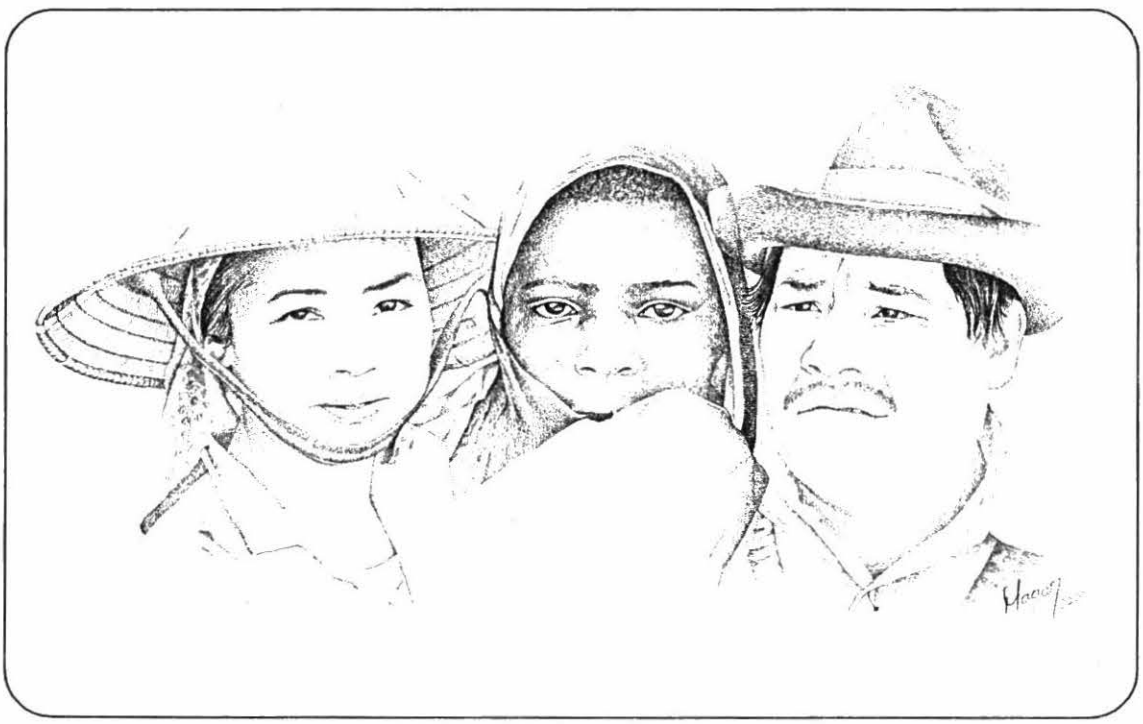
Improving Rural Livelihoods:

CIAT's Medium-Term Plan 2003-2005



Submitted to the CGIAR
September 2002

CIAT
Centro Internacional de Agricultura Tropical
International Center for Tropical Agriculture

The International Center for Tropical Agriculture (CIAT, its Spanish acronym) is one of 16 food and environmental research organizations known as the Future Harvest centers. The centers, located around the world, conduct research in partnership with farmers, scientists, and policymakers to help alleviate poverty and increase food security while protecting the natural resource base. The Future Harvest centers are principally funded through the 58 countries, private foundations, and regional and international organizations that make up the Consultative Group on International Agricultural Research (CGIAR).

In 2001, CIAT received support from the following donor countries: Australia, Belgium, Brazil, Canada, Colombia, Denmark, France, Germany, Iran, Italy, Japan, Mexico, the Netherlands, New Zealand, Norway, Peru, South Africa, Spain, Sweden, Switzerland, Thailand, the United Kingdom, and the United States of America.

Our work was also financed by the following organizations and foundations: the Asian Development Bank (ADB), the European Union (EU), the United Nations Food and Agriculture Organization (FAO), the Ford Foundation, Fundación Polar, the Inter-American Development Bank (IDB), the International Fund for Agricultural Development (IFAD), the Kellogg Foundation, the Nippon Foundation, the Rockefeller Foundation, the Wallace Foundation, and the World Bank.

CIAT also receives funds for research and development services provided under contract to a growing number of institutional clients.

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Contents

CIAT Medium Term Plan

2003-2005

Updated Summary and Overview

September 2002

The period since the submission to the CGIAR of the CIAT MTP 2002-2004 in August 2001 has been one of transition. Important developments include the completion of a strategic alliance with the Tropical Soil Biology Fertility Program (TSBF); modifications in the CIAT project portfolio; participation in the CGIAR change process through active involvement in the development of Challenge Programs; and a severe downward adjustment in unrestricted funding. These significant events are all discussed in detail below in this document.

Program Developments

Soil Fertility Alliance for Africa: Only by raising soil fertility can the 85% of Africa's poor who live in rural areas be able to achieve food security and increase farm incomes. In a step towards more effectively contributing to this goal, the TSBF Institute of CIAT was created under an agreement signed in December 2001. This agreement involves a full institutional merger of CIAT and TSBF. This alliance capitalizes on TSBF strengths in soil biology in Africa, and CIAT's soils research in Latin America and Asia; its convening role of the global Soil Water Nutrient Management Program; its research in Africa on bean based systems and participatory research; and its complementary capacities in soil health, land use analysis and molecular biology. The consequences of this agreement are fully reflected in the financial tables in this document. The TSBF Institute of CIAT will be hosted by ICRAF at its Nairobi headquarters and there is a wider arrangement to fully integrate the soils research of the three organizations.

Biofortification Challenge Program: Micro-nutrient deficiencies are a well recognized and widespread cause of health problems including anemia and blindness among the poor in the developing countries. Consequently, CIAT has for some years been doing pilot research on fortifying through genetic improvement the vitamin A content of cassava and the iron content of beans. Together with IFPRI, CIAT has led the development of an inter-center, multi-partner challenge program proposal to improve the nutrient content of a number of crops, including wheat, maize, sweet potato and rice as well as beans and cassava. This Challenge Program has been endorsed by the interim Science Council. Pending final decision by the Executive Committee and the CGIAR, it is expected to initiate full implementation in 2003 of the Biofortification Challenge Program. The full consequences of such a decision by the CG, are not shown in the tables in this document

Water and Food Challenge Program: Recognizing that water scarcity is an increasingly acute problem, particularly in the developing countries, IWMI has led the development of a proposal for a Challenge Program addressing the inter-related issues of water and food. Because of its experience for more than a decade of natural resource management in hillside watersheds, CIAT was asked to lead the development of an upper watersheds management theme in the water challenge program. This Challenge Program has been endorsed by the interim Science Council. Pending final decision by the Executive Committee and the CGIAR, it is expected to initiate full implementation in 2003 of the Water and Food Challenge Program. The complete consequences of such a decision by the CG, are not shown in the tables in this document.

Changes in CIAT Research Projects: Three new projects, described briefly below, have been added to the CIAT research program. These new projects- climate change and tropical agriculture, tropical fruits, and information for poor rural communities- all build on past CIAT research efforts. Initially these projects represent a reconfiguration of existing work and resources. Full project descriptions are included below, and these projects are all shown in the financial tables of this document. It is anticipated that with increased stakeholder and partner participation, these projects will in the future grow from the levels shown for 2003.

In addition, two projects have been dropped from the CIAT research program: systems for small farmers and strengthening NARS. Rather than continuing as a separate project, the systems approach is being fully integrated into other CIAT projects, in particular integrated pest management; tropical soil biology and fertility; hillsides; and land use. Similarly, the strengthening NARS functions continue as research support units of training, information and communication. The activities of genetic resource conservation, project SB1, continue at historic levels, but in order to simplify the project structure it is now administered autonomously through the SB2 project "Conservation and Use of Tropical Genetic Resources".

Climate Change and Tropical Agriculture: Climate change will have a massive impact on agriculture, especially in the tropics where developing countries and poor farmers are least well able to adapt to climate change. CIAT has been conducting research on climate change related issues for many years. This includes modeling of the effects of climate change on agriculture to understand which farmers will be most affected; developing improved crops that are more water efficient or heat tolerant; assessing land use and livestock systems for their impact on emitting or sequestering green house gases. In order to strengthen institutional commitment to research on an issue of increasing importance for tropical farmers, CIAT is pulling together its various lines of climate change research into an integrated effort that is now distinct in the CIAT project portfolio. In addition, CIAT has been supporting ICRAF in the development of the Climate Change Challenge Program.

Tropical Fruits: Tropical fruits are a high value crop with a rapidly growing demand that has the potential for good income generation on labor intensive small farms. CIAT has a number of scientific capacities that are being deployed to support national programs in their own fruit improvement efforts. These include the development of web based and GIS information systems for the agro-ecological and market targeting of new fruit opportunities; methods for the identification and exploitation of new market opportunities by poor rural communities; strategic research in the genetics and management of pests in priority problems identified by partners.

Information for Rural Communities: Information is increasingly the base of competitive edge in ever more linked markets. Lack of access to information on technologies, markets and natural resource management is one of the most serious disadvantages faced by poor rural communities. Building on past experience in agricultural communications, information management and participatory research, a new project on information for rural communities has been added to the CIAT research program and is included in the financial tables. This project aims to develop methods and information that strengthen the decision-making capacity of poor rural communities with the aid of modern information and communication technologies.

Financial Developments and Projections

CIAT recognizes and acknowledges some important increases in support from CGIAR members. The unrestricted contribution of Netherlands has nearly doubled since 2001. Likewise, Germany's unrestricted contribution also rose some 60% from the 2001 level The European Union's contribution has grown about 25% since 2001 while Sweden's contribution has also increased.

Despite this favorable news, however, CIAT's financial situation has been made more difficult due to decisions by important investors. Although remaining among the largest donors to CIAT, both Japan and the World Bank have made substantial reductions in their unrestricted contributions to CIAT. Denmark, also after years of strong support, has eliminated its 2002-2003 contribution to CIAT. In the aggregate, these decisions represent a decline of $2.5 million in income below what would have been projected.

As unrestricted or core income has declined, CIAT has increasingly relied on restricted income. This has enabled CIAT to maintain its core scientific competency largely intact, but clearly over time the research agenda becomes ever more focused on the specific priorities of individual investors and the particular project outputs they choose to support.

Moreover, further cost reduction measures have had to be implemented for 2002 in the amount of $1.2 million, and even greater cost reductions will have to be achieved in 2003. While every effort is being made to achieve these savings through improved efficiencies, it is not possible that all these savings can be made without affecting the research program.

Despite the planned cost savings measures, and a shift to assigning part of the core scientific competencies to restricted projects rather than supporting it with unrestricted resources, nonetheless CIAT currently projects a 2002 operating deficit of $500,000. Because this represents little more that 10% of reserves, this would appear to be acceptable on a one-time basis. Achievement of this target is critically dependent on no further erosion of unrestricted support and the obtaining of the anticipated restricted income. If these conditions are not met, then a more difficult situation could arise.

It is worth noting that in 2002 for the first time the TSBF Institute is included in CIAT's financial tables. Without this addition, the aggregate size of the budget would have fallen some 10% from 2001 to 2002.

With the outposting of research on agro-enterprises to Africa, the establishment of a regional coordinator position for Africa, and the merger with TSBF, the share of CIAT activities in Africa has risen from 26.6% to 32.9%. There are no other major changes in allocation of resources by crops or by CGIAR undertakings, activities or outputs.

Appendix I

Project Descriptions and Log Frames for 2003-2005

Project SB-2: Conservation and Use of Tropical Genetic Resources

Project Description

Objective: To preserve the Designated Collections and employ 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 the genetic diversity of wild and cultivated species and associated organisms.
2. Genes and gene combinations used to broaden the genetic base.
3. Mandated crops conserved and multiplied as per international standards.
4. Germplasm available, restored, and safely duplicated.
5. Designated Collections made socially relevant.
6. Strengthen NARS for conservation and use of Neotropical plant genetic resources.
7. Conservation of Designated Collections linked with on-farm conservation efforts and protected areas.

Milestones:

2002 Cassava cryopreservation implemented. Gene transfer used to broaden the genetic base and enhance germplasm of rice, cassava, and the forage grass *Brachiaria*. Screening with microarray technology initiated. Marker-assisted selection implemented for rice, beans, and *Brachiaria*. ESTs generated for cassava starch and CBB. A LIMS developed. Procedures developed for conservation of wild species and landraces, based on studies of seed biology and physiology. Safe-duplication and restoration continued.

2003 Efficient transformation system devolved for beans. Transgenic cassava tested for resistance to stemborer. Bioreactor technology implemented for cassava and rice. Markers developed for iron and zinc in beans. Collaboration with public and private partners strengthened. Advanced backcross populations of rice characterized. Protocols for cryoconservation of seeds and tissue germplasm established. Germplasm collections regenerated. Safe-duplication and restoration continued.

2004 High throughput screening of germplasm bank and breeding materials implemented, using microarray technology. Al tolerance in *Brachiaria* characterized. Marker-assisted selection for ACMV and whitefly resistance initiated. Transgenic rice resistant to a spectrum of fungal diseases. Development of insertion mutagenesis population in rice, using Ac/Ds. Gene flow studies for bean and rice completed. Links with conservation efforts in protected areas and on farms established. Germplasm collections regenerated. Initiation of DNA banks for core collections. Safe-duplication and restoration continued.

2005 Efficient transformation system devolved for cassava. Bean with high iron and zinc tested and transferred to CIAT Africa program. SNP markers developed for bean and implemented for MAS. Targeted sequencing of cassava genome. Isogenic of QTL in rice developed and tested. Gene expression studies. Technology transfer for rapid propagation system to NARS. Testing of Ac/DS population for gene identification

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

Collaborators: IARCs (IPGRI through the Systemwide Genetic Resources Program, CIP, and IITA through root and tuber crop research, IFPRI through biofortification proposal and CATIE); NARS (CORPOICA, ICA, EMBRAPA, IDEA, INIAA, INIFAP, UCR, INIAs); AROs (IRD, CIRAD, Danforth Center, CAMBIA, NCGR, and universities—Cornell, Yale, Clemson, Kansas State, Bath, Hannover, Rutgers, Ghent, Gembloux); biodiversity institutions (A von Humboldt, INBIO, SINCHI, Smithsonian); corporations and private organizations.

CGIAR system linkages: Saving Biodiversity (40%); Enhancement & Breeding (55%); Training (4%); Information (1%).

CIAT project linkages: *Inputs to SB-2:* Germplasm accessions from the gene bank project. Segregating populations from crop productivity projects. Characterized insect and pathogen strains and populations from crop protection projects. GIS services from the Land Use Project. *Outputs from SB-2:* Management of Designated Collections (gene banks); genetic and molecular techniques for the gene bank, crop productivity, and soils (microbial) projects. Identified genes and gene combinations for crop productivity and protection projects. Propagation and conservation methods and techniques for gene banks and crop productivity projects. Interspecific hybrids and transgenic stocks for crop productivity and IPM projects.

CIAT: SB-2 Project Log Frame (2003-2005)

Project: Conservation and Use of Tropical Genetic Resources
Project Manager: Joe Tohme

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
Goal To contribute to the sustainable increase of productivity and quality of mandated and other priority crops, and the conservation of agrobiodiversity in tropical countries.	CIAT scientists and partners using biotechnology information and tools in crop research. Genetic stocks available to key CIAT partners.	CIAT and NARS publications. Statistics on agriculture and biodiversity.	
Purpose To conserve the genetic diversity and ensure that 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.	Information on diversity of wild and cultivated species. Mapped economic genes and gene complexes. Improved genetic stocks, lines, and populations.	Publications, reports, and project proposals.	Pro-active participation of CIAT and NARS agricultural scientists and biologists.
Output 1 Genomes characterized of wild and cultivated species of mandated and nonmandated crops and of associated organisms.	Molecular information on diversity of mandated and nonmandated crops species, and related organisms. Bioinformatic techniques implemented. QTLs for yield component in rice, for nutrition traits in beans and cassava, and for Al tolerance in *Brachiaria*.	Publications, reports, and project proposals. Germplasm. Availability of a laboratory information management system (LIMS).	Availability of up-to-date genomics equipment, and operational funding.
Output 2 Genomes modified: genes and gene combinations used to broaden the genetic base of mandated and nonmandated crops.	Transgenic lines of rice and advances in cassava, beans, *Brachiaria*, and other crops. Cloned genes and preparation of gene constructs. Information on new transformation and tissue culture techniques.	Publications, reports, and project proposals. Germplasm.	IPR management to access genes and gene promoters. Biosafety regulations in place.
Output 3 Collaboration with public- and private-sector partners enhanced.	CIAT partners in LDCs using information and genetic stocks. New partnerships with private sector.	Publications. Training courses and workshops. Project proposals.	Government and industry support national biotech initiatives.
Output 4 Mandated crops conserved and multiplied as per international standards.	Germination rates for long-stored materials. Cost per accession/year, compared with other gene banks.	Visits to GRU substations and conservation facilities.	Absence of uncontrolled diseases. Quarantine greenhouse space available at different altitudes.
Output 5 Germplasm available, restored, and safely duplicated.	Number of germplasm requests received and satisfied annually. Users received germplasm and data. Users asked for novel germplasm and data.	Visits to multiplication plots. Reports on requests and delivery. Number of core collections multiplied and shipped.	Agreement with CIAT holds.
Output 6 Designated Collections made socially relevant.	Landrace diversity restored to farmers. Farmers use new varieties. Breeders use novel genes.	Germplasm catalogs. Plant variety registration logs. National catalogs.	International collecting possible. Quarantine matters cleared.
Output 7 Strengthen NARS for conservation and use of Neotropical plant genetic resources.	NARS germplasm collections conserved. Number of trainees trained at CIAT. Number of universities and NARS using training materials.	Country questionnaires. Courses registered. Distribution and sales of training materials.	NARS and networks willing to cooperate.
Output 8 Conservation of Designated Collections linked with on-farm conservation efforts and protected areas.	Number of case studies and pilot *in situ* conservation projects.	Project documentation.	NARS interested in conservation efforts. Farmers interested in conservation efforts.

Project IP-1: Bean Improvement for the Tropics

Project Description

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

Outputs:

1. Higher and stable bean production with less dependency on inputs such as pesticides, fertilizers, and water.
2. Integration of traditional and advanced (e.g., marker-assisted selection) crop-improvement techniques and farmer participatory research activities to facilitate the rapid adoption of improved bean cultivars.
3. Strengthening of NARS, regional networks, and farmers in basic food production and technology adoption.
4. Higher rates of bean technology adoption achieved through NARS, regional networks, and farmers.

Gains: Improved varieties grown in 40% of Latin America and 10% of Africa (in network countries) by year 2005. Bean productivity stabilized, and bean availability secured for poor rural and urban consumers in restricted areas. Pesticide use cut by 20% in selected areas, thus reducing hazards to environment and health. Farmers growing the new cultivars will see a 10%-50% increase in their income from marketing beans. Public and private researchers have access to beans with multiple-stress resistance and greater nutritional value. Research capacity strengthened through regional networks.

Milestones:

2003 Marker-assisted selection developed for various biotic constraints. Lines with resistance to angular leaf spot, drought, bean common mosaic virus, and bean golden mosaic virus developed. Specialty types developed in Andean beans.

2004 Lines resistant to bean common mosaic virus, black root, bean fly, root rots, and angular leaf spot made available to partners in Africa. Advanced lines with improved drought tolerance validated with partners. Progeny from marker-assisted selection for P-efficiency made available to partners.

2005 Nutritional quality traits incorporated into high-yielding and stress-tolerant cultivars.

Users: Small farmers in tropical America and Africa (mainly women) will obtain higher and more stable yields. Poor consumers, especially women and children, will benefit from low-cost protein and micronutrients. The environment and 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*: PABRA, ASARECA, ECABREN, and SABRN (Africa); PROFRIJOL and PROFRIZA (Central and Andean America). *Developing improved germplasm:* NARS and farmers for FPR. *Improving soil, pest, and disease management:* ICRAF, CIMMYT, IITA, CIP, TSBFI, and national partners in the systemwide IPM program and African Highland Initiative (AHI). *Training in breeding and IPM:* Bean/Cowpea CRSP and ICIPE. *Diffusing new technology:* NGOs, churches, relief and governmental agencies, and entrepreneurs. *International institutions:* CATIE and EAP-Zamorano (Central America), universities and other institutions in Australia, Belgium, Canada, France, Netherlands, Spain, Switzerland, UK, and USA. *Resistance breeding and gene tagging*: Bean/Cowpea CRSP.

CGIAR system linkages: Enhancement & Breeding (75%); Crop Production Systems (10%); Protecting the Environment (5%); Networks (5%); Training (4%); Information (1%).

CIAT project linkages: Germplasm conservation and characterization (SB-1 and SB-2). IP-1 and IP-2 contribute to IPM (PE-1), nutrient and water-use efficiency (PE-2), climate change (PE-6), sustainable hillside systems (PE-3), and participatory research (SN-3). Impact assessed by BP-1.

