SCIENCE COUNCIL

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Report of the Sixth External Program and Management Review (EPMR) of the Centro Internacional de Agricultura Tropical (CIAT)

January 2008

CONSULTATIVE GROUP ON INTERNATIONAL AGRICULTURAL RESEARCH

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Report of the Sixth External Program and Management Review (EPMR) of the Centro Internacional de Agricoltura Tropical (CIAT)

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THIS DOCUMENT CONTAINS:

- Extracts from the Summary Record of Proceedings of the Annual General Meeting 2007 (AGM07)
- Science Council Commentary
- CIAT Response to the Sixth EPMR
- Transmittal letter and Report of the Panel on the Sixth CIAT EPMR

Consultative Group on International Agricultural Research (CGIAR)

CGIAR Annual General Meeting, 2007 (AGM07)[1]

Agenda Item 11. Evaluation (cont'd)

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11.b CIAT EPMR

Conclusion and Decisions:

The CGIAR endorsed the ExCo recommendations on the 6th CIAT EPMR.

- To demonstrate its commitment to taking fiduciary and accountability standards seriously, the CGIAR requested CIAT to develop a more specific reinvigoration plan that includes options and takes into account Members' concerns. Members were requested to send written comments on the existing reinvigoration plan to the Center, copied to the finance team at the CGIAR Secretariat within one week.
- A special meeting on CIAT will be held at the end of January 2008 to examine details of the reinvigoration plan and make decisions on next steps, including consideration of the option of realignment, if necessary.
- The ExCo ad hoc committee on finance should be established immediately and tasked with examining the CIAT reinvigoration plan, including on governance issues in addition to finance. Its analysis will be an input into the special January 2008 meeting on CIAT .
- The CGIAR Secretariat was requested to develop TORs for the ExCo ad hoc committee on finance and suggested membership, to be approved virtually so the ad hoc committee may start its work as soon as possible. (This decision supersedes the decision in an earlier agenda item (2. CGIAR Change Management Process) for the Change Management Working Group on funding mechanisms to develop TORs for the ExCo ad hoc committee on finance.)
- ExCo 14 (May 2008) will take stock of progress on CIAT.
- There is also the need for a serious analysis of how to avoid similar situations in the future. The System must use the CIAT case and the outcome of the January 2008 meeting to improve donor behavior and financial management of Centers.
- A paper on lessons learned on what could have been done to avoid the current situation will be commissioned. It should be available for discussion at the May 2008 ExCo meeting, and also serve as an input into the governance part of the change management process.
- The CGIAR commended the scientific community at the Center for their resilience in the face of severe problems, and for the scientific excellence of their research.
- The CGIAR also expressed thanks and support to the Board Chair and Interim DG and their efforts to improve the situation.

[1] Extract from the Summary record of Proceedings of Annual General Meeting, 6-7 December 2007

Science Council Commentary
on the Sixth External Program and Management Review of the Centro Internacional de Agricoltura Tropical (CIAT)

September 2007

The Science Council considered the Report of the Sixth External Program and Management Review (EPMR) of CIAT, and the Center's response, at the SC's eighth meeting at FAO in Rome on the 27th of August, 2007. The main findings and recommendations of the EPMR Panel were presented by the Panel Chair, Dr. Eduardo Venezian. Responses on behalf of the Center were made by Board Chair, Dr. Yves Savidan, and by CIAT Director General, Dr. Joachim Voss.

The SC thanks the Panel for their detailed and constructive work stressing the need for CIAT to emerge from its current crisis and acknowledging that the Panel had a difficult task. The SC notes CIAT's mostly positive response to the EPMR Report and its 19 recommendations, of which the Center fully agrees to implement 13 and partially agrees with 6.

Overview
Two key findings from the review were the need to overcome governance and management shortcomings and to clarify CIAT's future strategic research agenda. The Panel recommended improvements in seven categories: organization and planning of research, research management, specific research topics, regional organization of research, intellectual property, center management, and governance. The Council agrees with the Panel that the Center needs to quickly emerge from the most recent turmoil and instability by rethinking its research strategy and by revitalizing its leadership. The SC concurs that this is a crucial time for CGIAR donors to invest collectively in CIAT's turnaround, subject to program, governance and management changes detailed in the EPMR report.

Program
The Council welcomed the Panel's positive assessment of the quantity and quality of CIAT's research for development, their productive and relevant work and world class scientific programs. The SC believes that the quality and the relevance of CIAT's science should be the basis and starting point in reshaping CIAT as a solid, high performing global research institute. The Council notes that, in general, the Center had responded only half-heartedly to the 5th EPMR (2000) and suggests that this might have contributed to the current problems the institute is facing. The Council suggests strengthening the recently started practice of monitoring the implementation of EPMR recommendations through the annual MTP review.

The SC concurs with the Panel that an overarching vision and a comprehensive strategic plan needs to be prepared. The lack of such road map in the recent past has resulted in seemingly constant organizational and management changes. The SC suggests that this strategic planning exercise should not be started until the next administration of the Center is in place.
The proposed "outcome line" concept, seeking to integrate natural resource management research with CIAT mandated commodities in regional programs, should be seriously considered by the Center in the forthcoming strategic planning exercise. Due consideration should be given to ensure that the production of IPGs will result. Thus the Council, in addition to monitoring the implementation of EPMR recommendations through the annual

MTP review, recommends that a) the SC review a draft of the new strategic plan before it is approved by the Board, and, b) a focused follow up review be undertaken by the SC eighteen months after the review of the draft strategic plan to report on the progress.

The SC concurs with the Panel recommendations to maintain key research themes and functions (crop protection, forage and rice research, IP capacity, spatial analysis and social science work). The Council also agrees with the Panel's recommendation to strengthen CIAT's agrobiodiversity research program, mainstreaming the current agroecosystem program activities. CIAT's Genetic Resource Unit staffing has been an apparent casualty of the crisis; with additional losses of essential critical mass in entomology, pathology, virology and physiology which the Panel believes should be remedied as a priority (Rec.3). This is strongly supported by the SC and deserves added funding support from investors. The SC feels that the Panel's Recommendation 4, on closer collaboration with ILRI in SSA on forage genetic resources, is highly appropriate, as is Recommendation 6 on IPR in rice and *Brachiaria*.

The SC stresses the need for CIAT and IITA to agree, without delay, on how to coordinate cassava research in SSA. There is a good model for this in the recently negotiated alignment arrangements for rice research in Africa among CIAT, IRRI and the Africa Rice Center. As cassava is arguably a higher current priority food staple than rice for SSA, it deserves to be on top of the alignment agenda for the continent. The SC looks to the Alliance to have resolved any ongoing issues such that a new agreement is in place in 2008.

The Panel considers that CIAT's program and its credibility in LAC is eroding. The SC supports the Panel recommendation for CIAT to re-engage with research partners in Latin America as soon as possible, not missing the opportunities inherent in the forthcoming strategic planning exercise and paying particular attention to the deterioration of relations between CIAT and Colombia, its host country.

Based on the Panel's assessment, the SC believes that CIAT's Asian program appears to include a series of technical assistance projects of an adaptive nature; although well integrated within the region, it lacks visibility at the CIAT HQ.

The TSBF is considered by the Panel as an exemplary program, with many outputs and a high reputation. CIAT is to be congratulated for this accomplishment. The TSBF program is perhaps a possible multidisciplinary systems-based model for the "outcome line" approach proposed by the Panel.

The Panel commends CIAT's regional programs that have matured to be the principal strategic platform for R for D for CIAT. It sees "outcome lines" in the regions as the model for CIAT in future, with regional leaders to be given more autonomy in a decentralization strategy as indicated in Recommendation 9. However, the Panel feels CIAT management is ill-equipped to support this. This is not a problem peculiar to CIAT alone and thus deserves more discussion at both the Center and system levels as it seems to be essentially a matrix management mode (Fig 7.10), with the attendant challenges this implies.

Management and Governance

The SC agrees with the Panel, and is pleased to note the Center also acknowledges, CIAT's need to improve HR management and devise a new IRS staff policy. The SC would like to

emphasize that as recommended by the Panel, and by 5th EPMR (2000), that CIAT needs to add operational capacity and devise a plan to manage IP.

The SC concurs with the Panel that the current management intervention of the Center by the Board, although justified given the financial and management crisis, should end as soon as possible and that an action plan to improve management should be put in place as a matter of urgency. The SC also agrees with the Panel that the Board should have done better on due diligence seeing that, as the report indicates, management lacked the required finance and management skills and "….CIAT was living beyond its means since 2002." (p.114). The SC is pleased to see that given the magnitude and the length of the financial crisis the current CIAT Board of Trustees has made efforts to strengthen its financial management expertise.

The SC remains perplexed by the lack of effective and anticipatory CGIAR oversight of Center finance management. The SC believes that the CGIAR cannot afford recurrent crises such as this one without the necessary sound preventive measures. Such measures should go beyond the current annual financial flagging that a Center is not in a "healthy" financial position. If CIAT was spending in excess of its revenues since 2002, as stated by the Panel and agreed by the Center, the CGIAR System cannot wait 5 years for an external review to address the situation. The SC suggests that the CGIAR Scoping Team assess the need to create a stable mechanism to better anticipate and deal with finance, management and governance crises such as the one CIAT has gone through.

The SC notes that CIAT, just as with some other Centers, is losing focus in its research through a much higher reliance on restricted / project funds than in the past. The SC sees one way to assist the Centers deal with the decline is to urge members to support the resourcing of the SPs. The SC recognizes that most research institutes today are largely funded through restricted project funding; it is not unique to the CGIAR. However, funding a long-term strategic international agricultural research agenda with a focus on IPGs is not conducive to short-term projects with attendant short-term impact expectations, and does place a special responsibility on investors in the CGIAR. The SC believes that this also requires the system and the Centers to have more discipline in their undertakings; Centers need clear strategic plans, focused MTPs, aligned business plans to resource them and a strong management team to stay focused on implementing them.

In summary

The SC endorses the recommendations of the Report, notes that the Center is in a process of renewal of leadership and looks forward to CGIAR membership support to the Center's transition into a revitalized global research institute. The SC will review a draft strategic plan that will outline a research approach to implement the EPMR recommendations soon after a new management team is in place. The SC also recommends that a small team re-visit the Center within 18 months to report on the progress in implementing the EPMR recommendations.

CIAT's RESPONSE TO THE 6TH EXTERNAL PROGRAM AND MANAGEMENT REVIEW PANEL RECOMMENDATIONS

The CIAT Management and Board of Trustees welcome the recommendations, suggestions and observations of the 6th EPMR Review Panel. We found that the panel was truly dedicated to the interests of CIAT and of its mission.

The review came shortly after a second significant staff downsizing in a two year period. This was made necessary by a financial crisis brought on by a combination of highly unfavorable local currency conditions, further significant reductions in core income and the center's failure to implement full cost special project budgeting in a sufficiently timely manner.

In this context, the panel's quest for solutions in order to reinvigorate the center is much appreciated. We are in substantial agreement with the Panel's diagnoses and with many of the proposed remedies.

We are grateful that the panel recognized the progress CIAT has made over the last 7 years in strengthening and building excellent regional programs in Africa and Asia and the high quality partnerships we have built in the Challenge Programs and beyond.

The exceptional rankings of our gene bank and of CIAT's Tropical Soil Biology and Fertility Institute are a source of special satisfaction as we consider these to be core strengths on which much of the rest of our research builds. This is especially true of our highly rated commodity and biotechnology related science.

Amongst our accomplishments we would include the pivotal role CIAT played in bringing the Gates foundation into the CGIAR and into Agriculture via the Harvest Plus Challenge Program. We are also proud of the dedicated and effective efforts of the DG and of the previous BOT chair Dr. Jim Jones, towards the creation of the Alliance of the CGIAR centers in Cali in May of 2006.

We fully agree with the need to develop a new strategy for Latin America together with our major partners and will launch that initiative in November with a special symposium on *"From Colombia to the World: Agriculture for the 21st Century."*

The financial crisis has exposed serious weaknesses in our management and governance competencies. Many significant steps have already been taken to correct these. As the Panel notes, several more are needed and will be implemented; however, in some cases we disagree with the panel about the best way to do so.

One of CIAT's special strengths has been the capacity to put science at the service of people through the integration of high quality social and spatial analysis with our advances in the life sciences. We recognize the need to better focus and integrate that work in CIAT's priority agendas and to rebuild our excellence in the social sciences. Concrete measures are underway to achieve this.

In summary, of the 19 recommendations we agree with 13 and partially agree with 6.

[#1] The panel recommends **that CIAT management initiate as a matter of urgency a strategic planning process that re-invigorates the mission of the institute, analyses the environment in which it operates, enumerates its comparative advantages and strengths, and identifies the major problem areas and targets to focus its research for development agenda on achievable outcomes.**

CIAT Response**:** Partially agreed. Prior to receiving this recommendation from the EPMR, the CIAT BOT in its May 2007 meeting had tasked Management with developing an updated research strategy This would build upon the ongoing effort coming out of the May 2006 CCER reports to enhance focus and integration in the CIAT research program. This has already led to a reorganization of research into six product lines (CG "projects"). CIAT Management will pursue this strategic planning process further with a view to updating the research strategy with particular attention to developing a reinvigorated approach with stakeholders in Latin America (Recommendation # 8) as well as formulating outcome lines for the P&A RDC. Nevertheless, it is not appropriate to engage in a full scale institutional strategic planning process at this time since this would better be left to an incoming DG after 2010. Thus, this current updating of the research strategy should largely occur at the level of outcome lines and should be closely linked to resource mobilization efforts.

[#2] The Panel recommends **that CIAT implement its research for development agenda via a small number of outcome lines that engage multidisciplinary teams in a system-based approach that targets outcomes defined clearly and unambiguously in a revised institute strategic plan.**

CIAT Response: Agreed. As noted in CIAT's response to recommendation #1, CIAT subscribes to the concept of updating its research strategy. CIAT sees considerable virtue in the EPMR Panel's analysis of the advantages of outcome focused inter-disciplinary teams with a systems based approach which would build on positive experience that CIAT has already been implementing this approach, for example, with PABRA, TSBF, and in Asia. It is anticipated that such an approach would provide the cornerstones of a revised research strategy.

[#3] The panel recommends **that CIAT support at least one entomologist, one pathologist, one plant physiologist, and one virologist to provide disciplinary support across the Agrobiodiversity RDC**

CIAT Response: Agreed. This complex of disciplinary skills would be appropriate to support the current work from the Agrobiodiversity RDC that would continue in the new research plan. These positions would be included in the 2008 working budget, subject to resource availability, and recruitment for any gaps in this disciplinary coverage would be completed by early 2008.

[#4] The panel recommends **that CIAT strengthen its forage research efforts to better realize the potential of the forage improvement program for providing benefits to small farmers in Africa and Central America.**

CIAT Response: Agreed. Central America has been for some time a focus of particular attention for forage improvement and there is already evidence of uptake of new forage options. Full realization of the potential of forages in that region would seem a likely priority in an updated research strategy. CIAT particularly agrees both with the EPMR panel and key national programs in Africa that the potential for forages in Africa is immense and deserving of a considerably increased effort, in coordination with ILRI. CIAT would seek ways of redeploying existing resources and, building on the successful experiences in Asia, reinvigorate efforts on forages in Africa while alliances with African partners and stakeholders were developed to generate investment for a full scale effort.

[#5] The panel recommends **that CIAT continue to support the rice program in LAC.**

CIAT Response: Agreed. CIAT sees a continuing commitment to rice research in LAC in partnership with the public and private sector in LAC; with CG Challenge Programs and other centers; and with other major global actors in rice research. Recently CIAT has reached agreement for common engagement in rice research in Africa together with IRRI and WARDA.

[#6] The panel recommends **that (i) CIAT revisit its contracts with the Fund for Irrigated Rice in LAC (FLAR) on access to rice germplasm to CGIAR guidelines and the Standard Material Transfer Agreement of the International Treaty on Plant Genetic Resources For Agriculture and (ii) CIAT revisit the Papalotla contract on distribution of Brachiaria germplasm, in light of current marketing and distribution conditions to ascertain if this situation is presently in line with CGIAR guidelines and the Standard Material Transfer Agreement of the International Treaty on Plant Genetic Resources For Agriculture.**

CIAT Response: Agreed. While CIAT believes that the agreement with FLAR is already fully in line with CGIAR policy, it will work with FLAR to insure that this is made unambiguously clear. CIAT would aim to have a clarified agreement ready for consideration by the CIAT and FLAR Boards before the end of 2007. Further, CIAT is confident that any uncertainties about the agreement with Papalotla can be resolved in clear line with CGIAR policy. CIAT will approach Papalotla to explore any issues with a view to having a fully developed agreement for the May 2008 BOT meeting.

[#7] The panel recommends **that CIAT and IITA develop a common, coordinated cassava research agenda and work closely to implement their joint agenda in Africa.**

CIAT Response: Agreed. CIAT has always seen great virtue in a coordinated inter-center approach to cassava research in Africa with IITA, and, building on a variety of positive recent collaborations, CIAT will renew efforts to realize this important objective. Preliminary explorations along these lines would be initiated in 2007 with a view to having a full consultation in 2008 with relevant African and other stakeholders to design a common agenda.

[#8] The panel recommends **that CIAT commission a task force of key stakeholders to assist the Center in developing a regional strategy for rebuilding its research programs in LAC.**

CIAT Response**:** Agreed. As noted in the response to recommendation #1, this would be a natural and priority corollary to updating the research strategy. This task force would be brought into action in early 2008 with the CIAT 40th Anniversary Celebration of November 2007 serving as foundation to launch this process.

[#9] The panel recommends **that CIAT's global orientation be operationalized through strengthened Regional Programs (Africa, Asia and LAC); this requires operational changes at the leadership, staffing and administrative levels including moving additional responsibility, authority and resources to program leaders.**

CIAT Response: Partially agreed. CIAT agrees with the Panel that it has significant comparative advantages that can contribute to selected strategic target outcomes in all these regions. However, to operationalize CIAT's global operation, CIAT needs to maintain its focus on international public goods. Organization by regional programs could risk diversion into regional public goods which would not be appropriate for CIAT. Consequently, CIAT has so far organized its research around globally relevant products or outcomes. Clearly regional research leadership and scientists, in consultation with key stakeholders, have a central role in identifying strategic foci and alliances in consonance with CIAT comparative advantages and competencies. Furthermore, management and administrative systems should naturally be adapted to be responsive to and supportive of regional operations with an effective degree of delegation of responsibility and authority to regional research leadership. Nevertheless, issues of research organization are probably best postponed until after the development of any future Strategic Plan (See response to Recommendation #1). At that point the organizational form would be chosen on a set of strategic criteria among which would figure the costs and speed of implementation of the new structure.

[#10] The panel recommends **that CIAT fully implement the 5th EPMR recommendation on IP (2000) and add operational capacity to manage IP to its staff and devise an operational plan for managing IP.**

CIAT Response: Partially agreed. While CIAT needs some significantly improved access to expertise for managing IP issues, it would not expect to become fully or even mainly self sufficient in these functions. Alliances at the CGIAR level would be sought in order to access the specialized expertise and economies of scale that can not be achieved at the center level. CIAT will examine its needs and the approach taken to managing IP at other centers and comparable organizations with a view to identifying the skill sets that it would be appropriate to supply internally, while seeking alliances for the supply of other expertise on a shared or contract basis. CIAT would give first option to resolving this by collective action, potentially among the LAC centers of the CGIAR, rather than expecting to rely principally on in-house capacity.

[#11] The panel recommends **that the TSBF Scientific Advisory Committee be discontinued.**

CIAT Response: Agreed. The Scientific Advisory Committee (SAC) has played a useful role during the merger of TSBF with CIAT, but with the successful integration that has now been achieved, a continuing indefinite direct oversight of the SAC by the CIAT BOT is no longer needed. Consequently, the SAC as a formal body reporting to the CIAT BOT will be dissolved.

[#12] The panel recommends **that CIAT adopt the research organizational structure and reporting lines presented in *Figure 7.11*.**

CIAT Response: Partially agreed. CIAT agrees that organizational options for research deserve serious consideration. The concept of inter-disciplinary outcome lines in the regions is attractive and in fact would not represent in some cases a major change from current practice. However, as noted in the EPMR report, it would be folly to degrade the profile of TSBF; specifically, the most effective way to manage the status of TSBF requires further analysis. To provide guidance CIAT would propose a CG stripe review of lessons to be learned from mergers in the CGIAR (e.g. INIBAP, ISNAR, IBSRAM, TSBF etc) .

CIAT sees both the priority research issues of concern to the People & Agroecosystems (P&A) RDC as well as the disciplinary competencies housed in the P&A RDC as critical to achieving CIAT's research objectives. Improving the access of the rural poor to the opportunities of high value crops and adaptation to climate change are both of increasing importance to the CG system as a whole and also key foci within P&A research. These would be natural candidates for consideration as outcome lines within an updated CIAT research strategy. The P&A RDC also serves as the focal point for skills in systems approaches and social sciences, broadly including GIS, market and other institutional analysis, socio-anthropology, and economics. For CIAT to be effective in attaining its mission, it must have world class expertise in all these fields. While these approaches need to be integrated with the work of other disciplines in specific outcome lines (e.g. working with breeders on improved beans for Africa), it will not be possible for each outcome line to fully self-source expertise in all these approaches, even taking into account partners' contributions. Consequently the P&A RDC has been intended to serve as a central expertise resource for a wide variety of CIAT outcome lines – as it has been doing with TSBF -- with the added advantage of a community of practice and senior leadership with experience in the relevant fields to ensure oversight for research quality that would not be achieved by decentralizing all this expertise to specific outcome lines.

Likewise, CIAT agrees that it is important to strengthen its effectiveness in achieving outcomes in the regions. Achieving this will require clarity in delegation of responsibilities and authorities, strengthened controls, and improved central provision of some service functions. Overall, CIAT continues to think that global outcome lines would be a more attractive option than regional divisions. This would provide a structure that would enhance CIAT's global niche while taking advantage of the excellent implementation, adaptation and partnering capacity it has in the regions.

CIAT is already implementing a relocation of the functions of the PPP Directorate. CIAT further agrees on the need to strengthen impact analysis and IP (see response to

Recommendation #10), and there could be merit to organizing these as support services through the office of the DDG-R.

Finally, CIAT agrees that spatial analysis is a critical research tool that can provide important support to research planning and evaluation. The text of the report is so far reaching in its proposals for reductions in this area that CIAT will need to examine the implications of various options with care before reaching a final decision. CIAT sees GIS as a research area where the Alliance centers should explore the opportunities to pool capacity. GIS research capacity would remain in the P&A RDC rather than be assigned to the office of the DDG-R as recommended by the panel.

[#13] The Panel recommends **(Strongly) that the CIAT Board take rapid and bold actions to reconstitute CIAT leadership and management in the short term. The Panel also recommends that a specific action-plan be put in place to follow up on the implementation of this recommendation by 1 March 2008 in close consultation with the CGIAR.**

CIAT Response: Agreed. Renewal of key senior management positions was already considered as a priority since the 2006 CCER by the DG and the BOT. A significant part of this recommendation has recently been accomplished through the successful recruitment of a senior administrator from the private sector to fill the new position of DDG Corporate Services. He is currently recruiting for the new director of administration and is handling the director of finance function himself on a temporary basis in order to give it priority attention. As shown in the organigram, it is indeed our intent to rapidly identify an "experienced financial manager with a recognized professional accountancy qualification". Our difference in judgment with the panel is on the reporting relationship, as noted in our response to recommendation 14 below.

Since 2003, five of the "old guard" have left senior management. What remains to be done to achieve a complete renewal is to plan for the succession of the DDG R and of the DG. The BOT chair, the DG and the DDG–CS have already started the consultation process with the CGIAR on the best way forward, beginning with a meeting with the new CGIAR Director in Washington on August 13th.

[#14] The Panel recommends **that *(i)* CIAT establish a Finance Director position and recruit an experienced financial manager with an internationally recognized professional accountancy qualification. The Finance Director should report directly to the DG to ensure the relative independence of the position and to enhance internal financial controls, and should be a member of the Management Team. *(ii)* The recently established Grants Management Unit should be abolished and its functions disaggregated.**

CIAT Response: Partially Agreed. The MT and BOT agree with the recommendation for the need of a strong Head of Finance with recognized professional accountancy qualifications as planned in the organizational structure when the DDG-CS was appointed. Considering the magnitude of the financial situation and the lack of available resources in the short term, the DDG-CS will act as the interim Head of Finance.

The financial crises has its origin back at the beginning of the decade when the MT recognize that restricted projects absorbed significant dwindling core funds. However, the previous

Finance Director failed to recognize the reality and magnitude of the direct and indirect overhead costs. Requests by the DG to the Directors of Finance and Administration - starting in late 2003 - to establish compulsory full cost budgeting templates supported by a coherent policy that requires such costs to be included in the development of new contract proposals (implementation of a full cost budgeting process) were agreed to, but not implemented.

The continual increase of restricted project funds that needed subsidies from core funds compounded the depletion of reserves. During this period the previous Finance Director, who is an internationally recognized professional with the required accountancy qualifications, reported directly to the DG, but was not able to respond rapidly enough make the changes required by this new funding environment. Therefore we disagree that having the Head of Finance reporting to the DG will bring any benefits to financial management and improvement of CIAT's financial situation. The main issue, as stated in the World Bank accountants' report, was one of the soft controls i.e. too permissive a management culture. We have fixed that by bringing in someone tough, fair and well experienced to run the business – as recommended by the CCER report on Management and Governance.

We disagree with the recommendation to abolish Grants Management but agree to integrate the existing unrestricted core Budgets Office with functions of Grants Management within the Finance Office. The principal functions of Grants Management, namely, 1) administration of research funds (budgeting – accounting – reporting: including the control of recovery of institutional costs at proposal development), 2) contracts management and general support to the grants process, 3) the delicate function of support to both the research and the accounting teams; should not be disaggregated. We agree that the management of donor relations and support to other fund raising activities should be handled outside of Budgets and Grants Management.

We propose to afford the new DDG-CS the opportunity to demonstrate that an aligned Budget office that includes administration of core and restricted funds will provide the required financial controls and prevent overextension of CIAT's financial capabilities in the future. We agree that by mid 2008 the Head of Finance will be appointed reporting to the DDG-CS.

[#15] The Panel recommends **that Human resource management become a priority at CIAT; this should entail aligning human resource planning with broader program and financial planning efforts, streamlining human resource business processes to improve service delivery, and renewing policies and their consistent application.**

CIAT Response: Agreed. We agree that human resource management needs to extend its reach to include the regions and hence become a more global organization. This will require its human resource policies be reviewed and adapted and a system expanded to allow the integration of and access to the regions.

It is essential that Human Resource management forms part of the strategic CIAT agenda. However, as a project driven organization and as long as CIAT's financial situation remains critical, it will be important to maintain a human resource contracting policy that aligns contractual employment terms with projects. Such a hiring policy will continue to exert heavy pressure on researchers to obtain longer term funding or to develop a solid funded project

pipeline. As CIAT's financial situation improves (reserves and liquidity to exceed current required average) core resources can again selectively be made available to bridge certain key research contracts between projects.

A total overhaul of the IRS compensation and category structure is needed. The research organization needs to be balanced (currently top heavy) and a more normal distribution amongst categories is required. Clear parameters for promotions need to be established and adhered to. In order to bring CIAT back to become and remain competitive in compensation with other institutions within the CGIAR system, selected funds need to be made available as the financial situation improves.

We agree that updating of HR policies, particularly IRS policies, and their consistent implementation is essential both at HQ as well as in the regions. The process has already started. We also agree that the performance evaluation process needs to be reshaped. It is true that the lack of resources makes the implantation of the review process more difficult, but monetary considerations can not play the only role in an effective performance review process. The implantation of a force ranking process might have to be considered.

[#16] The panel recommends **that the Board, in consultation with management, institute measures to strengthen Board operations and strategic focus; measures should address information shortcomings, the Board's heavy workload and agenda, and priority performance indicators.**

CIAT Response: Agreed. The EPMR Panel witnessed a very unusual Board meeting format, for several reasons, the primary one being the frequent interim meetings with the Executive Committee of the Board to develop a common response to the financial crisis. In times of normal operation we intend to focus the two annual meetings, in the format started in 2005. The May meeting will deal mostly with research strategy and oversight ('Annual Review'). The November meeting will concentrate on financial and administrative oversight. The financial crisis and the frequent interim meetings, both in person and through bi-weekly conference calls, meant that information flow between Board and management had been effectively transmitted before the May BOT. We agree that the information flow can always be improved, and the form needs to reflect a "normal" bi-annual pattern of meetings. As of this coming November Board meeting, we intend to replace this emergency" system with by good quality briefs for each agenda item, as was done in the past, and are considering bi-monthly reports by the management team to the Board. With the termination of the financial crisis, the Board expects its workload to be significantly reduced as soon as in 2008 and its next agenda focused on the issues of leadership and succession planning (recommendation 13) and strategy planning (recommendation 1).

[#17] **The panel strongly recommends that the Board lay out clear parameters and a timetable to end, as soon as possible, its intervening mode so that normality can return to CIAT.**

CIAT Response: Agreed. The return to normality at CIAT is not dependent on the Board's mode of operating, but rather, on the successful implementation of all the changes in the organization, budgeting system, controls that have been recommended by external consultants and reviewers. Nevertheless, the Board has put milestones in place which upon

completion, by the closure of the 2007 budget, will permit the Board to go back to its previous 'engaged mode'. The current by management towards the completion of the milestones has already allowed a decrease in the number of intermediate virtual meetings.

[#18] **The panel strongly recommends that CIAT strengthen the board's expertise in finance/accountancy, establish an internal control policy framework, hold closed sessions of the Audit Committee to probe deeper on the functioning of internal controls, and make risk management a standing agenda item of the board.**

CIAT Response: Agreed. Since 2005, the Board has made sustained efforts to strengthen its expertise in finance, and will have identified additional financial expertise by the end of 2007, to replace the expert who left after the last 2006 Board meeting for business reasons. An internal control policy framework will be developed for approval at the Board November 2007 meeting. The closed sessions of the Audit Committee, will continue with all the committee members. Risk management will continue to be a standing agenda item, as decided since 2006.

[#19] **The panel strongly recommends that the board reflect critically on lessons learned from the recent period of distress and move expeditiously, in consultation with the CGIAR, to reinvigorate the leadership of the board and its committees, as needed.**

CIAT Response: Partially agreed. The current Board has spent a large amount of time analyzing the roots of CIAT's crisis and, with management and external consultants discussed the changes to be implemented. We agree the Boards that have been in place since the last EPMR, share responsibility for the recent period of distress.

We also agree that the current Board needs to replace a financial expert who resigned in 2006 for business reasons. We are rapidly evolving in the right direction. We believe that since November of 2005 when the Management and the Board revised both the way in which Finance Leadership reports to the board, and the TORs and procedures of the Board and its committees, we have fully and clearly demonstrated the quality and level of leadership expected from a Board.

