	
Unrestricted + center inc		0,57	0,11	0,11	0,00	0,06	0,00	0,28	
<b>Total Project Cost</b>		<b>1,24</b>	<b>0,25</b>	<b>0,25</b>	<b>0,00</b>	<b>0,12</b>	<b>0,00</b>	<b>0,62</b>	
14. SN - 2: Linkages with NARS	Colombia	0,18	0,00	0,00	0,00	0,08	0,00	0,13	
	FAO	0,02	0,00	0,00	0,00	0,01	0,00	0,01	
	Germany	0,03	0,00	0,00	0,00	0,01	0,00	0,02	
	USA	0,21	0,00	0,00	0,00	0,06	0,00	0,15	
	Unrestricted + center inc	1,64	0,00	0,00	0,00	0,49	0,00	1,15	
	<b>Total Project Cost</b>	<b>2,08</b>	<b>0,00</b>	<b>0,00</b>	<b>0,00</b>	<b>0,62</b>	<b>0,00</b>	<b>1,46</b>	
15. SN - 3: Farmer Participatory Research	Denmark	0,02	0,01	0,01	0,01	0,00	0,00	0,00	
	Kellogg Fdn	0,15	0,04	0,04	0,04	0,01	0,00	0,03	
	Unrestricted + center inc	0,49	0,12	0,12	0,12	0,02	0,00	0,10	
	<b>Total Project Cost</b>	<b>0,67</b>	<b>0,17</b>	<b>0,17</b>	<b>0,17</b>	<b>0,03</b>	<b>0,00</b>	<b>0,13</b>	
16. BP - 1: Impact Assessment	CGIAR	0,03	0,00	0,00	0,00	0,03	0,00	0,00	
	PAW	0,04	0,00	0,00	0,00	0,04	0,00	0,00	
	Others	0,10	0,00	0,00	0,00	0,10	0,00	0,00	
	Unrestricted + center inc	0,43	0,00	0,00	0,00	0,43	0,00	0,00	
	<b>Total Project Cost</b>	<b>0,59</b>	<b>0,00</b>	<b>0,00</b>	<b>0,00</b>	<b>0,59</b>	<b>0,00</b>	<b>0,00</b>	
17. SW - 1: Ecoregional Program for Tropical Latin America	IDB	0,19	0,05	0,05	0,02	0,02	0,01	0,02	
	Switzerland	0,11	0,03	0,04	0,01	0,01	0,01	0,01	
	Unrestricted + center inc	0,30	0,06	0,12	0,03	0,03	0,02	0,03	
	<b>Total Project Cost</b>	<b>0,30</b>	<b>0,06</b>	<b>0,12</b>	<b>0,03</b>	<b>0,03</b>	<b>0,02</b>	<b>0,03</b>	
18. SW - 2: Soil, Water, and Nutrient Management (SWNM)	Germany	0,20	0,06	0,10	0,00	0,02	0,00	0,02	
	Netherlands	0,11	0,03	0,05	0,00	0,01	0,00	0,01	
	Switzerland	0,23	0,07	0,12	0,00	0,02	0,00	0,02	
	United Kingdom	0,18	0,05	0,08	0,00	0,02	0,00	0,02	
	Unrestricted + center inc	0,66	0,02	0,03	0,00	0,01	0,00	0,01	
	<b>Total Project Cost</b>	<b>0,76</b>	<b>0,23</b>	<b>0,38</b>	<b>0,00</b>	<b>0,08</b>	<b>0,00</b>	<b>0,06</b>	
19. SW - 3: Systemwide Program on Participatory Research and Gender Analysis	Denmark	0,06	0,01	0,01	0,02	0,00	0,00	0,01	
	FORD FDN	0,47	0,12	0,12	0,14	0,04	0,00	0,06	
	Germany	0,64	0,18	0,18	0,19	0,05	0,00	0,08	
	IDRC	0,41	0,10	0,10	0,12	0,03	0,00	0,05	
	Italy	0,14	0,03	0,03	0,04	0,01	0,00	0,02	
	Netherlands	0,10	0,02	0,02	0,03	0,01	0,00	0,01	
	New Zealand	0,10	0,03	0,03	0,03	0,01	0,00	0,01	
	Switzerland	0,10	0,03	0,03	0,03	0,01	0,00	0,01	
	Unrestricted + center inc	0,19	0,05	0,05	0,06	0,02	0,00	0,02	
	<b>Total Project Cost</b>	<b>2,19</b>	<b>0,55</b>	<b>0,55</b>	<b>0,66</b>	<b>0,18</b>	<b>0,00</b>	<b>0,26</b>	