CIAT: IP-1 Project Log Frame (2003-2005)

Project: Bean Improvement for the Tropics
Project Manager: César Cardona

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
Goal To obtain a lasting increase in food availability and income for the poor through improved bean productivity.	Increased bean production, and better income distribution and nutrition with improved cultivars and management practices.	National production statistics.	Adoption continues at rates at least comparable with those in the past.
Purpose To increase bean productivity through improved cultivars and management practices in partnership with NARS, regional networks, and farmers.	Improved cultivars and/or management practices are used by NARS, regional networks, and farmers in 40% of Latin America and 10% of Africa (in network countries) by year 2005. Farmers growing new varieties see a 10% increase in income from marketing of beans. Regional networks fully devolved to local management, with CIAT participating as a research partner.	Reports of NARS and regional networks. Adoption survey reports. Publications. CIAT reports. End-of-project and evaluation reports.	Core of bean researchers and operation budgets are maintained. Continued donor support to regional networks. Access to resources from challenge programs. Regional bodies and national governments continue to give priority to bean production.
Output 1 Improved, small-seeded, bean germplasm resistant to major biotic and abiotic stresses and combined with greater nutritional and market value.	Improved parents, populations, and/or lines available to NARS, regional networks, and farmers.	Reports from NARS and regional networks. Annual reports. Publications.	Continued donor support to PROFRIJOL, the African networks, and CIAT. Continued input of (CIAT) breeders, molecular geneticist, and plant nutritionist.
Output 2 Improved, large-seeded, bean germplasm resistant to major biotic and abiotic stresses and combined with greater nutritional and market value.	Improved parents, populations, and/or lines available to NARS, regional networks, and farmers.	Reports from NARS and regional networks. Annual reports. Publications.	Continued donor support to PROFRIZA, PROFRIJOL, the African networks, and CIAT. Continued input of breeder and molecular geneticist.
Output 3 Strategies developed for managing diseases and pests in bean-based cropping systems.	IPM strategies developed. Gene combinations to control insects and pathogens determined.	Reports from NARS and regional networks. Annual reports. Publications.	Continued input of pathologist, entomologist, and virologist. Continued donor support to whitefly IPM project.
Output 4 Improved cultivars and management practices developed and tested in partnership with NARS, regional networks, NGOs, and farmers.	Bean productivity increased. Farmers' dependence on inputs reduced. Nutritional value of beans increased. Production costs reduced. Climbing beans widely adopted in Kenya and at least one other African country. Improved crop management practices adopted by 10% of farmers by 2005.	Trials on experiment stations and on farms. National statistics. Publications.	Continued donor support. Active collaboration with all partners involved, including farmers.

Project IP-3: Improved Cassava for the Developing World

Project Description

Objective: To develop germplasm, methods, and tools for increased productivity and value of the cassava crop that will result in increased income and development of rural communities involved in cassava production and processing.

Outputs:

1. Genetic base of cassava and related *Manihot* species evaluated and available for cassava improvement.
2. Genetic stocks of improved gene pools developed and transferred to national programs.
3. Collaboration with other institutions.
4. Maintenance of field germplasm bank.
5. Breeding for resistance to insects and other arthropods, and development of alternative methods for their control.
6. Disease resistance in cassava.
7. Development and use of biotechnology tools for cassava improvement.
8. Knowledge of cassava genetics.

Gains: The rural populations in Africa, Asia, and Latin America and the Caribbean benefit by increased productivity, enhanced value of the products produced, and flexibility obtained through the availability of different processing alternatives for cassava.

Milestones:

2002 A set of three different diallels evaluated and analyzed to gain knowledge of the inheritance of traits of agronomic relevance. Initiation of shift in the breeding scheme from hybrid production to design of parental lines.

2003 The first set of S1 lines planted in the field. Better understanding of methods for controlling postharvest physiological deterioration. Better understanding of germplasm and processing procedures for the production of fried cassava chips.

2004 The first *trapiche yuquero* (cassava mill) begins full production of cassava flour. Other alternative uses being scaled up.

2005 The first hybrids from parental lines with some degree of inbreeding produced. First results from the newly developed protocol for the production of double haploids.

Users: Immediate beneficiaries are farmers growing cassava for cash crop or subsistence. Other beneficiaries are processing industries related to cassava (for animal feed, processed food, starch, or derived products).

Collaborators: IITA and IFPRI (CGIAR centers), NARS in Asia (particularly, Thailand, Vietnam, China, India, Indonesia) and Latin America (particularly, Brazil, Colombia, Cuba, Haiti, Venezuela), CLAYUCA, and the private sector involved in cassava processing.

CGIAR system linkages: IITA cassava breeding (50%); Crops (10%); Biofortification Initiative (25%); Protecting the Environment (5%); Training (3.4%); Networks (6.6%). Participates in the Global Cassava Strategy.

CIAT: IP-3 Project Log Frame (2003-2005)

Project: **Improved Cassava for the Developing World**
Project Manager: **Hernán Ceballos**

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
Goal To improve the livelihoods of rural populations in Latin America, Africa, and Asia by increasing cassava productivity, while protecting the environment and enhancing the value of products derived from this crop.	Increased productivity of cassava clones. Widened uses for cassava. Increasing the area planted to the crop.	National statistics of different countries where projects have been implemented. Recognition of private sector (processing).	
Purpose To develop methods and tools that will make the genetic improvement of cassava more efficient and to identify valuable germplasm for the breeding project. Eventually, a technology package involving germplasm, cultural practices, and processing alternatives will be made available to rural communities.	By the end of year 2005, the project has consolidated the technology packages for alternative industrial uses of cassava and strengthened the reliability and sustainability of the crop as a source of food security for subsistence farming.	Reports and project documents of our partner institutions. Reports from the processing sector.	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 the project's goal. Absence of drastic changes in the price of maize as a commodity that would greatly affect cassava competitiveness.
Output 1 Genetic base of cassava and related *Manihot* species evaluated and made available for cassava improvement.	Evaluation of genetic diversity for: Carotene and key minerals content in roots and foliage. Starch quality and properties in cassava roots. Evaluation of the effect of carotene content in reducing postharvest physiological deterioration.	Articles published. Annual reports and project proposals. Clones developed to take advantage of findings from this output.	Natural disasters or civil strife do not impede progress toward achieving the project's goal. Cassava field germplasm bank is maintained.
Output 2 Genetic stocks of improved gene pools developed and transferred to national programs.	Changes in the breeding scheme implemented and their consequences measured. Development of a new product in cassava: lines with varying degree of inbreeding. Resources found to develop a protocol for producing double haploids in cassava. Number of clones for each agroecological region with outstanding performance.	Project home page. Annual reports and working documents. Scientific publications. Shipment of germplasm to collaborators in different countries.	Natural disasters or civil strife do not impede progress toward the project's goal. Adequate funding for research activities.

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
Output 3 Collaboration with other institutions in place.	Continue the consolidation of CLAYUCA. Continue with joint research and collaboration with IITA. Continue the support of cassava breeding projects in Asia. Training of visiting scientists. Close interaction with private sector involved in cassava processing.	Case studies published. Annual reports and working documents. Submission of joint research proposals. Support from private sector.	Natural disasters or civil strife do not impede progress toward the project's goal.
Output 4 Field germplasm bank maintained.	Continue the collection of data for a complete data set from the germplasm bank. Introduce new germplasm from countries around the world.	Project proposals and reports. Accessions planted and maintained in the field. Introduction of new accessions.	Natural disasters or civil strife do *not impede* progress toward the project's goal.
Output 5 Breeding for resistance to insects and other arthropods, and alternative methods for their control developed.	Search for molecular marker(s) associated with resistance to whiteflies. Introgression of resistance to whiteflies into breeding stocks. Evaluation of reaction to insects and arthropods in breeding stocks. Development of methods for the biological control of soil insects.	Annual reports and working documents. Scientific publications. Development of commercial products for the biological control of cassava pests.	Natural disasters or civil strife do not impede progress toward the project's goal. Adequate funding for research activities.
Output 6 Disease resistance in cassava identified.	Identification of the causal agent of the frogskin disease and modes of transmission. Implementation of the molecular marker associated with resistance to ACMV. Identification of germplasm and cultural practices for controlling root rots in cassava. Identification of parental material resistant to bacterial blight and superelongation disease.	Annual reports and working documents. Scientific publications. Training manuals. Development of a diagnostic kit for frogskin disease.	Natural disasters or civil strife do not impede progress toward the project's goal. Adequate funding for research activities.
Output 7 Biotechnology tools for cassava improvement developed and used.	Development of a protocol for producing double haploids in cassava. Identification of genes of commercial, environmental, or consumer preference value for genetic transformation. Identification of traits of agronomic relevance to be associated with molecular markers for MAS. Collaboration for the development of QTLs of agronomic relevance.	Annual reports and working documents. Scientific publications. Molecular markers identified.	Natural disasters or civil strife do not impede progress toward the project's goal. Adequate funding for research activities.

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
Output 8 Cassava genetics known.	Evaluation of diallel sets for coastal, acid-soil savannas and mid-altitude valleys to analyze the inheritance of important traits. Identification of populations showing interesting segregations for further analysis, using molecular markers. Testing of the hypothesis that hybrids from inbred lines perform better than those produced from non-inbred parents.	Annual reports and working documents. Scientific publications. Training manuals.	Natural disasters or civil strife do not impede progress toward the project's goal. Adequate funding for research activities.

Project IP-4: Improved Rice for Latin America and the Caribbean

Project Description

Objectives: To add to the well-being of the rice sector, particularly resource-poor farmers, by increasing the genetic diversity and stability of high-yielding rice varieties. These will require lower inputs, thus reducing production costs, helping to protect the environment, and making locally available rice more affordable.

Outputs:
1. Enhancing gene pools.
2. Integrated pest and disease management.
3. Education and rice cultivation as a vehicle to alleviate poverty.

Gains: Development of robust high-yielding rice varieties requiring lower inputs, well-characterized progenitors, and advanced materials with an ample genetic base. Training made available to our partners, with a focus on developing capacity to increase the number of desirable traits in varieties. Unit costs to farmers will be reduced and profits increased. Rice becomes a more affordable food for consumers.

Milestones:

2003 Improved rice populations with high yields and high quality grain will be made available for evaluation by national organizations. These populations will include advanced materials from interspecific breeding activities designed to broaden the genetic base of rice. Molecular markers for resistance genes to blast, sheath blight, crinkling disease, RHBV, and *Tagosodes orizicolus* (planthopper) will be developed. Marker-assisted selection (MAS) developed for traits not previously included in our improvement efforts such as resistance to bacterial blight and nematodes. Sources of improved progenitors with combinations of resistance genes to blast distributed to national programs. Improved rice populations with a broader genetic base enhanced by recurrent selection distributed to national programs. Gene flow, IPR, safety, and efficacy studies for transgenic rice will be made for *hoja blanca* and sheath blight. Participatory breeding will be used to reach resource-poor rice farmers. Bioreactors will be adapted to increase mass production of double haploids.

2004 Genetic progress for populations enhanced by recurrent selection for different traits assessed in several countries. Studies of the genetics of complex traits, including yield, and involving interspecific crosses and molecular markers completed. MAS used to combine resistant genes to produce rice that has durable blast resistance. Molecular and virulence characterization of rice pathogens, including brown spot and sheath rot. Advanced populations continue to be developed through wild rice genes and recurrent selection. These populations include additional traits such as resistance to crinkling disease. MAS implemented as a breeding tool for at least five traits. Transgenic rice, resistant to RHBV, tested regionally. Distribution maps of wild species and characterization of red rice available.

2005 MAS for multiple traits a routine activity. Participatory selection and breeding result in new rice varieties for resource-poor farmers. Advanced lines with multiple traits from wild species tested by national programs for release as varieties. An interactive training for rice researchers through the Internet or available as CD-ROMs available for both farmers and scientists. The developing systematic selection methods for complex traits increasingly become the focus of genetic studies. Near-isogenic lines for resistance genes to blast used in regional studies to understand the dynamics of the pathogen and develop locally resistant varieties. Use of transgenic technologies scaled up for breeding programs, and transgenic *hoja blanca* rice available to national programs.

Users: Rice researchers especially in Latin America. Ultimate beneficiaries are LA rice farmers, most of whom are small farmers, and resource-poor consumers who eat rice because of its availability and affordability.

Collaborators: CIRAD and IRD (France); FLAR; JIRCAS (Japan); RDA (Korea); FEDEARROZ and CORPOICA (Colombia); EMBRAPA (Brazil); INIA (Peru); INIA and DANAC (Venezuela); Nicaragua; CIAT (Bolivia); IIA (Cuba); Costa Rica; China; INIA (Chile); INIA (Uruguay); UCor and LaPlata (Argentina); KSU, Cornell, LSU, Texas A&M, and Rutgers (USA).

CGIAR system linkages: Enhancement & Breeding (60%); Crop Production Systems (5%); Protecting the Environment (5%); Saving Biodiversity (20%); Policy (5%); Training (2%); Information (1%); Networks (2%). Linked with IRRI and WARDA.

CIAT project linkages: Germplasm conservation (SB-1); genomics (SB-2); participatory research for uplands (SW-3), hillsides (PE-3), and cropping systems for the savannas (SW-2). Improved germplasm to PE-1 and PE-2.

CIAT: IP-4 Project Log Frame (2003-2005)

Project: Improved Rice for Latin America and the Caribbean
Project Manager: Lee Calvert

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
Goal Germplasm of beans, cassava, tropical forages, rice, and their wild relatives collected, conserved, enhanced, and made accessible to NARS and other partners.	Sufficient number of accessions (of beans, cassava, and tropical forages), representing genetic diversity, conserved and managed *ex situ*. Strategies and guidelines for *in situ* management of biodiversity of beans, cassava, and tropical forages have been developed and tested with users. Accessible rice germplasm meets NARS' standards in terms of productivity, stability, agronomic traits, and user needs. Techniques and relevant information for more efficient and reliable germplasm improvement are accessible to users.	CIAT's germplasm bank inventories. Partners' technical reports. Annual reports.	
Purpose To increase rice genetic diversity and enhance gene pools for higher, more stable yields with lower unit production costs that reduce prices for consumers and decrease environmental hazards.	Evaluations of yield potential (interspecific, wide, and elite crosses, and recurrent selection). Continued use of improved germplasm by NARS. Monitoring rice production practices and markets. IPM practices in place for stable production and cleaner environment. Rice lines selected with desired gene traits. Potential sources for high levels of biotic and abiotic stress resistance.	Databases. Project, CIAT, and NARS annual reports. Publications. Promotional activities (conferences, training, workshops, and field days).	Stability (internal and external). National policies favor adoption of new technology.
Outputs 1. Rice gene pools enhanced. 2. Rice pests and genetics of resistance characterized. 3. Education and rice cultivation used as vehicles to alleviate poverty.	Pathogen and pest variation and source of resistance identified. IPM strategies. Workshops. Training courses. Farmer surveys.	Project progress report for 2002. Publications. Project progress and workshop reports.	Continued support from CIAT, CIRAD, and FLAR. Continued adequate funding. Recommendations adopted by NARS and implemented by farmers.

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
Output 1: Enhanced gene pools Rice improvement, using conventional breeding and gene pools and/or populations with recessive male-sterile genes. Evaluation of savanna upland rice lines in Latin American countries. Developing upland rice for smallholders. Advance and evaluate interspecific gene pools. Introgress new plant type genes into LAC's gene pools. Use anther culture and *in vitro* culture to enhance gene pools.	13 rice populations developed with improved tolerance of soil acidity; resistance to blast, RHBV, and *T. orizicolus*; good grain quality; early maturity. Number of field trials planted and lines selected. Populations distributed to NARS for line development. 14 populations developed; 12 populations in process; 4 populations yield tested and/or molecular characterized. Partners: WARDA, CIRAD, EMBRAPA, Cornell U. 433 crosses made; tropical irrigated (226), temperate (155), upland (52). Number of selected lines. Double haploids: interspecific crosses (386), accelerated breeding populations (815), somaclones (3758 in Venezuela; 4440 in Colombia).	Project progress report for 2001. Field visits and evaluations in testing sites. Breeding populations distributed throughout LAC. Breeding populations in storage and field. Best lines and QTLs identified. Double haploids in storage. Publications.	Continued support from CIAT, CIRAD, and FLAR. Adequate funding and timely release of budget. Favorable climate. Continued financial support for anther culture laboratory. Crosses, field support, and operational costs provided by FLAR.
Output 2: Integrated pest and disease Management Characterized interactions of host-plant resistance to rice blast, sheath blight, and grain discoloration. Characterization and use of partial and complete resistance for controlling rice blast. Characterization of interactions within the host plant, rice *hoja blanca* virus, and *T. orizicolus* complex. Foreign genes as novel sources of resistance to rice *hoja blanca* virus and *Rhizoctonia solani*. Characterization of interactions among host plant, *Polymyxa graminis*, and rice stripe necrotic virus causing *entorchamiento*.	Virulence spectrum and genetic structure of rice pathogens. Molecular markers associated and number of resistance genes. Sources of complete, complementary, and partial resistance. Rice lines with diversified resistance to RHBV and *T. orizicolus*. Understanding components of resistance to the RHBV complex. Crop management components developed. Transgenic lines with RHBV-viral genes with reduced symptoms produced and evaluated. Transgenes introgressed into commercial cultivars. Novel genes for multicomponent resistance to rice pathogens used. RSNV and vector complex characterized. Germplasm evaluation methods developed.	Pest and disease resistant varieties released by partners. Collection of rice pathogens. Database of resistance sources. Crosses made among resistance sources. F7 lines with stable blast resistance combining genes Pi-1 and Pi-2. Rice genome map with blast resistance genes mapped. Rice progress report for 2001. Publications. Resistant germplasm selected under artificial conditions.	Rice crosses and populations developed by breeders. Biotechnology Unit identify molecular markers associated with resistance. Continued collaboration with FLAR. Continued adequate funding from Colombia and Rockefeller. Continued support and adequate funding from CIAT, CIRAD, and FLAR. Continued funding from Colombia, Rockefeller, and COLCIENCIAS. Permission for field testing of transgenic plants granted. Continued support and adequate funding.

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
Output 3: Education and rice cultivation as vehicles to alleviate poverty			
Participatory development of rice for poor communities in marginal areas. FLAR–CIAT collaboration. Collaborator training and information.	Community-based projects. New equipment for small rice systems. Number of scientists trained. Workshops. Published reports of courses. FLAR annual report. Publications and Web pages.	Increased production in marginal areas. Number of communities participating. Rice progress report for 2001. CIAT's Web page.	Special funds continue. Recommendations adopted by farmers.

Project IP-5: Tropical Grasses and Legumes: Optimizing Genetic Diversity for Multipurpose Use

Project Description

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

Outputs:

1. Optimized genetic diversity of selected legumes and grasses for quality attributes, host-parasite-symbiont interactions, and adaptation to edaphic and climatic constraints.
2. Selected grasses and a range of herbaceous and shrubby legumes evaluated with partners, and made available to farmers for livestock 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 usefulness in production systems of elite grass and legume germplasm. New grasses and legumes contribute to increased milk supplies to children and cash flow for small dairy farmers, while conserving and enhancing the natural resource base.

Milestones:

2002 Defined patterns of variation in spittlebug bioecology in contrasting ecosystems. Known animal production potential of *Brachiaria* hybrids with resistance to spittlebug. Forage availability and livestock productivity increased in selected provinces of six Southeast Asian countries.

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 resistance to spittlebug are made available to farmers. Role of endophytes in resistance to Rhizoctonia in *Brachiaria brizantha* defined.

2004 Multipurpose legumes validated for use in priority crop-livestock systems. Prototype field management systems designed for enhancing endophytes' role in drought tolerance of *Brachiaria* species.

2005 *Brachiaria* hybrid with resistance to spittlebug available as commercial cultivar to farmers in the tropics.

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

Collaborators: National, governmental, and nongovernmental agricultural research and/or development organizations; SROs: universities—Hohenheim, Cornell, and Gottingen—and IGER, OFI, CSIRO, JIRCAS, and ETHZ.

CGIAR system linkages: Enhancement & Breeding (30%); Livestock Production Systems (15%); Protecting the Environment (5%); Saving Biodiversity (40%); Strengthening NARS (10%). Participates in the Systemwide Livestock Program (ILRI) through the Tropileche Consortium.

CIAT project linkages: Genetic resources conserved in the Genetic Resources Unit will be used to develop superior gene pools, using where necessary molecular techniques (SB-2). Selected grasses and legumes will be evaluated in different production systems of LAC, Asia, and Africa, using participatory methods (SN-3) to assess their impact in rural livelihoods and in natural resource conservation (PE-2 and PE-3).

CIAT: IP-5 Project Log Frame (2003-2005)

Project: **Tropical Grasses and Legumes: Optimizing Genetic Diversity for Multipurpose Use**
Project Manager: **Carlos E. Lascano**

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
Goal 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.	New cultivars of grasses and legumes used by farmers. Raised productivity of livestock and crops while protecting biodiversity and land in savannas, forest margins, and hillsides.	Statistics and case studies on socioeconomic benefits and natural resource conservation in smallholder livestock farms in LAC and Southeast Asia.	Policies are put in place by governments to favor sustainable livestock and forage development in marginal areas occupied by small farmers.
Purpose To deliver to farmers superior gene pools of grasses and legumes for sustainable agricultural systems in subhumid and humid tropics.	Demonstrated economic and ecological benefits of multipurpose grasses and legumes to livestock and crop farmers in savannas, forest margins, and hillsides.	Range of variation in desirable traits. Performance of forage components in systems.	Support from traditional and nontraditional donors. Effective collaboration from: CIAT projects AROs, partners, farmers, and NGOs
Output 1 Grass and legume genotypes with high quality attributes.	Usefulness of different accessions of *Cratylia* under direct grazing by milking cows known by 2002. New *Brachiaria* genotypes with superior forage quality available to partners and farmers for improved animal performance by 2003.	On-farm demonstrations. Scientific publications. Annual reports. Theses.	Effective collaboration with: CIAT projects (PE-2) AROs, partners, farmers, and farmer groups
Output 2 Grass and legume genotypes with known reaction to pests and diseases and interaction with symbiont organisms.	QTLs for resistance to spittlebug (and high Al in the soil) in *Brachiaria* available for marker-assisted selection by 2003. Benefits of endophytes (biotic and abiotic constraints) demonstrated under field conditions by 2003. Role of endophytes in Rhizoctonia resistance in *Brachiaria* clarified by 2003. *Brachiaria* genetic recombinants with combined resistance to different species of spittlebug are available to NARS by 2003.	On-farm demonstrations. Scientific publications. Annual reports. Theses.	Effective collaboration with: CIAT projects (SB-1 and SB-2) AROs, partners, farmers, and farmer groups
Output 3 Grass and legume genotypes with superior adaptation to edaphic and climatic constraints.	New *Brachiaria*, *Paspalum*, *Leucaena*, *Calliandra*, *Desmodium*, and *Arachis* accessions with adaptation to major abiotic constraints (low-fertility soils, drought, poor drainage, and cool temperatures) available to partners and farmers by 2003. Improved accessions of *Vigna* and *Lablab* with adaptation and known value to farmers in hillsides of Central America available to partners and farmers by 2003. *Brachiaria* genetic recombinants with resistance to high Al in the soil and with drought tolerance available to partners and farmers by 2004. QTLs for Al tolerance in *Brachiaria* identified by 2003.	On-farm demonstrations. Scientific publications. Annual reports. Theses.	Effective collaboration with: CIAT projects (SB-1, PE-2, PE-4) AROs, partners, farmers, NGOs, and farmer groups
Output 4 In partnership with NARS, superior and diverse grasses and legumes are evaluated and disseminated through participatory research.	New grass and legume cultivars released by partners available to farmers by 2002. Improved multipurpose grasses and legumes result in increased on-farm milk, meat, and crop production in benchmark sites (hillsides and forest margins), and reduced labor requirements in benchmark sites in Southeast Asia by 2003. Scaling up of *Cratylia argentea* in Central America in place by 2002. New market opportunities for protein leaf meal assessed by 2003. Widespread adoption of forage technologies in Southeast Asia. Effective forage multiplication systems are established in benchmark sites in Southeast Asia. NARS researchers and development workers trained in forage agronomy and participatory methods. Information network on forage research and development established in Southeast Asia.	Surveys on adoption impact of new grasses and legumes: Seed sold Area planted Production parameters Environmental and socioeconomic indicators	Effective collaboration with: CIAT projects (PE-2, SN-1, SN-2, SN-3, BP-1, and Ecoregional Program) Partners, farmers, NGOs, and farmer groups

Project IP-6: Tropical Fruits, a Delicious Way to Improve Well-Being

Project Description

Objective: To provide information and support to partners in the public and private sectors to promote the production, processing, and marketing of tropical fruits by rural communities, and thus increase wealth and improve welfare of current and future generations in the countryside.