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August 3, 2007

Rudy Rabbinge,
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Ren Wang, Director,
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The World Bank
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Dear Drs. Rabbinge and Wang,

On behalf of the Panel, I am pleased to transmit to you the report of the sixth External Program and Management Review (EPMR) of the International Center for Tropical Agriculture (CIAT). The Panel has reviewed CIAT's performance in the four broad areas of: i) mission, strategy and priorities; ii) quality and relevance of the science; iii) effectiveness and efficiency of management (including governance and finance); and iv) accomplishments and impacts. We also have addressed the list of strategic issues raised by the Science Council for this EPMR.

The Panel has made 19 recommendations and a number of suggestions aimed at improving the research program strategy and the quality of management and governance at the Center. The Panel notes the good working relationship between the Board and management. The Panel was impressed with the quality and relevance of science at CIAT. The Panel reaffirmed the need for CIAT's research outputs in addressing a global CGIAR mandate. However the Panel found that delivery of CIAT's potential contribution is compromised by financial, management and governance deficiencies.

The EPMR Panel encountered a Center deeply affected by financial distress, resulting from inadequate handling of an otherwise successful effort by CIAT's leadership to raise project funds (restricted) to compensate for falling CGIAR core funding. Protracted and reactive adjustments to this financial problem have generated instability and dispersion in the research programs, severe reductions and uncertainly in staff employment and low morale in the Center.

Despite this gloomy panorama, the Panel finds CIAT still to be a high quality and productive research institution. Its core program on genetic improvement of the four mandate commodities

for tropical environments is first class. On the other hand, the Panel finds that the Center's agroecosystem-oriented research effort -- applying participatory methods, social science and other tools for developmental strategies to help poor farmers -- to be variable in quality and results. Granted that this area of research is complex and difficult to approach, because of the enormous diversity of situations in the world, CIAT has not defined a solid research strategy for delivery of research results. The Panel therefore has recommended that CIAT's research programs be reorganized so as to integrate more effectively its various component parts and to focus sharply on the target population of poor farmers in specific geographic areas. The Panel finds that the successful expansion of CIAT activities into the Africa and Asia regions since 2000 lends support to this approach. CIAT's research for development approach in these regions in fact resembles closely the concepts proposed in the Report. The Panel commends CIAT for its good record of participation in collaborative research with many national and international institutions, other sister CGIAR centers, and in a variety of innovative public-private partnerships that are essential for effective agricultural research for development.

The Panel finds the leadership and management of the Center as the weakest aspect of CIAT's operation. The Strategic Plan approved for 2001 – 2010 has not provided a sound guide for the Center's program development and implementation; inadequate handling of financial and human resource problems has damaged the research programs and staff morale. Operations and the strategic focus of the Center have not improved under the Board intervention that has now been in effect for more than 18 months. The Panel believes that it is important to correct the shortcomings in management and governance of CIAT, as a key step in the reshaping of the Center's vision, organization and subsequent program implementation.

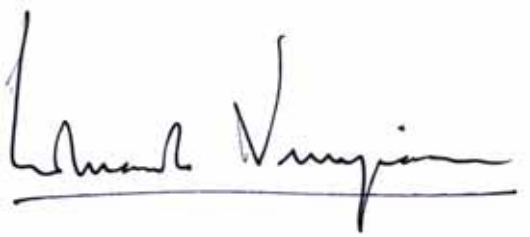
The Panel believes that CIAT has a strong potential to emerge from its present difficulties and to regain the status of a solid institute, well-positioned to make significant contributions to poverty alleviation. We believe that this is a crucial time for CGIAR donors to, collectively, invest in CIAT's turnaround and urge the donor community to act promptly. The Panel recommends that these investments be subject to fundamental program, governance and management changes detailed in the report.

The Panel would like to express its thanks to the CIAT Board, management and staff, which cooperated with us in every way and provided us with all the information and facilities required.

I personally thank the members of this Panel for their great contribution, energy and dedication to the task. The Panel members join me in expressing our appreciation for the very valuable assistance provided by Ruben Echeverría, our Panel Secretary.

We remain grateful for the opportunity to participate in the challenging task of conducting this review. We hope that the Report will be useful to CIAT and its partners, as well as to the CGIAR.

Yours sincerely



Eduardo Venezian
Panel Chair

CONSULTATIVE GROUP ON INTERNATIONAL AGRICULTURAL RESEARCH

SCIENCE COUNCIL AND CGIAR SECRETARIAT

Report of the
Sixth External Program and Management Review (EPMR) of the Centro Internacional de Agricoltura Tropical (CIAT)

Review Panel:

Eduardo Venezian (Chair)
Pedro Arraes
Getachew Engida
Elizabeth Field
Graeme Hammer
Greg Traxler

SCIENCE COUNCIL SECRETARIAT

AUGUST 2007

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SUMMARY

Context and main issues

CIAT's mission statement, as approved by the Board (1999), reads: "*To reduce hunger and poverty in the tropics through collaborative research that improves agricultural productivity and natural resources management*." The global environment in which CIAT operates has been changing rapidly. There has been a shift from philanthropic *donors* supporting science to alleviate global hunger to one of development-focused *investors* targeting poverty alleviation. While CIAT is well positioned with core competencies and capacity to operate effectively in this more demand-driven environment, it places a new set of pressures on the strategic focus and management of the center. CIAT's current strategic plan is no longer appropriate. It sets out generic research targets that are associated with specific system components rather than identifying target agroecosystems and issues or problems where integrated CIAT research could have focus, comparative advantage, and measurable impact. CIAT has received numerous calls to sharpen research focus and integrate its research activities. It has undertaken a series of re-arrangements of its research activities but has been unable to achieve a form that can integrate its suite of component skills and focus them at critical issues in defined target agroecosystems. It is timely to revisit research targets and clarify CIAT's strategic research agenda. *[Rec. #1]*

The more demand-driven research environment has generated opportunities for enhanced research for development funding. Funding for special projects has risen substantially at CIAT over the past 7 years. At the same time unrestricted funding has diminished. While this gives the appearance of good adaptation by CIAT to this changed funding environment, and led to temporary growth in staffing, shortcomings in managing this transition have precipitated a financial "crisis" at CIAT. This has generated the need for significant downsizing over the past few years, resulting in a 2007 scientific staff equal in number to that which existed in 2000. It is now a priority issue at CIAT to overcome governance and management shortcomings that have allowed such an extended financial crisis that has engulfed its operations.

Hence, the two major themes for deliberation by this EPMR Panel were: (i) clarifying CIAT's strategic research agenda, and (ii) overcoming governance and management shortcomings.

Research programs at CIAT and quality of science

In 2007, in response to CCER recommendations, CIAT moved from a project approach to a product-line approach of implementing its research agenda. It has implemented this approach within its recently institutionalized Research for Development Challenge (RDC) structure. Research at CIAT is currently organized in two RDCs – People and Agroecosystems and Sharing the Benefits of Agrobiodiversity. The Agrobiodiversity RDC contains all the germplasm related products while the Agroecosystems RDC contains the range of other disciplines involved in system-based research for development.

The Panel found generally high quality and relevance of science at CIAT, although this varied somewhat among research areas. CIAT ranked highly among CGIAR Centers in publications and citations and had an impressive array of germplasm products coming from its core beans, cassava, forages and rice programs. In addition, the Germplasm Research Unit was rated as

among the best in the world and activities at the Tropical Soil Biology Institute (TSBF) were rated as exceptional. It was more difficult to assess livelihood impacts of use of CIAT research due to the lack of availability of impact assessment studies. The Panel suggested strengthening this activity.

The Agroecosystems RDC incorporates product lines for Markets, Institutions and Livelihoods and for Integrated Soil Fertility Management, which houses the TSBF Institute of CIAT in Africa. The Panel was struck by the clear contrast in approach between these two product lines. The Markets product line is discipline oriented with a focus on system components, while the Integrated Management line is problem/outcome oriented and seeks the disciplinary expertise needed for targeted interdisciplinary research for development at the whole system level. The Panel is of the view that the implementation of the product line concept, as manifested in the Markets line, will not achieve the interdisciplinary interaction required to achieve the development outcomes of CIAT's mission. On the contrary, it is clear that TSBF-CIAT has a well-developed research strategy based on integrated multi-disciplinary teams to undertake system-based action research and innovation that is targeted at priority development outcomes. The Panel noted that this multi- and inter-disciplinary approach, which clusters the relevant set of component disciplinary product lines, exemplifies the concept of system level "outcome line" required by research for development across all of CIAT. *[Rec. #2]*

The Agrobiodiversity RDC incorporates product lines for beans, cassava, forages and rice. Its activities in germplasm improvement can be more readily aligned with the recent implementation of the product line approach. These programs generate critical germplasm products for use across the target agroecosystems forming the research for development agenda of CIAT. The germplasm products are a critical component in pursuing improvement in the broader integrated system. The Panel noted few areas where these germplasm programs could be strengthened, some issues with free access to germplasm related to some contractual arrangements, and a need to clarify arrangements on cassava with IITA *[Rec. #3-7, 10].*

CIAT in the Regions

CIAT has significantly expanded its regional operations in Africa and Asia, while reducing its activity in Latin America and the Caribbean (LAC), since the time of the previous EPMR (2000). Research for development teams in Africa (such as the Pan-Africa Bean Research Alliance-PABRA and TSBF) and Asia were generating observable impacts via integrated interdisciplinary teams and the Panel was highly impressed with their activities and mode of operation. They have developed strong collaborative partnerships with local and international agencies in pursuing impact targets. The Panel observed similar potential in LAC, which was not being realized due to diminishing support from CIAT, and recommended action towards a rejuvenated regional strategy for LAC. *[Rec. #8]*

The system-based and impact target focused project teams found in the regions exemplified the integrated multidisciplinary approach required to achieve outcomes**.** They combine broad system diagnosis (production systems, markets, institutions) with use of targeted entry points (often based on CIAT germplasm products and associated markets) to generate development impact. This incorporates relationships with local NARS to enhance scaling out opportunities. The Panel noted that these regional teams were already operating effectively as "outcome

line" teams– they clustered the requisite component mix around a system improvement goal. Hence, the Panel recommended operationalizing CIAT's research agenda through strengthened regional programs. *[Rec. #9]*

Towards an integrated and clearly articulated research agenda

The Panel considered the concept of "outcome line" and how it could be used to generate strategic focus for the effective future functioning of CIAT. An outcome line was identified as a body of research for development that had a clearly identified impact target in a priority agroecosystem. The identification of targets and agroecosystems forms a critical part of revitalizing the CIAT strategic plan, while the design of the teams required for each associated outcome line would provide the means for CIAT to integrate its component disciplinary competencies and product lines to greatest effect. Outcome line teams would be arranged within CIAT regions and draw on disciplinary expertise as required. The core expertise in Agrobiodiversity underpins the outcome lines by generating improved germplasm products that feed into the outcome lines. Hence, the Panel recommended this concept as a means to focus planning of the strategic research agenda for CIAT. This functionality would enable entry and exit of outcome lines. In that regard the Panel noted that current CIAT activity in tropical fruits is an example of a pilot outcome line within the LAC region. The Panel further discussed the qualities of research leaders needed for the outcome line approach.

The Panel then proceeded to consider the structural arrangements of CIAT's research resources needed to achieve this functionality. This involved some small changes to the existing organizational chart. It was recommended to organize research via four programs - Agrobiodiversity, Asia, Africa and LAC – to deliver the germplasm products and house the outcome lines. In the Panel's view, enhancing responsibility and authority of the four program leaders would facilitate effective decisions on disciplinary mix in research teams, allow creativity in research leadership, and clarify reporting relationships for scientists in research teams. *[Rec. #12]*

The implications of this structure related to aligning existing teams in Africa into a single coordinated regional program, and discontinuing the Agroecosystems RDC program and the Public-Private-Partnerships directorate. The four programs (Agrobiodiversity and the three Regions) are vested with the responsibility of implementing germplasm products and outcome lines that will have been clearly defined in the renewal of the strategic plan. The outcome lines in the regions will require disciplinary expertise from the disciplines represented in the existing Agroecosystems RDC and existing staff might fill some of these roles. However, the Panel identified the discontinuation of the Agroecosystems RDC as the primary source of research savings from core.

The recommended organization structure included strengthening the DDG-Research Office with three staff positions – proposal development and IP manager; senior economist/impact specialist; spatial analysis specialist.

Organization and management

CIAT's organizational structure has changed a number of times since the last EPMR (2000). The current Management Team consists of the DG, the DDG-Research, the DDG-Corporate Services, and the Director of Public-Private Partnerships. The team has not operated

effectively as a group in recent years. It has lacked the full mix of skills needed for sound institutional decision-making – in particular in finance and management. And it has not strategically led CIAT through the period of financial crisis. Only 32% of staff surveyed by the EPMR believe that relations between staff and management are positive, and just 23% have confidence in CIAT leadership (DG and the Board). The Panel considers the defection of key scientists out of frustration with the prolonged period of instability to be the number one risk to CIAT's future**.** The Panel recommends that the CIAT Board take rapid and bold actions to reconstitute CIAT leadership and management in the short term and that the implementation of this recommendation be followed up by 1 March 2008 in close consultation with the CGIAR. *[Rec. #13]*

The Panel believes that CIAT Board and management must improve procedures for balancing research ambition with financial reality. CIAT's failure to focus on building reserves and the over-expansion of its research mission left it vulnerable to financial downturns in 2005, from which it has not yet recovered. The Panel believes that the Finance Department requires major adjustments, including the establishment of the position of a Finance Director that reports directly to the DG and recruitment of an experienced financial manager with a professional accountancy qualification. The Panel also recommends that the recently established Grants Management Unit be abolished and its functions disaggregated. *[Rec. #14]*

Despite the difficult challenges that CIAT currently faces, the Panel found that CIAT staff remain committed to the center's mission and their work, and are proud of the center's accomplishments. However, the financial situation and the nature of subsequent downsizing decisions have been detrimental to morale. While CIAT spent some US$10M in "phase out costs" associated with staff terminations and restructuring since 2003, human resource management has lacked the needed attention of CIAT leadership. CIAT's human resource policies and procedures, and related management systems are in need of updating. The Panel recommends that human resource management become a priority at CIAT, and that this should entail aligning human resource planning with broader program and financial planning efforts, streamlining human resource business processes to improve service delivery, and renewing policies and their consistent application. *[Rec. #15]*

Governance

The Panel believes that the Board did not provide strong strategic leadership and oversight for much of the period since the last EPMR. The growth of project-funded activity at CIAT, from 2000 through 2005, was not strategically driven and weakened CIAT's research focus; the downsizing that followed was conducted in successive rounds and overall has not resulted in a clear strategic repositioning. While CIAT's Board has scientific expertise, it has lacked financial expertise for the bulk of the period under review. As a result, the Board was unable to identify and deal effectively with the financial and risk management issues that CIAT faced – and the center entered a period of financial turmoil.

The current Board has inherited problems that pre-date the terms of its current members. The Board has begun to take positive corrective measures. Since late 2005, the Board has been operating in an intervening mode, in which it has become intensely involved in discussions of critical issues and decision-making. During this time, the Board has provided oversight and guidance to management relating to the financial crisis, and the Board has aimed to ensure that financial decisions were aligned with research strategy. In the Panel's view, the Board's

dedication to CIAT and commitment to shepherd the center through this difficult period have been exemplary.

However, a Board intervention is not "business as usual," and as of mid-July 2007 there is uncertainty concerning the duration of this intervention. Further, while scientific programs at CIAT continue to be impressive, financial and management challenges continue to loom large. In the Panel's view, the intervention has not resulted in the resolution of CIAT's underlying problems. Since March 2006, the center has not had a permanent Director of Finance or the equivalent – which is essential in the view of the Panel – and no plans are underway to recruit one (as of mid-July, 2007). As noted above, the defection of key scientists has become a major risk at CIAT. The Panel has concluded that fresh approaches are needed in terms of leadership and governance at CIAT, and that the Board should end its intervention as soon as possible – so that normality can return to CIAT. *[Rec. #17]*

The Panel believes that there is a strong chance of financial recovery provided the Board and management take deliberate and timely actions in the near to medium term. This will only be possible if the Board and management have a clear understanding of the underlying causes of the current problem and take appropriate actions, including major adjustments to roles and responsibilities for financial management, risk management and internal control throughout the institute. The Board will need to strengthen further its expertise in finance/accountancy and the operations of its Audit Committee. The Panel recommends that the Board institute measures in general to strengthen its operations and strategic focus. [Rec. #16 and #18]

It is the Panel's considered view that the Board has fallen short of good governance practice in two of its critical responsibilities. First, the Board's oversight of the performance of top management was not sufficient to identify weaknesses early and take decisive, appropriate and timely actions to resolve these in the long-term interests of CIAT. Second, the Board's membership did not include financial expertise that could have helped it spot early signs of financial difficulties and unconventional accounting practices. In this regard, the Board was not provided with clear and explicit advice from internal or external professional advisors. The Panel strongly recommends that the Board reflect critically on lessons learned from the recent period of distress and move expeditiously, in consultation with the CGIAR, to reinvigorate the leadership of the Board and its committees, as needed. [Rec. #19]

LIST OF RECOMMENDATIONS

(The Panel recommends that):

1. CIAT management initiate as a matter of urgency a strategic planning process that re-invigorates the mission of the institute, analyses the environment in which it operates, enumerates its comparative advantages and strengths, and identifies the major problem areas and target agroecosystems to focus its research for development agenda on achievable outcomes.
2. CIAT implement its research for development agenda via a small number of outcome lines that engage multidisciplinary teams in a system-based approach that targets outcomes defined clearly and unambiguously in a revised center strategic plan.

3. CIAT support at least one entomologist, one pathologist, one plant physiologist, and one virologist to provide disciplinary support across the Agrobiodiversity RDC.
4. CIAT strengthen its forage research efforts to better realize the potential of the forage improvement program for providing benefits to small farmers in Africa and Central America.
5. CIAT continue to support the rice program in LAC.
6. *(i)* CIAT revisit its contracts with the Fund for Irrigated Rice in LAC (FLAR), on access to rice germplasm in line with CGIAR's guidelines and the Standard Material Transfer Agreement of the International Treaty on Plant Genetic Resources; and *(ii)* CIAT revisit the Papalotla contract on distribution of Brachiaria germplasm, in light of current marketing and distribution conditions to ascertain if this situation is presently in line with CGIAR guidelines and the Standard Material Transfer Agreement of the International Treaty on Plant Genetic Resources.
7. CIAT and IITA develop a common, coordinated cassava research agenda and work closely to implement their joint agenda in Africa.
8. CIAT commission a task force of key stakeholders to assist the Center in developing a regional strategy for rebuilding its research programs in LAC.
9. CIAT's global orientation be operationalized through strengthened Regional Programs (Africa, Asia, LAC); this requires operational changes at the leadership, staffing and administrative levels; including moving additional responsibility, authority and resources to program leaders.
10. CIAT fully implement the Fifth EPMR (2000) recommendation on IP and add operational capacity to manage IP to its staff and devise an operational plan for managing IP.
11. The TSBF Scientific Advisory Committee be discontinued.
12. CIAT adopt the research organizational structure and reporting lines presented in *Figure 7.11.*
13. (strongly) CIAT Board take rapid and bold actions to reconstitute CIAT leadership and management in the short term. The Panel also recommends that a specific action-plan be put in place to follow up on the implementation of this recommendation by 1 March 2008 in close consultation with the CGIAR.
14. (i) CIAT establish a Finance Director position and recruit an experienced financial manager with an internationally recognized professional accountancy qualification. The Finance Director should report directly to the DG to ensure the relative independence of the position and to enhance internal financial controls, and should be a member of the Management Team. (ii) The recently established Grants Management Unit should be abolished and its functions disaggregated.
15. Human resource management become a priority at CIAT; this should entail aligning human resource planning with broader program and financial planning efforts, streamlining human resource business processes to improve service delivery, and renewing policies and their consistent application.
16. The Board, in consultation with management, institute measures to strengthen Board operations and strategic focus; measures should address information shortcomings, the Board's heavy workload and agenda, and priority performance indicators.
17. (strongly) The Board lay out clear parameters and a timetable to end, as soon as possible, its intervening mode so that normality can return to CIAT.

18. (strongly) CIAT strengthen the Board's expertise in finance/accountancy, establish an internal control policy framework, hold closed sessions of the Audit Committee to probe deeper on the functioning of internal controls, and make risk management a standing agenda item of the Board.
19. (strongly) The Board reflect critically on lessons learned from the recent period of distress and move expeditiously, in consultation with the CGIAR, to reinvigorate the leadership of the Board and its committees, as needed.

LIST OF SUGGESTIONS

(*The Panel suggests that*):

1. The cassava research team focus on a smaller number of clearly defined objectives as suggested by the CCER report.
2. CIAT work with ILRI to improve smallholder animal production systems in Africa.
3. CIAT discontinue the separate identity of the Enabling Rural Innovation Program and integrate this disciplinary capacity into the Africa regional program.
4. CIAT continues to support the well established network of soil and water management in Central America.
5. CIAT publishes existing research for development case studies as a special issue of a relevant international journal with a synthesis paper that draws together the main lessons from across this research for development studies.
6. CIAT clarify its strategy for the operation of AGRONATURA and that CIAT ensures that it does not subsidize AGRONATURA.
7. Any further reductions required in core expenditure be obtained in the first instance via the reconfiguration associated with discontinuing the People and Agroecosystems Research for Development Challenge. Further, the Panel suggests that an enhanced proportion of available core funding be allocated to regional leaders to facilitate demand-driven development of the required disciplinary skill mix in outcome lines.
8. A senior economist be assigned as a staff person reporting to the DDG-Research with responsibility to coordinate monitoring and impact of research.
9. Spatial analysis expertise of the minimum size required for this service role be maintained within the office of the DDG-Research.
10. In conjunction with *Recommendation #1*, that CIAT formalize and implement procedures for priority setting, research monitoring and impact analysis that inform the process of formulating CIAT's strategic plan.
11. The Finance Department develop a reporting package including the following: (i) cash flow analysis by currency phased by month at each reporting period with adequate commentary on the impact of currency on both receipts and expenditure; (ii) critical highlights of statutory financial statements emphasizing risk items such as overdue receivables, provisions; (iii) budget performance reporting, providing detailed variance analysis.
12. In the formulation of budgets, CIAT adopt formats that clearly indicate the build-up of (i) projected revenue by source of funding and by currency including phasing either on a monthly or quarterly basis; (ii) assumptions that are explicitly stated, regarding the build up of revenue projections; (iii) costs by source of funding and types/objects of expenditure (staff, activities).

13. CIAT draw lessons from other CGIAR centers where budgetary information and actual financial performance include quarterly reporting, variance analysis, and forecasts which revise Approved Budgets in the light of actual performance, supported by appropriate commentaries.
14. The head of the Corporate Communications and Capacity Strengthening unit be given authority to play a leadership role in driving CIAT's external communications, working with the DG and relevant managers.
15. CIAT reorganize existing roles in the Office of the DG and appoint a special assistant for institutional alliances and donor relations.
16. The process for appraising the performance of the DG should be conducted against pre-agreed measurable goals, should incorporate staff feedback, and should result in concrete actions designed to deal with identified weaknesses.

1 INTRODUCTION

1.1 Panel, terms of reference and acknowledgements

The membership of CIAT's Sixth External Program and Management Review (EPMR) Panel is shown in *Annex 1* and the terms of reference for the Panel (CGIAR terms of reference for EPMRs and Science Council specific issues for this review) are listed in *Annex 2*.

The Panel began preparing for the review in early 2007 and met at the Center from 19 to 26 May 2007 (initial phase) and from 4 to 18 July 2007 (main phase). The Panel attended sessions of the meeting of CIAT's Board of Trustees (BOT) held in Cali from 19 to 23 May 2007. In addition to receiving opening presentations by senior staff of the Center during the initial phase, the Panel held interviews with a large number of individuals and groups. Members of the Panel visited CIAT projects and partners in Africa (Uganda, Kenya, Malawi), Asia (Vietnam and Laos), and Central America (Honduras, Nicaragua). See EPMR agenda in Annex 3. Prior to, during and after its first face to face meeting, the Panel received and read a large number of documents provided in paper and electronic forms by the Center (Annex 4). Staff and stakeholder surveys provided excellent information on key aspects for this review.

CIAT provided outstanding resources for the Panel including documentation, office space, information technology support, travel arrangements, administrative help and plenty of time for discussion with staff. The Panel expresses its gratitude to the BOT, the Director General, the Deputy Director General for Research, The Deputy Director General for Corporate Services, Directors of CIAT research programs and units and all CIAT staff for their help and hospitality throughout the Panel's work.

The Panel thanks Ms. Carolina Jaramillo (Cali, Colombia) for her invaluable administrative support during the preparation and implementation of the review including her assistance preparing the final report. The Panel thanks Ms. Kijo Waruhiu (Science Council Secretariat) for her research support in preparation for the review. The Panel thanks the Panel Secretary, Dr. Ruben Echeverría (Science Council Secretariat), for his continued support throughout the review.

1.2 Origin and evolution of CIAT

CIAT is a not-for-profit research and development organization supported by the Consultative Group on Agricultural Research (CGIAR) along with fourteen other international centers. CIAT is dedicated to research for overcoming technological constraints to agricultural productivity and for sustainable management of natural resources in developing countries of tropical regions, aiming at reducing hunger and poverty. CIAT was founded in 1967 as an autonomous institution and in 1971 joined the CGIAR, being one of the four "founding" Centers that were established in response to the food crisis of the 1960s. CIAT's initial mandate was to "generate and deliver, in collaboration with national and regional institutions, improved technology, which will contribute to increased production, productivity and quality of specific food commodities in the tropics – principally countries in Latin America and the Caribbean – thereby enabling producers and consumers, especially those with limited resources, to increase their purchasing power and improve their nutrition."

In 1977, at the CGIAR's request, the Board recognized global responsibilities going beyond the initially emphasized regional scope.

CIAT has undergone many changes over the years in accordance with changing conditions and needs in its sphere of responsibility and with the expansion and specialization of the CGIAR network of research centers. By the late 1970s the Center was moving from a broad initial base to a smaller number of research programs with narrower geographical and ecological foci. Its earlier research on livestock was phased out and the research programs were built around three major food staples of the Latin American region: rice, beans, and cassava. A fourth program, replacing the previous Beef Program, was structured in the early 1980s for research on forage pastures in the acid soils of the Latin American lowland tropics.

During the 1980s CIAT expanded its collaborative networks for testing and adoption of technologies and focused more attention on managing natural resources. At the beginning of the decade, CIAT expanded its research on commodities outside Latin America for beans, cassava and tropical forages for which it had received a global mandate. The regional program for cassava in Asia started in the late 1970s and one for beans in Africa began in the mid 1980s. For rice, CIAT had a specific regional mandate and the focus was broadened to include upland environments, in addition to irrigated rice. The maize research program of CIAT was transferred to CIMMYT. CIAT increased ties with national agricultural research programs to devolve and decentralize a share of its operations. Regional programs were built with staff posted to key regions, and regional networks developed. Also, several specialized units were established to support the commodity teams. Farmer Participatory Research began as a project towards the end of the 1980s and a Biotechnology Unit was established.

By the beginning of the 1990s the Center was positioned to conduct research from strategic to applied research. The requirement for sustainability was further emphasized as reflected in the environmental sensitivity in the research themes, such as biological control, reduction of soil erosion and water stress and increased emphasis on the management of natural resources. Serious financial constraints however forced the Center to downsize its operations and reduce the number of staff considerably during the 1990s; but the areas of biotechnology, genetic resources, and participatory research were largely protected. Notwithstanding, the Center went ahead with significant organizational changes. A new mandate and a new program structure were devised. Resource allocation for the four germplasm improvement programs and for training was reduced and a new set of ecoregional activities started. New Natural Resources Management programs were initiated on tropical lowlands and on hillsides, as well as studies on policy effects on land use systems. CIAT also became involved in CGIAR Systemwide initiatives. CIAT modified its organizational structure in 1996, building up its senior management team around the elements considered essential in its new strategy of: "improving productivity, managing natural resources and doing research together." From the previous research structure based on programs and units, CIAT changed into a structure of 16 Projects, which included 2 in Saving Biodiversity (including Biotechnology), 5 in Germplasm Improvement, 5 in Sustainable Production, 3 in strengthening NARS and, 1 in Policy.

After the 5th EPMR (2000) and under a new administration (the current CIAT DG began in 2000) CIAT was reorganized based on a new Strategic Plan (2001-2010) and has subsequently undergone several reorganizations. During the past few years the Center suffered reductions

in its core funding that led to several cuts in staff and downsizing of programs. In fact, over the whole period 2001 – 2007, the following research program units were eliminated: Soil Water Nutrient Management Systemwide, LAC Ecoregional, Sustainable Systems, Hillsides/Watersheds, and Information for Rural Communities. At the end of 2006, research was organized under 3 major *Research for Development Challenges* (RDCs): Agrobiodiversity, Agroecosystems and Rural Innovation encompassing 11 projects. Under continuous financial pressure and following the recommendations of CCERs, the Rural Innovation Institute was closed in early 2007.

In May 2006 CIAT adopted the concept of *"product lines"* (PLs), and in May 2007 6 product lines were formed within the 2 RDCs. The PLs are: (PA1) Market, Institutions and Livelihoods and (PA2) Integrated Soil Fertility Management, under the Agroecosystems RDC; and (SBA1) Improved Bean for the developing World, (SB2) Improved Cassava for the Developing World, (SBA3) Improved Multipurpose Forages for the Developing World, and (SBA4) Improved Rice for LAC under the Agrobiodiversity RDC. The transition to this new structure is ongoing.