1/ Individual members providing targeted funding to pay specific project costs.

Center Totals	Total	Undertakings						
		Increase Productivity		Protect Environ	Saving Biodivers	Improve Policies	Strengthen NARS	
		Breeding	Systems				Training	Other
Total Targeted Funding	15,00	4,22	2,65	3,59	1,27	0,68	0,75	1,85
Total Unrestricted Funding	17,85	4,65	2,10	3,62	3,00	1,05	0,97	2,45
Total Center Income	1,00	0,28	0,12	0,20	0,17	0,06	0,05	0,14
<b>Total Allocations</b>	<b>33,85</b>	<b>9,14</b>	<b>4,87</b>	<b>7,41</b>	<b>4,44</b>	<b>1,79</b>	<b>1,77</b>	<b>4,44</b>



**Table 9. CIAT RESEARCH AGENDA STAFF COMPOSITION, 1999-2003**

	1999 (actual)		2000 (estimated)		2001 (proposal)		2002 (plan)		2003 (plan)	
	Hired by:		Hired by:		Hired by:		Hired by:		Hired by:	
	center	other	center	other	center	other	center	other	center	other
<b><u>Internationally-Recruited Staff (IRS)</u></b>										
<b>Research and Research Support</b>	80	7	80	6	77	6	77	6	77	6
<i>of which:</i>										
<i>Post-doctoral Fellows</i>	6		6		6		6		6	
<i>Associate Professionals</i>	21	7	21	6	21	6	21	6	21	6
<b>Training / Communications</b>	3		1		1		1		1	
<i>of which:</i>										
<i>Post-doctoral Fellows</i>										
<i>Associate Professionals</i>										
<b>Research Management</b>	7		7		7		7		7	
<i>of which:</i>										
<i>Post-doctoral Fellows</i>										
<i>Associate Professionals</i>	1				1		1		1	
<b>Total IRS</b>	<b>90</b>	<b>7</b>	<b>88</b>	<b>6</b>	<b>85</b>	<b>6</b>	<b>85</b>	<b>6</b>	<b>85</b>	<b>6</b>
<b><u>Support Staff</u></b>	<b>610</b>		<b>600</b>		<b>600</b>		<b>600</b>		<b>600</b>	
<b>TOTAL STAFF</b>	<b>700</b>	<b>7</b>	<b>688</b>	<b>6</b>	<b>685</b>	<b>6</b>	<b>685</b>	<b>6</b>	<b>685</b>	<b>6</b>

**DEFINITIONS**

**Internationally-Recruited Staff (IRS)**

This category includes staff who carry out highly technical/senior functions, as defined by the center, and they may include personnel hired in the local or regional labor market. Included in this group, but shown separately, are post-doctoral fellows and associate professionals (who may have other titles in different centers), and who often are staff provided by donors as part of a project or other institutional arrangement. Costs for consultants engaged for specific tasks are not personnel expenses and the individuals are not staff; their costs should be calculated in the "supplies and services" category.

**Support Staff**

This category includes the numerical majority, in many cases, of personnel at a center. These are usually, but not necessarily always, individuals hired in the local labor market. They carry out functions which require less demanding skills than for the IRS category. The support staff category does not include seasonal field labor or other individuals engaged on a purely contract basis, for example when a center contracts with an employment agency to provide security, janitorial, and other services. Such costs should be calculated in the "supplies and services" category.