Outputs:
The project's first phase is to obtain a stable funding base for the initiative. Once this base is established, the following outputs are expected:

1. Interactive Web-based information system in place for farmer groups, development agencies, and entrepreneurs to determine which tropical fruits would grow successfully in a given locale.
2. Tropical fruit-based business opportunities identified for targeted populations and/or areas, and development of these opportunities.
3. Two projects established in areas in which CIAT has special expertise, to satisfy specific needs of local organizations and add value to CIAT's Tropical Fruit Project.
4. Periodic market intelligence reports developed.

Gains: Farmers, farmer groups, entrepreneurs, and development agencies will have information on those fruit crops that can be grown successfully according to agroecological similarities. The rural population will be able to identify new business opportunities by matching crops that can be grown in their area and demand different classes of product. Development agencies will be able to identify income-generating opportunities for targeted populations or regions.

Milestones:

2002 Project preparation and data collection: two external funding proposals prepared and presented.

2003 Preliminary versions of database software to interpret relationships between fruit, climates, and soils. Pilot testing of climate homologs to identify promising species linked to a specific population identified jointly with Agroenterprises, Hillsides, or other CIAT projects. First expert workshop on class of product demand.

2004 Database carries information on 100 fruit crops. Database queries used by external organizations to identify business opportunities. Two fruit-based agroenterprise projects initiated (jointly with SN-1).

2005 Database carries information on 300 fruit crops. Germplasm exchange of 10 species facilitated by the project.

Users: Farmer groups, farmers, entrepreneurs, and any development agencies interested in increasing rural incomes in areas where tropical fruits may have a role to play; local research and development organizations; importers/exporters of tropical fruits.

Collaborators: Fruit gatherers and producers, national and international research and development agencies, developed and developing country universities, IPGRI, ICRAF.

CGAR systems linkages: Enhancement & Breeding (25%); Crop Production Systems (25%); Protecting the Environment (25%); Training (10%); Information (5%); Organization and Management (5%); Networks (5%).

CIAT project linkages: Collaboration with Land Use (PE-4) for software development, access to databases, and management and pilot testing of the fruit/soil/climate queries. Identification of business opportunities in conjunction with Agroenterprises (SN-1). Participatory research (SN-3) will collaborate with studies on selected fruits. Hillsides (PE-3) will identify sustainable business opportunities and implement fruit projects.

CIAT: IP-6 Project Log Frame (2003-2005)

Project: Tropical Fruits, a Delicious Way to Improve Well-Being
Project Manager: James H. Cock

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
Goal To encourage rural communities to promote production, processing, and marketing of tropical fruits in an environmentally sound manner, thus bringing wealth and improved welfare to current and future generations in the countryside.	Increased sales of tropical fruits by rural communities. Environmental certificates such as ISO[1] 14000 obtained by fruit production chains.	Case studies, agribusiness reports, and personal testimonies on socioeconomic benefits perceived by rural communities. Case studies of production, processing, and marketing systems. Internationally accepted certificates of environmentally sound practices.	
Purpose To provide information and support to partners in the public and private sectors to promote production, processing, and marketing of tropical fruits.	*What to Grow Where* databases and software used by farmer groups, entrepreneurs, and development agencies. Agribusiness opportunities based on matching market demand with potentially growable crops identified for specific populations (regions). Exotic fruit species (crops) introduced, based on *What to Grow Where*, into commercial production schemes. Specific new technologies commercially used.	Number of hits on Web site. Documentation of satisfied requests for support in developing fruit-based agribusiness. Documented cases of introduction of exotics. Documented use of new technologies and beneficial effects.	Markets for new products. Germplasm available. Active and effective collaboration between local, national, and international institutions. Logistical and administrative support with CIAT.
Output 1 Interactive Web-based information system in place for farmer groups, development agencies, and entrepreneurs to determine which tropical fruits can grow successfully in a given place. *What to Grow Where*.	Funded projects on *What to Grow Where*. Various climatic homologs identified (2003). Pan-tropical climate databases established (2003). Database with 300 tropical fruits (2005). Web-based access to databases (2007). Database with 2000 tropical fruits (2008).	Documents and deposits in the bank. Demonstrations. Reports. Scientific publications. Hits on Web site and follow-up surveys.	Donor(s)' interest in long-term projects with indirect impact. Available resources and effective collaboration with IPGRI and local organizations. Normal germplasm exchange.
Output 2 Fruit-based business opportunities identified for targeted populations and/or areas and development of these opportunities. Rural agroenterprises.	Funded projects on rural business enterprises (2004). Agreements with partners within and outside CIAT (2004). Successful adaptation and adoption of technology from one region (continent) to another. Successful new agrobusinesses established, using transferred technology (2005).	Documents and deposits in the bank. Visits to agribusinesses, business reports. Case studies. Reports.	Resources allocated to and collaboration with CIAT project PE-4. Free exchange of information and technology.
Output 3 Two projects established in areas in which CIAT has expertise. Specific fruit crop technologies.	New technology developed by CIAT under contract to other agencies effectively used by the fruit business.	Baseline studies and surveys. Reports of local agencies.	Willingness of farmers to introduce new fruits.
Output 4 Periodic market intelligence reports developed.	Expert meetings. Positive feedback on use of information.	Reports of expert meetings and consultants. Feedback and testimony from users.	Cooperation from other IARCs.

1. The International Organization for Standardization issues the *ISO 14000 Certification* to environmentally sound enterprises.

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 environments.

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 farms. Increased knowledge of the biology and ecology of pests and diseases and of the damage they cause. Molecular characterization of major pathogens and diagnostic kits made available. Whitefly biodiversity characterized. FPR methods for IPM developed and implemented. Biological control agents established in new regions. Pests and diseases on additional food and fruit crops evaluated or characterized.

Milestones:

2002 A global network and Web site for information on tropical agroecosystems (AES) developed. Participatory diagnosis of soil pest problems and local agricultural practices realized. Evaluation and/or dissemination of biological control agents of major pests of specific crops. IPM projects developed for AES. Components of the IPM package for global whitefly project ready for diffusion. Fruit crop viruses identified and diagnostic tools developed. Whitefly resistance mechanisms in cassava identified.

2003 IPM for cassava viruses and root rots implemented. Rapid diagnostic technique for the new cassava reovirus available and association studies for reovirus and CFSD completed. Cassava germplasm with resistance to CBB identified by use of molecular markers. Research on soilborne arthropods and pathogens advanced and coordinated with systemwide programs. Use of cassava varieties tolerant of frogskin disease in breeding and IPM programs. Biological control of soilborne arthropods advanced. Cassava hornworm baculovirus available to farmers.

2004 Biological control through entomopathogens developed for soilborne pests. Natural enemies of whitefly available for IPM programs. Information and technologies for implementing phytosanitary certification programs for cassava and other crops. Molecular markers tagging resistance to CBB available. Germplasm screened for resistance to *Phytophthora* root rot, using marker-assisted selection. Epidemiological validation of specified whitefly-transmitted geminiviruses. Characterization of cassava reovirus completed.

2005 Integrated components for IPM of soilborne pests available for the implementation of FPR methods. CFSD-tolerant varieties released. IPM for cassava bacterial blight implemented. Candidate genes for resistance to CBB and *Phytophthora* root rot identified in cassava. Whitefly-resistant cassava varieties available to farmers. Biological pesticide identified for whitefly control.

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

Collaborators: IARCs (IITA, ICIPE, CIP, ICARDA, AVRDC); AROs (e.g., CATIE, NRI, Crop and Food Researach, DBT, ETH, IPP, CIRAD, IRD, John Innes Center, CRCTPP); universities (Florida, Wisconsin, Cornell, São Paulo, Caldas, Palmira, Valle); NARS (e.g., EMBRAPA, CORPOICA, ICA, INIAP, INIVIT, MADR, NARO, IDIAP); NGOs; private industries (ASOCOLFLORES, Palmas de Casanare, Palmar de Oriente, Cía. Agrícola de Espárragos); PRONATTA; COLCIENCIAS SENA.

CGIAR system linkages: Crops (30%); Saving Biodiversity (20%); Protecting the Environment (40%); Strengthening NARS (10%). Whitefly and Participatory Methods Projects, and Soil Biota, Fertility and Plan Health in the systemwide program on IPM.

CIAT: PE-1 Project Log Frame (2003-2005)

Project: Integrated Pest and Disease Management
Project Manager: Anthony Bellotti

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
Goal To increase crop yields and reduce environmental contamination through the effective management of major pests and diseases.	Increased cassava yields. Reductions in environmental degradation through adoption of improved technology. Reduction of losses to several major diseases.	Production statistics. Adoption and impact studies. Project reports.	
Purpose To develop and transfer knowledge systems and pest-and-disease management components for sustainable productivity and healthier environments.	Adoption of germplasm with resistance to biological constraints. Establishment of released natural enemies. Use of environmentally friendly control strategies. Improved understanding of major biotic constraints.	End-of-project reports. Refereed publications, book chapters. Adoption and impact studies.	National policies favorable to adoption of IPM strategies (i.e., increased support to extension, reduction of subsidies for pesticides). National programs are active and strong in key countries. Active collaboration from other IARCs and DC research organizations. Active collaboration from AROs.
Output 1 Pest and disease complexes described and analyzed.	Pests, diseases, natural enemies, and vectors characterized. Host/pest/natural enemy/vector interactions analyzed. Better diagnostic tools available. Biological control agents established. Better understanding of the influence of drought in host-pest interactions. Identification of cassava with tolerance of diseases. Pest and disease distribution (maps) determined.	All areas: project reports, refereed publications, book chapters. Reports with maps, economic damage, biological information. Analysis of experiments. Transfer of tools to seed health facilities.	NARS 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 influence adoption. Collaboration with NARS possible. Evaluation, screening, and exploration sites accessible.
Output 2 Pest-and-disease management components and IPM strategies and tactics developed.	Testing of components for effectiveness. Control strategy recommendations clearly identified and crop management practices determined. Farmers test components. Guides on IPM strategies published. Disease detection methods available. Web site published.	Analysis of experiments. Guidelines for IPM. Reports on field effectiveness and probability of adoption of components. Field-oriented brochures.	
Output 3 NARS' capacity to design and execute IPM research and implementation strengthened.	Training, especially in FPR. Development of projects with NARS. Training materials developed.	Reports on training courses. Concept notes and projects prepared with partners.	
Output 4 Global IPM networks and knowledge systems developed.	Network of researchers established. Preparation of Web pages and databases with relevant IPM information.	Electronically published Web pages and databases.	

Project PE-2: TSBF/Overcoming Soil Degradation

Project Description

Objective: To develop and disseminate to clients strategic principles, concepts, methods, and management options for protecting and improving the health and fertility of soils through manipulation of biological processes and the efficient use of soil, water, and nutrient resources in tropical agroecosystems.

Outputs:
1. Biophysical and socioeconomic constraints to integrated soil-fertility management (ISFM) identified and knowledge on soil processes improved.
2. Improved soil management practices developed and disseminated.
3. Ecosystem services enhanced through ISFM.
4. Research and training capacity of stakeholders enhanced.

Gains: Guidelines for selecting productive and resource-use-efficient crop and forage components. Guidelines for identifying profitable options to manage organic and mineral inputs, crop residues, and green manure; and for controlling erosion and improving soil structure. Site-specific guidelines for optimum management of combined use of inorganic and organic resources. Soil-quality indicators to assist farmers and extension workers in assessing soil health. Decision-support systems for resource conservation and productivity enhancement. Strengthened capacity of NARS by use of decision guides for ISFM.

Milestones:

2003 Decision-making tools available for managing soil erosion, nutrient cycling, and maintenance of an arable layer. Correlations established between local soil-quality indicators and scientific measurements.

2004 Innovations for establishing an arable layer available. Management strategies for improving soil structure available for hillsides. Indicators of soil fertility, biological health, and physical quality used for decision making in hillsides and savanna agroecosystems.

2005 A soil quality monitoring system developed and tested by partners. Decision-making tool available for combined management of organic and inorganic resources. List of soil-quality indicators available to NARS for monitoring land degradation. Farmers adopting improved system components, including crops and soil management technologies.

Users: Principally small-scale crop-livestock farmers and extension workers in tropical agroecosystems of sub-Saharan Africa, Latin America, and Southeast Asia.

Collaborators: NARS: CORPOICA (Colombia), DICTA (Honduras), EMBRAPA (Brazil), IAR (Nigeria), IER (Mali), INERA (Burkina Faso), INRAB (Benin), INRAN (Niger), INTA (Nicaragua), ITRA (Togo), KARI (Kenya), NARO (Uganda), SRI (Ghana); AROs: CIP, IFDC, ICRAF, IITA, ICRISAT, IRD (France), ETH (Switzerland), JIRCAS (Japan); universities: Kenyatta and Nairobi (Kenya), Makerere (Uganda), Nacional (Colombia), Sokoine (Tanzania), UNA (Nicaragua), UNAH and EAP—Zamorano (Honduras), Uberlândia (Brazil), Imbabwe (Zimbabwe), Leuven (Belgium), Paris (France), Bayreuth and Hohenheim (Germany), SLU (Sweden), NLH (Norway), Cornell and Ohio State (USA).

CGIAR system linkages: Enhancement & Breeding (15%); Crop Production Systems (6%); Livestock (14%); Protecting the Environment (40%); Saving Biodiversity (5%); Strengthening NARS (20%). Convener of Systemwide Program on Soil, Water & Nutrient Management (SWNM), and contributes to the Ecoregional Program for Tropical Latin America, the African Highlands Initiative, and the Alternatives to Slash-and-Burn Agriculture Program.

CIAT project linkages: Integrated soil fertility and soil pest-and-disease management (IP-1, PE-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-3, PE-4, Climate Change), agroenterprise alternatives to improve profitability of soil management options (SN-1), and strengthening NARS via participation (SN-3).

CIAT: PE-2 Project Log Frame (2003-2005)

Project: TSBF/Overcoming Soil Degradation
Project Manager: Michael J. Swift

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
Goal Empowering farmers to conduct sustainable agroecosystem management by increasing capacity for ISFM through the generation and sharing of knowledge and tools across multiple scales.	Yields in farmers' fields increased. Land degradation halted or reduced. Yields per unit area and input increased. Changes in land use.	Farmer surveys. Regional and national production statistics. Land use surveys (satellite imagery, rapid rural appraisals).	Land survey data available. Farmers adopt new technologies. Socioeconomic conditions are favorable for achieving impact. Adequate resources available for soil research.
Purpose To develop and disseminate to clients strategic principles, concepts, methods, and management options for protecting and improving the health and fertility of soils through manipulation of biological processes and the efficient use of soil, water, and nutrient resources in tropical agroecosystems.	Technologies for soil improvement and management developed. Limiting soil-plant-water processes identified. Compatible plant components identified for low fertility soils in crop-livestock systems. Guidelines, manuals, and training materials for ISFM produced.	Scientific publications. Soil and crop management guidelines published. Decision-support systems developed. Annual reports.	Economic analysis of options available. Effective linkages within CIAT and partners in sub-Saharan Africa, LA, and Southeast Asia. Socioeconomic inputs available from other projects (e.g., PE-3, BP-1). Field sites accessible.
Output 1 Biophysical and socioeconomic constraints to ISFM identified, and knowledge on soil processes improved.	Soil, water, nutrient, and knowledge constraints to sustainable production defined, and the understanding of the roles of soil biota, multipurpose germplasm, and organic and inorganic resources for sustainable management of land resources improved.	Annual report and publications. Reviews published. Documents of synthesized results. Detailed tables published in annual report. Decision guides for ISFM developed.	Sufficient operational funds for soil and plant analyses. Literature on constraints available. Farmers continue to participate. Projects SN-2, PE-3, and PE-4 actively participate. Collaboration of participatory research project (SN-3), RIIs, and NARS.
Output 2 Improved soil management practices developed and disseminated.	Relevant knowledge, methods, and decision tools for improved soil management to combat soil degradation, increase agricultural productivity, and maintain soil health provided to land users in the tropics.	Annual reports and publications. Management guidelines and decision trees published and available to farmers, NARS, and NGOs. Training manual for use with tools. Maps published. Simulation models used to assess alternative management of organic resources for ISFM. A policy brief for ISFM produced.	Sufficient operational funds available for chemical analyses. Continuity of long-term experiments. Modeling expertise available from partners, e.g., Michigan State Univ., IFPRI, and CSIRO. Soil biology expertise from IRD and Univ. of Paris available.
Narrative Summary	**Measurable Indicators**	**Means of Verification**	**Important Assumptions**
Output 3 Ecosystem services enhanced through ISFM.	The soil's capacity to provide ecosystem services (global warming potential, water quality and supply, erosion control, nutrient cycling) and maintain soil biodiversity in the face of global change in land use and climate enhanced.	Annual reports and publications. Internationally accepted standard methods agreed upon for characterizing and evaluating below-ground biodiversity (BGBD), including a set of indicators for BGBD loss (GEF-funded special Project). Methods for assessing impacts of land management on soil microbial and faunal diversity tested. Work plan developed to evaluate interactions between soil management practices and soilborne pests and beneficial organisms.	Collaboration from partners. Information from questionnaires synthesized and comparisons made with available PE-3 results. Collaboration with PE-3 on soil erosion in CA. Collaboration with SN-2, PE-4, PE-3, and SWNM Program. Collaboration with PE-4 on land quality indicators at reference sites.
Output 4 Research and training capacity of stakeholders enhanced.	Research and training capacity of stakeholders in the tropics in the fields of soil biology and fertility and tropical agroecosystem management enhanced through the dissemination of principles, concepts, methods, and tools.	Scientific information (theses, publications, workshop reports, project documents) disseminated to network members and all stakeholders. Network trials planned and implemented with partners. Degree-oriented, and on-the-job personnel trained (farmers, NARS, NGOs).	Continued interest and participation of NARS and ARO partners, and national and international universities. Continued support for collaborative activities, e.g., SWNM program.

Project PE-3: Communities and Watersheds

Project Description

Goal: To foster community-based watershed management (CBWM) to address local natural resource priorities and contribute to improved environmental management, equitable resource allocation, and enhanced livelihood and food security.

Outputs:
1. Improved watershed management: land-water interactions.
2. More equitable highland-lowland resource allocation.
3. Provision of environmental services: water, biodiversity, and recreation.
4. Strengthened organizations: community and institutional capacity building.
5. Efficient use of project resources through participatory project management.

Gains: Farmers and local organizations adopt technologies, tools, and methodologies developed with CIAT and its partners at research watersheds. Results are sustainable, production systems profitable, land use improved, and natural resources preserved at the watershed level. Partner organizations apply technologies, tools, and methodologies developed by or with the project for their planning and activities at local, national, and regional levels. Decision makers at various levels have information, tools, and methodologies provided by the project to support their planning, monitoring, and decisions.

Milestones:

2003 Establish monitoring networks and indicators for individual research sites or watersheds. Document land-water interactions, highland-lowland interactions, resource allocation inequity, and community priorities. Initiate capacity-building programs at the local level. Promote the adoption of already proven approaches and technologies.

2004 Continue monitoring networks. Capacity building, strengthening local organizations, and training programs. Develop new technologies and approaches. Community-based adoption of proven methods and technologies. Improve local management, using CIAT's research results.

2005 Continue monitoring networks. Community-based adaptive management with proven methods and technologies. Ongoing capacity building. Decision support, providing information, tools, and methods at local, national, and regional levels. Training programs. Improve watershed management, using CIAT's research results. Scaling up.

Users: Farming families, youth, and rural communities of tropical watersheds. Project sites profit from increased community action aimed at improving watershed management. Educational institutions, directly through youth involvement and student participation, and indirectly through access to research materials. National and international development organizations involved in priority setting and investments in development.

Collaborators: SDC, CIMMYT, CATIE, CIP, IPCA, IWMI, IICA, PASOLAC, CARE, CIPAV, CVC, universities of Georgia, Florida, Guelph, British Columbia (Canada), Javeriana (Colombia), Nacional Agraria (Nicaragua), and CURLA (Honduras); DICTA, INTA, CONDESAN, ACERG, Herederos del Planeta, CIPASLA, Campos Verdes, CLOs, CIALs, Hillside Agricultural Program (HAP, Haiti).

CGIAR system linkages: IWMI, CIP, CIMMYT; and Water and Food, Mountain Development, and Urban Harvest Challenge Programs.

CIAT project linkages: *Soils (PE-2), land use* (PE-4), agroenterprises (SN-1), participatory methods (SN-3), forages (IP-5), impact assessment (BP-1), bean improvement (IP-1), cassava (IP-3), rice (IP-4).