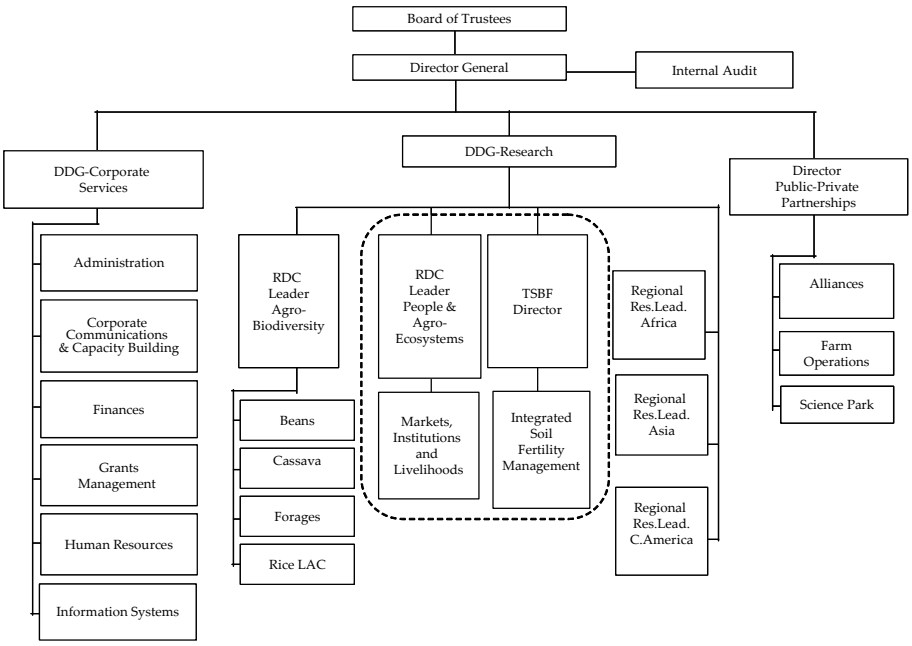
Research leaders have been appointed for each of the two RDCs as well as for the six PLs. These PLs are intended to be the heart of the research program and are complemented by CIAT's role as convenor of one systemwide program, Participatory Research and Gender Analysis (PRGA) and co-convenor of one Challenge Program, Harvest Plus. The introduction of the product concept is intended to better focus and integrate major elements of CIAT's existing research agenda initially within the framework of the Strategic Plan 2001-2010, without developing a radically different research agenda, but CIAT recognizes that it is timely in the second half of 2007 to embark on a reconsideration of its Strategic Plan.

In addition to the organizational changes induced by the product concept, due to constraints in unrestricted resources and the need to stabilize and rebuild reserves, 10 internationally recruited staff (IRS) positions (all scientific) and 65 nationally recruited staff (NRS) positions (40 of which were scientific) were eliminated in 2007. This follows on a round of cuts in 2006 which had phased out 14 IRS and 42 NRS scientific positions (and 83 positions total). Taking into account the normal attrition from winding up of restricted projects, overall the total number of IRS has fallen from 108 in 2005 to 86 in 2007 and it's projected at 81 for 2008. The latest organizational structure of CIAT, showing the two RDCs and their product lines is shown in Figure 1.1.

1.3 CIAT's mission, vision, and goals

CIAT's standing operational mandate is: "*CIAT will contribute to technology development that will lead to long-term improvement in productivity of agricultural resources; to the development of innovative, more cost-effective agricultural research approaches and methods; to the strengthening of agricultural research institutions in participating countries; and to the development of interinstitutional linkages*." Within the CGIAR, CIAT has global mandates for research on beans, cassava and forages and for research on rice with a regional responsibility for LAC. In addition it has important related research activities in: (i) resource management research in tropical areas through land use agroecosystems-oriented research in cleared forest margins, hillsides and savannahs, and (ii) institutional development through support activities at national and regional levels.

Figure 1.1 Current organizational structure of CIAT



Increasingly CIAT has sought to apply its expertise also to specific production problems encountered with other than the mandate crops, for the private sector, farmer organizations and others, who often contribute to the research costs. CIAT deploys specific scientific expertise such as integrated pest management (IPM), soils, biotechnology, and germplasm conservation to address problems of high value crops, such as tropical fruits, to complement the efforts of NARS.

Mission

CIAT's mission statement has not been changed since 1999, when it was last approved by the Board. It reads: "*To reduce hunger and poverty in the tropics through collaborative research that improves agricultural productivity and natural resources management*." CIAT attempts to integrate scientific agronomic and natural resources research with social science research, using extensively a participatory approach. In conducting its work, CIAT stresses collaboration with many other partner institutions that share similar objectives and concerns, including local, national and international agencies, both public and private. This feature of CIAT's operation has become stronger since the 1990s in accordance with the expanding globalization of the world and the larger activity of the center in Africa and Asia. CIAT plays a key role in a network of institutions supporting agricultural research and development, including those of the CGIAR system, with a view to improve the life of poor farmers in the tropics.

Although CIAT's mission is ambitious, the Center can expect to have an impact over time globally but particularly in the tropical region selected for assistance to poor farm families. Results achieved in the past years outlined later in this report, demonstrate that the stated mission is a reasonable one for the Center.

Vision and strategy

CIAT's Strategic Plan for 2001 – 2010 was prepared in 2000 after completion of the 5th EPMR and at the inception of the term of the new Director General. It was intended to reflect a renovated vision of how CIAT intended to carry out its research for development activities in order to meet the goals implicit in its mission. The summary (see box -CIAT's Strategic Plan 2001-2010) extract of the plan reveals the Center's vision as of 2000.

***CIAT's Strategic Plan (2001-2010)**, takes stock of emerging trends, seeks to exploit scientific advances, and envisions a future of sustainable rural livelihoods. In support of this vision, the plan outlines new directions and organizational arrangements for research, including the partnerships needed and the global and regional dimensions of future work. Specific consideration is given to the implications of globalization for the rural poor people in developing countries, both favorable and unfavorable; to the environmental damage caused by agricultural production and its consequence for resources poor farmers: and to the need for multidimensional, multipartner approaches extending beyond scientific research to tackle successfully the emerging problems.*

The strategic plan reaffirms the Center's basic commitment to alleviating hunger and poverty while protecting natural resources. The notion of sustainable rural livelihoods is at the core of CIAT's vision for the future. CIAT recognizes that science-driven agriculture can contribute to achieving sustainable rural livelihoods by enhancing competitive agriculture, agroecosystem health, and social capital for collective rural innovation. CIAT remains committed to fostering these conditions through its genetic improvement, natural resources, ecosystems management and socioeconomic research.

***CIAT's experience and assets**. CIAT's past contributions to rural development in tropical Latin America, Africa, and Asia have been significant and varied. They have emerged from research in areas such as genetic enhancement of crops and forages, pest and disease control, soil management, participatory research methods, and rural agroenterprise development. The Center's core asset is a multidisciplinary team of researchers experienced in systems approaches to a range of biophysical and socioeconomic issues affecting agriculture and natural resource management. Supporting them is an extensive scientific knowledge base, a large germplasm collection, and an up-to-date infrastructure of laboratories and other research-support facilities. There is also a long and rich experience of collaborative work with farmers and other agricultural specialists. This mix of assets gives CIAT a special advantage in exploiting science for sustainable rural livelihoods in poor tropical countries.*

***CIAT's 5 core competencies are:** Agrobiodiversity and genetics, Ecology and management of pests and diseases, Soil ecology and improvement, Land management, and Socioeconomic analysis. Each area of competence brings together related disciplines that have significant scope to contribute to and benefit from scientific advancement. Each can help CIAT and its partners to achieve a direct and lasting impact on rural livelihoods in the tropics. These core competencies are highly complementary, allowing for integrated approaches to problem solving.*

***Global and regional strategies**. The strategic plan sets out the broad vision for the future that CIAT has implemented through medium-term 3 year plans. The following policies and principles have guided the agenda setting and implementation of the plan:*

(i) CIAT's research program fits into a global context, namely the work of the CGIAR centers. Some CIAT outputs, such as conserved agrobiodiversity, are essentially global public goods. Work in this and other areas, however, is harmonized with regional research agendas in Latin America, Africa and Asia.

(ii) Key areas of CIAT's work have a global reach and contribute to sustainable rural livelihoods in all three target regions of the world. Main research topics are genetics improvement and conservation of beans, cassava and tropical forages, participatory research methods, agroenterprise development, and management of natural resources.

***Organizing research**. The 10-year plan outlined rests on three guiding organizational principles: integrating global and regional research strategies; cultivating a mutually reinforcing set of core scientific competencies within CIAT; and mobilizing project-based multidisciplinary teams to solve problems and exploit opportunities.*

Program changes 2002 – 2007

Since 2002, CIAT has undergone a great number of changes in its research and development activities, reflected in successive program and management reorganizations. Until 2005, changes were largely of an evolutionary nature, but subsequently these were more radical and structural in response to financial crisis. The chronology and nature of these changes is shown and discussed in Chapter 2. Some major modifications include the incorporation of the Tropical Soils Biology and Fertility Institute (TSBF) based in Africa and related adjustments in the soils and natural resources areas; launching a tropical fruit project that emphasized a new research orientation toward high value products to increase incomes in poor rural communities; reducing the function of strengthening NARS; redimensioning, reformulating and/or merging several projects such as those on land and water resources, social science, impact assessment, ecosystems management and termination of certain activities. Such changes were accompanied by successive rearrangements of program organization and management, up to the most recent one that adopts the product line concept, which is intended to better focus and integrate the major elements of CIAT's research.

The upshot of this process of ongoing change and adjustment over the last five years is that the vision of the Center has also been modified, at least in terms of the relative priorities and emphasis contained in the Strategic Plan 2001-2010. As that original vision was very broadly stated, however, CIAT continues to operate within the same general framework. The Panel considers that this situation has resulted in a diffused focus and lack of integration in CIAT's program, as pointed out in the previous EPMR and the recent CCERs. CIAT's proposed move to product-lines as an organizing principle is an attempt to correct this problem.

While the general mode of CIAT's research and development work remain within the broad guidelines of the Strategic Plan 2001-2010, developments since 2000 have prompted the Center to restate its vision and strategic direction. The new statement, drafted in 2007, attempts to provide a more precise view of how the center sees its work in the years ahead. Although such a view does not affect the period under review by the EPMR, it indeed gives an enlightening perspective that helps to better understand the problems, events and progress that has occurred since 2001, and illustrates the changes in strategy adopted by CIAT as a consequence. This is further discussed in Chapter 2.

1.4 Follow up to the 5th EPMR

The 5th EPMR (2000) made 15 recommendations to CIAT on various aspects of the Center's research program and management, which were all agreed upon by the BOT. These recommendations, CIAT's response, and commentaries from the 6th EPMR are shown in Annex 5. The Panel reviewed the actions taken by CIAT since 2001 in compliance with these recommendations and finds that fair progress has been made. Four recommendations have not been acted upon; eight are still either partially implemented or ongoing largely because of the nature of the tasks to be carried out, but progress has been achieved; and three have been completed.

Five of the recommendations refer to the area of genetic resources and of those only one has not been implemented, related to development of policy, strategy and capacity regarding the use of genetic resources (IP related issues). Three recommendations referred to Natural Resources Management research; one has been partially attended to and is still ongoing,

while the other two have not been acted upon (research strategy on NRM be cumulative in nature; and greater integration among projects).

Two recommendations concerned interdisciplinary crop research and its funding. One of these was successfully completed and the other one asking for funding support for the African bean project has been partially fulfilled. The CIAT program in Africa has expanded greatly in the past several years, even without core funds. This has largely erased the main reason for asking for more support for the bean project.

Three other recommendations addressed problems of research management and evaluation. Two have been partially fulfilled and are still ongoing. These refer to an in depth examination of the composition of the CIAT project portfolio and the mechanisms to foster intra- and inter-project integration. The 6th EPMR Panel considers that after many changes that have occurred in research management, intra-project integration is effective but cross-project integration continues to be an issue. A clear research strategy on this integration is still lacking. The other partially completed recommendation refers to an institutional/economic analysis and publication of CIAT's experience with research partnership. Regarding a recommendation on impact assessment there is no evidence of systematic impact analysis. Undoubtedly the virtual termination of the economic research unit at the Center has to do with the inability to fulfill this task.

CIAT responded to a recommendation of the 5th EPMR related to the hillsides project in Central America by closing it out due to unsatisfactory implementation and appointing new leadership for Regional Coordination in Central America. Finally, one recommendation addressed the need to elevate the priority assigned to the redesign of the financial information system and associated processes. This process is almost complete now, seven years later.

In sum, the Panel considers that 4 of the 15 recommendations of the 5th EPMR in (2000) appear unattended while 11 have been totally or partially resolved, with some of these still in progress. The Panel judges this as a fair outcome.

1.5 Follow up to recent Center Commissioned External Reviews (CCERs)

Since the time of the last EPMR, five CCERs were conducted at CIAT: Spatial Analysis (December 2003); Agrobiodiversity (May 2006); Agroecosystems (May 2006); Rural Innovation Institute (May 2006); Governance, Management and Finance (May 2006). A brief discussion of each CCER is presented below, with an overview of the recommendations, the EPMR Panel's views of the CCER, and the center's response. Overall, the EPMR Panel appreciates the good work that was done in the CCERs, and refers to it in this EPMR report. Common themes across CCERs included the need for focus and improved disciplinary integration of CIAT's research program. The Panel recognizes that these are important issues at an institutional level. However, the Panel notes that the CCERs did not cover CIAT's regional operations, where disciplinary integration is evident.

Spatial analysis CCER

The review targeted the now defunct Land Use Project, which contained the spatial analysis group. That group has now become part of the People and Agroecosystems Challenge, and is

now contributing to several of the new product lines in that program. Many of the findings of the CCER, which focused on the detailed operation at this unit/sub-unit level, are now not directly relevant. However, the evaluation was thorough, the report well reasoned, and focused at a logical level between project detail and broader issues. Hence, some of the observations remain useful to this EPMR. The reviewers noted: key strength in staff and capabilities in management and analysis of spatial data; too many activities – need to better define core business and focus; tendency to product/tool focus with poor publication record; need for tools and methods development to be better aligned with need or user demand; and gaps in skill base but should use collaboration to fill them.

There were 14 specific recommendations grouped under six sub-headings and CIAT agreed with all of them. The recommendations most relevant to this EPMR related to focus and strategy. The recommendations sought a clear vision and focus for the research, and integration of bio-physical and socioeconomic aspects to deliver triple bottom line outcomes. This highlights the need for this specialist sub-unit to collaborate closely with others to be effective. Effective strategies are required for linking with broader problem domains across CIAT in a demand-driven manner. *There is some movement of this nature with recent relocation of some staff and interaction with integrated projects in regions but effective integration remains elusive.*

Agrobiodiversity CCER

The review resulted in 24 recommendations. Following is a general summary of the main issues covered by those recommendations. The CCER judged the scientific work performed by CIAT staff in this area to be excellent.

The CCER Panel indicated that milestones are not apparent in the organization of the Agrobiodiversity activity, but that there was a great improvement in coordination and in the system to set priorities, which enhanced the competencies across different projects. CIAT overall priorities seem to be defined at the individual project level rather than being based on a set of integrated and interconnected priorities aimed at giving technological solutions and increasing basic knowledge. The Agrobiodiversity research agenda is now well focused on the four product lines: beans, forage, rice and cassava. Even though the research projects span a broad area from gene discovery to variety development, they seem to be well interconnected with well balanced activities between basic and applied research.

Another concern of the Panel regarded IPR issues. Although the position of Director for Public Private Partnership was created, no improvement in the center strategy on this issue was noticed. Indeed no systematized, clear policy on IPR issues is used by the center. Initiatives on IPR are individual efforts of scientists. An IP committee was created at CIAT with the intent to improve the awareness and skills of the staff and link to support form CIAT's legal office on IP issues. However, the Panel did not observe any systematized process on IPR issues of CIAT and furthermore it was difficult to understand the role of the Director of Public Private Partnership on IPR issues. CIAT will need to outsource legal expertise to take care of individual situations. There is limited internal expertise to give the matter the appropriate treatment.

Finally the Panel emphasized that Agrobiodiversity has an excellent and motivated research team with strong leadership, which has catalyzed strong integration among different disciplines**.** *The 6th EPMR Panel is in general agreement with the findings of the CCER.*

Agroecosystems CCER

At the time of the review of the Improving Management of Agroecosystems in the Tropics (IMAT) program, IMAT consisted of a cluster of 4 projects: Crop and Agroecosystem Health; Tropical Soils (TSBF); Communities and Watersheds; Spatial and Economic Analysis. The CCER report was insightful and thorough and provided useful input to this EPMR. The review noted: high quality of science; incomplete integration of social, economic, and ecological analysis with technology development and testing; need for constant fund-raising has dispersed scientific effort and burdened scientists with management; flexibility needed in fund-raising has come at a cost in strategic direction; there is a major vacuum in research leadership to orchestrate needed integration; and need for a few fully integrated and networked projects.

While the reviewers delivered 46 recommendations, the majority focused on issues of detail inside the 4 project areas forming the IMAT program. In responding, CIAT agreed with all recommendations, although only 'substantially' or 'partially' with some. There were 12 cross-cutting recommendations that were most relevant to the EPMR. Of these the key recommendations on integration suggested establishing fully integrated projects by merging skills from current programs, fusing the proposed 3 R&D Challenges to 2 by integrating IMAT with the then Enabling Rural Innovation (ERI) project to form People and Agroecosystems, and that conceptual framing and prioritization of major projects should occur as an iterative process between research leaders and management. CIAT implemented the suggestion on having 2 R&D Challenges, and has since implemented a product line approach within the RDCs. Along with this, there is now a research leadership team consisting of DDG Research, regional research leaders, and RDC research leaders, but its role in framing and prioritizing major integrated projects remains ill-defined as the product line approach focuses on component activities/outputs rather than on fully integrated projects directed at outcomes at agroecosystem level. Hence, the recommendation to establish fully integrated research projects remains unfulfilled. *The CCER also suggested strengthening the Impact Assessment group to support decision-making on research resource allocation. The Panel believes that this remains an unfulfilled need.*

Rural Innovation Institute CCER

At the time of the review, the Rural Innovation Institute (RII) was comprised of three projects; Rural Agro-enterprise Development, Participatory Research Methods, and Information for Development. RII also hosted the CGIAR systemwide program on participatory research and gender analysis (PRGA). The RII was dissolved in 2007 when CIAT reorganized its research activities into two RDCs. Scientists previously affiliated with RII projects have either been terminated or have been distributed among the new RDCs, primarily in the Agroecosystems RDC.

It was suggested, and the EPMR Panel agrees, that PRGA has had a major impact on how the CGIAR system deals with gender and status inequities. While a number of innovative research strategies have been developed in PRGA and the impact assessment work of the program was found to be of good quality, there has not been systematic data collection and analysis, and no academic breakthroughs on participatory research. The high quality of the rural agroenterprise development learning alliances was noted. On the other hand many references were made to the weakness or lack of research output of the RII. "*There are many*

descriptive papers but few analytical ones";" The research insights (hence research quality) gleaned from that facilitation/development action are so far low";" The Institute at present is undertaking development action that is, in its great majority, not produced as IPG, but is rather a localized, private good only";" Neither the incentive nor the capacity is in place at present to produce research at a minimally acceptable level. The present level is in fact well below an "international" level, and in many cases is far behind and below the present state of knowledge."

The CCER made 6 recommendations. CIAT agreed to 5, and substantially agreed to the other recommendation. The recommendations were all very general; none call for any specific action. All recommendations are related to the research focus and methods of the RII. It was recommended that RII move from a method driven to an issue driven approach and that linkages across RII projects and to other CIAT activities increase. The CCER recommended that RII move from generating manuals and development activity to IPG publications on methods. It was also recommended that an attempt be made to synthesize RII experiences. The CIAT reply is vague. *Given the criticisms of the program's output and management, the Panel believes that CIAT's response of closing the unit and re-assigning individuals to work within product lines seems an appropriate direction. An open question remains whether further pruning and consolidation of former RII activities is merited*.

Upon dissolution of the RII, an agreement was signed by CIAT's DG to create the Foundation for Rural Innovation (FRI). Other signatories to the agreement were the executive director of FRI (the former leader of the RII), the executive director of CORPOICA (and a member of CIAT's BOT), and the Fundación Alvaro Alice (and a member of CIAT's BOT). CIAT's policy requires that the DG seek BOT approval for agreements such as this to take effect. At its May 2007 meeting, CIAT's Board rejected this agreement. CIAT management and Colombian partners invested significant efforts in establishing FRI, and the signing of the agreement was widely reported in the Colombian press. The panel was advised by senior host country government officials that this experience has been detrimental to the host country relationship.

Governance, Management and Finance CCER

The CCER on Governance, Management and Finance reflects similar perspectives to the other CCERs regarding the broad research management and strategic issues facing CIAT. The CCER provided the EPMR Panel with a highly valuable introduction to issues at the center. The review was more thorough in governance and management, and had a light coverage of finance, possibly due to time and logistical constraints noted in that report. While the report recognized financial management and control problems, it did not delve deeply enough or provide needed guidance to the center on reform measures.

The CCER was conducted about six months after CIAT's financial crisis became apparent in November 2005. The CCER Panel recognized many shortcomings at the center, but was optimistic. They concluded that "CIAT is positioned to make a significant contribution to the Millennium Development Goals…" They cautioned, however, that *"It is absolutely critical that CIAT puts its house in order – and, as fast as humanly possible."* Overall, the CCER recommended that "the Board and management of CIAT follow up the Business Plan developed to cope with the current financial stress, by undertaking substantive redesign of governance, management and financial systems to create a coherent framework appropriate for a project-based institution." *In the view of the EPMR Panel, while specific recommendations have been*

followed and a new Director of Corporate Services has been appointed, much more work is still needed. The overarching recommendation of the CCER remains valid, as does the urgent need for change.

1.6 Observations

CIAT has a very broad mission and mandate, and a loose, generic strategic plan. In the absence of strong research management and direction, the center's research for development program tends to become too variable and unstable, especially when unexpected difficulties in exogenous financial conditions arise, as has happened since 2003.

CIAT therefore currently shows a research program and management organization in a state of flux. There are no clear cut goals, ways and strategies spelled out for moving the center into a new path of sound and steady service performance. What is making this difficult is the extremely low reserves, which have been depleted by the recent cost cutting measures. This has dramatically reduced management flexibility to act and invest in a new plan. CIAT has been aware of this undesirable situation and has laid out as of May 2007, a draft proposal of a renovated vision and strategic direction. The Panel believes that it is very important that CIAT carry on in the very near future, a process of rethinking, analysis and preparation of a new strategic plan and a business plan to implement it, in order to overcome the present state of flux.

2 CIAT IN FLUX

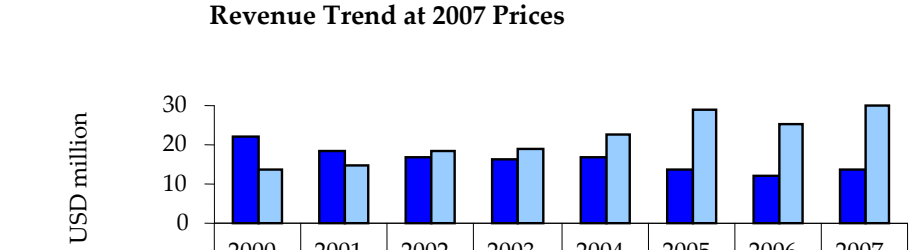
2.1 Context

The global environment in which CIAT operates has been changing rapidly. Large donor unrestricted financial support of research for development activities in CGIAR centers is increasingly less secure. The expectations of agencies prepared to invest in special project activities emphasize the need for measurable development outcomes. The environment has completed the shift from philanthropic *donors* supporting science to alleviate global hunger to one of development focused *investors* targeting poverty alleviation. While CIAT is well positioned with core competencies and capacity to operate effectively in this more demand-driven environment, it places a new set of pressures on the strategic focus and management of the center.

For the period covered by this EPMR, CIAT's current strategic plan for 2001-10, as outlined in Chapter 1, sets out a broadly-based agenda around the notion of sustainable rural livelihoods and CIAT's potential to mobilize its scientific competencies to this end. However, the CIAT research targets are technology focused rather than informed by detailed analysis of systems issues or problems. There is a weak connection between the technologies and the livelihoods goals. Hence, there is no overarching guide for strategic targeting or focus of CIAT's research for development agenda. The supply of research competencies and global reach combined with well-intentioned but vague references to linkages to improving livelihoods of the rural poor is not a compelling platform for encouraging investment in the new global environment.

CIAT scientists, using targeted project proposals, have been very successful at attracting restricted project funding. Figure 2.1 and Table 2.1 show the revenue trend for CIAT over the period 2000 to 2007. The gradual decline in unrestricted funding has been more than countered by the significant increase in restricted project funding. Clearly, there is substantial demand for CIAT's research competencies.

Figure 2.1 Trend in CIAT revenue from unrestricted and restricted sources (2000 to 2007)
Revenue is restated in terms of 2007 prices using the US yearly inflation rates



	2000	2001	2002	2003	2004	2005	2006	2007
Unrestricted	22.3	18.3	16.7	16.4	16.6	13.7	12.3	13.9
Restricted	13.6	14.6	18.3	19.0	22.8	29.0	25.3	30.0

Table 2.1 Changes in restricted and unrestricted revenue from 2000 to 2007 (US$M in 2007 prices)

	2000	2001	2002	2003	2004	2005	2006	2007	2000 - 2007 % Change
Unrestricted	22.3	18.3	16.7	16.4	16.6	13.7	12.3	13.9	-38%
Restricted	13.6	14.6	18.3	19.0	22.8	29.0	25.3	30.0	121%
Total Income Excl. Self-generated	35.9	32.9	35.0	35.4	39.4	42.6	37.5	43.9	22%
Total Income Incl. Self-generated	37.2	35.3	35.3	36.5	40.5	44.0	39.0	45.4	22%
Ratio: unrestricted/restricted	62%	56%	48%	46%	42%	32%	33%	32%	-

Total revenue in 2007 is estimated at US$45.4M (Table 2.1), an increase in real terms of 22% over 2000. In spite of this large overall increase in revenue, however, a major shift from unrestricted core to restricted project funding has occurred. Restricted revenue rose by 121% from US$13.6M in 2000 to an estimated amount of US$30.0M in 2007. Over the same period, unrestricted revenue declined by 38% from US$22.3M to US$13.9M.

At first glance these data suggest that CIAT has adapted well to the more demand-driven environment. However, this largely reflects the creativity and entrepreneurial capacity of CIAT scientists to respond rapidly to environmental change. The evolution of the overall vision, research strategy, program thrusts, and overall governance and management of the institute has lagged. The gradual shift to a greater proportion of restricted project funding was not accompanied by appropriate adjustments in financial management systems, leading to incomplete costing of special projects and a financial "crisis" that has pre-occupied the Board and management for the past few years. The Panel of the CCER on Governance, Management, and Finance encouraged CIAT to move away from governance, management and financial systems that pre-suppose a core-based institution, and recommended that CIAT redesign its systems to create a coherent and transparent framework appropriate for a projects-based institution. At the same time, the success of the scientists in capturing special project funding had also further diversified the suite of CIAT activities, which were already suffering from lack of clear strategic focus. Consequently, other recent CCERs noted a similar lack of vision and research strategy. For example, the first recommendation from the CCER on Agrobiodiversity states *"The Panel recommends that CIAT's overall mission be sharpened in the form of several major focus areas addressing products, tools, services, and knowledge. Such a vision should facilitate the establishment of a global yet concrete project portfolio within CIAT's mission."* Clearly CIAT had not yet adjusted to its new environment.

In this chapter, the evolution of CIAT's research program and structure since the last EPMR is first summarized. This demonstrates the difficulty faced by research managers in navigating a path for the institute as the operating environment changed. It also highlights the constancy of organizational change faced by CIAT staff during this period of flux. This instability has created a number of issues and tensions that have become central to the reflections of this EPMR Panel in its attempt to provide constructive guidance and recommendations for the future of CIAT. The Board and CIAT management have only recently commenced a re-

working of the vision and strategic direction for CIAT. This position is summarized in the second part of this chapter.

These summaries along with insights obtained from a range of existing detailed review documents and consultations with management and staff has informed and focused the EPMR Panel deliberations. This leads the Panel to an initial clear and obvious recommendation and to an overview of the main issues to be addressed by this EPMR, which are summarized in the last section of this chapter.

2.2 Evolution of CIAT's research program and structure

In 2000, at the time of CIAT's Fifth External Program and Management Review, CIAT's research program was built on 16 projects that had provided a stable research structure since 1997. In addition, CIAT was the convenor of three systemwide or ecoregional programs.

2002 was a time of major transitions. First, building on the strengths of CIAT's own soils research project and its role as convening center of the Soil Water Nutrient Management Systemwide Program, CIAT merged with the Tropical Soils Biology Fertility Institute (TSBF) in order to be able to more effectively address soil fertility issues in Africa. As part of this merger, CIAT's own soils project was folded into TSBF. Second, building on several years of research on improving nutrient content in beans and cassava, CIAT joined with IFPRI to co-convene the development of a biofortification program that evolved into the Harvest Plus Challenge Program (CP), which has the objective of contributing to overcoming micro-nutrient deficiencies through enhanced nutrient content in major food staples. Third, CIAT refocused its own research structure into 15 projects with the dual objectives of streamlining operations while responding to important new research opportunities. Rather than continuing as a separate Sustainable Systems project, the systems approach was integrated into other CIAT projects and the Sustainable Systems project was discontinued. Similarly, the function of strengthening NARS was incorporated into research support units of training and information and the NARS linkages project was discontinued. The bean research project and the separate beans in Africa projects were successfully integrated into a single program, while the genetic resources and the biotechnology projects were similarly integrated into a single project. Fourth, the position of Regional Coordinator was established in Africa, Asia, and Central America. Regional Coordinators were charged with the responsibility of working with partners in the regions to develop a joint agenda of common interest across the range of CIAT projects. Until then, all regional staff had worked for a single project so there was no effective mechanism to articulate the entire range of CIAT research competencies with the needs and priorities of NARS. Fifth, the Latin America Ecoregional Program was brought to a close. Sixth, the Rural Innovation Institute was formed to give direction and profile to the combined efforts of the projects on Agroenterprises, Participatory Research, and Information for Rural Communities.

Three new projects were also launched in 2002:

- The tropical fruits project was initiated in order to take advantage of the opportunity offered by the rapidly growing demand of high value products to increase incomes in poor rural communities.
- A climate change project was started in recognition of the need to cope with the massive impact climate change will have on agriculture in the tropics.

- An information for rural communities project began with the aim to develop methods to strengthen the decision making capacity of poor rural communities with the aid of modern information and communication technologies.

In 2004, CIAT established three Research for Development Challenges (RDCs) as platforms for enhanced integration. These were not formal institutional structures with budget and leadership authority. The RDCs were - Sharing the Benefits of Agrobiodiversity; Overcoming Land Degradation; and Enhancing Rural Innovation. These RDCs substantially mirrored the broad underlying objectives of the 2001-2010 Strategic Plan of improving rural livelihoods through a more competitive agriculture; sustained agroecosystems health; and an enhanced capacity of rural communities to innovate.

In addition, although CIAT never wavered in its belief in the importance of climate change to the rural poor in the tropics, in 2004 the climate change project was deleted from the project portfolio in response to lukewarm donor support and the failure of CGIAR to establish the Challenge Program with which it would have partnered.

In 2005, the Soil Water Nutrient Management Systemwide Program was wrapped up by mutual agreement of the partners. Some elements of this agenda were assumed by the Water and Food Challenge Program, while the association of the Sub-Saharan Africa Challenge Program with TSBF became the focus of the soils research for Africa. Secondly, in a slight repositioning, the Integrated Pest Management project was recast as a Crop and Agroecosystems Health project within the Agroecosystems RDC in a change that was more organizational and presentational than of operational research strategy. Thirdly, the scope of the Land Degradation RDC was expanded to cover Improving Management of Agroecosystems in the Tropics.