**Table 10. CIAT CASH REQUIREMENT, REVENUE FLOW, & CURRENCY SHARES, 1999-2000**

(in \$'000)

**MONTHLY CASH USES AND SOURCES**

<i>1999 Note: 1/</i>	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cash Requirement	3,150	2,500	2,500	2,650	2,500	2,750	2,200	2,180	2,188	2,162	2,256	2,578
Member & Center Income	3,173	1,286	1,982	1,440	2,423	2,200	2,570	2,763	2,654	3,304	2,207	6,135
Net Monthly Position	0,023	-1,214	-0,518	-1,210	-0,077	-0,550	0,370	0,583	0,466	1,142	-0,049	3,557
Accumulated Position	0,023	-1,191	-1,709	-2,919	-2,996	-3,546	-3,176	-2,593	-2,127	-0,985	-1,034	2,523

<i>2000 Note: 2/</i>	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cash Requirement	2,751	2,449	2,400	2,400	2,400	3,000	2,400	2,400	2,400	2,400	2,400	3,150
Member & Center Income	0,785	4,531	1,427	1,700	1,327	1,527	1,788	1,877	0,747	4,749	3,079	5,449
Net Monthly Position	-1,966	2,082	-0,973	-0,700	-1,073	-1,473	-0,612	-0,523	-1,653	2,349	0,679	2,299
Accumulated Position	-1,966	0,116	-0,857	-1,557	-2,630	-4,103	-4,715	-5,238	-6,891	-4,542	-3,863	-1,564

**CURRENCY STRUCTURE OF EXPENDITURES**

Currency	1999 note 1/ (actual)			2000 note 2/ (estimated)		
	Amount	\$ value	% share	Amount	\$ value	% share
US Dollar		15,8	52%		17,3	51%
Colombian Peso	23 869	13,6	45%	31 142	15,6	46%
Others note 4/		0,91	3%		1,0	3%
<b>TOTAL</b>		<b>30,3</b>	<b>100%</b>		<b>33,9</b>	<b>100%</b>

**Notes:**

1/ this part to be completed only in the Research Agenda submission (March).

2/ this part to be completed in both the Agenda & Financing Plan submissions.

3/ this part to be completed only in the Financing Plan submission (September).

4/ All other currencies the sum of which accounts for less than 5% of total expenditure.

**List of Acronyms and  
Abbreviations Used in Text**

## List of Acronyms and Abbreviations Used in the Text

### Acronyms

ADB	Asian Development Bank
ARI	Advanced Research Institute
Bean/Cowpea CRSP	Bean/Cowpea Collaborative Research Support Program (University of Georgia, USA)
BoT	Board of Trustees (CIAT)
CA	Département des Cultures Annuelles (CIRAD)
CARDER	Corporación Autónoma Regional de Risaralda, Colombia
CARE	Cooperative for American Relief Everywhere
CATIE	Centro Agrónomo Tropical de Investigación y Enseñanza, Costa Rica
CBN	Cassava Biotechnology Network
CENIPALMA	Centro de Investigación en Palma de Aceite, Colombia
CIALs	Comités de Investigación Agrícola Local, Colombia
CIFOR	Centre for International Forestry Research, Indonesia
CIMMYT	Centro Internacional de Mejoramiento de Maíz y Trigo, Mexico
CIP	Centro Internacional de la Papa, Peru
CIPASLA	Consortio Interinstitucional para la Agricultura Sostenible en Laderas, Colombia
CIRAD	Centre de Coopération Internationale en Recherche Agronomique pour le Développement, France
CLAYUCA	Consortio Latinoamericano y del Caribe de Apoyo a la Investigación y Desarrollo de la Yuca ( <i>Spanish for Latin American and Caribbean Consortium to Support Cassava Research and Development</i> ), based at CIAT
CLODEST	Comité Local para el Desarrollo Sostenible de la Cuenca del Río Tascalapa, Honduras
CNPMF	Centro Nacional de Pesquisa de Mandioca e Fruticultura Tropical ( <i>of EMBRAPA</i> )
CODESU	Corporación para el Desarrollo Sostenible de Ucayali, Peru
COLCIENCIAS	Instituto Colombiano para el Desarrollo de la Ciencia y la Tecnología “Francisco José de Caldas”, Colombia
CONDESAN	Consortium for the Sustainable Development of the Andean Ecoregion, Peru
CORPOICA	Corporación Colombiana de Investigación Agropecuaria
CSIRO	Commonwealth Scientific and Industrial Research Organization, Australia
CURLA	Centro Universitario Regional del Litoral Atlántico, Honduras
DANIDA	Danish International Development Agency, Denmark
DFID	Department for International Development, UK
DGIS	Directorate-General for International Cooperation, The Netherlands
DICTA	Dirección de Ciencias y Tecnología Agrícola, Honduras
DNP	Departamento Nacional de Planeación, Colombia