CIAT: PE-3 Project Log Frame (2003-2005)

Project: **Communities and Watersheds**
Project Manager: **José Ignacio Sanz**

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
Goal To foster community-based watershed management (CBWM) to address local natural resource priorities and contribute to improved environmental management, equitable allocation, and enhanced livelihood and food security.	Water quality. Biodiversity. Conflict resolution mechanisms. Income (monetary and/or in kind). Farmer adoption of technologies and methods.	National and local statistics. Local research.	The environmental, social, economic, and political conditions are maintained at a macro level.
Purpose To strengthen local processes of watershed management and sustainable agricultural development in tropical regions, based on experiences with NRM at research sites.	User groups (number and types). Institutions with community involvement. Local capacity-building and training programs. Youth involvement in NRM. Community-based involvement in watershed management.	Field verification. Institutional reports.	Local partners continue project-related activities. Donors remain interested in the proposed project objectives and continue to provide support.
Output 1 Improved watershed management based on knowledge of land-water interactions. Farmers adopt approaches and technologies developed with CIAT and its partners to establish environmentally sound management and livelihood alternatives.	Land-water interactions: Water quality Land use change, intensification, diversification Soil erosion Nutrient management Productivity.	Local research. Field verification. Project reports. Youth reports. Local research groups' reports.	Climate variability is normal.

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
Output 2 More equitable resource allocation based on highland-lowland interactions and trade-off analysis. Identify and monitor indicators of highland-lowland resource interactions. Promote community-based approaches for resolution of inequities.	Highland-lowland interactions: Erosion Water quality Water quantity (drinking and irrigation) Trade-off analysis: Water rights and concessions Income distribution (highland-lowland) Livelihood opportunities Conflict resolution: User association participation Consortium functioning Policy and/or institutional changes	Local research. Field verification. Youth reports. CIAL reports. Consortia reports. Monitoring reports.	Social stability.
Output 3 Provision of environmental services including water, biodiversity, and recreation. Adoption of sustainable management practices by local farmers and user groups. Increased forest and agricultural biodiversity. Realizing the potential of recreational opportunities.	Water: Water quality Water quantity Biodiversity: Native versus exotic species numbers (temporal and spatial) Agrobiodiversity (number and type) Recreation: Types and number of suppliers Ecotourism	Field verification. Local research. CIAL reports. Youth reports. Institutional reports.	*Climate variability is normal.*
Output 4 Strengthened organizations. Local and national organizations involved in sustainable agricultural development at site, national, and regional levels use the technical and methodological resources developed by the project in their decision making and other activities. Interinstitutional coordination is enhanced.	Training programs (number and type). Youth group formation and activities. User groups supported (number and type). Digital information (number and type). Decision-support mechanisms. Information dissemination (format and content).	Local research groups' reports. Youth reports. Training reports. *Institutional reports.* Dissemination materials and project reports.	Social stability.

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
Output 5 Efficient use of project resources through participatory project management. Internal and external partners directly participate in project management to ensure adequate and efficient use of the project's resources.	Approved projects designed with partners and donors. Partners participate in fieldwork. Data-sharing agreements. Lessons learned by the project and its partners disseminated. New projects adopt methods, techniques, and experiences generated by the project and its partners.	Planning documents, proposals, and reports. Dissemination materials and project reports. Direct verification through networks and consortia. Reports to donors. Annual reports.	Institutional linkages maintained.

Project PE-4: Land Use in Latin America

Project Description

Objective: By providing relevant information about land use change, the project aims to help decision makers, ranging from farmers to World Bank investors, reduce the uncertainties of development.

Outputs:
1. Baseline and time-series data for subsequent analysis performed.
2. Information and insight of biological limitations and drivers of land use change developed.
3. Analysis and prediction of socioeconomic factors influencing land use development performed.
4. Analysis and prediction of vulnerability of land use systems to significant external events performed.
5. Methods of capturing farmers' knowledge in land use division support developed.

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:

2002 Germplasm targeting tool completed (Beta version). World climate surfaces upgraded to 1-km grid. *FloraMap 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.

2004 Data, analyses, and tools for natural resource management disseminated throughout tropical America and other tropical areas of the world.

2005 Delivery of second-order information products (e.g., policy guidelines, analytical methods, or information exchange networks) that will reduce the risks associated with specific land use changes that might otherwise threaten the well-being of significant numbers of rural people in the tropics. These will address specific issues such as water productivity, climate change, and application of new germplasm.

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

CIAT: PE-4 Project Log Frame (2003-2005)

Project: Land Use in Latin America
Project Manager: Simon Cook

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
Goal To reduce the risk of agricultural development in the tropics by providing spatial information about significant opportunities and threats of natural resource management.	Risk recognized as a reducible factor. Information adopted by decision makers. CIAT, CGIAR, or other collaborating research institutional activities enhanced by the ability to target activities.	Policy, projects, or funding strategies modified identifiably to include spatial information. Research portfolios modified identifiably by targeting or pre-selection. Risk management strategies, based on spatial information, included in development projects.	
Purpose To enable decision makers, ranging from farmers to World Bank investors, to reduce the uncertainties of development by providing relevant information about land use change.	Decision makers use spatial information to reduce risk.	Documented case studies at farm, national, and regional scales. Published methods of generalizing improved decision making, using spatial information of land use.	That uncertainty significantly obstructs land use decisions at a range of scales. That spatial variation introduces significant uncertainty to these problems. That relevant spatial information can be generated in a cost-effective manner.
Output 1 Baseline and time-series data for subsequent analysis performed.	Population, crop, and selected databases generated. Detailed climate data sets developed for modelers. Detailed future climatic data sets used to predict climate change effects.	Information available at CIAT. Selected information downloadable at CIAT Web site.	Information can be delivered to analysts and decision makers.
Output 2 Information and insight of biological limitations and drivers of land use change developed.	Threats of global climate change (GCC) to regional crop production defined for entire regions. Threats of climate change to plant genetic resources defined. Models developed for defining the impact of GCC on the potential productivity of a range of crops developed.	Maps and databases completed. Models developed, calibrated, verified, and published. Projects developed to apply models.	Sufficient data are available to generate insights.
Output 3 Analyses and predictions of socioeconomic factors influencing land use development performed.	Spatial processes driving land use change identified. Distribution of poverty and its causes identified more accurately, using spatial information.	Published explanations of the improved accuracy of explaining land use change. Spatial drivers of poverty explained in published case studies by June 2004. Information used to direct poverty alleviation policy.	Sufficient data are available to generate insights. Links exist with governmental and NGO partners to enable implementation of poverty alleviation policies.
Output 4 Analyses and predictions of vulnerability of land use systems to significant external events performed.	Indicators of vulnerability adopted by policy agencies. Spatial information on vulnerability used to reduce investment risks in at least one country case study.	Methods of vulnerability assessment published with case study at national or regional scale by June 2004. *Ex ante* analysis of the benefits of risk reduction published.	Sufficient data are available to generate insights.
Output 5 Methods of capturing farmers' knowledge in land use decision support developed.	Strengths and weaknesses, overlaps and gaps identified between farmer and scientist knowledge with respect to locally (e.g., declining soil fertility) and globally rooted resource-base management problems (e.g., climate change). Respective roles of farmers and scientists identified in local decision problems about locally and globally rooted resource-base problems. Farmer-to-farmer decision-support network established that tackle selected locally and globally rooted resource-base problems.	Case study documented of farmers generating information and merging with "hard" data on natural land resources. Network of farmer support initiated, including a minimum of 200 users at second-order organization level. Generated methods and tools documented and disseminated.	Sufficient data are available to generate insights. Local structures enable network establishment.

Project PE-6: Confronting Global Climate Change

Project Description

Objective: In ecoregions within the scope of CIAT's mandate, to overcome expected reductions in productivity of some major food crops and forages as a consequence of climate change (CC), while reducing the environmental impact from agriculture.

Outputs:

1. Vulnerability and opportunity assessments of responses made by ecoregions, populations, crops, and crop wild relatives in crisis from changing climates.
2. Germplasm and management systems adapted to changing climatic conditions and exacerbated incidence of pests and diseases.
3. Crop, forage, water, and soil management strategies developed to minimize sources and/or increase sinks of greenhouse gases (GHGs).
4. Impact of implemented strategies for adaptation to and mitigation of CC assessed, and institutional capacity enhanced.

Gains: *Plant breeders* and *agronomists* have access to realistic and detailed definitions of the climates encountered in response to CC. *Farmers* and *consumers* of CGIAR-mandated and other food crops have varieties adapted to marked changes in temperature and drought conditions. *Farmers* benefit from informed decision capacity and sustainable systems that minimize GHG emissions (CO_2, CH_4, and N_2O) and maximize carbon sequestration for international carbon trading. *Policy makers* have information of the effects of CC on the performance of CGIAR-mandated and other food crops and possible changes required to confront CC and prevent widespread land degradation. *National governments* have more accurate information on sources of GHG emissions and their removal by sinks for incorporation in their annual inventories under Article 7 of the Kyoto Protocol.

Milestones:

2002 Maps of expected changes in maize yields in response to CC for Latin America and Africa. Alliances developed with CORPOICA, CONDESAN, MIS, FAO, Lempira Sur, CATIE, JIRCAS, Ministries of the Environment of Colombia and Honduras. Two workshops held on CC issues in Central America (CA) and Colombia. Definition of CIAT activities within the Challenge Program on CC.

2003 Advanced versions of *FloraMap* and *MarkSim*. Preliminary assessment of bean and cassava yields for CA and Africa. Definition of areas in urgent need to preserve wild relatives of beans. Advanced lines of drought-tolerant beans available to NARS for CA. Tropical grasses ranked by their nitrification inhibition potential (greenhouse studies). Global warming potential (GWP) estimated for the South American savannas. Preliminary estimate of GWP for the Quesungual reference site (Honduras).

2004 Current and expected distribution of *Macrophomina* in Latin America. Definition of priority areas for conserving wild relatives of cassava, and release of drought-tolerant *Brachiaria* hybrids. Case study assessment of net reductions in N_2O emissions due to *B. humidicola* in CA and Colombian savannas. Implemented pilot project to trade C from agroforestry systems (AFS) in Colombia.

2005 Implemented pilot project to trade C from AFS in Colombia. Environmental characterization of intensive, high-input, cattle-production systems: case studies in Colombia and CA.

Users: Immediate beneficiaries are farmers growing CGIAR-mandated crops and consumers, especially poor farmers in developing regions. Policy makers will use information on predicted changes in climate to plan land use and to include environmental services as part of the development agenda for selected regions.

Collaborators: NARS and national research centers: Brazil (EMBRAPA, INPE, INPA); Colombia (CORPOICA, Instituto von Humboldt, Univ. Nacional, MinAmbiente, IDEAM), Central America (Univ. Honduras, Ministerio del Ambiente); CGIAR centers: ILRI; CIMMYT, ICRAF; ARIs: universities—Cornell and Florida (USA), Zurich (Switzerland), Bayreuth (Germany); climate change modelers—Hadley Climate Center (UK), NCAR (USA); international and local NGOs; farmer and community organizations.

CGIAR system linkages: Enhancement & Breeding (17.5%); Crop Production Systems (20%); Livestock (20%); Protecting the Environment (35%); Training (2.5%); Information (2.5%); Networks (2.5%). Participation in the ICWG—CC.

CIAT project linkages: IP-1, IP-3, PE-1, PE-2, PE-5, SN-2, SN-3.

CIAT: PE-6 Project Log Frame (2003-2005)

Project: **Confronting Global Climate Change**
Project Manager: **Marco Rondón**

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
Goal To contribute to long-term increases in agricultural productivity, poverty reduction, and conservation of the global environment.	Agricultural production increased. Farmers' income increased. Agriculture-related emissions of greenhouse gases (GHG) reduced. Water production levels maintained or increased.	National statistics of agricultural production and rural income. National and international inventories of GHG. National and regional inventories of water resources.	
Purpose To overcome expected reductions in productivity of some major food crops and forages as a consequence of global climate change, while reducing the environmental impact from agriculture in ecoregions within the scope of CIAT's mandate.	Net increase in agricultural productivity resulting from adoption of climate change (CC)-adapted crops. Net reduction in the global warming potential (GWP) of key ecoregions: tropical lowlands, hillsides, and Andes.	National and regional statistics of food and forage production. Regional and national inventories of GHG compared over time.	NARS partners show interest in collaborative research. Adequate funds from global challenge programs (climate change, water) allocated. Favorable policies for the release and adoption of new crop and forage varieties. Timely implementation of policy and trading incentives to favor adoption of environmentally safe management practices.
Outputs 1. Vulnerability and opportunity assessments of responses of ecoregions, populations, crops, and wild relatives of crops in crisis from changing climates. 2. Germplasm and management systems adapted to changing climatic conditions and exacerbated incidence of pests and diseases. 3. Crop, forage, water, and soil management strategies developed to minimize sources and/or increase sinks of GHGs. 4. Impact of implemented strategies for adaptation to and mitigation of GCC assessed, and institutional capacity enhanced.	Maps of risk of yield decline (maize, beans, cassava) for Africa and Latin America. Maps of risks of loss of habitat for wild relatives of crops. Adoption of drought-adapted crop and forage varieties as key components of production systems that minimize crop failures. Pilot testing of developed methodologies in at least three benchmark ecoregions: tropical lowlands, hillsides, and Andes. Implementation of a pilot project for trading C sequestered in soils and/or biomass. Studies to assess economic benefits of adopting drought-tolerant beans and pastures in LA. Study prepared on scenarios for potential C trading in improved pastures and no-tillage cropping systems. One BSc and two MSc theses submitted.	Maps available. Information transferred to policy makers. Field verification. Project reports. National average of yields in dry seasons. National GHG inventories. Pilot contract for C trading. Studies transferred to policy makers.	Active participation of germplasm development projects. Access to benchmark sites continued. Continued commitment of local partners to project activities. Successful involvement NARS partners for release of new varieties. Successful involvement of suitable partners experienced in C trading.

Project SN-1: Rural Agroenterprises Development

Project Description

Objective: To develop methods and tools for use by local practitioners in the participatory design and execution of development schemes for decentralized, rural agroenterprise, by which the production of smallholders can be diversified and value-added.

Outputs:

1. Methods for identifying viable market opportunities that would incorporate small-scale farmer selection criteria.
2. Decision-making tools and institutional models for strengthening rural agroenterprises and complementary support services.
3. Methods and tools for developing local capacity to select and develop postharvest processing and handling technologies.
4. Options for integrating collective action with business organization to establish sustainable enterprises.
5. National personnel trained in the design and execution of agroenterprise development projects.

Gains: Rural populations in CA, Andean Region, eastern and southern Africa, and Southeast Asia 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.

Milestones:

2003 Alliances and projects established in Asia for validation and adaptation of the methods and tools developed by the project in LA. Similar projects in Africa on-going.

2004 Guidelines available for designing institutional support systems for rural agroindustry, based on experiences in Latin America.

2005 Guidelines for identifying and developing viable rural agroenterprises prepared for eastern Africa.

Users: Immediate beneficiaries are the technical personnel of GOs and NGOs in rural development and rural policy makers. Ultimate beneficiaries are the inhabitants of rural areas, including female small farmers, and entrepreneurs, who benefit from training and information on market opportunities, postharvest technologies, enterprise skills, and access to better support services.

Collaborators: *Development of methods and technology components:* CIRAD, NRI, PRODAR (at Lima), IDRC, CIP, IITA, SEARCA, UPWARD, CARE, CRS. *Execution of pilot projects:* CIPASLA (Colombia), CLODEST (Honduras), CODESU (Peru), Africare, TIP, Concern Universal. *Training and networking:* PRODAR-IICA (Peru), members of PhAction (GTZ, NRI, JIRCAS, ACIAR, CIRAD, FAO, IITA, CIP, IFPRI, IRRI); ASARECA (Foodnet).

CGIAR system linkages: Crops and Livestock Production Systems (15%); Livestock (5%); Protecting the Environment (20%); Training (10%); Information (10%); Networks (10%); Organization and Management (30%). Participates in the Global Post-harvest Forum (PhAction).

CIAT: SN-1 Project Log Frame (2003-2005)

Project: Rural Agroenterprises Development
Project Manager: Rupert Best

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
Goal To improve the livelihoods of rural populations in LA, Africa, and Asia by enhancing the capacity of support institutions to promote competitive and environmentally responsible agroenterprises that equitably link smallholders to growth markets.	Percentage decrease in rural poverty index in selected areas of Africa, Asia, and LA.	National statistics of different countries where projects have been implemented.	
Purpose To develop methods and tools for use by local practitioners in the participatory design and execution of decentralized rural agroenterprise development schemes aimed at diversifying and adding value to the production of smallholders.	By the end of 2006, the project has complemented its activities in the reference sites by establishing alliances with important partner institutions in LA who are widely using the methods, tools, and institutional models developed by the project. These products have been adapted by partners in Asia and Africa and are applied in a selected number of sites on both continents.	Reports and project documents of our partner institutions.	Political and institutional support for sustainable rural and agricultural development at the reference sites and targeted countries is maintained. Natural disasters or civil strife do not impede progress toward the project's goal.
Output 1 Tools, methods, and information for identifying and developing market opportunities, developed as an input for the design of economically viable and sustainable rural agroenterprises.	Training materials for market opportunity identification available and being used by partners in LA, Asia, and Africa. A series of methods and tools for identifying market opportunities are available for use in different situations; these methods and tools are developed at the reference sites and elsewhere through alliances. Information system on alternative trade available. Training materials for the design of market plans and strategies for small agroenterprises available.	Manual published. Annual reports and project proposals. Project home page. Training materials.	Collaborating institutions have adequate resources to use the materials and tools developed. Natural disasters or civil strife do not impede progress toward the project's goal.

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
Output 2 Tools, methods, and information systems that can be used in the selection and local development and adaptation of appropriate postharvest technologies for small-scale rural agroenterprises.	Methods and tools developed for establishing local information systems in support of agroenterprise development. Series of manuals on methods and techniques for the participatory development of postharvest technology for improving the efficiency of rural agroindustry. Manuals in preparation on techniques for the participatory development of new rural agroindustrial products and processes.	Project home page. Manuals published. Annual reports and working documents.	
Output 3 Information, options, and recommendations for the design of efficient and effective organizational and business schemes for small-scale rural agroenterprise and their support services.	Case studies of small rural agroenterprises, documenting best practices, key success factors, and lessons learned, completed for LA and Asia. Options for the organization of enterprises, their links in the agrifood chain, and the organization of support services are being tested in the reference sites and with other partner institutions.	Case studies published. Project proposals and annual reports. PhD thesis on agroenterprise clusters (local food systems).	
Output 4 Institutional models and policy options for establishing and strengthening rural agroenterprises and their support systems within a territorial context.	Ten or more agroenterprise projects being executed at reference sites in LA, Asia, and Africa. Manual for identifying and developing integrated R&D rural agroenterprise projects completed. Guidelines for designing local support systems to promote agroenterprises at the microregional level.	Project proposals and reports. Published field guides and associated training materials. Guide published.	

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
Output 5 Alliances consolidated with a range of strategic stakeholders, with whom the project carries out research and training to enhance the capacity to design and develop successful agroenterprise projects.	200 personnel trained in aspects of agroenterprise development in LA, Africa, and Asia. Case studies on the adoption and impact of agroenterprise R&D completed. Project's Web site expanded and updated periodically with project outputs. Strategic alliances with research and development partners for both research and capacity building.	Training documents, course evaluations, and annual reports. PhD thesis completed on rural innovation and impact of the project's work in the LA reference sites. Project's Web site. Letters of Understanding, project contracts, and interinstitutional agreements.	

Project SN-3: Participatory Research

Project Description

Objective: To develop and disseminate participatory research (PR) principles, approaches, and 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. PR approaches and 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 PR.
3. Professionals and others trained as facilitators of PR.
4. Material and information on PR approaches and 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 LA universities with the 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 restricted areas. Lessons learned, and methodologies and materials disseminated globally, jointly with the Systemwide Programme on Participatory Research and Gender Analysis for Technology Development and Institutional Innovation (SP-PRGA), convened by CIAT, and with the Farmer Participatory Research for IPM Project (FPR-IPM) of the Systemwide Program on Integrated Pest Management (SP-IPM).

Milestones:

2002 PPB approaches institutionalized in at least three NARS (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 at one site. Methods for PR on NRM at the landscape scale applied in at least one site. A community-based participatory monitoring and evaluation system developed, tested, and evaluated in at least two countries in LA. Associations of community-based farmer research groups formed in at least four countries. Participatory projects for integrated management of AES health established in at least five CGIAR and NARS centers.

2003 CIAL approach validated in Africa. Methods for participatory agroenterprise development systematized and available for users. Seed enterprises established at village level in two African countries. A method to institutionalize participatory monitoring and evaluation, and participatory research approaches within R&D systems developed and tested in at least one Latin American and one eastern African country.

2004 Associations of community-based farmer research groups providing services to and supporting CIALs and having strategic alliances with R&D institutions. Impact assessment analyses to derive lessons and impacts of PR methods on livelihoods conducted in at least three Latin American countries. A method for testing and evaluating technologies in a resource-to-consumption (R-to-C) framework developed, tested, and evaluated in two African countries.

2005 Capacity of national partners to implement and support PM&E and PR processes established within R&D institutions in at least two Latin American and two eastern African countries. Lessons from R-to-C framework tested and validated in at least two Latin American countries.

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, SP-PRGA, SP-IPM.

CGIAR system linkages: Enhancement & Breeding (25%); Crop Production Systems (16.7%), Livestock (8.3%), Protecting the Environment (25%); Training (5%); Information (5%); Organization and Management (15%). Convenor of SP-PRGA and Coordinator of the SP-IPM's FPR-IPM Project.