After 2005 structural changes introduced were more radical and traumatic. In 2006 in reaction to reduced unrestricted funds, both the Communities & Watersheds Project and the Information for Rural Communities Project were discontinued. The planned outputs of these projects were phased out of the Medium Term Plan (MTP). CIAT continued to participate in the Water CP, leading the research theme on Water and People in Catchments. In the hope of streamlining the organization and enhancing collaboration between economics and geographical information systems, the Land Use and Impact Assessment Projects were merged into a single project, but the leader was never named for this project and the unit never become functional.

Based upon the recommendations of a CCER, the Rural Innovation and Improving the Management of Agroecosystems in the Tropics RDCs were merged into a single People & Agroecosystems RDC. This also entailed the dissolution of the Rural Innovation Institute. At the same time the Agroecosystems RDC as well as the Agrobiodiversity RDC were formalized into structures with an appointed leader with budget and personnel authority. By this time, CIAT's research program consisted of 11 projects complemented by involvement in the system wide initiatives on PRGA and the Harvest Plus CP.

In 2007 in response to the recommendation of a CCER, CIAT reorganized its research around the product concept, which is intended to better focus and integrate major elements of CIAT's research. The intent was not to develop a radically different research agenda. Products did

not differ greatly from outputs in the MTP so that CIAT products were presented as outputs in the current MTP. The process of developing and disseminating products extends all the way from assessment of demand to product design through research, testing, and fine tuning prototype products with users, to their distribution and subsequent evaluation of impact. The intent is for different scientists and disciplines to integrate their work to contribute different elements to the product process at appropriate stages over the course of the product cycle. Partnerships would provide key inputs to product development, and the roles of partners needed to be envisaged in the design of the product development process.

To implement this approach CIAT formed 6 product lines (PL) with designated leaders within the existing RDC structure. These PLs are complemented by CIAT's role as convenor of one systemwide program (PRGA) and co-convenor of one Challenge Program (Harvest Plus). The People & Agroecosystems RDC encompasses 2 PLs: Markets, Institutions and Livelihoods, and the Integrated Soil Fertility Management Product Line of the Tropical Soils Biology Institute (TSBF) of CIAT. Agrobiodiversity RDC includes 4 PLs to improve the productivity of beans, cassava, rice, and tropical forages. The work of the former project on conservation and use of genetic resources continues but is now presented as comprising some of the products (outputs) of the 4 commodity PLs.

It is clear to the Panel that this state of continual flux in CIAT's research program, while trying to better position the institute, has resulted from poor definition of the vision and strategic direction to guide that positioning. The current Strategic Plan is too generic and lacks sharp definitions of targets, means and stages of development, so that it does not provide a clear road map to guide the evolution of the Center. The recent CCERs have repeated the call of the 5th EPMR to sharpen targets and strategies and CIAT management has begun to respond. Whether this new attempt at focus will be more successful than past attempts is key for the future of CIAT.

2.3 Revising the vision and strategic direction for CIAT

The Panel was provided with a brief paper written in early 2007 outlining the current thinking of the BOT and Management on the vision and strategic direction for CIAT. The paper reinforced the mission of CIAT and sets out a number of aspirations for the institute (see box - CIAT's Strategic Vision (2007) - in the following page).

This new strategy paper discusses how CIAT would achieve the required focus and integration by evolving from a project based, into a targeted, product-based, organization. The definition of the product concept, as recommended in the recent CCER on Agrobiodiversity, is detailed and implementation steps in the product process cycle are presented. Further, in relation to financial sustainability of the institute, the paper presents further aspirations that by 2009 CIAT would be a center where:

- Administration and management are entirely supported by overheads, and
- Mainstream research, including product lines and challenge programs, is almost entirely supported by special projects.

It is the view of the Panel that the process to develop a new strategic plan for CIAT is a welcome, although overdue, development. Any planning process will need to result in far clearer targets for the institute and operational processes to achieve them.

[#1] **Hence, *the Panel recommends* that CIAT management initiate as a matter of urgency a strategic planning process that re-invigorates the mission of the institute, analyses the environment in which it operates, enumerates its comparative advantages and strengths, and identifies the major problem areas and target agroecosystems to focus its research for development agenda on achievable outcomes.**

Specific requirements in relation to this recommendation will be considered throughout this report as the Panel analyzes the main issues at CIAT requiring attention of this EPMR.

***Strategic Vision* (2007).** *The enduring* mission of CIAT *is to contribute to reducing hunger and poverty in the tropics through collaborative research that improves agricultural productivity and natural resource management. CIAT will maintain its reputation and capacity for integrating the key scientific competencies required to make significant progress in attaining its mission. To achieve impact, we recognize the importance of working in effective partnerships with national programs, civil society organizations, and the private sector to conduct research that produces international public goods including technologies, methodologies and knowledge of direct relevance that are being taken up by intended users to improving the livelihoods of the rural poor.*

CIAT has a unique comparative advantage in genetic improvement of its germplasm collection in beans, cassava and tropical forages and will use its 40 years of experience and knowledge on how to add value to that collection for the benefit of the poor. CIAT reaches end-users through integration of molecular biology, breeding, pathogen ecology, integrated soil fertility management and the development of effective impact pathways using decision support, participatory approaches and equitably linking poor farmers to developing market. Thus CIAT will focus its efforts on applied research outputs of highest potential benefit for the livelihoods of the poor in the tropics.

These outputs will be co-developed with and disseminated through partners in Latin America, Sub-Saharan Africa, and Southeast Asia. CIAT will host the leading center of excellence for research on rice in Latin America through a public/private partnership and will facilitate the emergence of other similar research partnerships in cassava, beans and forages.

CIAT's continuing ability to have a significant impact on the lives of the poor and to sustain the environments on which they depend, using improved germplasm, can only be and will continue to be accomplished via an integrated interdisciplinary approach that includes the following three areas:
(i) CIAT will excel in integrated land, soil fertility, and water management research from a landscape/livelihoods perspective particularly in Eastern and Southern Africa with the TSBF institute of CIAT taking the lead in this activity.
(ii) CIAT will be among the world leaders in the use of spatial analysis focused on deployment of genetic resources and their interaction with markets and other agricultural natural resources in the tropics.
(iii) CIAT will be an active contributor to a global CGIAR partnership on market chain analysis and high value products as well as to a system wide partnership on natural resource management and agriculture in the Amazon basin.

CIAT will also continue to develop the potential of students and young professionals, especially from the South, to better serve the science and technology and development needs of their countries.

2.4 Overview of the main issues for attention of the EPMR

The preceding outline on the state and evolution of CIAT since the last EPMR, in combination with detailed information from the recent CCERs, other reviews and reports (Annex 5), direct consultation with the CIAT Board, management and staff, and discussions with research partners and collaborators, has informed the perspectives of the Panel on the major strategic issues to be considered. The Panel has identified major issues that can be grouped into two key foci: (i) overcoming governance and management shortcomings exposed by recent changes in CIAT's operating environment, and (ii) clarifying CIAT's strategic research agenda and its implementation. The strategic issues for this EPMR identified by the Science Council of the CGIAR will be accommodated within these broad foci. The discussion here identifies the problems and key questions occupying the Panel that will form key threads through this report in seeking recommendations towards identifying solutions.

Overcoming governance and management shortcomings

The priority issue for CIAT is to overcome the extended financial "crisis" that has engulfed its operations over the period since the last EPMR. The key strategic issue arising for this EPMR relates to the effectiveness of the governance and control environment at CIAT. The nature of internal controls and risk management processes and the role of the Board and management in oversight will be analyzed as a means to identify strategies for effective and sustainable recovery. Financial challenges are sure to befall any center; skilled direction must be capable of extracting a center from a lingering state of "crisis" so that it can carry out its mission.

The organizational stress that has resulted from the financial "crisis" has exposed issues in center leadership and management. The need to terminate international and national staff has influenced morale and staff perceptions of center leaders. These cuts have come in several rounds, yet CIAT remains in financial "crisis" mode. This leaves many employees on short term contracts waiting for the next round and leaves CIAT vulnerable to the loss of key scientists. What effect has this situation had on delivering outcomes? How does the staff view the credibility and competency of the management and Board? Are there strategies that can re-build organizational trust and re-invigorate a culture of commitment? How does CIAT manage its human resources to maintain quality research leadership and skills in this environment? Have staffing cuts and cost savings been strategically balanced between management, administration and research staff? Is the significant investment of core funds in infrastructure at headquarters still required?

The evolution of CIAT from a Latin American organization to a global organization has exposed issues in human resource management. Analysis of these issues will be used to inform recommendations on strategies for more effective human resource management. This issue has also influenced interactions with the host country for CIAT headquarters. What strategies can management adopt to re-build relationships with Colombia? What should be the role of CIAT in the broader Latin America region in this new environment?

Clarifying CIAT's strategic research agenda

It is clear from the trajectory outlined earlier in this chapter (section 2.2) that CIAT does not have a stable strategic platform that informs and underpins implementation of its research agenda. Developing such a stable platform, which must retain flexibility for initiation and

cessation of research thrusts, is urgently required and forms the basis of the first recommendation of this report.

CIAT has very recently (2007) moved to a product line approach of implementing its research agenda. Moreover, it has implemented this within a recently institutionalized Research for Development Challenge structure. Hence, products have been aligned with outputs in the standard annual planning (MTP) process. Is this the most appropriate design to achieve outcomes where targeted interdisciplinary effort is often required? Does it capture the full potential of the product concept presented in the CCER on Agrobiodiversity? How can CIAT sharpen its delivery of integrated research for development? How can CIAT's mix of disciplinary expertise be better utilized? What is the role of the regions in this process? What is the best way to link CIAT's detailed research in specific product/process areas to development outcomes? How should CIAT position itself in the research-development continuum? How should CIAT manage its relationships with NARS in this positioning?

CIAT has been forced to move to an operating position that is more responsive to needs of donors. What strategies should CIAT adopt in balancing strategic thrusts with funding opportunism? How should CIAT allocate its core resources to best effect in this environment? How should it prioritize allocation decisions among germplasm conservation, regions, core research competencies, and new research areas (such as high value commodities)? How should CIAT use impact assessment in this process? In what key disciplinary areas should CIAT invest in detailed product/process research? How does it balance its investment between basic science and achieving outcomes? How does CIAT sustain its scientific strength in genetics and Agrobiodiversity? How does CIAT deal with natural resource sustainability aspirations? Should resource conservation issues be a direct target or part of a package associated with livelihood improvement?

Many of the outcomes sought by CIAT involve interactions with market forces and the private sector. How much expertise does CIAT require in-house to make these linkages work effectively for development outcomes? How far into market systems should CIAT delve? How should CIAT manage its relationships with the private sector? What are the implications of these relationships on IP management? CIAT is engaged in a number of CGIAR system wide initiatives. What are the overheads and opportunity costs associated with this engagement? How should CIAT decide when to allocate capacity to these initiatives?

These and numerous other specific associated questions will be addressed by the EPMR Panel throughout this report**.** *It is our intent that the reflections and recommendations presented in this report will be of assistance to CIAT in dealing with the two main areas of issues identified - Overcoming Governance and Management Shortcomings, and Clarifying the Center's Strategic Agenda.* The recommendations will incorporate specific details and processes required for implementation wherever feasible.

3 PEOPLE AND AGROECOSYSTEMS RESEARCH FOR DEVELOPMENT CHALLENGE

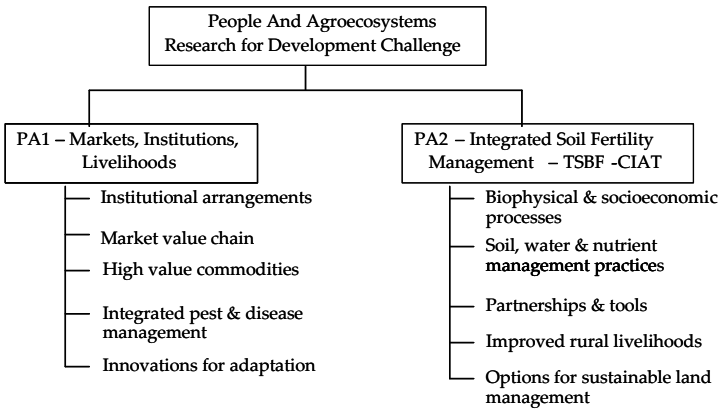
3.1 Introduction

The Agroecosystems RDC was created in 2006 by merging the previous Rural Innovation RDC with the Agroecosystem RDC. This brought together the project areas in Crop and Agroecosystem Health Management (the former PE-1), Tropical Soil Biology and Fertility (PE-2), Rural Agroenterprise Development (SN-1), Participatory Research Approaches (SN-3), Systemwide Program on Participatory Research and Gender Analysis (SW-3), and Spatial and Economic Analysis for Decision and Policy Support in Agriculture and the Environment (BP-2) as outlined in Chapter 2.

In an attempt to achieve enhanced focus and integration, following recommendations to that end from the three research CCERs in 2006, CIAT has now discontinued projects and implements its research program through a product line (PL) approach. However, the PL approach has been implemented within the existing organizational structure of the two broad RDCs: Agroecosystems and Agrobiodiversity. Agrobiodiversity contains all the germplasm related research and development (Chapter 4) while Agroecosystems contains the suite of other disciplines involved in system based research and development. In this transition, some project areas were moved between the RDCs (e.g. tropical fruits into Agroecosystems RDC and aspects of crop and agroecosystem health management, specifically, disease resistance breeding, into Agrobiodiversity RDC).

Research Leaders have been appointed for each of the RDCs and the Agroecosystems RDC encompasses two PLs: Markets, Institutions and Livelihoods (PA1), and Integrated Soil Fertility Management (PA2). The latter PL houses the Tropical Soils Biology Institute (TSBF) of CIAT. Each PL contains a number of products that in large measure reflect the previous project structure (Figure 3.1). This chapter examines the activities of the two PLs, presents a Panel assessment of these activities, and discusses issues that present opportunities for improvement.

Figure 3.1 Product lines and products within the Agroecosystems RDC



3.2 Markets, institutions and livelihoods

CIAT's intent for this PL is to deliver innovations -- mostly in the form of approaches, methods, tools and policy options -- that contribute to improving the effectiveness of agricultural research and development and the uptake of research results by small scale farmers. Above all, PA1 aims to ensure that the strategies, approaches and methods employed and advocated by CIAT are appropriate for benefiting the hard-to-reach – and especially the poor farmers in Africa, Asia and Latin America.

PA1 addresses several aspects of the CGIAR System Priorities 3, 4 and 5, by pursuing key research questions around systems approaches ("where to do what?"), organizational models, and learning approaches. Products/outputs from PA1 are intended to increase the effectiveness of other product lines of CIAT, and of the wider R&D community. It is CIAT's belief and experience that many of the most appropriate tools for achieving widespread impact (both social and biophysical) need to be derived through iterative interdisciplinary research processes. Agricultural science practice cannot be successful if it is disconnected from development practice, and system-based action research is often required in order to yield innovation and robust, international public goods.

CIAT has identified 5 products within PA1 (Figure 3.1):

Product 1 *(Institutional arrangements for increasing impact)s* concerns strengthening the organizational capacities of farmer organizations and rural service providers, particularly in relation to the most effective approaches for improving their capacities for innovation in order to support rural people in breaking out of the poverty trap. The research focuses on farmer groups and higher level rural institutions by studying the effectiveness of approaches, methods and institutional arrangements as promoters of pro-poor interventions and change.

Product 2 *(Market value chain management practices)* is related to the potential to improve rural livelihoods and alleviate poverty by improving market access. Improved understanding of how impact occurs is used to design more effective and equitable market-oriented R&D interventions. The research will focus on mechanisms to link farm enterprises into the agri-food chain in a more equitable manner and will involve development partners, private sector buyers, and state organizations in Latin America, Asia and Africa.

Product 3 *(High value commodities)* is concerned with high value crops that reduce inequality between resource poor and resource rich farmers while avoiding undermining of the natural resource base. The research focuses on approaches, tools and technologies for improving the competitiveness of smallholder producers of high value commodities including tropical fruits. The initial research is focused on 3 model high value fruit crops in Latin America.

Product 4 *(Product and environmental quality through Integrated Pest and Disease) Management (IPDM)* is focused on the development of technologies for better product and environmental quality through management of diseases and pests. The three key targets are tropical fruits, a biological pesticide suitable for Africa, and a method to quantify one plant pathogenic soil-borne species of *Pythium* in Africa, initially for beans.

Product 5 *(Innovations for adaptation to change and vulnerability)* aims to make available policy guidelines, tools, and innovations for adaptation and resilience of agricultural systems to situations of risk, high stress and vulnerability. Products will include improved understanding of the natural and biological resource that provides the link to climate change, and guidelines that improve smallholder farmers' adaptive behavior. Better tools are needed to identify effective development policies and associated investments that support the implementation of profitable and resilient land uses that enhance both welfare and the environment. The research is focused in Africa.

Overall, PA1 provides a set of core competencies necessary to support successful targeting, systems integration, reaching end users, and impact assessment – with inputs contributing directly through teamwork with biophysical scientists to the delivery of the outputs of CIAT's other product lines. The opportunities presented to increase CIAT's reach and contributions to poverty alleviation are the suggested justification for concentrating these core competencies. Many of the outputs from PA1 are knowledge-intensive innovations in the form of methods, tools and good practice guides. Most are targeted globally or at least across two regions, with application to development often depending upon subsequent local adaptation, and translation.

The engagement of local partners is critical to the success of this PL. CIAT selects partners in research in strategic agroecological or market-defined situations on the principle of subsidiarity. In cases in which the local – and if possible regional -- partner is responsible for implementation, CIAT's role becomes that of coordinating its planning so as to arrive at robust conclusions at the higher level.

Panel assessment of market, institutions and livelihoods (PA1)

Two of the three CCERs conducted in 2006 related to the then project areas that now form this PL. The CCER of CIAT's Strategy for Natural Resource Management: Improving Management of Agroecosystems in the Tropics (CCER-IMAT; May 2006) reviewed the quality and relevance of research in the Crop and Agroecosystem Health Management (PE-1), Integrated Soil Fertility Management (PE-2), and Spatial and Economic Analysis for Decision and Policy Support in Agriculture and the Environment (BP-2) projects. The CCER on the Rural Innovation Institute (CCER-RII; May 2006) reviewed the quality and relevance of research in the Rural Agroenterprise Development (SN-1) and Participatory Research Approaches (SN-3) projects, and the Systemwide Program on Participatory Research and Gender Analysis (SW-3). These reviews provide good insight into quality issues within projects that has been valuable in informing the EPMR Panel. In deriving broad assessments the Panel has combined the information in the reviews with its own observations from presentations, interviews and field visits, which are by necessity less detailed in any specific area, but better informed in breadth across the whole institute.

The CCER-IMAT noted the high quality of science and its relevance to CIAT's mandate. However, there was a concern about incomplete integration of social, economic, and ecological analysis with technology development and testing. Panel observations are consistent with both these findings. The CCER-RII made many references to the weakness or lack of research output of the RII and recommended moving from a method driven to an issue driven approach and focus more on outputs (research leading to new insights) rather than inputs (development action plus manuals). As the RII has been discontinued and

remaining staff absorbed into this product line, it remains unclear to the Panel whether the problem has been remedied or merely dispersed.

The Panel is of the view that the implementation of the PL concept, as manifested in this PL, will not achieve the interdisciplinary interaction required to achieve the development outcomes of CIAT's mission. Indeed, the Panel believes that the suite of reorganizations implemented since the 5th EPMR (Chapter 2) have not resulted in the necessary integration to efficiently accomplish CIAT's desired outcomes. The products defined here remain as disciplinary islands that closely reflect prior discipline-based project groupings. The Panel is concerned that effective disciplinary integration in outcome focused teams, which is the fundamental functionality required of CIAT research for development, is not facilitated by this organizational structure. The structure houses component pieces and the integration to the system and problem domain is secondary, although despite this, seemingly achieved in regional operations (Chapter 5).

A number of the SC directives to this Panel relate directly to this issue. In particular, strategic issue 3 for this EPMR states: *A large component of CIAT's portfolio is made up of small and discrete activities which may lead to inefficiencies in the deployment of resources. In response to SC criticism of having a large number of apparently unrelated projects, it appears that CIAT, rather than completing and/or eliminating these projects, has merely subsumed them under one program. The SC encourages the EPMR to assess how CIAT could rationalize, concentrating on fewer, well-selected areas of strategic international research with high potential benefit to the poor in the tropics.*

While the Panel is aware of the key role of these disciplinary research components in delivering outcomes, and was presented with good evidence to this end (Ch. 5), the Panel considers that the current structure encourages their operation as independent units. This generates considerable overlap and diffusion of effort across CIAT as the independent disciplinary units each seek to develop broadly-based projects around their disciplinary expertise. There is little semblance of a coherent research program. The Panel was unable to identify a clear research strategy for the current product lines on markets, institutions and livelihoods that would avoid this confusion and facilitate effective synergies across its disciplines and with other disciplines across CIAT. The Panel is of the view that the disciplinary competencies housed in market, institutions and livelihoods (PA1) would be more effectively utilized within CIAT if they were housed within multi-disciplinary, outcome focused research project teams that would serve "outcome lines", rather than in discipline based component "products".

***[#2]* Hence, *the Panel recommends* that CIAT implement its research for development agenda via a small number of outcome lines that engage multidisciplinary teams in a system-based approach that targets outcomes defined clearly and unambiguously in a revised center strategic plan.**

The strategic plan should include strategies and processes for evaluating, initiating, and exiting outcome lines. Issues concerning reporting structures and disciplinary professional development would need to be taken into account in such an arrangement. We pursue this issue further following examination of regional activities (Chapters 5 and 7).

The SC also requested the Panel (*Annex 2*) to consider the focus of the expansion of research on tropical fruits, which now forms product 3 within the PA1 product line as described above. The Panel is of the view that the exploratory approach being adopted by the small team engaged via a focus on selected species with significant potential in LAC is entirely appropriate and directly targeting CGIAR System Priority 3A. The research is beginning to attract significant special project funding, with 2 significant projects approved towards the end of 2006. In the past two years around US$0.2M is being allocated from CIAT core funds to this group. The CCER on Agrobiodiversity recommended that tropical fruit activity should gradually move to 100% self-funding. It will be necessary to maintain vigilant evaluation of progress and potential for impact to underpin decisions on continuation of this research and balance between unrestricted and restricted project funds for this activity over time.

3.3 Integrated soil fertility management

The PL on Integrated Soil Fertility Management (ISFM) in essence houses the Tropical Soil Biology and Fertility Institute of CIAT (TSBF-CIAT) in Africa and aims to address soil fertility related issues and to contribute to sustainable land management. The activities are now totally focused in Africa following the closure of the ISFM program in Latin America in 2006-2007. The over-arching goals are to strengthen national and international capacity to manage tropical ecosystems sustainably for human well-being, with a particular focus on soil, biodiversity and primary production; to reduce hunger and poverty in the tropical areas of Africa through scientific research leading to new technology and knowledge; and to ensure environmental sustainability through research on the biology and fertility of tropical soils, targeted interventions, building scientific capability and contributions to agricultural policy formulation and development.[2]

To achieve its 3 key objectives, the work at CIAT-TSBF is organized into five major products (Figure 3.1). For each of these products there are specific targets for contributing to outcomes and impacts. The outcomes and impacts are conceptualized around seven strategic pillars:

1. Improving fertilizer efficiency and developing soil and water management practices;
2. Improved germplasm as an entry point for managing soil fertility;
3. Managing the genetic resources of soil for enhanced productivity and plant health;
4. Understanding farm level social and cultural dynamics;
5. Linking farmers to markets, nutrition, and health;
6. NRM strategies to move from plot to landscape scales; and
7. Strengthening scientific and institutional capacity of partners for ISFM.

Product 1 (*Biophysical and socioeconomic processes understood, principles and concepts developed for protecting and improving the health and fertility of soils*) encompasses research developing

[2] The main objectives of ISFM are to support the livelihoods of people reliant on agriculture by developing profitable, socially-just and resilient agricultural production systems based on Integrated Soil Fertility Management (ISFM); to develop Sustainable Land Management (SLM) in tropical areas of Africa through reversing land degradation; and to build the human and social capital of all CIAT-TSBF stakeholders for research and management on the sustainable use of tropical soils. CIAT-TSBF addresses several aspects of CGIAR System Priority 4: Promoting poverty alleviation and sustainable management of water, land, and forest resources. Most effort relates to System Priority Area 4A: Promoting integrated land, water and forest management at landscape level, but considerable effort is also dedicated to System Priority Area 4D: Promoting sustainable agro-ecological intensification in low- and high-potential areas.

principles and concepts that transcend the classical boundaries of the biophysical sciences through integration with economics, sociology and anthropology.

Research activities from ***Product 2*** (*Economically viable and environmentally sound soil, water, and nutrient management practices developed and tested by applying and integrating knowledge of biophysical and socioeconomic processes*) address the social, economic, and gendered dynamics of local knowledge generation and exchange, the nature of the interface between research-extension, local community institutions/social networks, and evaluate the economic and environmental impacts of current or proposed practices.

At the center of the research-outcome-impact chain, ***Product 3*** (*Partnerships and tools developed and capacity enhanced of all stakeholders for improving the health and fertility of soils*) addresses the building of human and social capital of all CIAT-TSBF stakeholders for effective research and sustainable management of tropical soils.

Product 4 (*Improved rural livelihoods through sustainable, profitable, diverse and intensive agricultural production systems*) represents the application of human and social capital and networking and sound, socio-culturally and economically relevant biophysical principles for ISFM.

The highest scale of the research-for-development activities in PA2 is found within ***Product 5*** (*Options for sustainable land management (SLM) practices for social profitability developed, with special emphasis on reversing land degradation*). These activities are dedicated to applying the findings of all the previous outputs for restoring degraded agricultural lands to economic and ecological productivity, enhancing ecosystem health and improving livelihoods by generating technology, institutional, and policy innovations.

Overall, PA2 has a major focus on developing and extending technologies that support sustainable intensification of cropping systems, especially in the dry and moist savanna, hillside, and forest and forest margin agro-ecological zones (AEZs) in Africa. In these AEZs, poverty, population growth and a rising demand for food is driving expansion of cropped area into increasingly marginal lands and/or remnant forest zones. Under these circumstances, sustainable intensification of agriculture on already cultivated land (instead of expanding the area under cultivation) represents the most promising solution to achieving food and income security and protecting against natural resource degradation. The expected beneficiaries, target ecosystems and end users are principally small-scale crop-livestock farmers and extension workers, NGOs and NARS in tropical agroecosystems of Sub-Saharan Africa.

Panel assessment of integrated soil fertility management (PA2)

The CCER of CIAT's Strategy for Natural Resource Management: Improving Management of Agroecosystems in the Tropics (CCER-IMAT; May 2006) reviewed the quality and relevance of research in the then Integrated Soil Fertility Management (PE-2) project that forms this product line. The CCER was glowing in its assessment of CIAT-TSBF:

- TSBF-CIAT fully represents CIAT's core mission and objectives and the research conducted is generally of high standard.
- TSBF has become a world leader in tropical soil fertility research and joining CIAT has further strengthened this process.

- The quality of outputs and achievements at TSBF is among the highest within CIAT and a direct reflection of its historical institutional culture of collaboration (South-North and South-South), competitiveness for international funding, and excellent scientific guidance.
- TSBF-Africa essentially continues to function as an almost completely grant-funded unit.
- TSBF has demonstrated that strategic and development objectives are not mutually exclusive in NRM research and can in fact have synergistic effects, including maintaining a high level of publications in international journals.
- Top senior scientists working in TSBF-CIAT have maintained an average publication output of 5 to 7 journal papers per year, which is comparable to top performers in ARIs.
- TSBF has moved out of its original niche in soil biology and soil fertility research. Its new mandate now includes 'integration' and 'management', both of which require expertise in many disciplines.
- TSBF has established itself as a lead institution in tropical soil ecology and microbiology research, including leadership of the Conservation and Sustainable Management of Below-Ground Biodiversity (CSM-BGBD) project.
- The standing of TSBF in the global scientific community is generally excellent. TSBF-CIAT has wide ranging partnerships, primarily through regional networks that serve as vehicles for field research and capacity building and generally involve strong collaboration with NARS, national and international universities, NGOs and farmer groups/associations.
- The merger of TSBF with CIAT has greatly enhanced the integration of CIAT germplasm in ISFM activities, with mutual benefits for TSBF and CIAT's commodity programs. Advanced, adapted germplasm has become the key entry point for ISFM.

Observations of the 6th EPMR Panel from presentations, interviews and field visits, are consistent with these findings from the more in-depth review conducted as part of the CCER. It is clear that TSBF-CIAT has a well-developed research strategy based on integrated multi-disciplinary teams to undertake system-based action research and innovation that is targeted at priority development outcomes. This strategy is concisely articulated in the document TSBF-CIAT's Strategy and Work Plan, 2005-2010.[3]

It is the Panel's view that, when targeted at outcomes for small rural land-holders in specific agro-ecological zones or territories that relate best to identified strategic development opportunities for CIAT, then this multi- and inter-disciplinary approach exemplifies the concept of "outcome line" required by research for development across all of CIAT. It is likely that a range of entry points – improved germplasm, ISFM, path to market, etc – will be relevant in different situations. Diagnosis of the target system to identify entry point opportunities will be a critical starting point. While TSBF-CIAT has moved to this mode of operation, it still operates under what is now essentially the misnomer of a soils banner.

[3] *"…TSBF-CIAT's research for development approach has been based on an Integrated Soil Fertility Management (ISFM) paradigm. However, successful resource management and sustainable agricultural productivity need to go still further, addressing socio-cultural realities in the realms of markets, health and policies. The central hypothesis is that natural resource management research will have more leverage if the apparent gaps between investment in the natural resource base and equitable income generation and distribution can be bridged. Therefore, TSBF-CIAT's new strategy proposes to take ISFM further forward, by addressing the full chain of interactions from resources to production systems to markets, socio-cultural forces, and policies. Under the new framework, investment in soil fertility management represents a key entry point to sustainable agricultural productivity growth, and a necessary condition for obtaining positive net returns to other types of farm investments."*

However, the Panel is of the view that the TSBF brand is so well-known and highly regarded that it would be folly to re-name it to better reflect it's now broader interdisciplinary and system outcome focused approach. However, as alluded to in the CCER, it will be necessary for TSBF-CIAT to maintain a coherent approach to a small number of specific integrated projects that are guided by CIAT's strategic research agenda. This is considered further in Chapter 7.