EAP-Zamorano	Escuela Agrícola Panamericana at Zamorano, Honduras
EC	Economic Commission ( <i>of the</i> EU)
ECABREN	Eastern and Central Africa Bean Research Network
ECLAC	Economic Commission for Latin America and the Caribbean
EMBRAPA	Empresa Brasileira de Pesquisa Agropecuária, Brazil
ETH	Eidgenössische Technische Hochschule, Switzerland
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FCRI	Field Crop Research Institute, Thailand
FLAR	Fondo Latinoamericano y del Caribe para Arroz de Riego, <i>based at</i> CIAT
FONAIAP	Fondo Nacional de Investigaciones Agropecuarias, Venezuela
GRU	Genetic Resources Unit (CIAT)
IBSRAM	International Board of Soil Resources and Management, Thailand
ICA	Instituto Colombiano Agropecuario, Colombia
ICARDA	International Center for Agricultural Research in the Dry Areas, Syria
ICER	Internally Commissioned External Review
ICIPE	International Centre of Insect Physiology and Ecology, Kenya
ICRAF	International Centre for Research in Agroforestry, Kenya
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics, India
IDB	Inter-American Development Bank, USA
IDEAM	Instituto de Hidrología, Meteorología y Estudios Ambientales, Colombia
IDIAP	Instituto de Investigación Agropecuaria de Panamá
IDRC	International Development Research Centre, Canada
IFAD	International Fund for Agricultural Development, Italy
IFDC	International Fertilizer Development Center, USA
IFPRI	International Food Policy Research Institute, USA
IGAC	Instituto Geográfico "Agustín Codazzi", Colombia
IGDN	Inter-American Geospatial Data Network
IGER	Institute of Grasslands Environment Research, UK
IIA	Instituto de Investigaciones Agropecuarias, Venezuela
IIASA	International Institute for Applied Systems Analysis, Austria
IICA	Instituto Interamericano de Cooperación para la Agricultura, Costa Rica
IILA	Instituto Italo-Latino Americano, Italy
IITA	International Institute of Tropical Agriculture, Nigeria
ILRI	International Livestock Research Institute, Kenya
INBIO	Instituto Nacional de Biodiversidad, Costa Rica
infoDev	Information for Development Program, <i>based at</i> The World Bank
INIA	Instituto Nacional de Investigación Agraria, Peru ( <i>now</i> INIAA)
INIAA	Instituto Nacional de Investigación Agraria y Agroindustrial, Peru ( <i>formerly</i> INIA)
INIAP	Instituto Nacional de Investigaciones Agropecuarias, Ecuador
INIFAP	Instituto Nacional de Investigaciones Forestales y Agropecuarias, Mexico