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

CIAT: SN-3 Project Log Frame (2003-2005)

Project: Participatory Research
Project Manager: Carlos A. Quirós (acting)

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
Goal To develop and apply knowledge, tools, technologies, skills, and organizational principles that will contribute to improving human well-being and AES health.	Application of participatory methods and analytical tools, and organizational principles by R&D organizations that result in incorporating farmers and other end-users' needs in integrated agroecosystem management and conservation (IAEM). Within 5 years, project products used at additional reference sites in two AES (hillsides and forest margins) of CIAT's mandate. Project products used by at least three institutions outside LAC by end of year 5. Improved end-users' well-being at the respective reference sites.	Projects, plans, and reports of national public-sector entities, donors, NGOs, and community-based organizations in the three reference sites and mandated AES of CIAT's mandate, which refer to their use of project products.	
Purpose To develop and disseminate PR principles, approaches, and 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 human well-being and AES health.	Number of R&D organizations applying participatory methods, analytical tools, and organizational principles. Number of entities in LAC teaching participatory methods. Number of meetings among stakeholder groups. Number of participatory projects implemented by R&D institutions.	Impact study. Institutional reports. Publications. Proceedings.	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.
Output 1 PR approaches and analytical tools, and indigenous knowledge that lead to the incorporation of farmers and other users' priorities in R&D agendas developed for interested institutions.	Number of methodological approaches developed or adapted and analytical tools developed for IAEM.	Project reports. Publications.	Good coordination and integration among collaborators. Minimal conflicts for meeting demands. *Full participation of stakeholder groups.* Field staff fulfilling true facilitator roles. Data available from reference sites. Internet system functioning well.
Output 2 Organizational strategies and procedures for PR.	Number of strategies and organizational procedures for PR adopted and adapted.	Project reports. Publications.	
Output 3 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.
Output 4 Material and information on PR approaches and analytical tools, indigenous knowledge, and organizational principles developed.	Number of visits to Web sites. Number of requests for materials and information. Number of materials published.	Project reports. Publications.	
Output 5 Impact of SN-3 project activities documented.	Dependent on nature of study, e.g., for CIALs: number of host countries; total no. of initiated, inactive, and mature CIALs; research and self-management capacity; no. and diversity of institutions facilitating CIALs; gender composition; diversity of research themes; no. of beneficiaries, microenterprises formed, community services performed, facilitators and trainers trained, second-order organizations formed, and requests for publications and training materials.	Case studies, M&E reports and databases, impact studies.	Staff have time, suitable methodologies, and funds available.
Output 6 CIAT projects and other institutions supported and strengthened in conducting PR.	Number of internal projects supported. Number of external entities strengthened. Number of participatory projects carried out by internal projects and other institutions.	Project reports. Publications of internal projects and of other institutions.	
Output 7 Capacity of SN-3 team strengthened.	Number of team meetings. Number of team-organized seminars and workshops.	Project reports.	

Project SN-4: Information and Communications for Rural Communities

Project Description

Objective: To link *research with development, and cyberspace with the town square*, that is, to strengthen the decision-making capacity of rural communities and R&D organizations by better enabling them to obtain, generate, and share information and knowledge, with the aid of modern information and communication technologies (ICTs).

Outputs:

1. Appropriate models for integrating ICTs into rural community development.
2. Local information systems for rural agroenterprise development.
3. Local information systems to support agriculture and natural resource management (NRM).
4. Tools for local assessment of risks and opportunities in crop production and NRM.
5. A virtual network of community-based groups employing participatory R&D methods, linked with formal R&D organizations.
6. Impact assessment and continuous learning.

Milestones:

2003 Training tool for community telecenter development, initial version of a local information system for rural agroenterprise development, and preliminary study of telecenter impacts completed in Colombia.

2004 New projects under way in southwestern Colombia to scale up the community telecenter model in collaboration with various national institutions and local partners.

2005 Projects under way in other Latin American countries to develop local information systems in support of agriculture and NRM as well as risk- and opportunity-assessment tools and to build a virtual network of community-based groups, using participatory methods, linked with formal R&D organizations.

Users: Immediate beneficiaries are local organizations (particularly farmer groups, NGOs, and schools) that acquire new information management and communications skills. To the extent that new ICTs are linked with conventional media (such as community radio) and informal communications networks, a much broader segment of the rural population, including groups such as women who often get less than their share of development benefits, will gain more equitable access to relevant information and knowledge. While focusing initially on tropical America, the project will also seek to work in Africa and Asia.

Collaborators: Other international centers in targeted subregions, e.g., CONDESAN/CIP in the Andean Region, CATIE in CA, and ICRAF in eastern Africa. LDC universities, research institutes, governmental programs (e.g., Compartel in Colombia), and NGOs committed to improving the use of new ICTs in remote rural areas; local partners for developing project outputs; international organizations with expertise in information and communications for development: Bellanet, Association for Progressive Communications (APC), and International Institute for Communications and Development (IICD).

CGIAR system linkages: Training (30%); Information (60%); Organization and Management (5%); Networks (5%).

CIAT project linkages: SN-4 will provide all CIAT projects with a new option for increasing research impact and obtaining feedback on their products from rural people.

CIAT: SN-4 Project Log Frame (2003–2005)

Project: Information and Communications for Rural Communities
Project Manager: Nathan Russell

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
Goal To help the rural poor build sustainable livelihoods by improving the flow of genuinely relevant information among rural communities and research and development (R&D) organizations.	Increased numbers of more efficient rural agroenterprises. Increased numbers of local initiatives aimed at improving natural resource management. Increased opportunities for off-farm activities that generate income and employment.	Impact evaluation within a sustainable livelihoods framework based on household surveys, interviews with key informants, and group techniques in targeted rural communities.	
Purpose To strengthen the decision-making capacity of rural communities and R&D organizations by enabling them to better obtain, generate, and share information and knowledge with the aid of modern information and communication technologies (ICTs).	New options for enhancing livelihoods identified by individuals and organizations in rural communities through improved information access. Stronger planning and problem-solving capacities in rural communities, based on improved electronic communications both among communities and with R&D organizations. A greater capacity of local organizations to satisfy information demand in rural communities.	Case studies on the use of information obtained with the aid of ICTs in targeted rural communities. Impact evaluation of Web-based information applications developed by local organizations.	Rural communities can obtain affordable, reliable access to Internet. National and local organizations commit themselves to providing rural communities with relevant information services. Rural communities prove receptive to a new information culture based on the use of modern ICTs. Systems for continuous monitoring and evaluation adopted by organizations hosting rural community telecenters.
Outputs 1. Appropriate models for integrating ICTs into rural community development 2. Local information systems for rural agroenterprise development 3. Local information systems to support agriculture and natural resource management (NRM). 4. Tools for local assessment of risks and opportunities in crop production and NRM. 5. Virtual networks of community-based groups employing participatory R&D methods, linked with formal R&D organizations. 6. Impact assessment and continuous learning.	Feasibility studies on achieving connections among targeted rural communities. Financially and socially sustainable telecenters established by local organizations with the aid of training tools developed by CIAT. Dynamic, Web-based information systems developed by local organizations receiving training and other support from the Center. Locally developed Web-based information systems successfully integrated with conventional communications media in rural communities. Relevant information services developed for farmers that use participatory R&D methods, thus providing a basis for virtual networks of farmer groups.	Training tools available in print form and on CD-ROM. Locally developed information systems available on the Web. Consultancy reports and project information on the Web and in print form. Conference papers, journal articles, and technical reports on the performance and impact of community telecenters.	Public and private telecommunications agencies support initiatives to create affordable, reliable Internet access in remote rural areas. National and local organizations can generate resources through information services that enable them to sustain these services. National and local organizations gain credibility in rural communities as reliable providers of useful Web-based information services.

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 selected past CIAT research monitored.
3. Tools developed to assess the impact of research, both *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:

2002 Regulatory framework for GM crops analyzed. Consumer attitudes to GM food risks in one low-income country assessed. Role of improved fallows in Amazonian farming systems appraised. Riverine farming systems in the Colombian Amazon characterized. Methods for studying collective action evaluated. Distribution of benefits from bean genetic resources modeled. Impacts of research in the Colombian Eastern Plains reviewed.

2003 Impact monitoring systems in place in Asian agroecological sites. Surveys of bean adoption in two African countries initiated. Life histories of innovations in Central America conducted. One new study of impact of biotechnology completed.

2004 Two studies on technology adoption completed, and two new studies initiated. Impact of investments in social capital on NRM estimated.

2005 Impact of CIAT research on poverty reduction estimated. Impact-monitoring system operational in all agroecological sites. Expected benefits of four potential research outputs appraised.

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

Collaborators: *Future impact of research:* Colombian Ministry of Agriculture; universities—Hohenheim, California State Polytechnic, San Luis Obispo, Valle (Colombia); Center for Development Research (Denmark); CIAT projects—genetic resources, biotechnology on forages, rice, cassava, beans, hillsides; CLAYUCA. *Impact of past research monitored*: CIMMYT; IFPRI; SP—PRGA; all CIAT projects, but particularly, cassava, rice, forages, IPM, hillsides, land use, and agroenterprises.

CGIAR system linkages: Improving Policies (100%).

CIAT project linkages: All CIAT projects.

CIAT: BP-1 Project Log Frame (2003-2005)

Project: Impact Assessment
Project Manager: Douglas Pachico

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
Goal To obtain knowledge and expertise for enhancing performance of decision making in the agricultural and development sectors are made available to appropriate users.	Performance of investment in tropical agricultural research improved.	Research project portfolios in tropical agricultural research.	
Purpose To generate and disseminate information and tools to improve the capacity of CIAT and partner organizations to allocate research resources efficiently, and document the impact of research investments.	Research resources allocated more efficiently (expected rate of return to CIAT research portfolios increased). Results of impact analysis used in decision making and priority setting. Economic and environmental impact of selected past research identified and quantified.	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 tools developed at CIAT.	Adequate funding to agricultural research and extension. Decision makers willing to use economic analysis in research priority setting.
Output 1 Expected impact of future research estimated.	Expected rate of return for potential research projects estimated. Expected economic, distributional, and environmental impact identified and quantified.	CIAT technical publications. CIAT published planning documents.	Willingness of decision makers to use the information. No external shocks that invalidate the results.
Output 2 Impact of selected past CIAT research documented.	Economic, social, and environmental impact of CIAT research outputs identified and quantified.	CIAT technical publications.	
Output 3 Tools developed to assess the impact of research, both *ex ante* and *ex post*.	Methodologies generated. Databases compiled and maintained. Causal paths of impact mapped. Indicators identified.	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.	Analysts willing to use the tools in their impact analyses. Data available for using the tools.
Output 4 Institutional capacity for estimating, monitoring, and evaluating research impacts improved.	Appropriate and well-designed impact assessment components included in the work plans and budgets of CIAT projects and projects of partner organizations.	CIAT project log frames and budgets. Work plans of CIAT researchers. Research proposals submitted by projects. Similar documentation from partner organizations.	Institutional and financial support for impact assessment.

Project SW-2: Soil, Water & Nutrient Management

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 PR.
3. Indicators to monitor the environmental and economic impact of land use systems.
4. Decision-support systems, such as models and GIS, 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 NARS, IARCs, and SROs through capacity building. Prevention 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 NRM worldwide.

Milestones:

2003 Guidelines available for optimizing soil water use. Water and nutrient fluxes determined in watersheds under different land use management practices. Recommendations available for NRM in areas of high risk of land degradation.

2004 Validation of soil quality indicators. Cadre of local scientists, farmer groups, and extension workers trained to develop local solutions to SWNM constraints in the four SWNM consortia.

2005 Independent community-based investigations established by the four consortia in benchmark areas. Technologies for soil improvement established in two sites.

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

Collaborators: IARCs (TSBF, IBSRAM, IFDC, ICRISAT, ICARDA, IITA, ICRAF, ORSTOM); NARS, universities, and AROs of the four SWNM consortia.

CGIAR system linkages: Crops (9%), Livestock (21%), Protecting the Environment (50%), Policy (10%), Strengthening NARS (10%).

CIAT project linkages: Confronting soil degradation (PE-2); watershed resource management (PE-3); land use studies (PE-4) and participatory methods (SN-3).

CIAT: SW-2 Project Log Frame (2003-2005)

Project: Soil, Water & Nutrient Management
Project Manager: Michael J. Swift

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

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
Goal To contribute to long-term increases in agricultural productivity, poverty reduction, and the conservation and enhancement of land and water resources.	Agricultural production increased in benchmark sites. Farmers' income increased. Land degradation halted or decreased.	Agricultural census data. Human welfare statistics.	
Purpose To develop, disseminate, and promote implementation by land users of effective, ecologically sound technologies and systems for sustainable land management and conservation.	20% of farmers in restricted areas adopt at least one new SWNM technology per consortium through individual and community-based actions. Information on SWNM technologies published.	Surveys of land use practices. Lists of publications, Web pages. Bulletins and brochures.	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.
Output 1 Technologies and tools for improved soil, water, and nutrient management developed.	At least two new or improved SWNM technologies developed by each of the four research consortia.	Publications in international journals. Manuals and decision-support tools. Annual reports.	External funding levels are maintained. Benchmark sites established and maintained with partners.
Output 2 Community-based institutional mechanisms that encourage use of sustainable land management practices developed, tested, and promoted.	Each consortium has established at least one community-based organization in each restricted area or study site.	Annual reports, newsletters, and bulletins.	Community-based groups continue with their own resources. Institutions within each consortium maintain their matching support for the SWNM program.
Output 3 Capacity of stakeholders to plan and implement research programs on sustainable land management enhanced.	Farmers, NARES personnel, and policy makers trained. At least four training manuals and guidelines for SWNM produced.	Numbers of training courses and field visits held. Number of personnel trained. Institutional reports.	NARES have means to execute programs.
Output 4 Policies that address equity issues, access to resources, and land tenure developed.	Guidelines and decision-support systems developed.	Policy guideline documents. Publications in international journals.	Policy makers are open to dialog with SWNM program.

Project SW-3: Participatory Research and Gender Analysis

Project Description

Objective: To assess and develop methodologies and organizational innovations for gender-sensitive participatory research (PR), and operationalize their use in plant breeding (PB), and crop management and NRM.

Outputs:
1. Methods for PPB developed.
2. Methods for PR on NRM developed.
3. Gender-sensitive methodologies suitable for pre-adaptive PR developed.
4. Evaluation and functioning of innovations for institutionalizing participatory approaches.
5. Innovative approaches to capacity building functioning.
6. New partnerships among the IARCs, NARS, NGOs, and farmer groups developed.

Gains: Accelerated learning from existing experience and generation of new, widely applicable, methodologies for pre-adaptive PR and GA. The CGIAR and NARS will access a worldwide exchange of expertise on PR and GA among a wide range of institutions. Considerable savings and increased impact from NARS 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.

Milestones:

2002 Guidelines prepared on methods for scaling up 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.

2003 Published guidelines on the costs and benefits of different approaches to involving and targeting differentiated users. Guidelines for PR and 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.

2004 At least three CGIAR centers with partners incorporate PPB into core (mainstream) PB programs. At least two CGIAR centers incorporate participatory methodologies resulting from the program's work into their NRM research.

2005 A core capacity in the CGIAR to conduct PR has been institutionalized in terms of people trained in the methods, changes implemented in research organization, multi-year funding committed and institutional policies adopted, such that the scientific use of PR is an organic part of research, project design, staff recruitment and capacity building in the CGIAR.

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

Collaborators: IARCs, NARS, NGOs, grassroot organizations, universities.

CGIAR system linkages: Enhancement & Breeding (25%); Crop and Livestock Production Systems (18.8%); Livestock (6.3%); Protecting the Environment (30%); Training (8%); Information (8%); Organization and Management (2%), Networks (2%).

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

CIAT: SW-3 Project Log Frame (2003-2005)

Project: **Participatory Research and Gender Analysis**
Project Manager: **Jacqueline Ashby**

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
Goal To 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.	At least 50% of the CGIAR centers have increased their capacity to use PR and GA at the end of 5 years. Impact of PR and GA on technology development processes and research organization has been documented in at least 10 case studies that show appropriate use of PR and GA in that improved benefits for rural poor and women can be projected.	Published results of the SP-PRGA impact studies. Program monitoring and assessment of capacity building in the centers. External review reports.	CGIAR centers and partner institutions are willing to commit staff and budget to PR and GA, to contribute to capacity building, and to collaborate in impact assessment.
Purpose To assess and develop methodologies and organizational innovations for gender-sensitive PR and operationalize their use in PB, crop management, and NRM.	Use of PR and GA is integrated into the CGIAR system and partner institutions' core research. Effective methods for PR and GA in technology development and institutional innovation are developed and disseminated; the methods are recognized and understood by relevant senior management and staff; and the methods are being applied appropriately by at least 50% of CGIAR centers supported by Program research and capacity building by the end of 5 years. Center projects collaborating with the Program have gender-sensitive stakeholder/farmer participation in the organization and management of the research process. The Program's planning and evaluation organs are stakeholder-based and include active farmer representation.	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.	Donor commitment to the Program remains steady over the 5 years. Center staff collaborating with the Program can include results in their center's reports and annual reviews. Stakeholders are willing to contribute actively to planning and evaluation of the Program.
<u>Overall Output I</u> Methods and organization for PPB developed.			
Specific output 1 Effective participatory methods in PB assessed and developed, with focus on breeding by farmers; plant selection (segregating lines); variety selection (fixed lines).	Methodology guidelines published for all three approaches. Methods in use in at least four cases involving national programs and NGOs (at least one case) for each type of breeding. Publications disseminated on the results of the methods. Workshops held to exchange results.	Program publications, journal and book publications. Program home page. Impact assessment studies. Annual reports and workshop proceedings.	Method development and assessment can be advanced quickly in some "model" crops. Analysis of effectiveness in farmer breeding, plant selection, and variety selection.
Specific output 2 Improved targeting of beneficiary groups to involve in participatory breeding through developing methods for involving direct and indirect stakeholders.	Published guidelines on cost-benefits of different approaches to involving and targeting differentiated users. Synthesized findings on how to involve hidden and indirect stakeholders and how to resolve	Program publications. PhD dissertations. Impact assessment studies.	CGIAR, NARS, and farmer-researchers are willing to collaborate in studies, using stakeholder/beneficiary differentiation.

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
	conflicts among diverse groups. Evidence available that PB products are more user-differentiated. Evidence available that indirect stakeholders, such as extension workers, have been involved.		
Specific output 3 Effective organizational forms for operationalizing participatory breeding identified and developed in the research process.	Ways in which existing breeding programs organize and fund links with farmers reviewed and documented. Reports available on organizational options for participatory breeding along with cost-benefit analyses. Guidelines for decision makers on promising forms of organization. Capacity building through training and consultancies provided.	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, NARS (including NGOs), and farmer-researchers are willing to collaborate in studies of organization.
Specific output 4 User access to products of participatory breeding ensured through identification of effective organizational forms and links to supporting seed services.	Synthesis of case studies on how to strengthen local seed production systems. Published analyses on the role of the formal seed system in PB approaches. At least two channels identified that move PB products rapidly to different users.	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.
Overall Output II Methods and organization for participatory NRM research developed.			
Specific output 2 Development and dissemination of improved crop and NRM strategies, incorporating better use of existing and new PR and GA methods.	Workshops conducted with at least six collaborative research projects to incorporate GA and gender-sensitive participatory methods into ongoing activities. Materials accessible on approaches for upscaling participatory NRM in 2000. Up to 10 experiments conducted and evaluated on how farmer and researcher experimentation fit together. Up to three community-based and three researcher-based resource monitoring tools tested and compared, and results ready for dissemination in 2000. Up to four regional trained groups in PR and GA actively supply training in 1999.	Program annual reports, workshop reports. Published guidelines for PR and GA methods and organizational strategies. Working paper on Web site. Results disseminated via NRM working group and network. Proceedings and reports are available on Web site.	At least six 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.
Specific output 3 Organizational capacity to use PR and GA methods in NRM research improved with a focus on farmers, local institutions, scientists, extension workers, and research and extension institutions.	New options for organizational innovation for participatory approaches to NRM research identified from at least three case studies at different management scales. Up to three case studies of collective resource monitoring. Farmer representation in NRM research decision making increased.	Comparative analysis and case studies of organizational options published on the SP-PRGA home page. NRM small-grant annual reports. PhD dissertations. Farmer representatives on collaborating projects' stakeholder committees and on the SP-PRGA planning committee.	Cooperating projects are willing to test a range of methods and indicators. Cooperating projects comply with small-grant conditions to set up stakeholder committees. Training in PR and GA and impact analysis is of interest to cooperating institutions.