The Panel was struck by the clear contrast in approach between product lines PA1 and PA2 in the Agroecosystems RDC. PA1 presents as discrete disciplines looking for a problem while PA2 is problem/outcome oriented and seeking the disciplinary expertise needed for targeted interdisciplinary research for development. The outcome line(s) already present in PA2 have been dissected to component pieces that fit the product line concept, which may have advantages for organizing component research and development activities within the outcome line focus. The important distinction is that the relevance of the component products, and their role in integration to the outcome target, is the driver of the process.

Hence, the Panel reaffirms Recommendation #2; "... that CIAT implement its research for development agenda via a small number of outcome lines that engage multidisciplinary teams in a system-based approach that targets outcomes defined clearly and unambiguously in a revised center strategic plan." The concept details for outcome lines will be elaborated in Chapter 7.

4 SHARING THE BENEFITS OF AGROBIODIVERSITY RESEARCH FOR DEVELOPMENT CHALLENGE

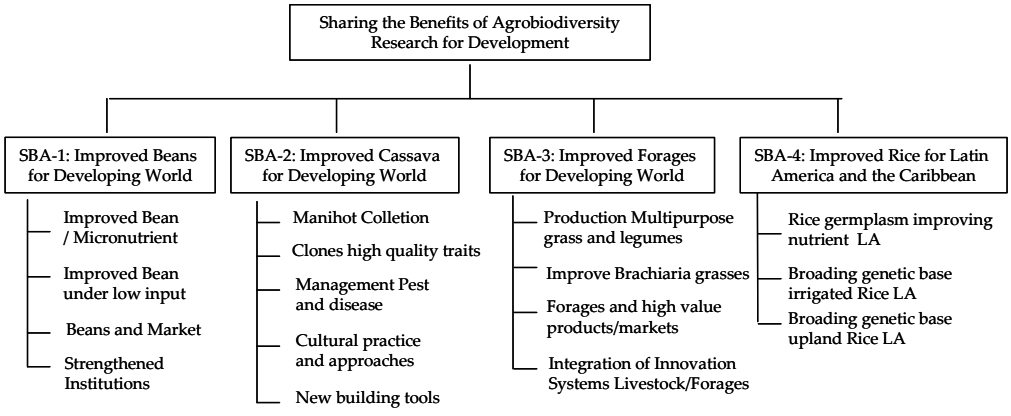
4.1 Introduction

The Agrobiodiversity RDC was created in 2006 incorporating the Biotechnology Unit, the projects to improve productivity of beans, cassava, rice and tropical forages and the Genetic Resource Unit (GRU). This RDC builds upon the conservation of plant genetic resources; makes a major effort in research to improve the germplasm available through partners to rural communities; and contributes to the development of an appropriate policy environment. In order to advance in this challenge CIAT conserves genetic resources of beans, cassava and tropical forage. In collaboration with IRRI and WARDA, CIAT carries out specific and unique rice research applied to the Latin American tropics while also maintaining through the GRU a regional rice collection for LAC.

Important aspects of this RDC research are carried out in collaboration with two CGIAR Challenge Programs: *HarvestPlus CP* on Biofortification, co-managed by CIAT with IFPRI, enhances the micronutrient content of food crops, including beans and cassava; and *Generation CP* seeking advances in science for the utilization of genetic resources.

This RDC has its strength in the balance and integration of conventional plant breeding with a large array of biotechnological techniques including molecular markers, genomics, proteomics, tissue culture and genetic transformation. Research also develops basic tools and technologies that delineate the molecular genetic basis of cassava, beans, rice and tropical forages, underpinning crop improvement and the development of innovative agricultural practices. This RDC is organized around these four PLs with a set of specific products/outputs associated with each product line (Figure 4.1).

Figure 4.1 Product lines and products/outcomes within the Agrobiodiversity RDC



The Panel identifies that the leadership of this RDC is recognized and individual project leaders engage their personnel and resources within their projects in an efficient manner. Staff training and learning is very strong, resulting in motivated, dedicated and effective research teams. The CCER conducted in May 2006 pointed out that CIAT's Agrobiodiversity group has

achieved an impressive degree of success in raising external funds for specific as well as broad projects (HarvestPlus CP, AgroSalud, CLAYUCA, FLAR, and the Generation CP) due to the excellent reputation of the group for the quality of the research that it conducts. The 6th EPMR Panel endorses the findings of the CCER regarding the excellent quality of the science and scientists of the SBA RDC. Both are held in high regard in the international scientific community.

4.2 Conservation and use of tropical genetic resources; genetic resources unit (GRU)

Few countries possess the resources needed to ensure that their germplasm conservation needs are satisfied. CGIAR germplasm conservation and utilization activities produce a large impact through the generation of this International public good. CIAT is located in a continent that is rich in unique genetic resources. CIAT has the global mandate to collect, conserve, characterize, document, and distribute germplasm of cassava, common beans and tropical forages.

CIAT has the globally most important collections of cassava, common bean, and tropical forages. The number of registrations from CIAT (formally designated in trust by FAO) rank highest in the international collection (Table 4.1). Its importance in terms of diversity and free availability to countries all over the world is immeasurable, especially for those located in the tropics of America, Africa and Asia.

Table 4.1 Germplasm from the CIAT collection registered into International Treaty

	Rank	No. of taxa	No. of accessions
Beans (Phaseolus)	1	44	35,231
Cassava (Manihot)	1	33	6,499
Tropical Forages	1	668	23,140
			64,870

As a CGIAR Center, CIAT is expected to play an important role in contributing to the implementation of the international treaty on International Plant Genetic Resources for Food and Agriculture, which is the principal global legally-binding intergovernmental policy framework governing the conservation and sustainable use of plant genetic resources for food and agriculture. Interpretation and compliance with the requirements of this treaty are an important responsibility, and one that is currently being handled well by the GRU leader.

An important GRU goal is to minimize the chance of losing accessions within the collection through seed deterioration or catastrophic event. CIAT has taken several important actions since the last EPMR that have reduced this risk. Regeneration cycles have been shortened, storage equipment has been upgraded, and the duplication of CIAT mandate collections by distributing accessions to CIMMYT (beans and forages) and CIP (cassava), is underway. Progress in completing the backup is given in Table 4.2.

Table 4.2 Progress in the % of CIAT accessions in safety back-ups at CIMMYT and CIP

	CIMMYT		CIP
	Seed collections		
	Bean	Forage	Cassava
2003	MOU signed		
2004	6,025 (17%)	2,259 (9.8%)	MOU signed
2005	7,849 (22%)	3,835 (16.7%)	1,184 (19.7%)
2006	10,866 (31%)	5,577 (24.2%)	4,728 (78.8%)

% on a basis of 35,000, 23,000 and 6,000 accessions, respectively

CIAT MTPs from 2000 to 2007 have consistently reported achieving targets for important outputs including: conservation and multiplication of the mandated crop, characterization of genetic diversity of cultivated species, characterization of associated organisms, genomes and gene combinations used to broaden the genetic base of mandate crops and associated organisms. Progress in long-term conservation of the collections is given in Table 4.3.

The GRU has been very active in the provision of materials to users. GRU has implemented a web-based system for requesting accessions that has facilitated an increase in materials distributed. In 2000-2006 37,536 samples of cassava, beans and tropical forage material were sent to partners (Table 4.4). Another development in the GRU has been the implementation of a bar coding system to handle accession data. This system minimizes mistakes in managing the large number of accessions in the collections. The GRU also contributes to CIAT's basic research effort in understanding relationships between landraces and wild relatives, in the understanding of the population structure of beans and cassava, and the evolution of these species.

Table 4.3 Progress in long-term genetic conservation at CIAT as indicated by % of accessions regenerated

	Seed collection		Collection (cyopreservation)
	Beans	Forages	Cassava
2003	7,025 (20.1%)	2,278 (9.9%)	348 (5.8%)
2004	7,294 (20.8%)	2,950 (12.8%)	541 (9.0%)
2005	8,839 (25.3%)	3,708 (16.1%)	621 (10.3%)
2006	11,925 (34.1%)	5,795 (25.2%)	621 (10.3%)

% on a basis of 35,000, 23,000 and 6,000 accessions, respectively

A comprehensive evaluation of the GRU was completed in October 2006 by the CGIAR System-wide Genetic Resources Program. The opinion expressed in the review was that "CIAT GRU is among the best found in the world", and that CIAT GRU capacity to fulfill its responsibilities has improved substantially over the past three years. The GRU unit leader is widely recognized as the leading bean genetic resource specialist in the world, as well as being among the world's leading experts in CIAT's other mandate crops.

Table 4.4 Samples from germplasm collections distributed by CIAT GRU in the period 2002 -2006

Commodity / Years	2002	2003	2004	2005	2006	Total Samples
Beans (Phaseolus)	2,933	5,912	3,288	4,569	1,153	17,855
Cassava (Manihot)	3,077	1,820	3,094	3,210	3,476	14,677
Tropical forages	1,547	447	1,892	701	417	5,004
Total Samples	7,557	8,179	8,274	8,480	5,046	37,536

Recent cuts in CIAT staff have reduced GRU capacity to undertake important characterization work to a minimum. The potential payoff to characterization work has increased due to advances in functional genomics. Loss of essential disciplinary capacity (in entomology, plant pathology, virology, and plant physiology) could endanger the ability to accomplish GRU's mission. A further risk to the unit is the heavy reliance in GRU on a single scientist. CIAT should be aware of the need to groom replacements for this key senior scientist.

The lack of access to specialist disciplinary support is an issue across all breeding programs that are part of the Agrobiodiversity RDC.

[#3] Hence, *the Panel recommends* that CIAT support at least one entomologist, one pathologist, one plant physiologist, and one virologist to provide disciplinary support across the Agrobiodiversity RDC.

4.3 Beans

The common bean species (*Phaseolus vulgaris*) is the most important grain legume for human consumption. The major bean production areas are in Latin America and Africa, where most production is done by smallholder subsistence farmers. CIAT bean research began in 1973. In 1974 the Beans Production Program was established with a global mandate for the crop. In 1983/84 an Africa bean program was created. Beans for Latin America (IP-1) and Beans for Africa were established in 1994 as part of the reorganization of the Bean Program. The current CIAT research strategy focuses on the exploitation of the vast genetic resources of bean that exist as a complex array of major and minor gene pools, races and sister species. CIAT's gene bank has been the source of genes for disease and insect resistance, abiotic stress tolerance, nutritional quality and yield potential. Most traits are still selected by conventional means in field sites where most important diseases, edaphic constraints and drought can be manipulated for purposes of selection. Marker Assisted Selection (MAS) is employed selectively but strategically, generally for disease resistance genes. CIAT pioneered participatory selection with farmers and this practice is being extended and systematized.

The MTP's from 2000 to 2007 have consistently reported achieving targets for breeding germplasm with relevant traits, and for strengthening networks in Africa. CIAT has promoted integration of traditional and advanced crop improvement techniques and farmer participatory research activities to facilitate adoption of improved bean cultivars. Although

yield and disease resistance remain among the main germplasm improvement criteria, increased effort has been given to selection for early maturity, marketability, nutritional value and cooking time.

Some recent accomplishments in common CIAT bean research include:

- Introduction of high yielding mid-altitude heat tolerant climbing beans to Africa.
- A deeper understanding of genetic diversity of common bean was attained using SSR markers on a larger scale
- Development of SNPs markers for Phaseolus species.
- Validation of SCAR markers for practical real-life plant breeding situations (bc resistance gene for BCMV, and Co-42 on Co-5 for anthracnose resistance).
- Identification of a new phaseolin type in common beans and establishment of standards for phaseolin morphotypes, which are available internationally as genetic stocks.
- Studies evaluating the gene flow from pollen of cultivated materials to the wild forms from Costa Rica, Guatemala, Colombia, Ecuador, Peru, Bolivia, and Argentina using chloroplast analysis provide evidence on the effect of evolutionary forces of domestications and gene flow on the levels of genetic diversity in common bean.
- Identification of high seed iron and zinc levels in landraces from Colombia, Bolivia and Rwanda.
- Development of a TILLING population of common bean.
- Implementation of an efficient and innovative seed systems model in Africa that is allowing the rapid diffusion of advanced bean lines.

The 6th EPMR Panel believes that CIAT's bean improvement program is by any measure the leading program in the world. It has a very high level of output of finished varieties and advanced lines for use in Africa and Latin America, produces important basic knowledge, is a leader in developing and applying biotechnology tools in bean improvement and is the primary source of capacity building in national bean programs. The program has strong linkages with ARIs, NARSs and other researchers in developing countries. These linkages keep the program on the cutting edge of science.

Given the long and successful history of this program the Panel is concerned that recent cuts have reduced the disciplinary range of scientists in CIAT and in the CIAT bean program. The incorporation of scientists from all key disciplines is crucial to the work of this and of the other commodity units. This very well integrated and high impact bean improvement program is a core technology program of CIAT.

4.4 Cassava

High and stable productivity have been the most important characteristics for varieties grown by resource limited cassava smallholders poor farmers. Recently interest in industrial uses of cassava has increased. Industrial varieties need special properties to be combined with high yield and yield stability. CIAT's cassava program has had activities in the Harvest Plus CP that aimed at producing clones with enhanced nutritional value, especially in relation to increased carotenoids. Also a mutation of waxy cassava starch and a potential "sugary" cassava that stores simpler starch molecules will open new possibilities to generate new added value products.

The approach that has been implemented by CIAT to pursue new opportunities and challenges for cassava is as follows: More efficient molecular breeding schemes; Research to reduce the negative impact that cassava cultivars may have in the environment; Massive systematic screening of germplasm; Divergent recurrent selection; Genetic transformation; Introduction of mutagenesis and TILLING; Crosses with wild *Manihot* species.

The MTPs from 2001 to 2007 have not been as consistent in defining objectives as for the other CIAT commodities. The program had outputs emphasizing enhancing the genetic base of cassava, evaluating genetic stocks and making them available for genetic improvement for national programs, developing and using biotechnology tools for cassava improvement, and generating basic knowledge of cassava genetics.[4]

Some of the main accomplishments of CIAT's cassava program include:

- Cassava clones were identified that contain considerably more crude protein in their roots when compared with normal cultivars.
- 36 SSR's have been used to detect variations in the global cassava collection.
- SSR methods have been used to identify the level of redundancy in CIAT's cassava germplasm collection.
- SSR markers were discovered as a putative marker associated with high leaf retention in cassava and with resistance to green mites.
- Development of a TILLING population for cassava.
- Development of high though put low coast in vitro protocols for the production of cassava planting materials.
- Successful production of transgenic cassava genotypes expressing pro vitamin A
- Confined biosafety field trials fully approved by the Colombian National Biosafety Authorities
- A total of 1,320 advanced breeding lines were introduced in 4 African countries.

The Panel recognizes that the cassava improvement program is doing important and pioneering work. CIAT plays a key role in improving cassava in developing countries because there are few cassava improvement programs worldwide. Because of its complex genetic structure, cassava is a difficult and relatively expensive crop to breed. *The Panel suggests that the cassava research team focus on a smaller number of clearly defined objectives as suggested by the CCER report.* In addition, the focus of the program does not seem to have the appropriate balance of effort across regions, with Latin America receiving insufficient attention though intensive work with CORPOICA in Colombia is noteworthy.

4.5 Forages

Tropical forages are the main feed stock for animal production in the tropics, and are the factor that most limits the intensity of livestock production, especially for smallholders and

[4] The introduction of inbreeding is a useful approach for identifying recessive traits. Thousands, of partially inbreed plants; including several mutagenic populations have been developed. Several mutants were identified with either reduced or double normal levels of amylase in their starch, as well as mutants with unique amylograms. Post harvest physiological deteriorations are usually expressed 1 or 2 days after cassava harvest. An interspecific cross between *M. walkerae* produced a plant with roots that did not deteriorate even 3 weeks after harvest. Cassava elite lines are being developed with long shelf life. The development of many clones having high starch content good adaptation to low humid tropics and arid soil, good resistance to multiple diseases and pests, as well as resistance to cassava mosaic disease open the possibility for testing of clones by African National Programs, which will lead to the release of superior clones for African conditions.

poor farmers. Program activities encompass the conservation, documentation and distribution of forage germplasm. The main forage improvement strategy is to exploit the genetic diversity of tropical grass. Program objectives are organized around four major products: 1) long term production and environmental benefits of multipurpose grasses and legumes 2) improved *Brachiaria* grasses, 3) forages for high value products developed to capture differentiated markets for smallholders, and 4) multipurpose grasses and legumes realized in crop/livestock systems.

The MTPs from 2000 to 2007 have consistently reported achieving targets for breeding forage germplasm grasses and legumes with high forage quality attributes good adaptation to soil and climatic constraints, with known reactions to pests and diseases and known interactions with symbiont organisms.[5]

The tropical forage program has organized a data base that provides information on the adaptation, use, and management of forage species. Below are some other recent results:

- Identification of a Brachiaria humidicola accession with higher nitrification inhibition (NI) activity
- Identification of a new green manure option (Canavalia brasiliensis) for hillsides of Central America.
- Isolation and expression of cysteine protease sequences related to Brachiaria-spittebug interaction.
- Gene expression analysis of stage III pistil comparison between apomitic and sexual plants identified 121 genes involved in regulation.
- Full implementation of an innovative recurrent selection scheme that is allowing a quick genetic gain in sexual populations and an efficient hybrid development for the major biotic and abiotic stresses.
- Development of hybrids fully resistant to at least six spittlebug species present in Colombia and Brazil.

The forages program has already had a huge impact in South America, and is starting to have major impact in Asia (Chapter 5), but has had little impact in Central America and almost no impact in Africa. This result reflects program focus rather than potential.

[*#4*] *The Panel recommends* that CIAT strengthen its forage research efforts to better realize the potential of the forage improvement program for providing benefits to small farmers in Africa and Central America.

In 2001 CIAT signed a contract with a private seed company in Mexico (Papalotla) to distribute material from its Brachiaria breeding program. The agreement granted ten year worldwide exclusive rights for seed multiplication and commercialization of hybrids developed by CIAT's Brachiaria breeding program. For this right, the company provides annual financial support to CIAT, and will pay CIAT a 2% royalty on sales of Brachiaria hybrids. The Panel believes this contract is in conflict with current CGIAR open access policy (see Recommendation #6).

[5] Recurrent selection was used to improve *Brachiaria spp.* resistance to spittlebug. Progress has been impressive by CIAT material in Mexico where more than 600 new sexual hybrids have been tested for resistance to three spittlebug species (*A. Varia*, *A. Reducta* and *Z.carbonaria*) and resistant levels were near 95% for all three species This is already having a great impact in farms throughout Latin America.

4.6 Rice for Latin America and the Caribbean

Rice gained visibility in the region in the 1960's when high yielding rice varieties were introduced to the region by the Rockefeller Foundation Program, which evolved into CIAT. At present the rice program concentrates on developing advanced materials with novel genetic diversity that incorporate a range of grain quality traits and resistance to pests and diseases which are important characteristics to sustain poor smallholder rice farms in LAC. To increase genetic diversity, the work is focused on interspecific crosses, composite populations and developing biotechnology methods that allow more efficient incorporation of important traits. The program generates both segregating populations and advanced lines which are transferred to partners through agreements and established networks.

Improved upland varieties have had an impact in upland rice ecosystems. A series of gene cassettes received from JIRCAS (Japan) is being explored as a means of increasing water use efficiency for irrigated rice ecosystems. Activity through the Generation CP uses a different approach to achieve better tolerance to water stress and increased efficiency in water use. The program in collaboration with the Harvest Plus CP, is developing rice with higher levels of iron and zinc.

The MTPs from 2000 to 2007 have consistently reported achieving targets for broadening the genetic base of rice gene pools, understanding the physiological basis of adaptive rice traits, and understanding the mechanisms of host-pest interaction for integrated pest and disease management. The genetic basis of durable resistance to rice blast was characterized as a combination of qualitative and quantitative genes, which give a much better understanding of what is required for rice to have durable resistance to blast. The rice program uses a recurrent selection process combined with conventional breeding methods as well as interspecific crosses, which has broadened the genetic base of rice. Below are some other recent results:

- Characterization of genetic diversity: relationship and potential origin of the weedy rice complex in Colombia.
- Methodology using TILLING for mass analysis of weedy rice populations collected from rice fields
- Methodology adapted for large scale detection of possible hybrids between the herbicide resistant variety and weedy rice.
- Development of chromosome segment substitution lines (CSSL's) for rice that will overcome interspecific sterility barriers;
- Validation of 56 SNP's to be used for the screening of rice genotypes having contrasting levels of iron content in polished grains.
- Identification of elites lines derived from crosses with O. glaberrima O. barthii and O. rufigon with high yield potential.
- Development of segregating rice populations to increase iron and zinc in the grain in addition to other desirable traits.

The Panel is aware that CIAT's rice program has produced, historically, the largest reported economic impact of all CIAT research programs. It continues to be a small, but highly productive program that plays a vital role in improvement of a major food crop in Latin America. Because of the unique ecosystem for rice production in Latin America, this program is strongly complementary to rice improvement programs at IRRI and the Africa Rice Center (WARDA). Furthermore the program draws in large amounts of special program funding and

hosts three top international rice scientists from CIRAD and IRD at no cost to CIAT. The rice program also suffers from lack of access to specialist disciplinary support.

***[#5] The Panel recommends* that CIAT continue to support the rice program in LAC.**

The Fund for Irrigated Rice in LAC (FLAR) is an innovative model of public-private partnership for dissemination of rice varieties among rice growers in LAC. FLAR relies on CIAT genetic materials, which contain novel genes of important traits for rice improvement. These lines serve as parents in the FLAR breeding program. The Panel believes that FLAR is a valuable model for CIAT to accomplish its mission. The Panel understands that the CGIAR Centers, including CIAT have signed agreements with the Governing Body of the International Treaty on Plant Genetic Resources that place each Center's ex situ germplasm collection within the purview of the Treaty and also commit the Centers to distributing germplasm under a standard material transfer agreement from January 2007. The Panel also believes that the present FLAR agreements, including the document signed between CIAT and FLAR in 2004, could result in restrictions on access to materials from CIAT's breeding programs. While FLAR is a valuable tool for extending the impact of CIAT's rice improvement work, it is important that the distinction between FLAR's rice breeding program and CIAT's rice breeding program is clarified and is brought in line with CIAT's commitments under the International Treaty and with CGIAR germplasm distribution and IPR guidelines (see chapter 6 on IPR section).

***[#6] The Panel recommends* that (i) CIAT revisit its contracts with the Fund for Irrigated Rice in LAC (FLAR), on access to rice germplasm in line with CGIAR guidelines and the Standard Material Transfer Agreement of the International Treaty on Plant Genetic Resources; and (ii) CIAT revisit the Papalotla contract on distribution of Brachiaria germplasm, in light of current marketing and distribution conditions to ascertain if this situation is presently in line with CGIAR guidelines and the Standard Material Transfer Agreement of the International Treaty on Plant Genetic Resources.**

5 CIAT IN THE REGIONS

5.1 Introduction

CIAT has had a long history of engagement in Africa, Asia, and Latin America. By 2002, positions of Regional Coordinators had been established for Africa, Asia and Central America regions. Regional Coordinators were charged with the responsibility of working with partners in the regions to develop joint agenda of common interest across the range of CIAT projects. Until then, there were individual projects active in each region (e.g. cassava in Asia, beans in Africa, hillsides in Central America), and there was no effective mechanism to articulate the entire range of CIAT research competency with the needs and priorities of NARS. In the same year the Tropical Soils Biology Fertility Institute (TSBF) was merged with CIAT, which significantly enhanced CIAT's presence in Africa.

As a consequence of these changes, activities in the regions have evolved into foci of co-coordinated research for development that address CIAT's core mandate. The Regional Coordinator positions were renamed as Regional Research Leaders in 2007 and together with the DDG Research, the RDC Research Leaders, and the TSBF Director; they form the Research Committee of CIAT.

The regional operations of CIAT have significantly expanded in Africa and Asia, while diminishing in LAC since the time of the previous EPMR (2000). At that time activities in the regions were embryonic and they did not receive separate review and assessment in that report. At the present time, there are 145 total staff active in the regions **(*Table 5.1*).** By far the largest contingent occurs in Africa (70 staff), but there is a significant presence in Asia (32 staff), and in LAC (23 staff).

Table 5.1 Staffing and budget in CIAT's regions, 2007

Region	Staffing (number)			Budget US$M		
	LRS Admin	LRS Research	IRS	Unrestricted	Restricted	Total
Africa						
TSBF	4	15	14*	0.26	4.7	4.96
PABRA	10	13	5	0	2.8	2.80
Other	11	10	8	0.15	0.9	1.05
Subtotal	25	38	27	0.41	8.40	8.81
Asia	16	7	9*	0.25	1.3	1.55
Latin America	3	13	7*	0.24	0.81	1.05
Total	44	58	43	0.90	10.51	11.41

* Includes 2 staff on secondment from other organizations

In this chapter we describe the regional operations, discuss their activities, and present an overview assessment and synthesis leading to both specific recommendations within a region and over-arching recommendations concerning regional operations.

5.2 Africa

CIAT's activity in Africa has two main platforms, TSBF and the Pan-African Bean Research Alliance (PABRA). A smaller amount of activity takes place under the Agroecosystems RDC in enabling rural innovation and GIS. CIAT leadership in participatory research approaches has resulted in the wide use of these methodologies in the region. TSBF and PABRA each consist of tightly focused sets of activities around their specific entry point which are soil science and beans respectively. Each platform has an impressive set of accomplishments, has established an extensive network of partners and has contributed to furthering CIAT's reputation and role in Africa. PABRA provides an appealing model of how a commodity-based program can achieve impact using an approach that integrates research in disciplines that span CIAT's scientific expertise from biotechnology, through plant breeding, soil science, human nutrition and social science. Since joining CIAT in 2002, TSBF has given CIAT visibility in tropical soil research and management, including innovative work in below ground biodiversity in Africa. TSBF and PABRA provide excellent platforms from which CIAT can expand its impact in Africa.

Comprehensive reviews of PABRA (through the Agrobiodiversity CCER and the Joint External Evaluation), TSBF (through the Natural Resource Management CCER) and the Enabling Rural Innovation project (ERI, through the Joint External Evaluation) were performed in 2006. The EPMR Panel's review finds these analyses to be of high quality and consistent with our perceptions on the ground. In the remainder of this section we summarize and assess CIAT work in PABRA, TSBF, ERI, and cassava and forage research, drawing heavily on the recently completed reviews.

The Pan-Africa Bean Research Alliance (PABRA)

PABRA, initiated by CIAT in 1996, is a consortium of African regional bean networks (the Eastern and Central Africa Bean Research Network, ECABREN, and the Southern Africa Bean Research Network, SABRN) consisting of African NARS in a total of 18 countries in SSA, CIAT and a number of donor organizations. CIAT acts as a coordinator, leader and catalyst for PABRA. Efforts are underway to integrate countries of the West African region.

The purpose of PABRA is to improve the bean crop and increase its productivity for the benefit of the rural and urban poor, through a range of activities in research, capacity building, networking and partnership building. The alliance's ultimate goal is enhanced food security, poverty reduction, income generation and community empowerment. The major beneficiaries of PABRA are women, who play the main role in bean production.

Collaboration within and between the networks in research is based on national interest and comparative advantage (human resources and facilities), which leads to distribution of thematic research projects among countries. Research results and technologies developed are shared among countries, avoiding unnecessary cost and duplication of efforts. PABRA facilitates an annual joint planning and reporting meeting with network and donor representatives at which funding and scientific activities are planned.[6]

[6] Swiss Development Corporation (SDC) together with Canadian International Development Agency (CIDA) and USAID, contributed to the founding of the PABRA alliance, and meet annually with implementing

PABRA has contributed to the building of substantial capacity in the partner countries. Farmers plant approximately 4 million hectares of beans in Africa. It is a preferred grain legume due to its short maturity period and its compatibility with other crops. It is planted by women as a subsistence crop. However, there is increasing demand in national and international markets for beans.[7]

In December 2006 a Joint External Evaluation Panel (JEEP) consisting of major PABRA donors (CIDA and SDC), published its report. The Panel wholly supports this report's summary statement of PABRA strengths and weaknesses.[8] The Panel agrees with the major thrust of the JEEP recommendations summarized below:

- *A program that focuses on the poorest strata of people needs a long-term perspective; therefore a long-term commitment for support to PABRA is required.*
- *Rationalize the unorthodox and strained reporting structure to increase the autonomy of CIAT's regional coordinator.*
- *PABRA has excellent relationships with FARA and ASARECA. These relationships and other mechanisms should be taken advantage of to increase CIAT's contribution to improved agricultural research policies in the region. A prime example of an area where CIAT has a role is in seed regulation.*
- *As funding allows, increase emphasis on seed systems and seed delivery, entomology and plant pathology. This might be accomplished through cooperation with TSBF.*
- *Facilitate the development of commercial linkages between community-based seed producer groups and private companies (agro-dealers, retailers and transporters, to name only a few).*
- *Explore further cooperation with CIAT's Rural Agroenterprise Development Project (beyond the current links in ERI activities) or other institutions specializing in agri-business development in order to ensure that PABRA activities are based on a sound understanding of bean markets.*
- *PABRA should be clear about its core business and strengths in contributing nutrient-rich beans*

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organizations in a steering committee. DFID, The Rockefeller Foundation, McKnight Foundation and EU (through ASARECA) also now support components of the PABRA agenda.

[7] By 2004, PABRA members released a total of 245 new bean varieties in 18 countries. CIAT informed the Panel that in just 7 of these countries PABRA varieties now cover nearly half the area planted to beans. PABRA's focus on seed-based technologies has been effective. Plant breeding, as the source of these technologies, continues to be a key activity. The fight against pests and diseases is continuous as new threats constantly arise. Besides bean root rot, other critical diseases include angular leaf spot, anthracnose, leaf rust, common bacterial blight and bean mosaic virus. Priority pests include bean stem maggots, aphids and cutworms. In addition, there is need for continued focus on low soil fertility and drought. Selection and breeding for resistance or tolerance is combined with IPDM approaches that maximize the gains to farmer and ecosystem health. Besides addressing drought, PABRA is extending to non-traditional bean areas such as the hot and humid areas of West Africa, where consumer demand and prices are high and where middle altitude climbers could play a significant role.

[8] "*The main strengths are*: (i) a strong and clear focus on the common bean (bean as an entry point) which is highly relevant for food security and poverty reduction in the partner countries, (ii) activities that are of high quality, well designed and innovative, (iii) substantial success in building competences and capacities at academic and scientific level, as well as at the level of development professionals, (iv) successful networking and collaboration with various partners, (vi) transformation and further development of results of scientific work to an application-oriented level, and (vii) a lean and effective management system. *The main weaknesses are*: (i) the weak adoption of improved practices developed and promoted by PABRA (non-varietal technologies), (ii) difficulties in establishing mechanisms to make adequate quantities of seed of improved varieties available, (iii) lack of criteria for partner selection, (iv) insufficient concepts to optimizing outreach of PABRA activities, (v) an unorthodox reporting system, and (vi) limited use of CIAT's whole potential (TSBF)."

to health programs but not assume a leading role.