INIVIT	Instituto de Investigaciones de Viandas Tropicales, Cuba
INTA	Instituto Nacional de Tecnología Agropecuaria, Argentina
IPGRI	International Plant Genetic Resources Institute, Italy
IPRA	Investigación Participativa en Agricultura/ <i>Participatory Research in Agriculture</i> (CIAT)
IRRI	International Rice Research Institute, The Philippines
ISNAR	International Service for National Agricultural Research, The Netherlands
IVITA	Instituto Veterinario de Investigaciones Tropicales y de Altura, Peru
IWMI	International Water Management Institute, Sri Lanka
JIRCAS	Japan International Center for Agricultural Sciences
LSU	Louisiana State University, USA
MT	Management Team (CIAT)
NARO	National Agricultural Research Organization, Uganda
NOVARTIS	Novartis Seeds AG, Switzerland
NRI	Natural Resources Institute, UK
OFI	Oxford Forestry Institute, UK
ORSTOM	L'Institute Francaise de Recherche Scientifique pour le Développement en Coopération, France
PABRA	Pan-Africa Bean Research Alliance
PASOLAC	Programa de Agricultura Sostenible de Laderas en Centro America
PROFITROPICOS	Proyecto Cooperativo de Investigación y Transferencia de Tecnología para los Trópicos Sudamericanos
PRODAR	Programa para el Desarrollo Agroindustrial Rural, Costa Rica
PROFRUJOL	Programa Cooperativo Regional de Frijol para Centro América, México y el Caribe
PROFRIZA	Proyecto Regional de Frijol para la Zona Andina
RIVM	Rijksinstituut voor Volksgezondheid en Miliehygiene (National Institute of Public Health and Environmental Protection), The Netherlands
SABRN	South Africa Bean Research Network
SDC	Swiss Agency for Development and Cooperation
SINCHI	Instituto Amazónico de Investigaciones Científicas, Colombia
SINGER	Systemwide Information Network on Genetic Resources (CGIAR)
SWNM	Systemwide Program on Soil, Water, and Nutrient Management (CGIAR)
TCA	<i>Spanish acronym for Amazonian Cooperation Treaty</i>
TSBF	Tropical Soil Biology and Fertility Program, Kenya
UNEP	United Nations Environment Programme, Mexico

UNIVALLE	Universidad del Valle, Colombia
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
WARDA	West Africa Rice Development Association, Cote d'Ivoire
WB	World Bank
WRI	World Resources Institute, USA
WWW	World Wide Web

## Abbreviations

ACMV	African cassava mosaic virus
AES	Agroecosystem
Al	Aluminum
AROs	Advanced research organizations
CA	Costa Rica
CBB	Bean common bacterial blight; Cassava bacterial blight
CD-ROM	Compact disk—read-only memory
CLOs	Comités locales
DCs	Developed countries
DNA	Deoxyribonucleic acid
DS	Decision support
ESTs	Expressed sequence tags (biotechnology)
FPR	Farmer participatory research
GA	Gender analysis
GIS	Geographic information systems
GOs	Governmental organizations
IARCs	International agricultural research centers (CGIAR system)
inc.	Income
INIAs	Institutos de investigaciones agrícolas
IPM	Integrated pest management
IRS	Internationally recruited staff (CIAT)
LA	Latin America (n)
LAC	Latin America and the Caribbean
LDCs	Less-developed countries
LoRSDIs	Local rural sustainable development initiatives
MTAs	Material transfer agreements (used in germplasm exchange)

MTP	Medium-Term Plan (CIAT)
N	Nitrogen
NARS	National agricultural research systems
NGOs	Nongovernmental organizations
NRM	Natural resource management
P	Phosphorus
PB	Plant breeding
PPB	Participatory plant breeding
PR	Participatory research
PR/GA	Participatory research and gender analysis
QTLs	Quantitative trait loci (genetics)
R&D	Research and development
RHBV	Rice “hoja blanca” virus
SE Asia	Southeast Asia
SP	Systemwide program (of the CGIAR)
SROs	Specialized research organizations
SS	Senior staff (CIAT)
SSA	Sub-Saharan Africa
TLA	Tropical Latin America
WANA	West Asia and North Africa