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
	Training of trainers and research partners in GA or user analysis conducted for existing and new NRM research partnerships.	Directory of trainers for training in GA or user and impact analysis in NRM on the SP-PRGA home page.	
Specific output 4 Development of effective methods for involving gender-differentiated and other direct and indirect stakeholders in NRM.	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. Guides for involving different stakeholder groups in participatory NRM are accessible.	Working paper and PhD dissertations on costs and benefits on the SP-PRGA home page. Published resources on methods for stakeholder participation on the SP-PRGA home page.	Reliable data can be obtained at a meaningful scale for estimating costs and projecting benefits. This compilation of resource materials is seen as necessary by PR and GA networks.
Overall Output III Use of GA is "mainstreamed".			
Specific output 1 Effective methods and capacity for using gender/stakeholder analyses developed.	Guidelines are 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. Approaches to using gender and stakeholder analyses and information on their likely outcomes and costs are integrated into published PBG and NRMG PR guidelines. Program workshops and training support integrate gender and stakeholder analyses. Gender and stakeholder analyses are 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 SP-PRGA small-grant programs. Program organization uses appropriate procedures for ensuring representation of gender-differentiated stakeholders at project steering committee and Program Planning Group levels.	GWG guidelines. SP-PRGA home page. PBG and NRMG annual reports and published guidelines. 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.	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.
Specific output 2 Effects of using gender and/or stakeholder analyses in technology development assessed.	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. Results of research on effects of differentiating users by gender and other characteristics on the design of PB or NRM technologies are disseminated and being used by centers and/or partners.	Working papers. PhD dissertations. SP-PRGA home page. Small-grant annual reports, site visits	PB and NRM guidelines are published

Appendix II

Financial Tables
2003-2005

Table 1. CIAT - Cost Allocation : Financial Requirements by CGIAR Outputs, 2003

(expenditure in $ million)

Center Projects	Germplasm Improvement	Germplasm Collection	Sustainable Production	Policy	Enhancing NARS	PROJECT TOTALS
01. SB - 2 : Conservation and Use of Tropical Genetic Resources	3.022	2.198	0.000	0.000	0.275	**5.495**
02. IP - 1 : Bean Improvement for the Tropics	3.005	0.000	0.601	0.000	0.401	**4.006**
03. IP - 3 : Improve Cassava for the Developing World	1.024	0.512	0.307	0.000	0.205	**2.049**
04. IP - 4 : Improved Rice for Latin America and the Caribbean	1.212	0.404	0.202	0.101	0.101	**2.020**
05. IP - 5 : Tropical Grasses and Legumes	0.656	0.875	0.438	0.000	0.219	**2.188**
06. IP - 6: Tropical Fruits, a Delicious Way to Improve Well-Being	0.103	0.000	0.206	0.000	0.103	**0.412**
07. PE - 1: Integrated Pest and Disease Management	0.000	0.377	1.321	0.000	0.189	**1.886**
08. PE - 2: TSBF/Overcoming Soil Degratation	0.617	0.206	2.469	0.000	0.823	**4.115**
09. PE - 3: Hillsides Watersheds	0.000	0.163	2.124	0.654	0.327	**3.268**
10. PE - 4: Land Use in Latin America	0.151	0.151	0.904	0.301	0.000	**1.507**
11. PE - 6: Confronting Global Climate Change	0.132	0.000	0.567	0.000	0.057	**0.755**
12. SN - 1: Rural Agroenterprises Development	0.000	0.000	0.252	0.000	0.377	**0.629**
13. SN - 3: Participatory Research	0.307	0.000	0.613	0.000	0.307	**1.227**
14. SN - 4: Information and Communication in Rural Communities	0.000	0.000	0.000	0.000	0.993	**0.993**
15. BP - 1: Impact Assessment	0.000	0.000	0.000	0.578	0.000	**0.578**
16. SW - 2: Soil, Water, and Nutrient Management (SWNM)	0.000	0.000	0.370	0.046	0.046	**0.463**
17. SW - 3: Participatory Research and Gender Analysis(PRGA)	0.202	0.000	0.444	0.000	0.161	**0.807**
UNDERTAKING TOTALS	**10.432**	**4.887**	**10.818**	**1.681**	**4.583**	**32.400**

Table 2. CIAT - Cost Allocation: Allocation of resources by CGIAR Outputs and CGIAR Activities, 2001-2005

(expenditure in $ million)

Outputs:	2001 (actual)	2002 (estimated)	2003 (proposal)	2004 (plan)	2005 (plan)
Germplasm Improvement *(Activity: Germplasm Enhancement & Breeding, plus Networks, as appropriate)*	8.584	10.826	10.432	10.432	10.432
Germplasm Collection *(Activity: Saving Biodiversity, plus networks, as appropriate)*	4.681	5.075	4.887	4.887	4.887
Sustainable Production *(Activity: Production Systems Dev & Mgmt, Protecting the Environment and Networks, as appropriate)*	10.422	11.203	10.818	10.818	10.818
Policy *(Activity: Improving Policies, plus Networks, as appropriate)*	1.378	1.744	1.681	1.681	1.681
Enhancing NARS *(Activity: Strengthening NARS - the three sub-activities, plus Networks, as appropriate)*	5.299	4.752	4.583	4.583	4.583
TOTAL	30.365	33.600	32.400	32.400	32.400

Activities:	2001 (actual)	2002 (estimated)	2003 (proposal)	2004 (plan)	2005 (plan)
Increasing Productivity	12.997	14.724	14.197	14.197	14.197
of which:					
Germplasm Enhancement & Breeding	8.584	10.826	10.432	10.432	10.432
Production Systems Development & Management	4.413	3.897	3.765	3.765	3.765
Protecting the Environment	6.010	7.306	7.052	7.052	7.052
Saving Biodiversity	4.681	5.075	4.887	4.887	4.887
Improving Policies	1.378	1.744	1.681	1.681	1.681
Strengthening NARS	5.299	4.752	4.583	4.583	4.583
of which:					
Training and Professional Development	1.555	1.188	1.146	1.146	1.146
Documentation, Publications, Info. Dissemination	1.581	0.996	0.961	0.961	0.961
Organization & Management Counselling	0.554	0.476	0.459	0.459	0.459
Networks	1.609	2.092	2.016	2.016	2.016
TOTAL	30.365	33.600	32.400	32.400	32.400

Table 3. CIAT- Cost Allocation: Project & Output Cost Summary, 2001-2005

(in $ million)

	2001 (actual)	2002 (estimated)	2003 (proposal)	2004 (plan)	2005 (plan)
SB-1 : Genetic Resources (merged)	1.045				
SB-2: Conservation and Use of Tropical Genetic Resources	3.306	5.707	5.495	5.495	5.495
IP-1: Bean Improvement for the Tropics	1.426	4.161	4.006	4.006	4.006
IP-2 : Beans in Africa (merged)	2.546				
IP-3: Improve Cassava for the Developing World	1.977	2.128	2.049	2.049	2.049
IP-4: Improved Rice for Latin America and the Caribbean	2.542	2.098	2.020	2.020	2.020
IP-5: Tropical Grasses and Legumes	2.230	2.272	2.188	2.188	2.188
IP-6 : Tropical Fruits	0.000	0.428	0.412	0.412	0.412
PE-1: Integrated Pest and Disease Management	1.307	1.959	1.886	1.886	1.886
PE-2: TSBF / Overcoming Soil Degradation	1.704	4.274	4.115	4.115	4.115
PE-3: Hillsides Watersheds	1.366	3.394	3.268	3.268	3.268
PE-4: Land Use in Latin America	1.905	1.565	1.507	1.507	1.507
PE-5: Sustainable Systems for Smallholders (merged)	2.446				
PE-6: Confronting Global Climate Change	0.000	0.785	0.755	0.755	0.755
SN-1: Rural Agroenterprises Development	1.035	0.653	0.629	0.629	0.629
SN-2: Linkages with NARS	1.649	0.000	0.000	0.000	0.000
SN-3: Participatory Research	0.665	1.274	1.227	1.227	1.227
SN-4: Information and Communication in Rural Communities	0.000	1.031	0.993	0.993	0.993
BP-1: Impact Assessment	0.516	0.601	0.578	0.578	0.578
SW-1: Ecoregional Program for Tropical Latin America (Eliminated)	0.232				
SW-2: Soil, Water, and Nutrient Management (SWNM)	0.582	0.463	0.463	0.463	0.463
SW-3: Participatory Research and Gender Analysis (PRGA)	1.887	0.807	0.807	0.807	0.807
Total	30.365	33.600	32.400	32.400	32.400

Summary by Undertaking:

	2001 (actual)	2002 (estimated)	2003 (proposal)	2004 (plan)	2005 (plan)
Increasing Productivity	12.997	14.724	14.197	14.197	14.197
Protecting the Environment	6.010	7.306	7.052	7.052	7.052
Saving Biodiversity	4.681	5.075	4.887	4.887	4.887
Improving Policies	1.378	1.744	1.681	1.681	1.681
Strengthening NARS	5.299	4.752	4.583	4.583	4.583
Total:	30.365	33.600	32.400	32.400	32.400

Summary by Output:

	2001 (actual)	2002 (estimated)	2003 (proposal)	2004 (plan)	2005 (plan)
Germplasm Improvement	8.584	10.826	10.432	10.432	10.432
Germplasm Collection	4.681	5.075	4.887	4.887	4.887
Sustainable Production	10.422	11.203	10.818	10.818	10.818
Policy	1.378	1.744	1.681	1.681	1.681
Enhancing NARS	5.299	4.752	4.583	4.583	4.583
Total:	30.365	33.600	32.400	32.400	32.400

Table 4. CIAT- Cost Allocation: Allocation of Project Cost to CGIAR Activities, 2001-2005

(in $ million)

Project	Activity	2001 (actual)	2002 (estimated)	2003 (proposal)	2004 (plan)	2005 (plan)
SB - 1 : Genetic Resources (merged)	Enhancement and Breeding (Beans)	0.052				
	Enhancement and Breeding (Cassava)	0.052				
	Enhancement and Breeding (Livestock)	0.052				
	Saving Biodiversity	0.836				
	Strengthening NARS--Training	0.042				
	Strengthening NARS--Information	0.010				
		1.045				
SB-2. Conservation and Use of Tropical Genetic Resources	Enhancement and Breeding (Bean)	0.545	0.942	0.907	0.907	0.907
	Enhancement and Breeding (Cassava)	0.545	0.942	0.907	0.907	0.907
	Enhancement and Breeding (Rice)	0.545	0.942	0.907	0.907	0.907
	Enhancement and Breeding (Livestock)	0.182	0.314	0.302	0.302	0.302
	Saving Biodiversity	1.322	2.283	2.198	2.198	2.198
	Strengthening NARS--Training	0.132	0.228	0.220	0.220	0.220
	Strengthening NARS--Information	0.033	0.057	0.055	0.055	0.055
		3.306	**5.707**	**5.495**	**5.495**	**5.495**
IP - 1 : Beans Improvement for the Tropics	Enhancement and Breeding (Bean)	1.070	3.121	3.005	3.005	3.005
	Production Systems (Bean)	0.143	0.416	0.401	0.401	0.401
	Protecting the Environment	0.071	0.208	0.200	0.200	0.200
	Strengthening NARS--Training	0.057	0.166	0.160	0.160	0.160
	Strengthening NARS--Information	0.014	0.042	0.040	0.040	0.040
	Strengthening NARS--Networks	0.071	0.208	0.200	0.200	0.200
		1.426	**4.161**	**4.006**	**4.006**	**4.006**
IP - 2 : Beans in Africa (merged)	Enhancement and Breeding (Bean)	1.273				
	Production Systems (Bean)	0.509				
	Protecting the Environment	0.255				
	Strengthening NARS--Training	0.178				
	Strengthening NARS--Information	0.076				
	Strengthening NARS--Networks	0.255				
		2.546				
IP - 3 : Improve Cassava for the Developing World	Enhancement and Breeding (Cassava)	0.988	1.064	1.024	1.024	1.024
	Production Systems (Cassava)	0.198	0.213	0.205	0.205	0.205
	Protecting the Environment	0.099	0.106	0.102	0.102	0.102
	Saving Biodiversity	0.494	0.532	0.512	0.512	0.512
	Strengthening NARS--Training	0.067	0.072	0.070	0.070	0.070
	Strengthening NARS--Networks	0.130	0.140	0.135	0.135	0.135
		1.977	**2.128**	**2.049**	**2.049**	**2.049**
IP - 4 : Improved Rice for Latin America and the Caribbean	Enhancement and Breeding (Rice)	1.525	1.259	1.212	1.212	1.212
	Production Systems (Rice)	0.127	0.105	0.101	0.101	0.101
	Protecting the Environment	0.127	0.105	0.101	0.101	0.101
	Saving Biodiversity	0.508	0.420	0.404	0.404	0.404
	Improving Policies	0.127	0.105	0.101	0.101	0.101
	Strengthening NARS--Training	0.051	0.042	0.040	0.040	0.040
	Strengthening NARS--Information	0.025	0.021	0.020	0.020	0.020
	Strengthening NARS--Networks	0.051	0.042	0.040	0.040	0.040
		2.542	**2.098**	**2.020**	**2.020**	**2.020**
IP - 5 : Tropical Grasses and Legumes	Enhancement and Breeding (Livestock)	0.669	0.682	0.656	0.656	0.656
	Production Systems (Livestock)	0.335	0.341	0.328	0.328	0.328
	Protecting the Environment	0.112	0.114	0.109	0.109	0.109
	Saving Biodiversity	0.892	0.909	0.875	0.875	0.875
	Strengthening NARS--Training	0.112	0.114	0.109	0.109	0.109
	Strengthening NARS--Information	0.022	0.023	0.022	0.022	0.022
	Strengthening NARS--Networks	0.089	0.091	0.088	0.088	0.088
		2.230	**2.272**	**2.188**	**2.188**	**2.188**
IP - 6 : Tropical Fruits	Enhancement and Breeding (Fruits)		0.107	0.103	0.103	0.103
	Production Systems (Fruits)		0.107	0.103	0.103	0.103
	Protecting the Environment		0.107	0.103	0.103	0.103
	Strengthening NARS--Training		0.043	0.041	0.041	0.041
	Strengthening NARS--Information		0.021	0.021	0.021	0.021
	Strengthening NARS--Org & Mgt		0.021	0.021	0.021	0.021
	Strengthening NARS--Networks		0.021	0.021	0.021	0.021
			0.428	**0.412**	**0.412**	**0.412**
PE - 1: IPM	Production Systems (Beans)	0.157	0.235	0.226	0.226	0.226
	Production Systems (Cassava)	0.235	0.353	0.340	0.340	0.340
	Protecting the Environment	0.523	0.784	0.755	0.755	0.755
	Saving Biodiversity	0.261	0.392	0.377	0.377	0.377
	Strengthening NARS--Networks	0.131	0.196	0.189	0.189	0.189
		1.307	**1.959**	**1.886**	**1.886**	**1.886**

Table 4. CIAT- Cost Allocation: Allocation of Project Cost to CGIAR Activities, 2001-2005

(in $ million)

Project	Activity	2001 (actual)	2002 (estimated)	2003 (proposal)	2004 (plan)	2005 (plan)
PE - 2: TSBF/Soils	Enhancement and Breeding (Beans)	0.102	0.256	0.247	0.247	0.247
	Enhancement and Breeding (Cassava)	0.051	0.128	0.123	0.123	0.123
	Enhancement and Breeding (Rice)	0.013	0.032	0.031	0.031	0.031
	Enhancement and Breeding (Livestock)	0.089	0.224	0.216	0.216	0.216
	Production Systems (Beans)	0.063	0.158	0.152	0.152	0.152
	Production Systems (Cassava)	0.031	0.079	0.076	0.076	0.076
	Production Systems (Rice)	0.008	0.020	0.019	0.019	0.019
	Production Systems (Livestock)	0.239	0.598	0.576	0.576	0.576
	Protecting the Environment	0.682	1.709	1.646	1.646	1.646
	Saving Biodiversity	0.085	0.214	0.206	0.206	0.206
	Strengthening NARS--Networks	0.341	0.855	0.823	0.823	0.823
		1.704	**4.274**	**4.115**	**4.115**	**4.115**
PE - 3: Hillsides Watersheds	Production Systems (Bean)	0.023	0.057	0.054	0.054	0.054
	Production Systems (Cassava)	0.011	0.028	0.027	0.027	0.027
	Production Systems (Livestock)	0.034	0.085	0.082	0.082	0.082
	Protecting the Environment	0.819	2.036	1.961	1.961	1.961
	Saving Biodiversity	0.068	0.170	0.163	0.163	0.163
	Improving Policies	0.273	0.679	0.654	0.654	0.654
	Strengthening NARS--Networks	0.137	0.339	0.327	0.327	0.327
		1.366	**3.394**	**3.268**	**3.268**	**3.268**
PE - 4: Land Use in Latin America	Enhancement and Breeding (Beans)	0.057	0.047	0.075	0.075	0.075
	Enhancement and Breeding (Cassava)	0.057	0.047	0.038	0.038	0.038
	Enhancement and Breeding (Rice)	0.038	0.031	0.000	0.000	0.000
	Enhancement and Breeding (Livestock)	0.038	0.031	0.038	0.038	0.038
	Protecting the Environment	1.143	0.939	0.904	0.904	0.904
	Saving Biodiversity	0.191	0.157	0.151	0.151	0.151
	Improving Policies	0.381	0.313	0.301	0.301	0.301
		1.905	**1.565**	**1.507**	**1.507**	**1.507**
PE - 5: Sustainable Systems for Smallholders (merged)	Production Systems (Bean)	0.408				
	Production Systems (Cassava)	0.408				
	Production Systems (Livestock)	0.408				
	Protecting the Environment	0.856				
	Strengthening NARS--Training	0.122				
	Strengthening NARS--Information	0.122				
	Strengthening NARS--Networks	0.122				
		2.446				
PE- 6: Climate Change	Enhancement and Breeding (Beans)		0.034	0.033	0.033	0.033
	Enhancement and Breeding (Cassava)		0.034	0.033	0.033	0.033
	Enhancement and Breeding (Rice)		0.034	0.033	0.033	0.033
	Enhancement and Breeding (Livestock)		0.034	0.033	0.033	0.033
	Production Systems (Bean)		0.052	0.050	0.050	0.050
	Production Systems (Cassava)		0.052	0.050	0.050	0.050
	Production Systems (Rice)		0.053	0.051	0.051	0.051
	Production Systems (Livestock)		0.157	0.151	0.151	0.151
	Protecting the Environment		0.275	0.264	0.264	0.264
	Strengthening NARS--Training		0.020	0.019	0.019	0.019
	Strengthening NARS--Information		0.020	0.019	0.019	0.019
	Strengthening NARS--Networks		0.020	0.019	0.019	0.019
			0.785	**0.755**	**0.755**	**0.755**
SN - 1: Rural Agroenterprises Development	Production Systems (Beans)	0.051	0.032	0.031	0.031	0.031
	Production Systems (Cassava)	0.051	0.032	0.031	0.031	0.031
	Production Systems (Fruits)	0.053	0.033	0.032	0.032	0.032
	Production Systems (Livestock)	0.052	0.033	0.031	0.031	0.031
	Protecting the Environment	0.207	0.131	0.126	0.126	0.126
	Strengthening NARS--Training	0.103	0.065	0.063	0.063	0.063
	Strengthening NARS--Information	0.103	0.065	0.063	0.063	0.063
	Strengthening NARS--Org & Mgt	0.310	0.196	0.189	0.189	0.189
	Strengthening NARS--Networks	0.103	0.065	0.063	0.063	0.063
		1.035	**0.653**	**0.629**	**0.629**	**0.629**
SN - 2: Linkages with NARS (merged)	Strengthening NARS--Training	0.495				
	Strengthening NARS--Information	0.989				
	Strengthening NARS--Org & Mgt	0.082				
	Strengthening NARS--Networks	0.082				
		1.649				
SN - 3: Participatory Research	Enhancement and Breeding (Beans)	0.055	0.106	0.102	0.102	0.102
	Enhancement and Breeding (Cassava)	0.055	0.106	0.102	0.102	0.102
	Enhancement and Breeding (Livestock)	0.056	0.106	0.102	0.102	0.102
	Production Systems (Bean)	0.055	0.106	0.102	0.102	0.102
	Production Systems (Cassava)	0.055	0.106	0.102	0.102	0.102
	Production Systems (Livestock)	0.055	0.106	0.102	0.102	0.102
	Protecting the Environment	0.166	0.319	0.307	0.307	0.307
	Strengthening NARS--Training	0.033	0.064	0.061	0.061	0.061

Table 4. CIAT- Cost Allocation: Allocation of Project Cost to CGIAR Activities, 2001-2005

(in $ million)

Project	Activity	2001 (actual)	2002 (estimated)	2003 (proposal)	2004 (plan)	2005 (plan)
	Strengthening NARS--Information	0.033	0.064	0.061	0.061	0.061
	Strengthening NARS--Org & Mgt	0.100	0.191	0.184	0.184	0.184
		0.665	1.274	1.227	1.227	1.227
SN - 4: Information and Communication	Strengthening NARS--Training		0.309	0.298	0.298	0.298
	Strengthening NARS--Information		0.619	0.596	0.596	0.596
	Strengthening NARS--Org & Mgt		0.052	0.050	0.050	0.050
	Strengthening NARS--Networks		0.052	0.050	0.050	0.050
			1.031	0.993	0.993	0.993
BP - 1: Impact Assessment	Improving Policies	0.516	0.601	0.578	0.578	0.578
		0.516	0.601	0.578	0.578	0.578
SW - 1: Ecoregional Program for Tropical Latin America (eliminated)	Production Systems (Bean)	0.014				
	Production Systems (Cassava)	0.014				
	Production Systems (Rice)	0.014				
	Production Systems (Livestock)	0.016				
	Protecting the Environment	0.093				
	Saving Biodiversity	0.023				
	Improving Policies	0.023				
	Strengthening NARS--Training	0.012				
	Strengthening NARS--Networks	0.023				
		0.232				
SW - 2: Soil, Water, and Nutrient Management - SWNM	Production Systems (Bean)	0.017	0.014	0.014	0.014	0.014
	Production Systems (Cassava)	0.017	0.014	0.014	0.014	0.014
	Production Systems (Rice)	0.018	0.014	0.014	0.014	0.014
	Production Systems (Livestock)	0.122	0.097	0.097	0.097	0.097
	Protecting the Environment	0.291	0.231	0.231	0.231	0.231
	Improving Policies	0.058	0.046	0.046	0.046	0.046
	Strengthening NARS--Networks	0.058	0.046	0.046	0.046	0.046
		0.582	0.463	0.463	0.463	0.463
SW - 3: Participatory Research & Gender Analysis - PRGA	Enhancement and Breeding (Beans)	0.118	0.050	0.050	0.050	0.050
	Enhancement and Breeding (Cassava)	0.118	0.050	0.050	0.050	0.050
	Enhancement and Breeding (Rice)	0.118	0.050	0.050	0.050	0.050
	Enhancement and Breeding (Livestock)	0.118	0.050	0.050	0.050	0.050
	Production Systems (Bean)	0.117	0.050	0.050	0.050	0.050
	Production Systems (Cassava)	0.117	0.050	0.050	0.050	0.050
	Production Systems (Rice)	0.120	0.051	0.051	0.051	0.051
	Production Systems (Livestock)	0.118	0.050	0.050	0.050	0.050
	Protecting the Environment	0.566	0.242	0.242	0.242	0.242
	Strengthening NARS--Training	0.151	0.065	0.065	0.065	0.065
	Strengthening NARS--Information	0.151	0.065	0.065	0.065	0.065
	Strengthening NARS--Org & Mgt	0.038	0.016	0.016	0.016	0.016
	Strengthening NARS--Networks	0.038	0.016	0.016	0.016	0.016
		1.887	0.807	0.807	0.807	0.807
	TOTAL	30.365	33.600	32.400	32.400	32.400

Summary by Undertaking:

	2001 (actual)	2002 (estimated)	2003 (proposal)	2004 (plan)	2005 (proposal)
Increasing Productivity	12.997	14.724	14.197	14.197	14.197
Protecting the Environment	6.010	7.306	7.052	7.052	7.052
Saving Biodiversity	4.681	5.075	4.887	4.887	4.887
Improving Policies	1.378	1.744	1.681	1.681	1.681
Strengthening NARS	5.299	4.752	4.583	4.583	4.583
Total:	30.365	33.600	32.400	32.400	32.400

Summary by Output:

	2001 (actual)	2002 (estimated)	2003 (proposal)	2004 (plan)	2005 (plan)
Germplasm Improvement	8.584	10.826	10.432	10.432	10.432
Germplasm Collection	4.681	5.075	4.887	4.887	4.887
Sustainable Production	10.422	11.203	10.818	10.818	10.818
Policy	1.378	1.744	1.681	1.681	1.681
Enhancing NARS	5.299	4.752	4.583	4.583	4.583
Total:	30.365	33.600	32.400	32.400	32.400

Table 5. CIAT-Investment, 2001-2005

Investments by Production Sector, Commodity and Region (in $ million)

PRODUCTION SECTORS & COMMODITIES	2001 (actual)	2002 (estimated)	2003 (proposal)	2004 (plan)	2005 (plan)
1/ *Germplasm Enhancement & Breeding*					
Crops	**7.377**	**9.384**	**9.041**	**9.041**	**9.041**
Beans	3.272	4.557	4.389	4.389	4.389
Cassava	1.866	2.372	2.286	2.286	2.286
Rice	2.239	2.349	2.263	2.263	2.263
Tropical Fruits		0.107	0.103	0.103	0.103
Livestock	1.204	1.442	1.391	1.391	1.391
Trees					
Fish					
TOTAL	**8.581**	**10.827**	**10.432**	**10.432**	**10.432**
1/ *Production Systems Dev. & Management*					
Crops	**3.171**	**2.850**	**2.751**	**2.751**	**2.751**
Beans	1.643	1.360	1.311	1.311	1.311
Cassava	1.182	1.061	1.023	1.023	1.023
Rice	0.346	0.291	0.282	0.282	0.282
Tropical Fruits		0.140	0.134	0.134	0.134
Livestock	1.242	1.048	1.014	1.014	1.014
Trees					
Fish					
TOTAL	**4.413**	**3.898**	**3.765**	**3.765**	**3.765**
2/ ***Total Research Agenda***					
Crops	**24.649**	**27.918**	**26.912**	**26.912**	**26.912**
Beans	11.486	13.500	13.010	13.010	13.010
Cassava	7.123	7.832	7.551	7.551	7.551
Rice	6.041	6.023	5.809	5.809	5.809
Tropical Fruits		0.563	0.542	0.542	0.542
Livestock	5.716	5.682	5.488	5.488	5.488
Trees					
Fish					
TOTAL	**30.365**	**33.600**	**32.400**	**32.400**	**32.400**

REGION	2001 (actual)	2002 (estimated)	2003 (proposal)	2004 (plan)	2005 (plan)
Sub-Saharan Africa (SSA)	8.089	11.051	10.660	10.660	10.660
Asia	4.754	4.902	4.729	4.729	4.729
Latin American and the Caribbean (LAC)	16.979	17.336	16.701	16.701	16.701
West Asia and North Africa (WANA)	0.543	0.311	0.310	0.310	0.310
TOTAL	**30.365**	**33.600**	**32.400**	**32.400**	**32.400**

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/commmodities in Increasing Productivity, scaled up to total investments for the Research Agenda.

Loading Calculation

Total Research Agenda	2001	2002	2003	2004	2005
Beans	11.486	13.500	13.010	13.010	13.010
Cassava	7.123	7.832	7.551	7.551	7.551
Rice	6.041	6.023	5.809	5.809	5.809
Tropical Fruits		0.563	0.542	0.542	0.542
Livestock	5.716	5.682	5.488	5.488	5.488
	30.365	**33.600**	**32.400**	**32.400**	**32.400**

Table 6. CIAT- Expenditures, 2001 - 2005

Object of Expenditure, Capital Investment and Capital Fund Cash Reconciliation (in $ million)

OBJECT OF EXPENDITURE	2001 (actual)	2002 (estimated)	2003 (proposal)	2004 (plan)	2005 (plan)
Personnel	16.095	17.000	16.800	16.900	17.000
Supplies and Services	10.725	13.050	12.150	12.050	11.950
Operational Travel	2.317	2.400	2.300	2.300	2.300
Depreciation	1.228	1.150	1.150	1.150	1.150
TOTAL	**30.365**	**33.600**	**32.400**	**32.400**	**32.400**
CAPITAL INVESTMENTS	**2001 (actual)**	**2002 (estimated)**	**2003 (proposal)**	**2004 (plan)**	**2005 (plan)**
Infrastructure & Leasehold	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
Furnishing & Equipment					
Farming	0.045	0.050	0.050	0.050	0.050
Laboratory & Scientific	0.081	0.350	0.250	0.250	0.250
Office	0.015	0.035	0.030	0.030	0.030
Housing					
Auxiliary Units	0.031	0.050	0.050	0.050	0.050
Computers	0.371	0.700	0.400	0.400	0.400
Vehicles	0.365	0.490	0.420	0.370	0.370
Aircraft					
sub-total	**0.908**	**1.675**	**1.200**	**1.150**	**1.150**
TOTAL	**0.908**	**1.675**	**1.200**	**1.150**	**1.150**
CAPITAL FUND CASH RECONCILIATION	**2001 (actual)**	**2002 (estimated)**	**2003 (proposal)**	**2004 (plan)**	**2005 (plan)**
Balance, January 1	0.787	1.025	0.400	0.300	0.300
plus: annual depreciation charge	1.228	1.150	1.150	1.150	1.150
plus / minus: disposal gains/(losses)	0.166	0.150	0.150	0.150	0.100
plus / minus: other	-0.248	-0.250	-0.200	-0.150	-0.100
minus: asset acquisition costs	-0.908	-1.675	-1.200	-1.150	-1.150
equals: Balance, December 31	**1.025**	**0.400**	**0.300**	**0.300**	**0.300**

Table 7. CIAT - Financing: Unrestricted and Restricted Grants and Center Income, 2001-2003

(in $ million)

Member	2001 ($ actual)	2001 (nat. currency)	2002 ($ estimated)	2002 (nat. currency)	2003 ($ proposal)	2003 (nat. currency)
Unrestricted Contributions						
AUSTRALIA	0.099	0.200	0.108	0.200	0.109	0.200
BELGIUM	0.076	3.500	0.085	0.087	0.084	0.087
CANADA	0.728	1.125	0.726	1.125	0.721	1.125
DENMARK	0.231	2.000	0.000	0.000	0.000	0.000
GERMANY	0.141	0.153	0.237	0.255	0.247	0.255
JAPAN	1.089	142.617	0.800	0.800	0.800	0.800
MEXICO	0.010	0.010	0.010	0.010	0.010	0.010
NETHERLANDS	0.080	0.091	0.164	0.168	0.163	0.168
NORWAY	0.609	5.550	0.743	5.550	0.726	5.550
SOUTH AFRICA	0.025	0.025	0.050	0.050	0.050	0.050
SPAIN	0.100	0.100	0.000	0.000	0.000	0.000
SWEDEN	0.339	3.400	0.368	3.700	0.386	3.700
SWITZERLAND	0.826	1.400	0.762	1.300	0.861	1.300
THAILAND	0.014	0.014	0.014	0.014	0.014	0.014
USA	2.200	2.200	2.200	2.200	2.200	2.200
WORLD BANK	3.420	0.000	2.770	2.770	2.000	2.000
subtotal	9.985		9.035		8.372	

	2001 ($ actual)		2002 ($ estimated)		2003 ($ estimated)	
Restricted Contributions						
ADB	0.327		0.554		0.400	
AGROPOLIS	0.080		0.165		0.107	
AUSTRALIA	0.435		0.524		0.240	
BELGIUM	0.465		0.327		0.300	
BRAZIL	0.130		0.130		0.130	
CAF	0.000		0.172		0.150	
CANADA	0.542		0.627		0.587	
CEGA	0.077		0.090		0.050	
CGIAR	0.049		0.042		0.000	
CLAYUCA	0.031		0.055		0.100	
COLOMBIA	2.564		2.641		2.783	
DENMARK	0.137		0.000		0.000	
EU	1.656		2.026		1.970	
FAO	0.019		0.165		0.120	
FIDAR	0.015		0.007		0.000	
FLAR	0.540		0.300		0.300	
CIP	0.000		0.012		0.009	
FORD FDN	0.376		0.000		0.000	
FRANCE	0.716		0.776		0.843	
GEF	0.000		1.350		1.700	
GERMANY	1.272		1.826		1.414	
HUMBOLT INSTITUTE	0.000		0.023		0.000	
ICRAF	0.101		0.000		0.000	
IDB	0.067		0.000		0.000	
IDRC	0.508		0.453		0.446	
IFAD	0.033		0.255		0.227	
IFPRI	0.214		0.063		0.008	
IICA	0.006		0.044		0.044	
ILRI	0.263		0.041		0.175	
IIMI	0.000		0.020		0.400	
IPGRI	0.013		0.000		0.000	
IRAN	0.054		0.000		0.000	
ISNAR	0.008		0.000		0.000	
ITALY	0.173		0.116		0.113	
JAPAN	2.060	268,383	0.800		0.800	
KELLOGG FDN	0.160		0.490		0.367	
NETHERLANDS	0.324		0.572		0.557	
NEW ZEALAND	0.311		0.201		0.200	
NIPPON FDN	0.341		0.397		0.400	
NRI	0.013		0.000		0.000	
OTHERS:	0.085		0.075		0.092	
POLAR FDN	0.018		0.000		0.000	
PAPALOTLA	0.123		0.213		0.180	
PERU	0.000		0.050		0.050	
ROCKEFELLER FDN	0.427		1.032		1.103	
SPAIN	0.000		0.100		0.100	
SWITZERLAND	1.549		1.188		1.224	
SWEDEN	0.000		0.039		0.013	
UNIVERSITY OF UPPSALA	0.022		0.020		0.000	
UNITED KINGDOM	1.062		1.729		2.144	
UNIVERSITY OF HOHENHEIM	0.010		0.007		0.000	
USA	0.890		3.318		3.181	
WALLACE	0.027		0.000		0.000	
WORLD BANK	0.092		0.029		0.000	
subtotal	18.385		23.065		23.028	
TOTAL GRANTS	28.370		32.100		31.40	

Summary Statement of Activitiy	2001 ($ actual)	2002 ($ estimated)	2003 ($ proposal)
Member Grants	28.370	32.100	31.400
+ Center Income (other revenues)	2.103	1.000	1.000
= Total Revenues	30.473	33.100	32.400
Less:			
Total Expenses	30.365	33.600	32.400
Surplus/ (Deficit) of total revenues over total expenses	0.108	-0.500	0.000

Table 8 CIAT- Financing: Allocation of Investor Grants and Center Income to Projects, 2001-2003

(In $ million)

Project	Member	2001	2002	2003
SB - 1 : Genetic Resources (merged)	september 2001 Submission	1.120	1.020	1.020
	Colombia	0.140	-	-
	EC	0.401	-	-
	IPGRI	0.013	-	-
	Unrestricted + center inc	0.491	-	-
	Total Project Cost	**1.045**	**-**	**-**
SB-2. Conservation and Use of Tropical Genetic Resources	september 2001 Submission	3.560	3.460	3.460
	Agropolis	0.044	0.047	
	Belgium	0.465	0.327	0.300
	CEGA	0.077	0.090	0.050
	Colombia	0.092	0.200	0.175
	CTP	0.018		
	EC		0.378	0.373
	France	0.161	0.214	0.296
	FIDAR	0.015	0.007	
	IDRC	0.092	0.135	0.129
	Germany	0.230	0.779	0.581
	Humbolt Inst.		0.023	
	New Zealand	0.023	0.018	0.018
	NRI	0.013		
	Others		0.025	
	Rockefeller Fdn	0.142	0.051	0.049
	United Kingdom	0.018	0.032	0.381
	United States		0.700	0.686
	Wallace	0.027		
	Unrestricted + center inc	1.888	2.683	2.458
	Total Project Cost	**3.305**	**5.709**	**5.496**
IP - 1 : Beans Improvement for the Tropics	september 2001 Submission	1.610	1.710	1.710
	Canada		0.598	0.576
	IFPRI	0.035	0.033	
	IICA		0.044	0.044
	Iran	0.054		
	Others	0.006	0.014	
	Switzerland	0.278	0.854	0.734
	United Kingdom	0.348	0.282	0.283
	USA		1.308	1.400
	Unrestricted + center inc	0.704	1.028	0.969
	Total Project Cost	**1.425**	**4.161**	**4.006**
IP - 2 : Beans in Africa (merged)	september 2001 Submission	2.610	2.800	2.800
	Canada	0.518	-	-
	ICRAF	0.101	-	-
	Rockefeller Fdn	0.103	-	-
	Switzerland	0.501	-	-
	United Kingdom	0.147	-	-
	USA	0.362	-	-
	Unrestricted + center inc	0.812	-	-
	Total Project Cost	**2.544**	**-**	**-**
IP - 3 : Improve Cassava for the Developing World	september 2001 Submission	1.800	1.840	1.840
	CLAYUCA	0.031	0.054	0.100
	Colombia	0.415	0.710	0.681
	EU	0.546	0.692	0.682
	IFPRI	0.069	0.023	0.008
	Japan	0.600		
	Netherlands	0.150	0.394	0.377
	Rockefeller Fdn	0.130	0.113	0.147
	University of Uppsala	0.022	0.020	
	United States		0.080	0.035
	Unrestricted + center inc	0.014	0.042	0.019
	Total Project Cost	**1.977**	**2.128**	**2.049**
IP - 4 : Improved Rice for Latin America and the Caribbean	september 2001 Submission	2.290	2.400	2.400
	Agropolis	0.035	0.018	0.007
	Colombia	0.322	0.325	0.300
	EU	0.709	0.929	0.915
	FLAR	0.540	0.300	0.300
	France	0.300	0.447	0.447
	Peru		0.050	0.050
	Unrestricted + center inc	0.635	0.029	0.001
	Total Project Cost	**2.541**	**2.098**	**2.020**
IP - 5 : Tropical Grasses and Legumes	september 2001 Submission	2.220	2.330	2.330
	Australia	0.039		
	Colombia	0.509	0.513	0.564
	Germany	0.220	0.566	0.300
	ILRI		0.041	0.175
	Japan	0.650	0.550	0.550
	Papalotla	0.123	0.213	0.180
	Switzerland	0.038	0.037	0.039
	United Kingdom		0.100	0.177
	Unrestricted + center inc	0.651	0.252	0.202
	Total Project Cost	**2.230**	**2.272**	**2.187**

Table 8 CIAT- Financing: Allocation of Investor Grants and Center Income to Projects, 2001-2003

(in $ million)

Project	Member	2001	2002	2003
IP - 6 : Tropical Fruits	september 2001 Submission	-	-	-
	Colombia		0.085	0.119
	Others		0.015	
	Spain		0.100	0.100
	Unrestricted + center inc		0.228	0.193
	Total Project Cost	**-**	**0.428**	**0.412**
PE - 1: IPM	september 2001 Submission	1.190	1.220	1.220
	Colombia	0.077	0.055	0.150
	Denmark	0.104		
	France	0.108	0.015	
	Germany		0.218	0.174
	New Zealand	0.136	0.082	0.082
	United Kingdom	0.072	0.766	0.684
	United States	0.126	0.139	0.177
	Unrestricted + center inc	0.683	0.684	0.619
	Total Project Cost	**1.306**	**1.959**	**1.886**
PE - 2: TSBF/Soils	september 2001 Submission	1.850	1.690	1.690
	ADB		0.111	0.080
	Australia	0.012	0.090	0.045
	Colombia	0.038	0.199	0.199
	GEF		1.350	1.700
	Germany		0.030	0.126
	IDRC		0.092	0.107
	IFAD		0.255	0.227
	Hohenheim	0.009	0.007	
	Others		0.014	0.012
	Nippon Fdn	-	0.397	0.400
	Rockefeller Fdn		0.593	0.607
	United Kingdom	0.175	0.254	0.174
	United States		0.205	0.040
	Unrestricted + center inc	1.470	0.677	0.398
	Total Project Cost	**1.704**	**4.274**	**4.115**
PE - 3: Hillsides Watersheds	september 2001 Submission	1.330	1.390	1.390
	ADB		0.333	0.240
	Australia		0.344	0.150
	Canada	0.023	0.029	0.010
	Colombia			0.050
	EU		0.027	
	ISNAR	0.008		
	Kellogg Fdn		0.088	0.105
	Others	0.006		
	Rockefeller Fdn		0.193	0.153
	Switzerland	0.139	0.047	0.150
	United States	0.124	0.825	0.842
	Unrestricted + center inc	1.065	1.508	1.567
	Total Project Cost	**1.365**	**3.394**	**3.267**
PE - 4: Land Use in Latin America	september 2001 Submission	1.830	1.910	1.910
	Agropolis		0.100	0.100
	CAF		0.172	0.150
	Colombia	0.109	0.099	0.099
	FAO	0.019	0.165	0.120
	Germany		0.010	
	IDRC	0.018		
	Others	0.021	0.062	0.400
	Sweden		0.039	0.013
	World Bank	0.091	0.030	
	Unrestricted + center inc	1.647	0.888	0.625
	Total Project Cost	**1.905**	**1.565**	**1.507**
PE - 5: Sustainable Systems for Smallholders (merged)	september 2001 Submission	2.630	2.710	2.710
	ADB	0.327	-	-
	Australia	0.368	-	-
	Colombia	0.142	-	-
	IDB	0.010	-	-
	IDRC	0.034	-	-
	IFAD	0.018	-	-
	ILRI	0.263	-	-
	Japan	0.400	-	-
	Nippon Fdn	0.340	-	-
	Switzerland	0.008	-	-
	Unrestricted + center inc	0.536	-	-
	Total Project Cost	**2.446**	**-**	**-**
PE- 6: Climate Change	september 2001 Submission			
	Others			
	Unrestricted + center inc		0.785	0.755
	Total Project Cost	**-**	**0.785**	**0.755**

Table 8 CIAT- Financing: Allocation of Investor Grants and Center Income to Projects, 2001-2003

(in $ million)

Project	Member	2001	2002	2003
SN - 1: Rural Agroenterprises Development	september 2001 Submission	1.120	1.100	1.100
	Australia	0.017		
	Colombia	0.030		
	France	0.147	0.100	0.100
	IDRC	0.160	0.123	0.100
	Switzerland			0.100
	United Kingdom	0.303	0.296	0.296
	United States	0.048	0.062	
	Unrestricted + center inc	0.330	0.072	0.033
	Total Project Cost	**1.035**	**0.653**	**0.629**
SN - 2: Linkages with NARS (merged)	september 2001 Submission	1.630	1.490	1.490
	Brazil	0.130	-	-
	Colombia	0.665	-	-
	Germany	0.076	-	-
	IDRC	0.047	-	-
	Japan	0.400	-	-
	Rockefeller Fdn	0.019	-	-
	USA	0.229	-	-
	Unrestricted + center inc	0.083	-	-
	Total Project Cost	**1.649**	**-**	**-**
SN - 3: Participatory Research	september 2001 Submission	1.050	0.850	0.850
	ADB		0.111	0.080
	Australia		0.090	0.045
	CIP		0.012	0.009
	Denmark	0.033		
	Kellogg Fdn	0.160	0.403	0.262
	Rockefeller Fdn			0.125
	United Kingdom			0.150
	Switzerland	0.074	0.077	
	Unrestricted + center inc	0.398	0.581	0.556
	Total Project Cost	**0.665**	**1.274**	**1.227**
SN - 4: Information and Communication	september 2001 Submission			
	Brazil	-	0.130	0.130
	Colombia	-	0.406	0.421
	Japan	-	0.250	0.250
	Rockefeller Fdn	-	0.055	0.023
	Unrestricted + center inc	-	0.190	0.169
	Total Project Cost	**-**	**1.031**	**0.993**
BP - 1: Impact Assessment	september 2001 Submission	0.650	0.570	0.570
	CGIAR	0.029		
	Colombia	0.025	0.048	0.026
	Germany		0.048	0.018
	IDRC	0.007		
	IFAD	0.015		
	IFPRI	0.111	0.008	
	IICA	0.006		
	Others		-	0.080
	Unrestricted + center inc	0.323	0.496	0.454
	Total Project Cost	**0.516**	**0.600**	**0.578**
SW - 1: Ecoregional Program for Tropical Latin America (eliminated)	september 2001 Submission	0.200	0.200	0.200
	IDB	0.056	-	-
	Switzerland	0.176	-	-
	Unrestricted + center inc			
	Total Project Cost	**0.232**	**-**	**-**
SW - 2: Soil, Water, and Nutrient Management (SWNM)	september 2001 Submission	0.750	0.760	0.760
	Germany	0.179	0.176	0.115
	Netherlands	0.093	0.091	0.090
	Switzerland	0.240	0.114	0.130
	Unrestricted + center inc	0.070	0.081	0.128
	Total Project Cost	**0.582**	**0.462**	**0.463**
SW - 3: Participatory Research & Gender Analysis (PRGA)	september 2001 Submission	1.850	1.740	1.740
	Denmark			
	FORD FDN	0.376		
	Germany	0.567		0.100
	IDRC	0.151	0.102	0.111
	Italy	0.173	0.116	0.113
	Japan	0.010		
	Others	0.072	0.007	
	Netherlands	0.082	0.087	0.090
	New Zealand	0.151	0.101	0.100
	Rockefeller Fdn	0.034	0.026	
	Switzerland	0.094	0.059	0.070
	Unrestricted + center inc	0.177	0.310	0.223
	Total Project Cost	1.887	0.808	0.807

Center Totals

Total Restricted Funding	18.385	23.065	23.028
Total Unrestricted Funding	9.985	9.035	8.372
Total Center Income	2.103	1.000	1.000
Reserves	(0.108)	0.500	0.000
Total	**30.36**	**33.60**	**32.40**