The Panel suggests that CIAT implements the Joint External Evaluation Panel (2006) recommendations regarding the PABRA program in Africa.

Tropical Soils Biology Fertility Institute (TSBF)

TSBF was created in 1984 as an independent entity with its own governing Board. Agreement was reached in December 2001 for TSBF to become part of CIAT (TSBF-CIAT), and it is currently placed within the People and Agroecosystems RDC (Chapter 3). Today, the Institute operates as an integral part of the CIAT research program, and the TSBF Director reports to the CIAT DDG-Research. TSBF-CIAT had staff located in Africa and Latin America until 2006 when all TSBF staff were withdrawn from Latin America. The TSBF directorate is housed in the World Agroforestry Center (ICRAF) campus in Nairobi, Kenya. TSBF maintains its own scientific advisory Panel, to which the DG of CIAT (normally represented by the DDG-R) and one CIAT Board member belong (Usually the chair of the Program Committee).

TSBF focuses on biological and organic resources in tropical soil biology and fertility and their relationship to the natural and social environment in order to provide farmers with improved soil management practices. TSBF staff of 14 scientists comprises seven soil scientists, one GIS specialist, three microbiologists, one agronomist, one social scientist, and one food and nutrition scientist. In 2006, 26 Ph.D. and 40 MS students were conducting research at TSBF.

TSBF-CIAT fully represents CIAT's core mission and objectives, and the research conducted is generally of high standard. TSBF has become a world leader in tropical soil fertility research, and its joining CIAT has further strengthened this process. The quality of outputs and achievements at TSBF is among the highest within CIAT and is a direct reflection of its historical institutional culture of collaboration (South-North and South-South), competitiveness for international funding, and excellent scientific guidance. TSBF functions as an almost completely special project funded unit.

An evaluation of TSBF was included in the IMAT CCER published in May 2006. The Panel agrees with the thrust of the CCER conclusions and recommendations which are summarized below: *The standing of TSBF in the global scientific community is generally excellent. TSBF-CIAT has wide ranging partnerships, primarily through regional networks (AfNet, MIS, SARNet, CONDESAN) that serve as vehicles for field research and capacity building and generally involve strong collaboration with NARS, national and international universities, NGOs and farmer groups/associations. Feedback received from these partners was generally positive, particularly in Africa, where AfNet has grown to about 350 members and TSBF has established an excellent reputation and track record of collaborative research. The uncertainty of maintaining the MIS network activities threatens the vitality of the soil conservation and management research efforts of the Central American countries.*

CIAT has recently made decisions that affect the balance of staff and infrastructure in TSBF-CIAT. Up until 2006 TSBF operated in LAC and Africa but following cuts in 2006, TSBF now focuses only in Africa. The implications for LAC are discussed later in this chapter. TSBF-Africa largely operates as an independent unit with a flat hierarchy. Scientists report directly to the director, who himself is well engaged in the research, tries to encourage interdisciplinary research and donor contacts, and also keeps close contact to the scientific

advisory Board. This system has been productive in research outputs but the overall positioning of TSBF in the CIAT organization needs to be revised. The Panel will return to this aspect in Chapter 7.

Cassava

Cassava characteristics make it a fundamental food security component in marginal lands in Africa, Asia and Latin America. CIAT has a single cassava scientist posted in Africa, a post-doctoral molecular breeder posted in Nigeria (in the national program, not at IITA). IITA has the primary mandate for cassava improvement in Africa and has a large network of cassava research collaborators on the ground in Africa, while CIAT has the larger germplasm collection and significant biotechnological tools and expertise. The Panel believes that the complementary tools of these two CGIAR centers implies that they have all of the means to make a major impact on cassava production, food security and rural livelihoods. This is a potential that has been largely unrealized to date due to failure of the centers to work in a more integrated fashion.

The basis of collaboration between CIAT and IITA is a detailed agreement signed by the respective DGs in June 1984. The agreement recognizes the comparative advantages of each center. CIAT was recognized as having an advantage in germplasm banks being located near the geographic origin of cassava. In addition CIAT was recognized as an important center in understanding the epidemiological profiles of the cassava diseases as well as, where applicable, the source of natural bio-control agents. Additionally CIAT was recognized as being strong in the area of cassava processing for various industrial applications and it was expected to take a lead role in this aspect. IITA, on the other hand, was recognized as a center responsible for breeding and dissemination of cassava in the African continent as well as being the principle channel for cassava germplasm destined for Africa. The agreement seemed to have steered the basics of collaborative work between the two institutions quite smoothly until five or so years ago when the centers began to have a strained relationship in the broad arena of cassava research, dissemination and processing areas. IITA put the matter of germplasm introductions to Africa as an issue that should be carefully handled to avoid, in the IITA's view, the possibility of introducing diseases in Africa. Modern biotechnological tools have greatly enhanced the ability to safely transfer germplasm between continents. Molecular markers allow materials to be screened for viruses that can be transferred through clonal propagation, while tissue culture allows disease-free materials to be transferred in-vitro. Given these technologies, there is no longer any threat of transmission of diseases from CIAT materials to Africa.

[#7] ***The Panel recommends*** **that CIAT and IITA develop a common, coordinated cassava research agenda and work closely to implement their joint agenda in Africa.** The inability of centers to work together in such a widely recognized priority area reflects badly on the CGIAR system.

Forages

Livestock development is recognized as a key element for increasing the income of poor smallholders given the increased demand for animal products in developing countries. A major obstacle to livestock development in Africa is that a high proportion of smallholder crop/livestock systems are located in areas with prolonged dry seasons and with land in different stages of degradation. This leads to an inadequate supply of high quality feed for

livestock during the dry season. Many smallholders with livestock and limited land do not have easy access to fodder and have to walk long distances to harvest forages. Because forages can be cultivated under both favorable and marginal conditions, forages are one of the few opportunities available to a large number of smallholder farmers to produce high value or added value products.

For its work in Sub-Saharan Africa (SSA), Southeast Asia, and LAC, CIAT has developed a joint strategy with ILRI, with complementary research priorities and expertise to include forages in diverse crop/livestock systems. This partnership and the interaction with the private sector have allowed CIAT to amplify its delivery of research products. Much of CIAT's impact in South America is based on *Brachiaria,* a forage of African origin.

At present CIAT has no forage scientists posted in Africa, and few research linkages. CIAT had a forage agronomist in a shared position with ILRI until 2006. In the opinion of the EPMR Panel, forage improvement is a natural entry point for CIAT in Africa. Improved forages combine well with existing PABRA and TSBF efforts, with the potential to multiply the impact of these already strong programs. ILRI's forage improvement program focuses on tropical highlands, while CIAT's program focuses on tropical lowlands. *The Panel suggests that CIAT work with ILRI to improve smallholder animal production systems in Africa.*

Enabling rural innovation (ERI)

ERI has emerged from three main streams of CIAT's expertise and experience: (i) Farmer participatory research, (ii) Rural agro-enterprise development and (iii) Natural resource management. The aim is to use the most effective elements from these three areas to build more robust livelihood strategies within the rural community. CIAT is testing and evaluating ERI with partners and communities in Uganda, Tanzania, Malawi, Zimbabwe, Kenya, Mozambique, Zambia, Rwanda, and DR Congo. ERI is not limited to bean-related technologies and involves several actors and respective roles (NGOs, extension services, researchers). ERI was designed to work with 25 communities in three pilot areas and has successfully expanded from pilot sites in Tanzania, Malawi, and Uganda in 2002, to new sites in several countries with 53 groups. This work is specifically in support of PABRA; ERI has a broader range of other research activities in addition to this. Each situation and community is different and spill-over effects have not yet appeared. Continued assistance to these communities is required to maintain these activities.

This intensity of engagement is responsible for achieving localized successes, but is also its weakness. Little systematic data have been elaborated to prove the usefulness of the ERI concept in the long run. In Malawi the extension department felt that ERI was not very different from the farmer to farmer field schools with which they have experience. The ERI program operates at the developmental end of the research-development continuum and the Panel believes that this activity is not scaling up at a pace that merits continued support. Institutionalization of these developmental activities must be driven by demand from partner organizations and become their responsibility. *The Panel suggests that CIAT discontinues the separate identity of The Enabling Rural Innovation Program (ERI) and integrates this disciplinary capacity into CIAT's Africa regional program.*

5.3 Asia

CIAT conducts a set of coordinated projects that are based on poverty mapping to identify targets and diagnosis of market and farming systems to identify key entry points for effective intervention. Poverty in the region was assessed as greatest in Cambodia, Lao PDR and Vietnam and was associated with mountainous regions, lack of market access, and ethnicity. Smallholders in the upland rural areas have mixed cropping-livestock farms, often involving shifting cultivation, and cropping on steep hillsides. As population growth rates decline in the region and rapid economic growth in many countries generates market opportunities, there are significant opportunities for improving livelihoods of the rural poor. Key entry points include CIAT improved germplasm in forages and cassava, and capacity in market systems. This has been combined with strengths in agronomy and action research co-learning approaches, and with well-developed relationships with local NARS, to deliver an impressive set of innovations delivering measurable development outcomes. The Panel believes that Asia regional activities provide a working example of how an integrated multidisciplinary approach can effectively deliver outcomes by building on CIAT core expertise in commodities. Without the integration of economic, marketing, sociological and biophysical expertise and clear definition of targets, such outcomes would have been unlikely.

CIAT presence in the Asia region commenced in the 1980's with a focus on cassava production and evaluation of forages. It has evolved from a focus on sustainable production systems to a broader approach to farm and market systems. This has been concurrent with a shift from a set of independent projects to a strategy of more integrated projects that coincided with the establishment of the regional office and appointment of the regional research leader in 2001. CIAT houses 9 research scientists (2 seconded from other agencies) and 23 local research and administrative support staff. The regional office is located in Vientiane (Lao PDR) on the site of the National Agricultural and Forestry Research Institute, with smaller offices located in Hanoi (Vietnam) and Bangkok (Thailand). In addition, some support staff members are regionally based in local NARS offices near the research sites. Of the US$1.55M budget for the region in 2007, US$1.3M was generated via project grants largely obtained through regional staff efforts.

The suite of projects in the region fall into 3 linked categories – Farming and Production Systems; Participatory Research for Development; Market linkages – that span the applied research – development continuum. A brief description of each of these activities is given below, followed by the Panel comments and assessment. The projects are not recognized as an integral suite within the current research structure of CIAT. Responsible staff members are spread across the Agroecosystems and Agrobiodiversity RDCs and their nominal supervisors are research leaders in Africa and Colombia. Although there have been recent CCERs that cover these RDCs, the activities in the region remain basically invisible to these review processes. The situation is similar in the CIAT MTP, so that the integration occurring via the regional co-ordination is not communicated effectively in work plans.

Farming and production systems

Forages and livestock

There has been a history of CIAT forage research in Asia since the early 1990s, when the planting forages was a novel idea. Managed forage production has now become the key to

market-oriented smallholder livestock production. This has been a key factor in helping farmers make the jump from being livestock keepers to livestock producers. The Forages and Livestock Systems Project (FLSP), supported by the Australian Agency for International Development (AusAID), has had an impressive impact on livelihood improvement of upland farmers in Lao PDR. Improved forages have provided an entry point for major changes in farming systems. The ability to produce and sell livestock (pigs and cattle) via use of advanced adapted forages has led to increased income and labor productivity, which has facilitated less shifting cultivation of uplands and less use of uplands for annual cropping for rice. The use of uplands for forage may indeed provide a transition into higher value perennial crops that would likely offer even greater soil protection for these sloping lands. A managed feed resource was the key mechanism that enabled livestock systems change in the uplands. Relatively small areas of forages resulted in relatively large impacts. In the process FLSP helped local district staff develop a vision for how extension processes can work and to acquire the technical skills and extension tools to allow them to put this vision into practice. This has enabled diffusion of improved practices around forage use to expand exponentially.[9]

Cassava

The successful connection to cassava production in parts of Vietnam via a market-driven entry point is discussed below under market linkages. CIAT is also embarking on research on cassava in smallholder farm systems in upland areas of Lao PDR and Cambodia. The project on improved and integrated cassava-based cropping and livestock systems, is supported by the Nippon Foundation, and uses improved varieties as the main entry point. The expectation was that the increase in cassava production would be utilized for on-farm animal feeding as well as for processing into starch. Initial results support the concept and have led to the development of some simple labor-saving tools for on-farm operations and value adding (e.g. harvesting, chipping, drying). Networking and collaboration with national institutions is a key feature of the project as a prelude to scaling out of any useful development outcomes.

Participatory research for development

The Participatory Research for Development in the Uplands (PRDU) project is funded by the International Fund for Agricultural Development (IFAD) and implemented jointly by CIAT and the International Potato Center (CIP). The project works with international, national, and local research and development partners to provide technical and methodological support to five IFAD-funded investment projects in China, Lao PDR, and Vietnam. Participatory approaches and production technologies are piloted at focus sites (village clusters). Successful approaches and technologies are institutionalized by implementing partners and scaled out

[9] As part of the action learning research approach on forages in Asia, farmers tried supplementing feeding leaf of the forage legume CIAT Stylo 184 to their pigs and reported significant benefits on growth of the pigs. Researchers had provided this forage as part of a basket of forages for cattle and goat feeding. Feed for pigs was traditionally collected from fallow fields and forest margins, was labor intensive to collect, and was generally of poor quality so that very poor animal productivity resulted. Hence, growing small areas of forage legumes as a supplementation for village pig production systems appeared to be a promising option. The project on Forage Legumes for Supplementing Village Pigs in Lao PDR (L4PP) is now underway with support from the Australian Center for International Agricultural Research (ACIAR). The project has monitored significant increases in labor productivity and animal production and is pursuing research on nutritional analysis of the feeds. Close collaboration with local development partners is also occurring to assist with training, seed supply, and extension activities for scaling out use of this technology. Promising outcomes from this research are now leading to considerations of more systematized marketing systems for these livestock.

by the investment projects. The main objective of the PRDU project is to improve sustainability of livelihoods of resource poor farmers in steep uplands of Lao PDR, China, and Vietnam through technical and institutional innovations, as a contribution to reducing poverty in indigenous and marginalized rural communities. Activities involve on-farm trials, mentoring of extension specialists, training workshops, and monitoring and evaluation using a livelihoods approach. These activities are interfaced with the projects outlined above.

Market linkages

The Small-scale Agroenterprise Development in the Uplands of Laos and Vietnam (SADU) project, funded by the Swiss agency for Development and Cooperation (SDC), is the major activity focused on market linkages. Market limitations are often a major constraint in upland areas and agroenterprise development can assist through identifying products with market demand; identifying constraints along the market or value chain and establishing market information systems; stimulating development of new service providers; and engaging authorities in providing an enabling environment for trade. The objective is to identify and evaluate market opportunities for agroenterprise development. SADU focuses on an area rather than a product. The aim is to enable farmers to engage fully in market systems. SADU works with the whole market chain and attempts to address constraints wherever they occur.

In Vietnam, contract farming approaches are being investigated for cassava given expanding local and regional market demand for starch and ethanol. This provides a linkage point to activities on cassava production systems via CIAT related high-yielding cassava varieties. In other areas, rapid market appraisal techniques have been used to reveal constraints and opportunities. This has led to development activities on products such as persimmon (Vietnam) and paper mulberry (Lao PDR). Local NARS are engaged to deal with production issues associated with such products. The relevance to CIAT is that market driven opportunities can help poor farmers out of the poverty trap, so that, for example, less pressure is placed on annual cropping of upland areas if labor productivity is increased via these alternative commodities. In addition to the close working relationships with NARS, there is close engagement with district and provincial officials in helping to structure the policy environment to enable trade and entry of agro-industry in a manner that generates most value to the rural poor of the region.

Panel Assessment of the Asian regional program

The Asia regional program has put in place a high quality and coordinated set of research for development projects that are targeted at specific outcomes in key upland systems. The ability to blend together a myriad of funding agencies and retain a strategic research focus can only be commended. The diagnostic approach to identifying entry points most likely to succeed is a concept that has broad application. The building of relationships with local agencies in managing the extent of CIAT engagement across the research-development continuum is also commendable in that it is managed in a manner that focuses CIAT effort at the applied research level but extends to a position that underpins the development capacity in other agencies required to scale up outcomes. In addition, projects are conducted jointly with other CGIAR centers (CIP, and ILRI,) as appropriate and there are close links with IRRI. There have been good attempts at monitoring of impact and diffusion of effects beyond the immediate project activities. This is a critical aspect that should be a required feature of activities that engage through to outcome level.

The co-coordinated suite of projects undertaken in this region provides another example of the integrated multidisciplinary approach required to achieve outcomes. They exemplify the system-based action research for innovation approach discussed earlier. This is despite the need to work across various components of CIAT's organizational structure, to the extent that these highly successful regional activities are barely visible in CIAT planning and review documents. The major weakness observed was the lack of higher level analysis and publication of lessons from the various case studies available. Additional economic expertise, either within CIAT or its partners in the region would facilitate this process.

5.4 Latin America and the Caribbean

As of July 2007 CIAT was playing a much reduced role in LAC relative to past levels. Both external and internal factors limit CIAT's activities. External factors include weakened NARS capacity in many countries and reduced priority for LAC amongst most CGIAR members. Internal factors include financial constraints, a fluctuating research focus and the low priority given to the region by CIAT management.

CIAT's mandate crops of beans, rice, cassava and forages are fundamental components of Latin American smallholder production systems and are essential elements of the common diet in the region. Challenges in management of the natural resource base, including soil erosion and declining soil fertility, are also limiting production constraints over a large share of land in the region, particularly in Central America and the Caribbean subregion (CAC). Given this convergence of regional needs and CIAT capacity, CIAT is well placed to contribute to poverty reduction, improved nutrition and an improved environment in the region.

CIAT has a regional office for Central America in Managua, Nicaragua, staffed by a coordinator, a national staff economist, a national staff rice improvement scientist, and three administrative staff. Two special project scientists from Agrosalud are also located in Managua. One geographer from the CIAT forage program is located in Honduras. Core support for the region in 2006 was US$0.2M. If CIAT's research presence in CAC is tiny, it is virtually invisible in the rest of Latin America. Two CIAT international scientists act as the executive secretary and advisor to the executive secretary for the Amazon Initiative in Brazil. A CIAT geographer is located in Bolivia. In 2006 there was no published research output from these three staff. It is unclear to the Panel what these small, isolated activities contribute to CIAT's mission. Even more puzzling to the Panel is why CIAT has allowed its presence in South America to deteriorate to this extent.

The CAC office has been subject to frequent changes in staffing and organization. At its peak, CIAT had 8 international scientific staff in the region. Four TSBF international scientists were terminated during 2006, one of which was in CAC, another in Africa, and two at CIAT center.. Major activities in the region have included watershed management, forage, cassava, rice, and beans improvement, participatory breeding, tropical soils biology and fertility, and rural agroenterprise development. Until 2001, bean, rice and cassava improvement were each projects under the Genetic Resources directorate, and Soils, Agroenterprise, and Participatory Research were projects under the Natural Resources Directorate, along with Hillsides, Land Use, and Sustainable Systems. The Hillsides project has terminated, while Land Use, and Sustainable systems work continues, but organized under the Agroecosystems RDC.

The need for CIAT engagement in CAC is still valid. CIAT's support for national programs which are small and poorly funded, remains critical. For example, few Ph.D. level agricultural scientists are employed in the NARS in the region. So, research leadership from senior CIAT scientists is important. Beginning in the 1980s, CGIAR centers played a central role in building and maintaining regional research networks such as PROFRIJOL in beans, PRM in maize, and MIS in soils management. The networks were effective, efficient and align closely with CIAT's mandate and research approach.

Respect and appreciation by regional partners for CIAT's past work is very high in several areas. The bean germplasm program in particular is a dominant presence because of the impact of past work, and because the high respect the breeders in the region hold for CIAT's present program leader. Rice and forage germplasm work appears to have a solid, if less secure, position among scientists in the region. The cassava program has had a smaller impact, but recent changes in the program have created optimism. Elements of participatory approaches to research are well established in the region. This has been a major change from past approaches, and one for which much credit is due to CIAT.

Rice improvement

There is little rice breeding capacity in the region in either upland or irrigated rice. Nicaragua is the only country in the region that performs rice breeding. Genetic improvement in all other countries is based on selecting from CIAT lines. In recent years rice breeding in the region has been transformed by two important initiatives from CIAT's rice breeding program: recurrent selection and participatory plant breeding. Recurrent selection has broadened the genetic base of rice varieties in the region, including incorporating genes from interspecific crosses. Participatory breeding has been integrated into national programs through exposure to CIAT activities. These are important contributions in areas that had previously been of great concern in the region. CIAT's program has leveraged miniscule amounts of core resources through energetic and informed use of collaboration and partnerships. Collaboration with CIRAD has injected cutting edge breeding tools, practical line development and on the ground impact without the use of CIAT core funding. Because of the extremely limited rice breeding capacity in the region, CIAT's partnerships with national rice breeders has been indispensable to improvement in rice genetics. The Panel believes that without access to CIAT rice material, there would be little genetic progress in rice in the region.

CIAT has both upland and irrigated rice breeding programs, though no CIAT rice scientists located in CAC. CIAT has an agreement with FLAR to distribute rice materials (Chapter 4 and 6). Relationships between NARS partners and the CIAT rice program are based on personal relationships, experience and initiative of NARS rice breeders. The Panel believes that there is considerable scope to increase the impact of CIAT's rice program through increased CIAT presence in the region.

Bean improvement

CIAT has had a long history of activity in bean improvement in CAC. Virtually all improved bean lines in the region are CIAT lines or are based on CIAT lines. All countries in the region are reliant on CIAT germplasm to produce improved bean varieties. About half the countries in the region use CIAT materials for adaptive breeding while the other half do not do any

breeding but have the capacity to evaluate germplasm and to make selections from CIAT lines for release. Until 2003 all bean breeders in the region belonged to a formal regional bean network, PROFRIJOL, which was funded by the Swiss Development Cooperation (SDC) and coordinated by CIAT. The network funded a part-time coordinator position, annual work meetings and provided small grants to country participants to conduct bean research. This was an efficient, effective and productive mechanism for improving bean productivity. The legacy of PROFRIJOL is that the bean breeders in the region maintain close contacts, even though it requires more effort on the part of individual scientists to fund other research program. CIAT's bean program remains a driving force in the current informal network. Bean improvement in the region continues, but the current informal network is fragile. Because the network is based on personal contacts developed though PROFRIJOL, it is institutionally vulnerable to retirements of the current generation of breeders and to lapses in project-based funding. After 20 years of support for the PROFRIJOL network the SDC sought a new institutional approach to the region and in consultation with CIAT and CIMMYT a foundation to manage competitive grant funds was set up. This of course is not the same as network support and in the event has had much more of a validation than a research focus. As discussed below, CIAT has continued bean research in CAC through the Agrosalud project which maintains a scientist in the region and through bilateral projects (e.g. Nicaragua). However, it is disappointing that greater and more successful efforts have not been made to develop sustainable alternatives to PROFRIJOL.

It is unlikely that the level of NARS bean breeding capacity in the region will increase; nearly all national programs are under increasing pressure from reduced public agricultural research budgets. As CIAT continues to develop its capacity to use advanced breeding techniques (MAS, genomics, gene discovery), the importance of CIAT's bean improvement in the region will increase because these are capacities that are unlikely to exist in any member countries. The Panel believes that CIAT has had an extremely large impact and will remain an indispensable component of bean breeding in the region for the foreseeable future.

Forage improvement

Improved forages are important to the CAC region for two reasons. The first is that livestock are an important feature of agriculture. The second is because of the potential for forages to counter existing soil degradation problems exacerbated by topography, high population density and poor land management practices. Forage improvement capacity in the region is limited to a few agronomic evaluation programs capable of screening and selecting improved CIAT materials. CIAT's forage improvement has generated forage genotypes with superior forage quality, with resistance to major pests and diseases and with adaptation to acid, low fertility soils, to poorly drained soils and to drought.

Hastening the delivery of the improved forages to diverse environments requires an integrated understanding of production systems, animal husbandry, and market niches as well as of available genotypes. Participatory evaluation of forages, led by CIAT, has been effectively used in the region. Selected forage genotypes have been evaluated and disseminated with and by partners in different environments and production systems. The superior grass and legume genotypes have been released and promoted by NARS, private seed companies, and farmer associations. The Panel believes that an unrealized potential exists for CIAT to have an impact in the region through their forage improvement expertise. The importance of livestock and forage production is not limited to large farmers. Improved

forages represent a key technology for increasing land productivity and for arresting land degradation for small landholders in the region.

Cassava

Up to 1998 cassava research in LAC was led by CIAT in collaboration with national programs and research institutions, and was financed mainly with public funds. The Latin American and Caribbean Consortium to Support Cassava Research and Development (CLAYUCA) was established in 1999 as a complementary model based on strategic alliances between public and private sector institutions to facilitate the exchange of experiences and information, the transfer of improved technologies and the support to planning and financing cassava research and development activities. In the CAC region, only Nicaragua, Costa Rica, Haiti, and Cuba are CLAYUCA members.

CIAT plays a central role in the flow of improved cassava germplasm in the region. Cassava breeding capacity in the region is weak; most countries merely select clones sent by the CIAT program. CIAT has played a key role in establishing one of the region's only in-vitro labs in Nicaragua and in training technicians to run the lab. This lab now has the capacity for germplasm conservation and as a spillover this lab serves as a distribution facility to distribute disease free clones to neighboring countries. CLAYUCA is a key collaborative arrangement (Chapter 6). However, as noted in Chapter 4 the Panel sees the need for CIAT to increase cassava research activity in Latin America.

Rural agroenterprise development

CIAT is also involved in Agroenterprise development in CAC. Activity is conducted from CIAT headquarters as part of the current market value chain product. The objectives of the program are to improve market access of smallholders in traditional staple crops, new high value crop markets, and agricultural products for industrial purposes. This is primarily a training activity aimed at farmer organizations, NGOs, and governmental organizations. CIAT's efforts in this area are appreciated by their direct clients, but the Panel is concerned with the lack of research output, the balance between research and developmental activities, and the difficulty of scaling up to achieve broad impact. These are all concerns mentioned in the CCER of the Rural Innovation Institute. The Panel believes that this activity could be a supporting capacity for the regional programs.

Soil and water management (MIS)

Central America has one of the most severe soil degradation problems of any area of the world and CIAT has had significant natural resource management (NRM) activity in the region in the past. At present however, CIAT has no active research in the region although it remains involved in providing capacity building support to the soil and water management, regional network. CIAT terminated the only TSBF soil scientist stationed in the region in 2006. This scientist is presently on a short term consultant contract until the end of 2007. The Panel believes that to be more effective CIAT should better link soils NRM research with germplasm improvement and crop management according to regional demands. CIAT provides guidance and intellectual support to the MIS network. *The Panel suggests that CIAT continue to support this well established soil and water management network.*

Agrosalud
Agrosalud is a special project, begun in 2004, that focuses on the biofortification of staple crops in LAC. Agrosalud is funded by CIDA and involves the collaboration of CIMMYT, CIP, EMBRAPA, CLAYUCA & CIAT, NARS in Nicaragua, El Salvador, Honduras and Guatemala, and 21 other organizations in the region. It is associated with, and similar in intent to, the HarvestPlus CP. It is a well funded program that has assembled a multidisciplinary research team led by the former director of INTA (Nicaragua) and is headquartered at CIAT's regional office in Managua. EPMR Panel members observed excellent interaction among CIAT staff and their Agrosalud collaborators.

The Agrosalud program aligns well with a CIAT strategy that aimed at strengthening its genetic improvement programs in the region. CIAT's genetic improvement programs in rice, beans and cassava are vital components of Agrosalud. This program is presently shouldering much of the burden of supporting CIAT's breeding efforts in the region.

Panel assessment of the LAC regional program
The overall impression is that CIAT has considerable potential to build a strong presence in LAC and to make a vital difference in food security in the region. To realize this potential will require strategic planning and the commitment by CIAT Headquarters to follow through with donors, government decision makers and regional partners. The congruence between regional needs and CIAT's mandate and strengths are striking. It is a small region with huge needs for assistance for agricultural research and technology. There is a palpable weakening of NARS in the region. That CIAT has allowed its own research program to diminish sends the wrong message about the centrality of agricultural research in combating poverty and food security in the region.

The Panel feels that maintaining a credible presence would not require large amounts of core funding. CIAT germplasm has had a large and well-documented impact in the region, while the evidence of impact of other CIAT activities is scant. A minimum CIAT presence in Central America and the Caribbean might consist of a "genetic improvement specialist" and the present regional coordinator serving as agronomic support. The genetic improvement specialist should be capable of linking local bean, cassava, forage and rice breeders to CIAT programs, effectively fulfilling many of the functions of the defunct commodity networks. Agrosalud complements this activity. A further need is for economic research support which could be implemented from Headquarters.

A strategic presence in Latin America and the Caribbean is important to CIAT to fulfill its mission. The Panel believes that CIAT needs to take steps to reestablish its credibility in the LAC region. It is important that CIAT communicates to regional stakeholders that it is a long-term reliable partner.

[*#8*] *The Panel recommends* that CIAT commission a task force of key stakeholders to assist the Center in developing a regional strategy for rebuilding its research programs in LAC.

5.5 Summary of regional issues

While it was evident to the Panel that the regional operations were the focus for delivery of research for development in CIAT, it was also clear that this has not been effectively

communicated to the relevant scientific and professional communities. It is vital for the international standing of CIAT that publication in quality peer-reviewed journals extends beyond component science activities to cover the research for development case studies evident in the regions. The general lessons drawn from this research provide a basis for synthesis and communication of general principles that would be of great value. *Hence, the Panel suggests that CIAT publish existing research for development case studies as a special issue of a relevant international journal with a synthesis paper that draws together the main lessons from across this research for development studies.*

The Panel was impressed by the integration of research for development that is occurring via the regional operations and delivering tangible development outcomes via sustainable improvements in livelihoods of the rural poor. The activities are well connected with both the core genetic improvement science undertaken on CIAT mandate crops that is centered at headquarters in Colombia, and the range of disciplinary skills (soils, agronomy, economics, marketing, sociology, etc) required for effective delivery in target systems. It is clear to the Panel that the regional operations have matured to be the principal strategic platform for research for development in CIAT. The Panel is of the view that the implementation of CIAT's research agenda via outcome lines as recommended in Chapter 3 would be best achieved via the regions, following a strategic planning process that clearly identifies the priority target outcome lines in each region. To achieve this it will be necessary for CIAT to provide enhanced support to the regional operations as a critical component of its core activities and to enhance responsibilities and authority of the Regional Research Leaders. While significant restricted project funding will continue to be required for regional outcome lines, to continue to expect delivery of core outcomes on juggling of special project funding is not a sustainable option for CIAT. The three regions in 2007 are budgeted at around US$0.9M in total core funding (out of the US$18.8M center total).

There was also a consistent finding across regions that, other than for technical matters, the relationship between regional staff and headquarters was characterized by poor communication, excessive transactions costs, and conflicting strategic and operational visions. Administrative and financial reporting systems do not take account of regional variability and nuances and systems for HR management of regional staff have had to be developed in each region due to shortcomings in headquarters ability to deal with regional issues. Policies on matters such as housing allowances, promotions, access to professional development support funds, etc., must reflect the regional context. It appeared to the Panel that CIAT administration had not graduated from a Colombian-focused to a globally focused institution. Further, the administration is perceived in the region as having a controlling and indifferent posture, rather than a supportive and service oriented one.

The Panel believes that the regions should become the recognized vehicle for the implementation of CIAT's research for development agenda via outcome lines that utilize CIAT' s core technologies and disciplinary capabilities.

[*#9*] Hence, *the Panel recommends* that CIAT's global orientation be operationalized through strengthened Regional Programs (Africa, Asia and LAC); this requires operational changes at the leadership, staffing and administrative levels; including moving additional responsibility, authority and resources down to the program leaders.

The following measures are needed to accomplish these changes:

(i) ***Leadership*** - the DDG of Research and Regional Research Leaders should be charged with determining the strategic research focus for CIAT; this entails both identifying the target outcome lines in each region and the research for development teams/alliances needed for effective delivery

(ii) ***Staffing*** - disciplinary specialist staff based in the regions should participate in integrated research teams, and therefore should report to their Regional Research Leader (via the relevant regionally-based outcome line team leader)

(iii) ***Administration*** - financial reporting, administrative and human resource management systems in CIAT should be adapted quickly so that these become responsive and supportive of regional operations.

The features and implications of these recommendations are considered further in Chapter 7.

6 CIAT PARTNERSHIPS

Chapter 5 addressed CIAT's regional activities and related partnerships. Chapter 6 focuses on CIAT's role in CGIAR systemwide and challenge programs, relationships with CGIAR Centers, NARS, public-private partnerships, and CIAT's collaboration and management of intellectual property.

6.1 Systemwide programs

The CGIAR *Participatory Research and Gender Analysis* (PRGA) program, convened and managed by CIAT has had a recent (2007) External Review. PRGA has accepted and is implementing the External Review recommendations that the PRGA continue its strong work on participatory plant breeding and impact assessment while making a greater effort to mainstream gender analysis in the CGIAR. Both CIAT and the PRGA accept the Review recommendations of a closer relationship between the systemwide program and the convening center. Based on the review, the Science Council (SC) has recommended to ExCo that the program's work on participatory plant breeding (PPB) be continued for a third phase (3-5 years), placing priority on further compiling and assessing the existing ex-post impact evidence and conducting a comprehensive ex-post IA of the successful PPB cases identified by the Panel. The SC, agreeing with the PRGA review Panel's recommendation, has suggested that the participatory natural resource management research component of the program be integrated into the activities of the Inter-Center INRM Working Group. The SC sees a real need for more focused research on gender analysis (GA) leading to mainstreaming GA into all CGIAR research, since this is not being achieved in the current PRGA program. The SC has noted that PRGA's response to the external review includes as annex a draft strategy for a proposed third phase of PRGA. The SC recommended that a new strategy be formulated only after there is agreement on the future role of the systemwide program. As of July 2007 a decision is pending from ExCo.

The Panel considers PPB as the most important part of the PRGA systemwide program and that it is integrated into CIAT's commodity improvement programs. Further, the Panel agrees with the overall SC position on the systemwide program.

CIAT is implementing a global project on the white fly pest for the Systemwide *IPM program*. In the *Systemwide Livestock Program* CIAT is conducting a study on tradeoffs between using legumes as animal feed resources or for soil enhancement. The Panel noted that there was some activity in Asia of the systemwide livestock program which is relevant to CIAT's strategic agenda in the forage program (Chapter 5).

Due to its long term commitment to natural resource management research in hillsides agroecosystems, CIAT has been an active participant in both the *CONDESAN* and the *African Highlands Initiative* since their establishment. CIAT has had shared staff and joint research proposals and programs with both. Research on modeling land use in hillside farming systems has been a topic of joint interest between CIAT and both ecoregional programs, while CIAT scientists in rural innovation and beans have been particularly active in AHI.

CIAT has implemented research projects for the *Collective Action and Property Rights* Systemwide program (CAPRI); and is an active participant in the *Systemwide Genetic Resources*

Program, currently sharing a scientific position with the SGRP.

6.2 Challenge Programs

In terms of major partnership developments, CIAT remains strongly engaged in the four existing Challenge Programs (CPs). CIAT is co-convenor of the *Harvest Plus* CP, and conducts extensive research on improving iron content in beans and vitamin A in cassava. In the *Water and Food* CP, CIAT is leader of the research theme water and people in catchments; it has provided both the coordinator and the impact assessment specialist to the Basin Focal projects; and is implementing competitive research proposals, one on indigenous land use systems in Central America, and the other on valuing environmental services. In the *Sub-Saharan Africa* Challenge Program, CIAT is co-leader of the Eastern Africa Lake Kivu pilot learning site. In the *Generation* CP, CIAT is implementing research projects on cassava and rice. CIAT also looks forward with particular interest to participation in the forthcoming CPs on climate change and high value products.

In the Panel's view CIAT engagement in the CPs is an excellent opportunity for the Center to collaborate in major research activities where CIAT expertise has comparative advantage. At the same time this will help build partnerships with other CGIAR Centers, ARIs and NARS. CIAT needs to think carefully about its engagement in future CPs so that participation is fully consistent with CIAT's strategic plan.

6.3 Other links with CGIAR Centers

CIAT collaborates with *IITA* in joint cassava research projects in the Harvest Plus and Generation CPs as well as in a Rockefeller Foundation program on marker-assisted selection in East Africa. In 2007, TSBF-CIAT has been in dialogue with the Bill and Melinda Gates Foundation, on a strategy for soils research in Africa with IITA, *ICRISAT* and other centers active in Africa. Likewise, CIAT has been part of two consortia, one through the Generation CP, the other in partnership with ICRISAT and IITA, on grain and legumes in Africa.

CIAT has long had close collaboration with *IRRI* rice research and is actively involved in the exchange of materials with IRRI and *WARDA*. The three centers are currently developing a joint initiative for rice research in Africa. CIAT has worked closely with ILRI in joint projects on livestock in Africa, Asia, and Central America. CIAT hosts the *BIOVERSITY* program for the Americas and the *CIMMYT* program for South America, while *ICRAF* hosts the CIAT-TSBF program in Nairobi.

The Panel has mentioned the *IITA-CIAT* collaboration in cassava in Chapter 5 and the relationship between CIAT and *IRRI* on rice is very complementary (Chapter 4 and Chapter 5). The Panel supports the joint initiative *CIAT- ILRI* on forages/livestock projects but unfortunately a joint position on this collaboration in Africa was phased out recently.

6.4 Links with NARS

CIAT's collaboration with NARS is a critical part of its strategy and involves such a complex of relations as to defy brief summary. In *LAC*, among the more noteworthy relations, CIAT has partnered with CORPOICA in Colombia especially in forages, rice and fruits research.

EMBRAPA and CIAT are co-implementing projects for the Generation and Harvest Plus CPs on cassava and beans and are both strongly committed to the Amazon Initiative. In Central America CIAT has a wide range of research ongoing in all of its commodity programs as well as in the Agroecosystems RDC. In *Africa*, central instruments of cooperation with NARS include the Pan Africa Bean Research (PABRA) network and the Afnet soils research network of TSBF-CIAT. In *Asia*, key partners include NAFRI, which hosts CIAT's regional office in Laos; in Thailand the Thai Tapioca Development Institute and Kasetsart University for joint work on cassava; and CATAS in China for research on cassava and forages.

CIAT has a long history of integrating key scientific competencies required to make significant progress in attaining its mission. To achieve impact, the Panel recognizes the importance of working in effective partnerships with national public research programs to produce international public goods including technologies, methodologies and knowledge of direct relevance that are being taken up by intended users to improve the livelihoods of the rural poor. In the past, international agricultural research centers and particularly CIAT have exercised considerable effort in strengthening national agricultural research capacity to ensure that jointly generated knowledge effectively reach local farmers and achieve the expected impact on food production and rural community improvement. In addition to the more traditional public research partners, CIAT has also expanded partnerships to reach civil society organizations and the private sector.

The Panel considers that during the period covered by this review, CIAT-NARS interactions have been based mainly through the expanded role of NARS participation in the Challenge Programs (Harvest Plus and Generation) and through the networks established by CIAT's regional offices. There is also an increased CIAT-NARS interaction through the public-private partnerships, FLAR and CLAYUCA. In the specific case of the host country, Colombia, CIAT has had a declining level of engagement over the past few years. This is also true for the rest of South America, as CIAT has focused it's LAC operations on Central America and as it prioritized work in Africa and Asia.

The training programs, which have had a broad scope in the past, have become more limited and selective to provide training in key or innovative areas required by specific programs. The Panel believes that CIAT should use the expertise of more developed NARS and Universities to enhance the capacity building for less developed NARS.

Finally an implicit assumption that has circulated for 20 years, especially in crop improvement research, is that NARS eventually will grow out of their need for CIAT support. This, in general, has not been realized. Taking into consideration the huge heterogeneity of needs and strengths of NARS, the Panel believes that international centers such as CIAT will always have an important, but evolving, role to play in supporting research networks at regional and sub-regional level.

6.5 CIAT partnership with Colombia

CIAT has a wide range of collaborations with its host country, Colombia. Besides having its headquarters facilities on land provided by ICA-Colombia, during the period of this review the centerpiece of CIAT's relation with Colombia was an agreement with the Ministry of Agriculture and Rural Development (MADR) under which CIAT, in partnership with

Colombian organizations such as CORPOICA (the national corporation for agricultural research), undertook a set of research activities targeted at the savannas of South America. This included research on tropical forages, rice, soil fertility, maize (with CIMMYT) and land use. During the 12 years of this agreement through 2005, Colombia was one of the leading investors in CIAT and one of the leading investors in the CGIAR among tropical countries, with an investment averaging around US$2M annually; the Colombian direct monetary contribution to CIAT has declined to less than US$0.6M in 2007. In addition to this partnership for the savannas, some of the highlights of CIAT partnerships in Colombia include working closely with the Colombian rice growers through their association FEDEARROZ (a founding member of FLAR); implementing projects on cassava in the north coast with CORPOICA; supervising an average of over 60 Colombian thesis students annually; and developing a number of projects on tropical fruits. Several of the fruit projects were funded via competitive grants administered by the MADR after the termination of its long term agreement with CIAT.

The Panel observes a less active relationship between CIAT and Colombia than was the case at the time of the 5th EPMR (2000). Recommendation #8 of this EPMR, regarding a task force to develop a new strategy for CIAT in LAC, would be a positive step to reinvigorate this relationship.

6.6 Public – Private Partnerships

CIAT has long been engaged in activities that promote and facilitate collaborative participation of public and private partnership institutions in the support and conduct of agricultural research in LAC. The key aspect in this effort is institutional innovation, the ultimate objective of which is to contribute to the reduction of poverty and hunger.

These activities include two broad categories of undertaking at CIAT: one, now denominated *"alliances"*, involves cooperation among various institutions focused on specific commodities or problem topics; and the other related to the formation of a *"Science Park"* or complex of research entities located in the Headquarters. These activities fall outside the regular research program of CIAT and therefore have been traditionally distributed under different administrative units of the center, until finally being grouped in 2005 under the Directorate of Public–Private Partnerships (***Figure 1***). All projects and funds in these categories are managed by CIAT.

Alliances

The formation of partnerships or alliances seeks to generate sustainable pathways for the effective delivery of services to end users, and for resource mobilization. There are four main projects in operation, two of which were initiated in the past decade and are well established, and two that were just started in 2007. In addition, there are some cooperative agreements with Colombian institutions. The four main projects are as follows:

The *Fund for Irrigated Rice in Latin America and the Caribbean* (FLAR), created in 1995, is a consortium of public and private institutions of 15 member countries, among which the founding ones were Brazil, Colombia, Venezuela and Uruguay. National or state rice producer associations and related business are the main participants; CIAT is a member and host of FLAR while in the past IRRI and CIRAD were also members. FLAR's mission is the

sustainable development of irrigated rice production in the LAC region through research, in order to make it more productive and competitive at lower relative prices to consumers. FLAR uses CIAT advanced genetic material to support breeding activities that are conducted by members of the consortium. FLAR also has responsibility for the dissemination of its rice varieties, on which it has exclusive rights. FLAR has been operating with an annual budget of about US$0.9M in the last four years, coming mainly from membership fees, including from CIAT who is also a member of FLAR. The Panel has addressed CIAT-FLAR rice and IP features in Chapter 4 and 5, respectively.

The *Latin American Consortium for Support of Cassava Research and Development* (CLAYUCA) was created in 1999, following a similar institutional model as FLAR. Its membership includes several private and public organizations from 9 countries in LAC and, more recently, also three in Africa, plus CIAT. It operates with an average annual budget of approximately US$0.45M since 2005, which includes a small core contribution from CIAT. Other sources of funds are membership fees, Colombian and international projects, and service charges. The Panel has addressed CIAT-CLAYUCA cassava research features in Chapter 4 and 5.

The objective of the creation of CLAYUCA was to establish a self-financing, sustainable regional mechanism that facilitates the organized participation of stakeholders in the discussion and identification of priority issues and the definition of a regional R&D agenda for the cassava crop. CLAYUCA facilitates the execution of collaborative cassava-based, R&D activities in each member country, the search for financial support to implement R&D activities, and capacity building. CLAYUCA aims to coordinate research activity among members, rather than to execute research itself. CLAYUCA is an innovative initiative. It has brought private and public sector organizations together, brings additional resources into CIAT's cassava breeding program, and provides a conduit through which research priorities can pass from producers to CIAT. It presents a dilemma however, about how to respond when countries choose not to belong to the consortium.

New alliance projects are: *the Latin American Fund for Innovations in Palm Oil* (FLIPA), constituted in 2007 by Colombia, Ecuador, Venezuela, and CIAT, following also the FLAR model; and the International Research and Production Center for Waste Transformation, formed by a group of seven private enterprises, CLAYUCA and CIAT. These two ventures are quite recent and their fit to CIAT's agenda is unclear.

The foregoing projects are innovative institutional arrangements and show promise as useful schemes especially for support of commodity improvement programs in the future. To the extent that all these projects adopt the basic FLAR mode of operation, there may arise possible conflicts of interest in regard to the public-good nature of CIAT'S genetic materials and technology development, versus the private-market handling of derivatives by these new institutions. The Panel has expressed views on this delicate issue in Chapter 4, and further in the section on Intellectual Property Management below.

With regard to *public-private partnership projects* with Colombian institutions, two agreements were signed with important organizations in 2007: one with the *Colombian Agricultural Society* (SAC), which is a federation of agricultural producers associations, some of which (e.g. FEDECAFE, FEDEARROZ) are already collaborators of CIAT. This umbrella agreement facilitates CIAT's access to the new Colombian research funding system through competitive

grants, and gives valuable backing to CIAT from the agricultural production sector. The other agreement is with the *National Training Service Agency* (SENA), which renews a previous partnership with this public sector institution. This agreement will foster training activities at CIAT, particularly in advance subjects of applied biological sciences. Both projects mentioned are important insofar as they help to strengthen general collaborative ties with CIAT's host country. These ties have weakened over the past years, as a consequence of the redirection of CIAT's regional programs with a greater emphasis on Africa.

Finally, CIAT also has flagship cooperative agreements with companies elsewhere in Latin America. The most significant one is with the Papalotla seed company of Mexico, whereby CIAT has given to Papalotla the CIAT lines of Brachiaria grass for hybrid seed production (see Recommendation # 6 in chapter 4).

The Panel commends the Center for the breadth and strength of its research alliances and for its innovative approaches in this area.

Science Park (AGRONATURA)

The sustained reduction since the 1990's of CIAT's Latin America program and staff located at its headquarters, because of funding restrictions and shifts to other regions of the world, has resulted in idle building capacity on CIAT Headquarters. Hence, some years back, CIAT embarked on a novel system of partnership with other research organizations to create a "Science Park" on the campus. The AGRONATURA Scientific Park groups private and public institutions that share CIAT's mission, have an international dimension, and constitute a research community intent on generating relevant innovations, which also contribute to CIAT's goals. At present, there are 14 organizations that have established operations at the CIAT campus, including other CGIAR centers, foreign and international R&D agencies, private and public Colombian institutes, and new agencies such as FLAR, CLAYUCA and others. Use of the premises entails payment, which helps CIAT to defray maintenance and operating costs of its headquarters facilities. More significantly these partnerships contribute to retain a critical mass of research staff on the campus and thus create a better research ambience.

The fact that CIAT's headquarters facilities are too large for the present and foreseeable needs of the Center remains an issue. CIAT should address this issue in its business plan. *The Panel suggests that CIAT clarifies its strategy for the operation of AGRONATURA and that CIAT ensures that it does not subsidize AGRONATURA (see Chapter 7).*

6.7 Intellectual Property Management

Intellectual Property (IP) management is an area that has grown in importance for all research organizations, especially over the past two decades. The IP world in which senior scientists operated at the beginning of their careers, where germplasm and research tools were freely and informally exchanged directly between researchers, is gone. The major inputs to, and outputs of, CIAT's research – germplasm, varieties, information, scientific tools - that in the past were released as materials in the public domain, readily accessible and available to CIAT and its partners, have become subject to significant IP concerns and contractual constraints. The new environment for managing IP and intellectual assets is complex and has proven challenging and often expensive for both public and private sector institutions to deal with.

Yet the skill with which CIAT deals with IP issues is likely to have a profound impact on its future ability to access research tools, to faithfully steward research partnerships, and to extend its research results to poor farmers worldwide. The fact that CIAT's main mission is to create international public goods in no way diminishes the importance of thinking strategically and negotiating wisely with regards to IP.

The 5th CIAT EPMR (2000) and the 2006 CCER of the Agrobiodiversity program made recommendations concerning IP management. The thrust of each of these reviews was to recommend that CIAT *"develop at the earliest possible time a comprehensive [IP] policy, operational strategy and capacity to manage its research and development efforts on agrobiodiversity"* (5th EPMR).

CIAT has some important components of a system for IP management. These include:

- An intellectual property committee (though it is not clear to the Panel how active or effective this committee is).
- A staff member (the head of the Genetics Resource Unit-GRU) who is knowledgeable and skilled in dealing with CIAT's genetic resource obligations under international treaties and agreements.
- A policy on intellectual property rights posted on the CIAT website (dated May, 2001).
- Use of the standard materials transfer agreement (SMTA) of the International Treaty on Plant Genetic Resources for Food and Agriculture.

The Panel commends CIAT for its actions in challenging the "Enola" patent under procedures available in the US Patent Office. CIAT's persistence in pursuing this case demonstrates its commitment to the principle of open access to genetic resources. However, the Panel believes that CIAT still lacks staff capacity to manage and negotiate IP issues. IP issues are currently dealt with on an ad hoc basis through efforts of non IP specialists - scientists, CIAT's in-house lawyer, the PPP director, and the DG. To relegate IP issues to non-specialists is a risky strategy. The Panel believes that this practice should be discontinued.

[*#10*] *The Panel recommends* that CIAT fully implement the 5th EPMR (2000) recommendation on IP and that CIAT add operational capacity to manage IP to its staff and devise an operational plan for managing IP.

A recent CGIAR study presented a series of suggested practices.[10] We consider the following suggestions from this study to be relevant for CIAT: *(i) Each center should have an in-house IP Management Unit, with an annual operational budget, backed up by an IP Committee (this might be a full-time or part-time need, depending upon the center. Thus, centers might be able to share personnel to fit this need). (ii) The centers need to develop guidelines on the acquisition and use of 3rd party information, especially information that is included in center products such as databases and publications.(iii) Centers should conduct Intellectual Property Management audits to inventory IP and to identify situations where Centers' rights and policies are unclear and need to be addressed.*

10 Henson-Apollonio, V. and B. Hanumanth Rao. "Strategies for the CGIAR to Conduct Research and Deliver Technological Innovation that Benefit the Poor in a Context of IPR" in CGIAR Research Strategies for IPG in a Context of IPR Report and Recommendations Based on Three Studies. Science Council of the CGIAR, October 2006.

There are no precise guides on the form that IP expertise takes; parts of the IP management function, such as drafting contracts, will need to be done on a contract basis with outside experts, other functions such as monitoring compliance with existing contracts, must be done by CIAT administrative staff, and other functions such as setting clear IP policy must be executed by top management in consultation with outside experts. The *CGIAR Central Advisory Service for Intellectual Property* (CAS/IP) and the *Alliance of CGIAR Centers* should be a forum for discussing common IP management issues. There may also be value in CIAT approaching other centers, such as CIMMYT and CIP to consider how expertise might be shared across centers. CGIAR systemwide bodies capable of providing guidance in dealing with IP/Technology transfer issues also include the *Genetic Resources Policy Committee* (GRPC) and the *Private Sector Committee* (PSC).

CIAT has been innovative in forming agreements with the private sector. These agreements have had some positive effects on CIAT. However, in the dynamic environment in which CIAT operates and with the International Treaty on Plant Genetic Resources coming into effect, agreements must be subject to periodic review and renegotiation as times change.[11]

[11] As discussed in Chapter 4, the Panel believes that the FLAR and Papalotla agreements appear to provide exclusive, not open to all, rights to germplasm access and therefore reiterates (Recommendation #6) the need to revisit these agreements.

7 TOWARDS AN INTEGRATED AND CLEARLY ARTICULATED AGENDA

7.1 Introduction

The need for CIAT to clarify its strategic research agenda was one of the main areas identified for focus of deliberations of this EPMR Panel in Chapter 2. Subsequently, the Panel has identified the need to focus and integrate effort around system-based outcome lines (Chapter 3) and that the regions provide the major avenue to implement this approach (Chapter 5). In addition, the Panel has noted generally high, but variable, levels of science quality throughout the institute (Chapters 3, 4, 5). In this Chapter, the Panel presents an analysis of the quality and relevance of science at CIAT before proceeding to a discussion on research agenda. That discussion first targets the functional basis required to generate strategic focus in CIAT. This involves elaboration of the outcome line concept as a means to define targeted, interdisciplinary teams and consideration of the special role of the GRU. Second, the organizational structure and reporting requirements required for that functional form is defined. Implications and associated key recommendations for implementation are included.

7.2 Quality and relevance of science at CIAT

CIAT scientists produce a number of different outputs – improved populations from crosses, lines and varieties, research tools and methods, crop management practices, databases and computer programs, journal articles, books and other publications. Not all research output can be quantified, and any assessment of the quality of science is likely to be subjective and incomplete. Nonetheless, generally accepted measures of research quality exist in some areas, and can be useful when combined with other assessments. In this section we make a very general assessment of research quality in two categories of CIAT output. First, measures of CIAT's publication output will be discussed. Then measures of the output of the biodiversity program - tools, improved crosses, lines and varieties will be presented.

The last EPMR concluded that science at CIAT is of good quality and relevant. Recently four CCERs were conducted and had the following assessment of the quality of science at CIAT:

- **CCER Agrobiodiversity** *"A large and impressive series of publications including research articles in peer reviewed international journals, monographs, books and book chapters, as well as articles and abstracts in proceedings are indicators of the wealth of the research carried out by CIAT staff and collaborators. Also, there are several web available materials such as databases on plant genetic resources, the FloraMap, GIS tools for predicting the distributions of agrobiodiversity in the wild, as well as several available on line publications."*
- **CCER Agroecosystems** *"Internationally, it is expected that a scientist with a 100% research appointment publishes at least three peer-reviewed journal papers per year. Research scientists with a significant commitment to administration, teaching or other work should publish one to two journal papers per year. On average, this level of scientific output is achieved in projects PE-1 and PE-2, whereas PE-3 and BP-2 have achieved only half of the expected publication output."*
- **CCER Rural innovation Institute** *"The quantity, and apparently the quality, of learning alliances, appears high. The quality of this as a mechanism of actual and potential learning is high. The research insights (hence research quality) gleaned from that facilitation/development action/ are so far low. The peer-reviewed journal article and book or book chapter output has been on average over five years quite low".*

- **CCER Spatial Analysis "***An analysis of the publication record of the group was hampered by the lack of a centralized database of publications,. Clearly, much of the group's output has been in the form of conference papers, reports and technical manuals, all of which are unrefereed"***.**

Refereed publications

Table 7.1 shows three indicators of research output and research quality for the years 2004-2006. The first indicator is a broad measure of output of published research, including many types of publications. The second indicator considers only publications in top journals, so begins to consider quality as well as quantity of published output. The third measure – total citations- is an indicator of the quality and impact of scientific output. Articles that are highly cited are influential in furthering science, and highly cited authors are recognized as leaders in their profession. All three measures rank CIAT as one of the top CGIAR centers in terms of quantity and quality of science, during the period 1977-2006. The first two indicators rank CIAT between second and fourth among all CGIAR centers in terms of output of publications per scientist. The citation measure is not adjusted for number of scientists, which varies across centers. As such it measures the total impact of CIAT on the scientific community. CIAT ranks third in all three years. This again reflects very well on the quality of science, and scientific reputation of CIAT. Figure 7.1 tracks total citations through time. This figure shows IRRI to have twice the number of the citations of the next center, with CIAT to be a close third to IITA in recent years.

Table 7.1. CIAT (2004-2006) ranking among CGIAR centers for publications and citations

Indicator	2006		2005		2004	
	Number	Rank	Number	Rank	Number	Rank
1. Number of all publications *per scientist* in peer-reviewed journals, books, monographs and book chapters (15 centers)	2.67	2	3.05	2	2.63	7
2. Number of peer-reviewed publications *per scientist* in journals listed in Thomson Scientific/ISI (15 centers)	1.13	4	1.14	2	Na	Na
3. *Total* citations in publications included in Thomson Scientific/ISI (10 centers)	821	3	707	3	589	3

Na: information not available
Source: CGIAR Performance Measurement System, various years

On the other hand Table 7.2 shows the evolution of non-refereed publications, which indicates a great participation of CIAT researchers in scientific meetings illustrated by the impressive number of publications in proceedings. This is an important indictor of the importance that CIAT scientists place on maintaining their disciplinary skill and visibility. In addition an annual average of 24 theses were developed from 2002 to 2006 under supervision of CIAT scientists.

Improved germplasm

CIAT works with a vast range of national and international collaborators. These partners have a range of needs for improved germplasm. Some partners have limited plant breeding capacity and rely on CIAT for finished varieties. Others have well established breeding programs that look to CIAT for specific traits and segregating populations.

Figure 7.1. Total citations for the period 1990 to 2006 for the major CGIAR centers (Source: Thomson/ISI Web of Science)

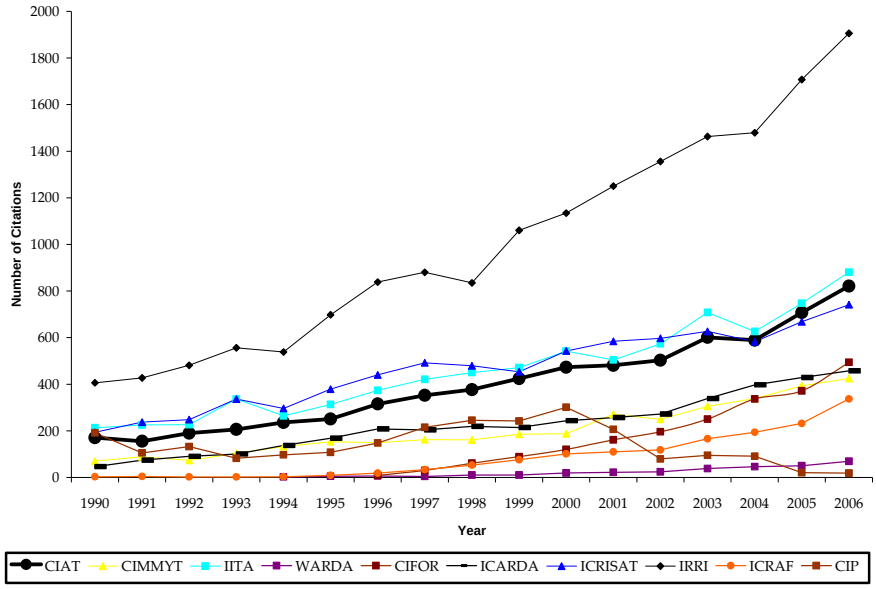


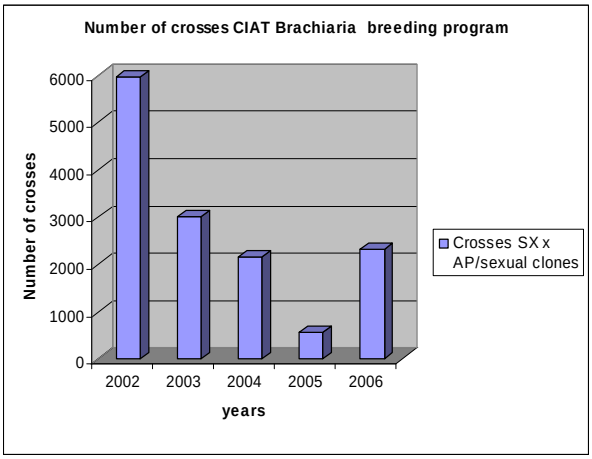
Table 7.2. Evolution of CIAT non refereed publications from 2002 to 2006

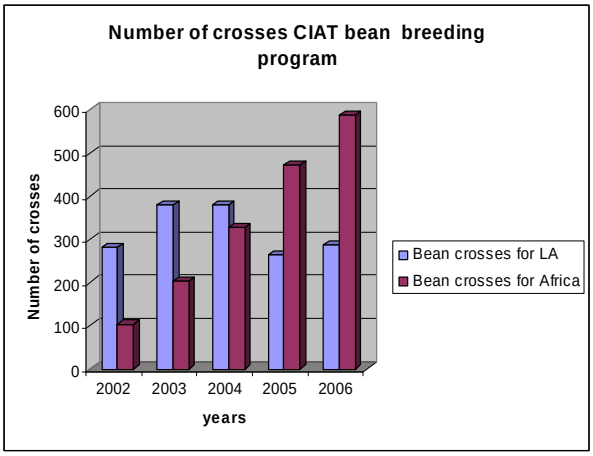
YEAR	2002	2003	2004	2005	2006
Books and Monographs, Book Chapters, Proceedings	40	86	26	47	72
Articles in Proceedings, Abstracts in Proceedings, Posters	89	50	81	70	291
Thesis	25	27	23	26	19
Other Publications	50	75	93	43	72
TOTAL	236	260	264	215	488

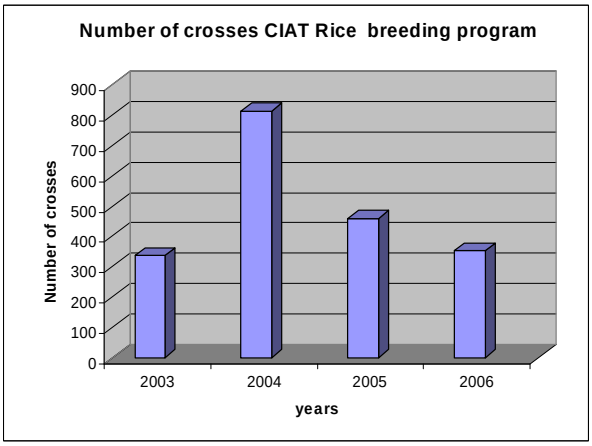
All four of CIAT's breeding programs were very active in the 2002-2006 period based on the annual number of crosses (Figures 7.2-7.5). The number of *Brachiaria* crosses declined during the period (Figure 7.2). Because this decline is largely explained by the breeding strategy employed, the number of crosses is not a good indicator of the productivity of the program. The Brachiaria program's recurrent selection strategy using apomixis is cutting edge and is yielding impressive results in terms of rate of genetic gain. The number of bean crosses for Africa has increased from 100 crosses to nearly 600 in five years (Figure 7.3). This indicates the momentum that the PABRA program has gained during this period. The number of bean crosses for Latin America has hovered around 300 for the period. Though lower than in Africa, this is still a considerable breeding effort and indicates that there is a large amount of material in the pipeline to be exploited by CIAT and its LAC partners. The rice program also made around 300 crosses per year, a commendable number for a relatively small program (Figure 7.4). The number of cassava crosses is a much higher and increased greatly in recent year because of the incorporation of new breeding methods (Figure 7.5). Overall, the large

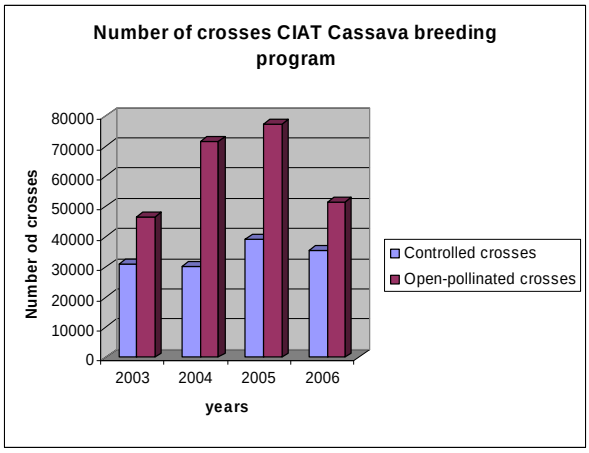
amount of breeding activity in all four programs suggests that CIAT is fully engaged in germplasm improvement.