Table 9. CIAT- Staff Composition: Internationally and Nationally Recruited Staff, 2000-2005

	2001 (actual)		2002 (estimated)		2003 (proposal)		2004 (plan)		2005 (plan)	
	Hired by:		Hired by:		Hired by:		Hired by:		Hired by:	
	center	other	center	other	center	other	center	other	center	other
Internationally-Recruited Staff (IRS)										
Research and Research Support	80	6	84	7	84	7	84	7	84	7
of which:										
Post-doctoral Fellows	6		3		3		3		3	
Associate Professionals	26	6	30	7	30	7	30	7	30	7
Training / Communications	2		2		2		2		2	
of which:										
Post-doctoral Fellows										
Associate Professionals										
Research Management	8		9		9		9		9	
of which:										
Post-doctoral Fellows										
Associate Professionals	1		1		1		1		1	
Total IRS	90	6	95	7	95	7	95	7	95	7
Support Staff	600		615		615		615		615	
TOTAL STAFF	690	6	710	7	710	7	710	7	710	7

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 10a. CIAT-Financial Position: Cash Requirement and Revenue Flow, 2001-2003

(in $'000)

MONTHLY CASH USES AND SOURCES

2001 Note: 1/	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Opening Cash Balance	5.957	8.883	5.350	4.996	3.713	3.725	3.551	2.895	2.561	2.417	2.558	5.178
Receipts												
Grants												
Unrestricted	4.300	0.089	1.200	0.100	1.246	0.230	0.040	0.000	0.000	0.275	1.320	1.185
Restricted	2.950	0.559	0.810	0.881	1.230	1.850	1.058	1.800	1.900	1.900	2.900	4.200
Earned Income/Others	0.066	0.319	0.066	0.066	0.066	1.066	0.066	0.066	0.056	0.066	0.700	0.500
Subtotal	**7.316**	**0.967**	**2.076**	**1.047**	**2.542**	**3.146**	**1.164**	**1.866**	**1.956**	**2.241**	**4.920**	**5.885**
Disbursements												
Operations	4.360	2.480	2.400	2.300	2.500	3.200	1.700	2.100	2.000	2.000	2.200	2.600
Capital Acquisition	0.030	0.030	0.030	0.030	0.030	0.120	0.120	0.100	0.100	0.100	0.100	0.125
Others	0.000	1.990	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Subtotal	**4.390**	**4.500**	**2.430**	**2.330**	**2.530**	**3.320**	**1.820**	**2.200**	**2.100**	**2.100**	**2.300**	**2.725**
Net monthly movement	2.926	-3.533	-0.354	-1.283	0.012	-0.174	-0.656	-0.334	-0.144	0.141	2.620	3.160
Ending Cash Balance	**8.883**	**5.350**	**4.996**	**3.713**	**3.725**	**3.551**	**2.895**	**2.561**	**2.417**	**2.558**	**5.178**	**8.338**

2002 Note: 2/	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Opening Cash Balance	8.338	8.038	7.668	8.568	7.468	6.118	6.708	5.700	4.800	5.450	6.700	7.550
Receipts												
Grants												
Unrestricted	1.800	0.880	0.000	0.350	0.100	1.570	0.300	0.200	0.800	1.600	0.800	0.800
Restricted	0.950	1.350	3.400	0.900	1.100	1.570	0.750	2.000	2.950	2.800	2.800	2.600
Earned Income/Others	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.500	0.100
Subtotal	**2.850**	**2.330**	**3.500**	**1.350**	**1.300**	**3.240**	**1.150**	**2.300**	**3.850**	**4.500**	**4.100**	**3.500**
Disbursements												
Operations	3.000	2.500	2.500	2.300	2.400	2.500	2.008	3.000	3.000	3.000	3.000	3.000
Capital Acquisition	0.100	0.150	0.050	0.100	0.200	0.100	0.100	0.150	0.150	0.200	0.200	0.200
Others	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050
Subtotal	**3.150**	**2.700**	**2.600**	**2.450**	**2.650**	**2.650**	**2.158**	**3.200**	**3.200**	**3.250**	**3.250**	**3.250**
Net monthly movement	-0.300	-0.370	0.900	-1.100	-1.350	0.590	-1.008	-0.900	0.650	1.250	0.850	0.250
Ending Cash Balance	**8.038**	**7.668**	**8.568**	**7.468**	**6.118**	**6.708**	**5.700**	**4.800**	**5.450**	**6.700**	**7.550**	**7.800**

2003 Note: 3/	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Opening Cash Balance	7.800	8.070	7.640	7.560	6.279	5.049	4.119	3.185	3.155	3.875	5.295	6.315
Receipts												
Grants												
Unrestricted	1.300	0.900	0.550	0.050	0.100	0.100	0.300	0.400	0.800	1.600	0.800	0.700
Restricted	2.000	1.300	2.000	1.300	1.300	1.700	1.300	2.150	2.450	2.350	2.850	3.255
Earned Income/Others	0.120	0.120	0.120	0.120	0.120	0.120	0.120	0.120	0.120	0.120	0.120	0.280
Subtotal	**3.420**	**2.320**	**2.670**	**1.470**	**1.520**	**1.920**	**1.720**	**2.670**	**3.370**	**4.070**	**3.770**	**4.235**
Disbursements												
Operations	3.000	2.600	2.600	2.600	2.600	2.700	2.504	2.550	2.500	2.500	2.600	2.600
Capital Acquisition	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100
Others	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050
Subtotal	**3.150**	**2.750**	**2.750**	**2.750**	**2.750**	**2.850**	**2.654**	**2.700**	**2.650**	**2.650**	**2.750**	**2.750**
Net monthly movement	0.270	-0.430	-0.080	-1.281	-1.230	-0.930	-0.934	-0.030	0.720	1.420	1.020	1.485
Ending Cash Balance	**8.070**	**7.640**	**7.560**	**6.279**	**5.049**	**4.119**	**3.185**	**3.155**	**3.875**	**5.295**	**6.315**	**7.800**

Table 10b. CIAT- Financial Position: Currency Structure of Expenditures, 2001-2003

	2001 (actual)			2002 (estimated)			2003 (proposal)		
Currency	Amount	$ value	% share	Amount	$ value	% share	Amount	$ value	% share
US Dollar		15.182	50%		16.464	49%		16.200	50%
Colombian Peso	31,428	13.664	45%	36,221	14.784	44%	37,129	13.932	43%
Others	[redacted]	1.518	5%	[redacted]	2.352	7%	[redacted]	2.268	7%
TOTAL	[redacted]	30.365	100%	[redacted]	33.600	100%	[redacted]	32.400	100%

Table 11. CIAT- Financial Position: Assets, Liabilities and Net Assets, 2001 - 2005

(in $'000)

	2001 (actual)	2002 (estimate)	2003 (proposal	2004 (plan)	2005 (plan)
Assets					
Current Assets					
Cash & Cash Equivalents	8,338	7,800	7,800	7,800	7,800
Accounts Receivable					
Donors	3,883	3,400	3,200	3,100	3,000
Employees	145	130	130	130	130
Other	1,041	1,000	800	760	700
Inventories	263	250	250	200	200
Prepaid Expenses	170	150	150	150	150
Investments	1,070	1,150	1,230	1,300	1,350
Total Current Assets	**14,910**	**13,880**	**13,560**	**13,440**	**13,330**
Fixed Assets					
Property, Plant, & Equipment	23,180	24,480	25,580	26,680	27,780
Less: Accumulated Depreciation	-13,380	-14,380	-15,380	-16,380	-17,380
Total Fixed Assets - Net	**9,800**	**10,100**	**10,200**	**10,300**	**10,400**
Other assets	**66**	**60**	**60**	**60**	**50**
Total Assets	**24,776**	**24,040**	**23,820**	**23,800**	**23,780**
Liabilities and Net Assets					
Current Liabilities					
Bank Indebtedness	0	0	0	0	0
Accounts Payable					
Donors	4,277	4,000	3,800	3,600	3,400
Employees	436	400	400	400	400
Others	2,111	2,000	1,800	1,800	1,800
In-Trust Accounts	1,056	1,000	1,000	1,000	1,000
Accruals and Provisions [1/]	494	658	758	858	958
Total Current Liabilities	**8,374**	**8,058**	**7,758**	**7,658**	**7,558**
Long-Term Liabilities	2,986	3,066	3,146	3,226	3,306
Total Liabilities	**11,360**	**11,124**	**10,904**	**10,884**	**10,864**
Net Assets					
Appropriated	251	130	100	100	50
Unappropriated	13,165	12,786	12,816	12,816	12,866
Total Net Assets	**13,416**	**12,916**	**12,916**	**12,916**	**12,916**
Total Liabilities & Net Assets	**24,776**	**24,040**	**23,820**	**23,800**	**23,780**

Appendix III

List of Acronyms and Abbreviation

List of Acronyms and Abbreviations

Acronyms

ACERG	Asociación de Centros Educativos del Cañon del Río Garrapatas, Colombia
ACIAR	Australian Centre for International Agricultural Research
ADB	Asian Development Bank
AHI	African Highland Initiative
APC	Association for Progressive Communications
ASARECA	Association for Strengthening Agricultural Research in Eastern and Central Africa
ASOCOLFLORES	Asociación Colombiana de Exportadores de Flores
AVRDC	Asian Vegetable Research and Development Center
Bean/Cowpea CRSP	Bean/Cowpea Collaborative Research Support Program (*of the* Univ. Georgia, USA)
BOT	Board of Trustees (*of* CIAT)
CA	Département des Cultures Annuelles (*of* CIRAD)
CAMBIA	Centre for the Application of Molecular Biology to International Agriculture, Australia
CARDER	Corporación Autónoma Regional de Risaralda, Colombia
CARE	Cooperative for American Relief Everywhere, USA
CATIE	Centro Agrónomico Tropical de Investigación y Enseñanza, Costa Rica
CBN	Cassava Biotechnology Network
CENIPALMA	Centro de Investigación en Palma de Aceite, Colombia
CIAT	Centro de Investigación Agrícola Tropical, Bolivia
CIFOR	Centre for International Forestry Research, Indonesia
CIMMYT	Centro Internacional para Mejoramiento de Maiz y Trigo, Mexico
CIP	Centro Internacional de la Papa, Peru
CIPASLA	Consorcio Interinstitucional para una Agricultura Sostenible en Laderas, Colombia
CIPAV	Fundación del Centro para la Investigación en Sistemas Sostenibles de Producción Agropecuaria, Colombia
CIRAD	Centre de Coopération Internationale en Recherche Agronomique pour le Développement, France
CLAYUCA	Consorcio Latinoamericano y del Caribe de Apoyo a la Investigación y Desarrollo de la Yuca, *based in* Colombia
CLODEST	Comité Local para el Desarrollo Sostenible de la Cuenca del Río Tascalapa, Honduras
CNPMF	Centro Nacional de Pesquisa de Mandioca e Fruticultura Tropical (*of* EMBRAPA)
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"
CONDESAN	Consorcio para el Desarrollo Sostenible de la Ecorregión Andina, Peru
CORPOICA	Corporación Colombiana de Investigación Agropecuaria
CRCTPP	Cooperative Research Centre for Tropical Plant Pathology, Australia
CRS	Catholic Relief Services, USA
CSIRO	Commonwealth Scientific and Industrial Research Organisation, Australia
CURLA	Centro Universitario Regional del Litoral Atlántico, Honduras
CVC	Corporación Autónoma Regional del Valle del Cauca, Colombia
DANAC	La Fundación para la Investigación Agrícola—Danac, Venezuela
DANIDA	Danish International Development Agency, Denmark
DBT	Department for Biotechnology and Biological Control (*of the* Univ. Kiel, Germany)
DFID	Department for International Development, UK
DGIS	Directorate-General for International Co-operation, the Netherlands
DICTA	Dirección de Ciencia y Tecnología Agropecuaria, Honduras
DNP	Departamento Nacional de Planeación, Colombia
EAP-Zamorano	Escuela Agrícola Panamericana *at* Zamorano, Honduras
EC	Economic Commission (*of the* European Union)
ECABREN	Eastern and Central Africa Bean Research Network
ECLAC	Economic Commission for Latin America and the Caribbean
EMBRAPA	Empresa Brasileira de Pesquisa Agropecuária

EPMR	External Program and Management Review (*of* CIAT)
ETH	also ETHZ; Eidgenössische Technische Hochschule—Zürich, Switzerland
E-TIP	Ecologia's Environmental Technical Information Project (online service)
FAO	Food and Agriculture Organization of the United Nations
FCRI	Field Crop Research Institute, Thailand
FEDEARROZ	Federación Nacional de Arroceros, Colombia
FLAR	Fondo Latinoamericano y del Caribe para Arroz de Riego, *based at* CIAT
FONAIAP	Fondo Nacional de Investigaciones Agropecuarias, Venezuela
FPR-IPM	Farmer Participatory Research for IPM Project (*of the* SP-IPM *and* SP-PRGA)
GEF	Global Environment Facility (*of the* UNDP, UNEP, *and* World Bank)
GRU	Genetic Resources Unit (*of* CIAT)
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit (German Agency for Technical Cooperation)
GWG	Gender Working Group (*of the* SP-PRGA)
HAP	Hillside Agricultural Program, Haiti
IAR	Institute for Agricultural Research, Nigeria
IBSRAM	International Board for Soil Research and Management, Thailand
ICA	Instituto Colombiano Agropecuario
ICARDA	International Center for Agricultural Research in the Dry Areas, Syria
ICER	Internally Commissioned External Review (*of* CIAT)
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
ICWG—CC	Inter-Center Working Group on Climate Change (*of the* CGIAR)
IDEAM	Instituto de Hidrología, Meteorología y Estudios Ambientales, Colombia
IDIAP	Instituto de Investigación Agropecuaria de Panamá
IDRC	International Development Research Centre, Canada
IER	Institut d'Economie Rurale du Mali
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 Avícolas, Cuba
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
INERA	Institut de l'Environnement et de Recherches Agricoles, Burkina Faso
INIA	Instituto de Investigaciones Agropecuarias, Chile
INIA	Instituto Nacional de Investigación Agraria, Peru (*now* INIAA)
INIA	Instituto Nacional de Investigación Agropecuaria, Uruguay
INIA	Instituto Nacional de Investigaciones Agrícolas de Venezuela
INIAA	Instituto Nacional de Investigación Agraria y Agroindustrial, Peru (*formerly* INIA)
INIAP	Instituto Nacional Autónomo de Investigaciones Agropecuarias, Ecuador (*formerly* Instituto Nacional de Investigaciones Agropecuarias)
INIFAP	Instituto Nacional de Investigaciones Forestales, Agrícolas y Pecuarias, Mexico
INIVIT	Instituto de Investigaciones de Viandas Tropicales, Cuba
INPA	Instituto Nacional de Pesquisas da Amazônia, Brazil
INPE	Instituto Nacional de Pesquisas Espaciais, Brazil
INRAB	Institut National des Recherches Agricoles du Bénin
INRAN	Institut National des Recherches Agronomiques du Niger
INTA	Instituto Nacional de Tecnología Agropecuaria, Argentina
INTA	Instituto Nicaragüense de Tecnología Agropecuaria

IPCA	Proyecto de Investigación Participativa en Centroamérica, *based in* Honduras
IPGRI	International Plant Genetic Resources Institute, Italy
IPP	Institute for Plant Protection, Germany
IPRA	Investigación Participativa en Agricultura/*Participatory Research in Agriculture, based at* CIAT
IRD	Institut de Recherche pour le Développement, France (*formerly* ORSTOM)
IRRI	International Rice Research Institute, the Philippines
ITRA	Institut Togolais de Recherche Agronomique
IVITA	Instituto Veterinario de Investigaciones Tropicales y de Altura, Peru
IWMI	International Water Management Institute, Sri Lanka (*formerly* International Irrigation Management Institute)
JIRCAS	Japan International Research Center for Agricultural Sciences
KARI	Kenya Agricultural Research Institute
KSU	Kansas State University, USA
Lempira Sur	FAO project in Honduras to change slash-and-burn agriculture
LSU	Louisiana State University, USA
MADR	Ministerio de Agricultura y Desarrollo Rural, Colombia
MinAmbiente	Ministerio del Medio Ambiente, Colombia
MIS	*also* MIS Group; Management and Information Systems Research Group (*of the* Univ. York, UK)
MT	Management Team (*of* CIAT)
NARO	National Agricultural Research Organization, Uganda
NCAR	National Center for Atmospheric Research, USA
NCGR	National Center for Genome Resources, USA
NLH	Norges Landbrukshøgskole (Agricultural University of Norway)
NRI	Natural Resources Institute, UK
NRMG	Natural Resource Management Group (*of the* SP-PRGA)
OFI	Oxford Forestry Institute, UK
ORSTOM	L'Institut Français de Recherche Scientifique pour le Développement en Coopération (*now* IRD)
PABRA	Pan-Africa Bean Research Alliance
PASOLAC	Programa de Agricultura Sostenible de Laderas en Centro América
PBG	Plant Breeding Group (*of the* SP-PRGA)
PhAction	Global Post-*h*arvest Forum
PROCITROPICOS	Programa Cooperativo de Investigación y Transferencia de Tecnología para los Trópicos Suramericanos
PRODAR	Programa de Desarrollo de la Agroindustria Rural para América Latina y el Caribe, *based in* Costa Rica
PROFRIJOL	Programa Cooperativo Regional de Frijol para Centro América, México y el Caribe
PROFRIZA	Proyecto Regional de Frijol para la Zona Andina
PRONATTA	Programa Nacional de Transferencia de Tecnología Agropecuaria, Colombia
RDA	Rural Development Administration, Korea
RIVM	Rijksinstitut voor Volksgezondheid en Milienhygiene (National Institute of Public Health and Environmental Protection), the Netherlands
SABRN	South Africa Bean Research Network
SDC	Swiss Agency for Development and Cooperation
SEARCA	Southeast Asia Regional Center for Graduate Study and Research in Agriculture
SENA	Servicio Nacional de Aprendizaje, Colombia
SINCHI	Instituto Amazónico de Investigaciones Científicas, Colombia
SINGER	The CGIAR System-wide Information Network for Genetic Resources
SLU	Sveriges Lantbruksuniversitet (Swedish University of Agricultural Sciences)
SP-IPM	Systemwide Program on Integrated Pest Management (*of the* CGIAR)
SP-PRGA	The CGIAR Systemwide Programme on Participatory Research and Gender Analysis for Technology Development and Institutional Innovation

SRI	Soil Research Institute, Ghana
SWNM	The CGIAR Systemwide Program on Soil, Water & Nutrient Management
TAC	Technical Advisory Committee (*of the* CGIAR)
TCA	Tratado de Cooperación Amazónica
TSBF	Tropical Soil Biology and Fertility Programme, Kenya (*now* TSBFI)
TSBFI	Tropical Soil Biology and Fertility Institute (*of* CIAT, *formerly* TSBF)
UCor	Universidad Católica de Córdoba, Argentina
UCR	Universidad de Costa Rica
UNA	Universidad Nacional Agraria, Nicaragua
UNAH	Universidad Nacional Autónoma de Honduras
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNIVALLE	Universidad del Valle, Colombia
UPWARD	Users' Perspectives With Agricultural Research and Development, *based in* the Philippines
USDA	United States Department of Agriculture
WARDA	West Africa Rice Development Association, Cote d'Ivoire
WRI	World Resources Institute, USA
WWW	World Wide Web

Abbreviations

Ac/Ds	The first pair of transposons discovered (biotechnology)
ACMV	African cassava mosaic virus
AES	Agroecosystem
AFS	Agroforestry systems
Al	Aluminum
ARIs	Advanced research institutes
AROs	Advanced research organizations
BGBD	Below-ground biodiversity
C	Carbon
CA	*Central America*
CBB	Cassava bacterial blight; *also* Common bacterial blight of beans
CBWM	Community-based watershed management
CC	Climate change
CD-ROM	Compact disk—read-only memory
CFSD	Cassava frogskin disease
CH_4	Methane (a pollutant)
CIALs	Comités de investigación agrícola local (Colombia)
CLOs	Comités locales (local committees)
CO_2	Carbon dioxide (a pollutant)
DCs	Developed countries
DNA	Deoxyribonucleic acid
DS	Decision support
ESTs	Expressed sequence tags (biotechnology)
FM	Forest margins
FPR	Farmer participatory research
FTE	Full-time equivalent
GA	Gender analysis
GCC	Global climate change
GHG	Greenhouse gases
GIS	Geographic information systems

GM	Genetically modified
GOs	Governmental organizations
GWP	Global warming potential
HS	Hillsides
IAEM	Integrated agroecosystem management and conservation
IARCs	International agricultural research centers (the CGIAR system)
ICTs	Information and communication technologies
INIAs	Instituciones nacionales de investigación agropecuaria (national institutions for agricultural and livestock research)
IPM	Integrated pest management
IPR	Intellectual property rights
ISFM	Integrated soil-fertility management
LA	Latin America; Latin American
LAC	Latin America and the Caribbean
LDCs	Lesser developed countries
LIMS	Laboratory information management systems
LoRSDIs	Local rural sustainable development initiatives
M&E	Monitoring and evaluation
MAS	Marker-assisted selection
MTA	Material transfer agreement (used in germplasm exchange)
MTP	Medium-Term Plan (CIAT)
N	Nitrogen
N_2O	Nitrous oxide (a pollutant)
NARES	National agricultural research and extension systems
NARIs	National agricultural research institutes
NARS	National agricultural research systems
NGOs	Nongovernmental organizations
NRM	Natural resource management
NZ	New Zealand
P	Phosphorus
PB	Plant breeding
PM&E	Participatory monitoring and evaluation
PPB	Participatory plant breeding
PR	Participatory research
QTLs	Quantitative trait loci
R&D	Research and development
RHBV	Rice "hoja blanca" virus (rice white leaf virus)
RIIs	Research intensive institutions
R-to-C	Resource-to-consumption *framework*
SP	Systemwide program (*of the* CGIAR)
SROs	Specialized research organizations
SS	Senior staff (*of* CIAT)
TLA	Tropical Latin America