Figures 7.2 – 7.5. Number of crosses per year for CIAT breeding programs
Data prior to 2002/3 not available.





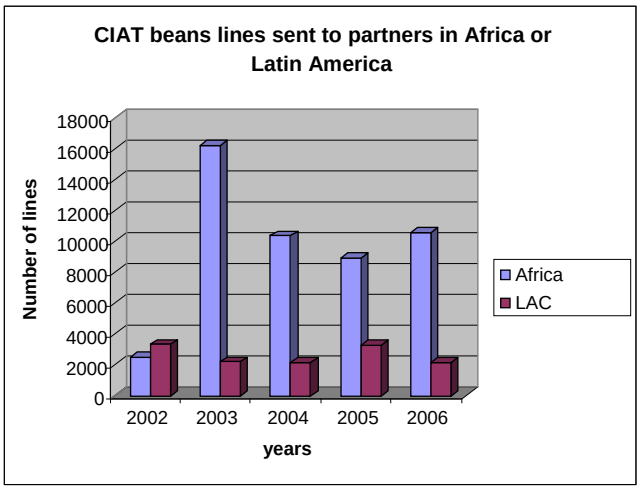


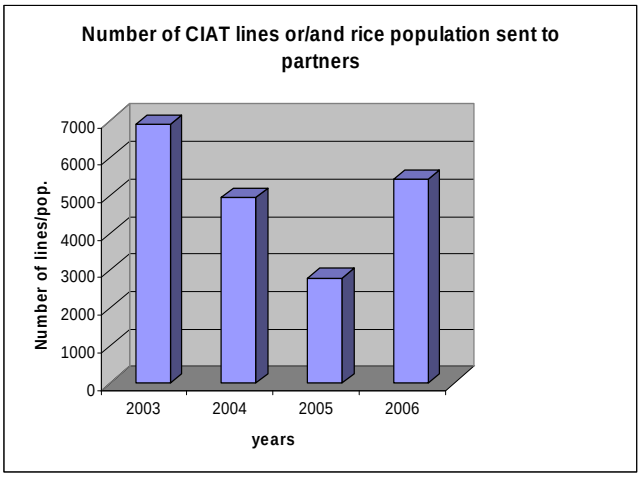


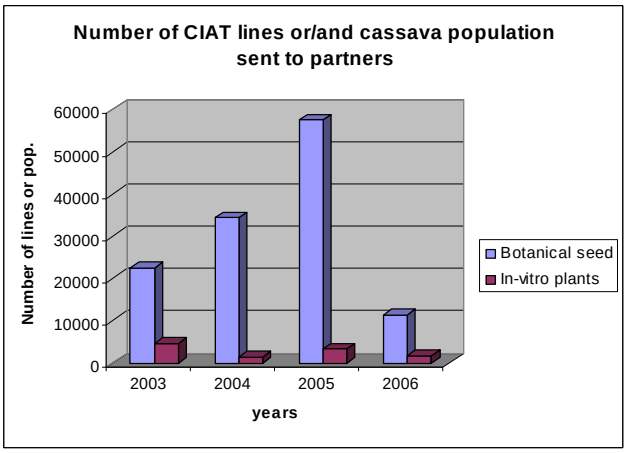
Line development is a direct indicator of output provided to partners. Lines incorporate an array of genes that have specific advantages in different environments, allowing partners to select those lines most suited to their needs. The number of lines sent to African partners has increased greatly since 2002, and is much larger than the number sent to LAC (Figure 7.6). A large number of rice lines (upland and irrigated) have been distributed to breeding programs in LAC (Figure 7.7). The number of cassava lines increased sharply from 2002 to 2005, but then fell sharply (Figure 7.8). Forage breeding distributes populations of apomictic hybrids.

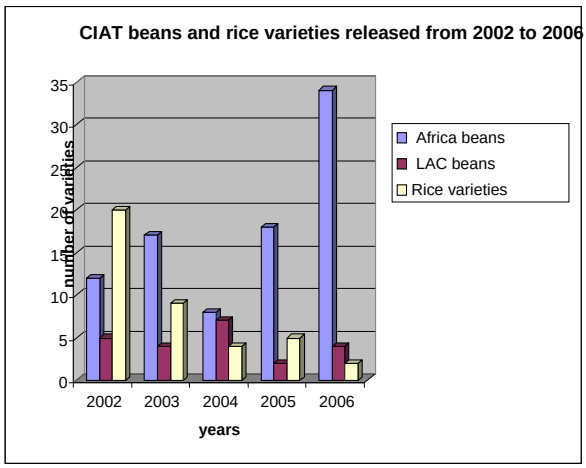
CIAT also produces finished lines that can be released by partners. An impressive number of CIAT derived bean varieties were released in Africa (Figure 7.9). A much smaller number of bean varieties were released in the much smaller LAC region. The number of rice varieties released fell sharply during the period. This fall is related to the role of FLAR in downstream breeding in irrigated rice. CIAT has explicitly divested its role as a provider of varieties to FLAR in order to enable it to move its breeding program upstream.

Figures 7.6 – 7.9. Number of lines of beans, rice and cassava each year sent to CIAT's partners and number of rice and bean varieties released each year
Data prior to 2002/3 not available









CIAT has developed a significant set of biotechnological tools developed for cassava, beans, forage and rice, including an impressive number of molecular markers developed and validated that have been used actively in the breeding programs. Furthermore there is a complete set of cutting edge tools that place CIAT as a well recognized upstream research organization. It is important to emphasize that a very substantial part of this work has been carried out based on special projects. Thus CIAT has been able to build capacity that is highly complementary to its applied breeding program without diverting financial resources.

In summary, the Panel judges the quality and quantity of upstream breeding activity in all four crops to be impressive. Partners are well served with genetic resources to be exploited for their needs. A perpetual issue for CIAT and other CGIAR centers is to find the appropriate balance between upstream and downstream research. Breeding capacity and needs in partners is diverse and places demands on CIAT commodity programs to continue with both upstream and downstream efforts.

***Impact assessment** and priority setting research*

CIAT has a long history of sound impact assessment work. Beginning shortly after CIAT's establishment, CIAT economists published a number of relevant studies of research impacts. During the 1970s and 1980s agricultural economists were located within the commodity programs, where significant time was dedicated to conducting ex-ante and ex-post impact studies. In 1992, CIAT brought together economists from different program areas to form an Impact Assessment research project with the objective of improving decision making in the allocation of research resources. In the Impact Assessment project, topics for impact studies were selected jointly among project staff and the managers of other research projects in CIAT, with the idea of producing studies on the full range of CIAT outputs. This group was well respected in the applied agricultural economics profession for their output of ex-ante and ex-post impact studies, methodological contributions, and tools for evaluating impact.

From the late 1990s on, emphasis was placed on generating evidence of the impacts of new areas of research such as NRM and institutional innovation (e.g. watershed management, participatory research, social capital): areas that were relatively understudied as compared to germplasm improvement. The impact analysis project had a project leader until mid-2005 and core budget through 2006. At present researchers from several disciplinary backgrounds are involved in impact analysis in CIAT. The impact analysis project no longer exists and no senior staff is assigned fulltime to impact analysis at headquarters. Comprehensive ex-post studies of CIAT's rice, bean and cassava work were published as chapters in a 2003 book on the impact of CGIAR germplasm. Refereed articles on the impact of participatory management and NRM research appeared in 2003-04. Apart from these studies, the quality of impact assessment work has been unimpressive, even though CIAT reported publishing 14 impact studies to the SC in 2006. The Asia program and PABRA monitor diffusion and some aspects of impact, but that work has not been published in refereed outlets. A number of short, internal publications have also been published. With the transfer of the former leader of the impact analysis project to the Water and Food CP, CIAT no longer has any senior economist dedicated to priority setting or impact analysis. Although two agricultural economists with records of solid work in this area are on CIAT staff, both are in management positions and not involved in impact analysis studies.[12]

In sum the Panel considers that the status of, and support for, impact assessment and priority setting analysis at CIAT has declined significantly in recent times. A significant amount of "impact assessment" work is underway, but this work is scattered, of variable quality, lacks direction, and has contributed little to directing research. Many activities seem to fall within the CIAT definition of impact assessment. Ex-ante or priority setting tools are not used in a systematic or productive manner in managing CIAT's research program. *The Panel suggests that management increase its capacity to conduct and use priority setting tools in managing research.*

[12] As part of the CGIAR Performance Measurement System, the SC annually evaluates two aspects of impact assessment activity at the CGIAR Centers using information provided by each Center. The SC ranked CIAT 9th out of 15 Centers in 2006 in "commitment to documenting impacts and building an impact assessment culture" and 12th in "overall impact assessment performance". In 2005, CIAT ranked 5th in overall impact assessment performance (the commitment measure was not reported in 2005).

7.3 Generating strategic focus - outcome lines and research for development teams

How can CIAT achieve the improved strategic focus recommended by the previous EPMR, a range of recent CCERs, and by the Science Council of the CGIAR as a key strategic issue for deliberation of this EPMR? In this section we detail the concept of "outcome line" and how it can be used for both generating strategic focus and developing the innovative, interdisciplinary, research for development teams required for the effective future functioning of CIAT in meeting its mission. The organizational structure and arrangements that might best serve this function are considered in a subsequent section.

The Panel has already recommended that CIAT organize its research for development agenda around "outcome lines" (Chapter 3) and that regional programs become the recognized vehicle for their implementation (Chapter 5). The concept of "outcome lines" is broader than the notion of component "product lines" as proposed and commenced by CIAT in 2007, but is consistent with it. An outcome line is a body of research for development that has a clearly identified impact target (e.g. improved livelihood of smallholder farmers in specific target systems of a specific region/territory). The suite of targets chosen for CIAT outcome lines (number and location) must be identified as part of the recommended new strategic planning process. This choice should be informed by analysis of rural poverty hotspots along with consideration of CIAT's comparative advantage from its core research in commodities and genetic improvement and capacity in other disciplines to intervene and aid development. In essence this process sets the integrated research agenda for CIAT. In addition to identifying target outcome lines, the strategic planning process should outline strategies and processes for initiating new, and exiting from existing, outcome line teams. The strategy process should include on-going evaluation of progress towards impact targets.

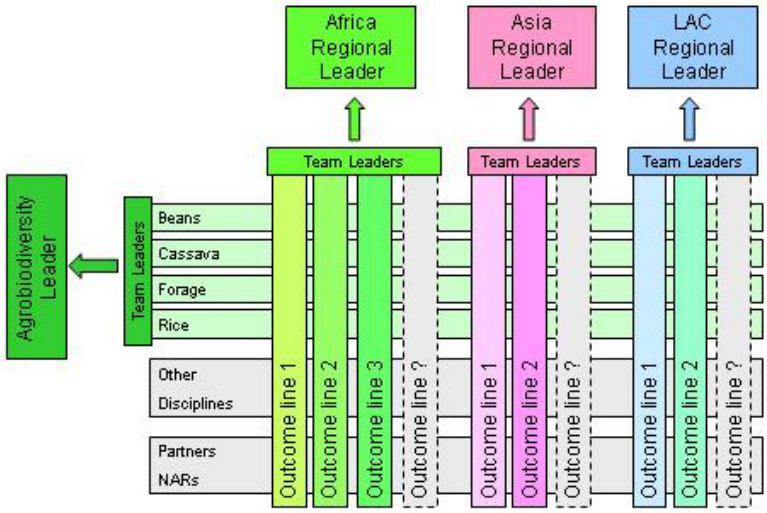
For any specific target that has been identified in the strategic planning process, the desired development impact must first be quantified. The outcome line then involves a broadly-based target system diagnosis (production systems, markets, institutions, learning networks, etc), ex ante impact assessment of potential interventions, design of potential component products and research product lines, consideration of partnerships needed across the research-development continuum, and delivery action research in co-learning mode using participatory processes with key target clients. It is vital to recognize that this is not a linear process – it is iterative and learnings to inform the process must be drawn from the range of disciplinary players brought together to initiate activities in the outcome line research for development team. For example, feedback from delivery action research can lead to substantive redesign of intervention approaches and associated products, requiring re-working of ex ante evaluations. In this process the interdisciplinary integration generates synergy and innovation. The approach is thus one of system-based action research and innovation that draws together disciplinary expertise as required.

The design of the research for development teams required for each outcome line provides the means for CIAT to integrate its disciplinary competencies to greatest effect. The Panel has noted earlier that successful case studies of this form of integration in the regions – beans in Africa; cassava/forages in Asia (Chapter 5) - provide the model on which to move forward. This underpinned the recommendation in Chapter 5 that the regional programs become the recognized vehicle for the implementation of outcome lines. The initial broad systems analysis for each target outcome line will identify the disciplinary competencies required in

the research for development team. The Panel is of the view that these disciplinary competencies should be co-located in the region where the team is operating, with the exception of the core crop improvement and genetics teams, which require critical disciplinary mass, operate across the outcome lines, and often generate critical entry points for them.

This form of functionality, which the Panel sees as required for CIAT to deliver outcomes via interdisciplinary research for development teams, is depicted in Figure 7.10. Outcome line teams are arranged within CIAT regions and draw on disciplinary expertise and component products as required. The core expertise in agrobiodiversity underpins the outcome lines by generating improved germplasm that meets the requirements identified in the outcome lines. In essence, this retains a "product line" perspective for this domain, but the number of products is restricted to those associated directly with genetic improvement.

Figure 7.10 Proposed functional form for CIAT research for development teams



* CIAT's **rice** research mandate focus only in LAC

As this functional form is implemented, the number of products in the Agrobiodiversity group would thus be reduced from the 16 proposed currently to 9 as follows –

- Improved Beans (Beans with improved micronutrients; Beans adapted to low input agriculture).
- Improved Cassava (Cassava adapted to environmental stresses; Resistance to pests and diseases).
- Improved Forages (Multipurpose grasses and legumes; Improved *Brachiaria* grasses).
- Improved Rice for LAC (Rice germplasm for nutrition; Broadening the genetic base – irrigated rice; Broadening the genetic base – upland rice).

In addition a product or products concerning germplasm collections for beans, cassava, and forages need to be associated with the Genetics Resources Unit (GRU). The special case of the

GRU is discussed in the next section. The other products currently defined in the four product lines of the Agrobiodiversity RDC involve other component disciplines that should be subsumed within the system level outcome line teams.

In this arrangement the product lines in Agrobiodiversity generate the germplasm products required in the outcome lines. These are key products underpinning CIAT's capacity to introduce innovation. However, alone they are not sufficient. Other disciplinary expertise (e.g. soils, agronomy, marketing, economics, rural sociology etc) is included as required by outcome line team leaders in the regions in order to generate desired system change. All of the products currently defined in the two product lines of the Agroecosystems RDC are subsumed into the outcome lines as they represent disciplinary component expertise necessary in the integration process rather than independent products. It is the view of the Panel that these disciplines, while being required within outcome lines, should not be regarded as core focal competencies across CIAT with their own "product lines". Further, we consider that pursuit of the approach to develop numerous discipline-based tools and methods as independent products has generated much of the diffusion and lack of focus currently evident, and that their grouping in the People and Agroecosystems RDC seemed forced and artificial. It is critical that the focus of effort of these disciplines reside within the problem domain of the outcome line in the region. Unlike the product lines in the Agrobiodiversity group, which reside closer to the basic biological research end of the research-development continuum, there remains no clear justification for CIAT to have a critical mass on basic research to underpin these more applied research disciplines. Hence, the skills currently residing in the Agroecosystems RDC would be allocated across the outcome lines where demand is driven by regional impact needs so that the relevant disciplinary competencies can be most effectively employed.

There are two special cases in the currently proposed Agroecosystems RDC product lines requiring separate consideration. First, the TSBF-CIAT product line is in essence an outcome line in the arrangement proposed here. As noted earlier (Chapter 5), TSBF has matured to conducting integrated interdisciplinary research for development, although it retains its original soils-based (TSBF) trademark. The TSBF outcome line(s) become an integral part of the Africa regional program. Organizational issues associated with this functionality are considered below (section 7.5). Second, the high value commodities product (current Product 3 under PA1), and in particular the tropical fruits activity, is in essence an exploration of a new outcome line. At this stage it is restricted to the Latin America region and would most sensibly operate via that regional research leader, with close oversight of the DDG Research, as it develops. Such pilot outcome lines should be evaluated using the principles to be defined in the recommended new strategic plan for initiation and development of new outcome lines. Hence, the Panel believes that the high value tropical fruits activity be positioned as a pilot outcome line within the LAC region.

In designing outcome lines, it is also essential to consider the disciplinary expertise that might be provided from partnerships. Within CIAT regional programs, examples abound of partnerships that contribute across the research-development continuum. Engagement both with advanced research centers that bolster specialized disciplinary skill and that supply potential innovation to the system, and with local institutions and NARS are particularly important in ensuring delivery of target impacts. A discussion of relationships with NARS is included in Chapter 6, but upstream and downstream partnerships are already flourishing

within CIAT programs. The successful delivery of impact targets via outcome lines is strongly dependent on nurturing relevant and productive partnerships.

Research leadership will play a critical role in successfully implementing this functional form in CIAT. Regional research leaders must be capable of taking a broad perspective on target systems and marshalling disciplinary expertise so that outcome teams share a commitment to generating solutions within the defined problem domain. These research leaders, in combination with the DDG Research, will also have a critical role in identifying the outcome lines to be included in CIAT's strategic research agenda (*see Recommendation #2: the Panel recommends that CIAT implement its research for development agenda via a small number of outcome lines that engage multidisciplinary teams in a system-based approach that targets outcomes defined clearly and unambiguously in a revised center strategic plan*.).

To implement such a recommendation the Panel believes that CIAT should appoint outcome line research team leaders and regional leaders with: (i) experience and capabilities in broad systems diagnosis; (ii) personal qualities that inspire integration and shared commitment to identifying solutions among disciplinary experts; and (iii) abilities to develop relationships leading to effective collaborative partnerships

This discussion of the functional form required for CIAT to achieve strategic focus via innovative, interdisciplinary, research for development teams has direct implications on the organizational structure and arrangements required to support this functionality. This aspect is considered in section 7.5.

7.4 The special case of the genetic resources unit (GRU)

It is essential to consider the special situation of the GRU at CIAT as its function and role do not conform with the outcome line approach described above as the general means for CIAT to generate strategic focus and effective integrated research teams. The GRU is a critical component of the CIAT core mission (section 4.2) that must have enduring support. The GRU represents CIAT's contribution to the implementation of the International Treaty on Plant Genetic Resources, which is the principal global legally-binding intergovernmental policy framework governing the conservation and sustainable use of plant genetic resources for food and agriculture.

In addition to meeting this global responsibility on germplasm conservation for CIAT's mandated species, the activities within GRU support, and are well integrated with, the crop improvement activities in the Agrobiodiversity commodity teams. This arrangement has been working effectively throughout the period associated with this EPMR as shown by the evaluation in section 4.2 of this report. Beyond its role in supporting crop improvement research at CIAT, the GRU has a unique global service role in the provision of germplasm and has been executing this role effectively. As part of this role GRU conducts research on cost effective methods of germplasm conservation and more basic research on understanding genetic relationships in the evolution of the mandate species.

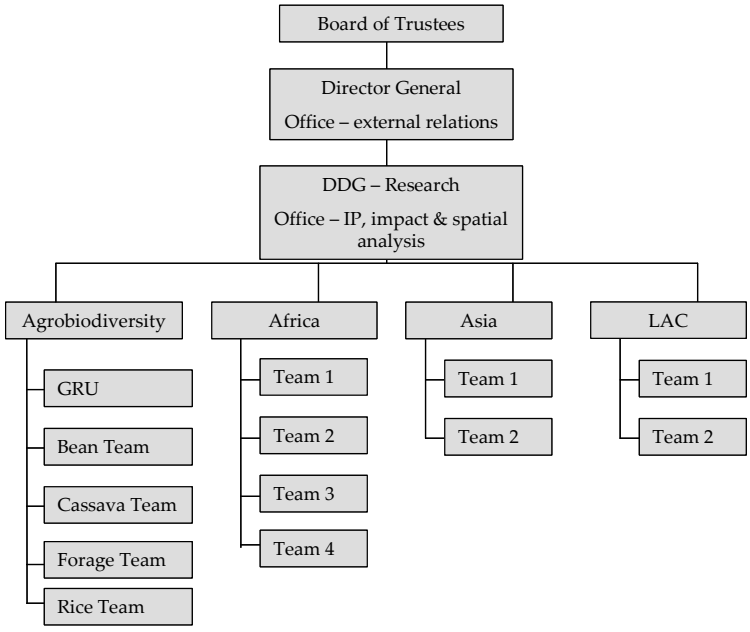
It is the view of the Panel that GRU should retain its independent identity and visibility as a critical work group within CIAT and that it is best located within the Agrobiodiversity group.

7.5 Research organizational structure and reporting lines

This section presents the Panel's views on organizing CIAT's research resources to achieve the strategic focus and functionality described in section 7.3. We prescribe some relatively minor changes to the existing organizational chart presented in Chapter 1. The Panel's view is that the current research structure suffers from two significant shortcomings. First, in some cases reporting lines are not clear or logical. For example, ERI personnel stationed in Africa report to the Agroecosystems RDC leader even though they work more closely with TSBF and PABRA. Secondly, the current structure hampers access of Agrobiodiversity and regional programs to the services of Agroecosystems RDC disciplinary expertise at obvious cost to integration and impact of CIAT's research program.

We propose the structure represented in Figure 7.11. The most significant departures of the proposed structure from the current one are that the number of research leaders would fall by one and regional program leaders would be given additional authority.

Figure 7.11 Proposed organizational structure for research delivery in CIAT



Research would be organized around four programs (one thematic and three geographically oriented) – Agrobiodiversity, Africa, Asia, and LAC. We suggest that Agroecosystems RDC resources be redeployed among the four programs. These programs are, in fact not very new as they correspond to groups that already exist in CIAT. What is new is how they would interact (Figure 7.10), and the level of responsibility, resources and authority that they would command. Each regional program would be responsible for one or more outcome lines and may contain one, or a small number of outcome line teams. The agrobiodiversity program would be responsible for delivering the germplasm products for use by the outcome line teams. Hence, the program leaders must have the required resources and authority to achieve results. At present, regional coordinators have immense responsibilities, but very little authority and few resources. At present no CIAT IRS report to the Central American or Asian coordinators, and only one IRS reports to the African coordinator. Furthermore, total core

allocation to all regions (including TSBF) in 2007 is a mere US$0.9M out of a total core of US$18.8M - less than 5% of core funds. The Panel views this as an incredibly small sum, given the centrality of on-the-ground activity to CIAT's mission.

The proposed new organization clarifies reporting lines for scientists. Program leaders would be vested with the responsibility for executing the germplasm products and outcome lines as elaborated in the strategic plan. They must then have the flexibility, resources and authority to form teams capable of carrying out this mission. The teams would be comprised of the disciplinary mix that program leaders, in consultation with the DDG-R, consider most appropriate for achieving the target impacts. The Panel has had the opportunity to closely observe the present leaders/coordinators of Agrobiodiversity, TSBF, Asia, Africa and Central America, and has interviewed many scientists about the quality of scientific leadership. The Panel considers the quality of scientific leadership to be one of CIAT's greatest assets, and one that is not currently being fully exploited. The Panel notes that all programs are already multidisciplinary. Within the programs, the Panel did not observe inter-disciplinary friction; rather each appears to operate as an integrated team. Disciplinary balance within a program will be dynamic, subject to change as special projects turn over. The Panel is confident that program leaders are the appropriate level at which decisions on disciplinary mix should be taken, while the DDG-R is responsible for assuring that overall CIAT NRM capacity remains sound. *(See recommendation #9 from section 5.5. the Panel recommends that CIAT's global orientation be operationalized through strengthened Regional Programs; this requires operational changes at the leadership, staffing and administrative levels; including moving additional responsibility, authority and resources down line to the program leaders.)*

The DDG-R under this organizational arrangement would be responsible for presenting a research strategy for approval by the DG and BOT. The strategic plan would be constructed in collaboration with the research committee, comprised of the DDG-R and the program leaders. The research strategy document would then be cleared by the DG and approved by the BOT. The DDG-R would be responsible for assessing the performance of the program leaders in executing the approved outcome line strategy, and in ensuring the collaboration across programs. The DDG-R would also be responsible, with advice from the research committee, for guiding the entry of CIAT into new research initiatives. [13]

TSBF is included as part of the Africa region in the proposed organizational chart. As noted earlier, the TSBF and the PABRA programs in Africa are both high-performing and already operating essentially as outcome lines. It is the Panel's view that all outcome line(s) should be clearly defined within the context of a single Africa regional program for CIAT. This should be an outcome of the proposed strategic plan renewal. The organizational arrangements for team leadership and regional leadership should flow from this process. The Panel does not see an urgent need to re-arrange organizational units in Africa prior to completion of that planning process as the current structure is operating effectively via good communication

[13] The tropical fruits project is an example of this type of initiative. The Panel views tropical fruits as consistent with CGIAR and CIAT priorities, as having the potential for making a large impact and for CIAT to become a center of excellence, and well aligned with existing CIAT scientific resources. Future initiatives should have similar characteristics. CIAT has moved cautiously forward in tropical fruits, and must be cautious to not be lured into activities that are not well aligned with its mission and competencies. There is a clear role for ex ante impact analysis to inform these considerations. Introducing support capacity in this area is suggested below.

between current research leaders. It will be the responsibility of the DDG-R to ensure that integration of outcome lines into the Africa regional program occurs. At present TSBF maintains its own Science Advisory Council (SAC), based on conditions set out in the 2001 agreement for TSBF to join CIAT. This document, which mandates that the SAC be guided by the 2001 TSBF strategic plan clearly was intended to guide the transition of TSBF. The incorporation of TSBF into CIAT has been successful and the operations of TSBF have matured considerably since 2001. The SAC of TSBF has guided this transition admirably. However, it is the view of the Panel that for TSBF to become a fully engaged program of CIAT, with significant responsibilities in strategic planning of CIAT's entire research agenda via the DDG Research, then the specific advisory role of SAC to TSBF is no longer required. In essence, its job is done, and TSBF is now fully integrated and accepted as a key structural component of CIAT.

[*#11*] Hence, ***the Panel recommends*** **that the TSBF Science Advisory Council be discontinued.** The Panel believes that the SAC members have provided significant value to TSBF. The Panel encourages the TSBF director to nurture these personal relationships going forward.

The state of CIAT's Asia presence was discussed in section 5.3. The perilous state of CIAT's LAC presence was discussed in section 5.4, where it was recommended that CIAT take steps to re-establish its credibility in the LAC region (*Recommendation #8*).

[*#12*] *The Panel recommends* that CIAT adopt the research organizational structure and reporting lines presented in Figure 7.11 (pg. 79).

Two major implications of this will be:

(i) The Agroecosystems RDC is discontinued. The remaining 4 programs (Agrobiodiversity and the 3 regions) are vested with the responsibility of implementing germplasm products and outcome lines that will have been clearly defined in the renewal of the strategic plan. The outcome lines in the regions will require disciplinary expertise from the disciplines represented in the existing PA RDC. While existing staff might fill some of these roles, *the Panel suggests that any further reductions required in core expenditure be obtained in the first instance via the reconfiguration associated with discontinuing the Agroecosystems RDC. Further, the Panel suggests that an enhanced proportion of available core funding be allocated to regional leaders to facilitate demand-driven development of the required disciplinary skill mix in outcome lines.*

(ii) The current Public-Private-Partnerships (PPP) Directorate is discontinued and its functions are relocated as follows. The research alliances function becomes part of the DDG-R Office as mentioned below (proposal development and IP manager); management and administration of the AGRONATURA Science Park and the remaining PPP Directorate functions (Alliances Coordinator, Farm Operations, Greenhouse and Science Park Coordinator and Analytical Services Lab) should be assigned to the DDG–Corporate Services.

In addition the proposed organizational chart (Figure 7.11) contains three suggestions for staff positions in the DDG-R office to provide support services across the programs:

(i) ***Proposal development and IP manager***. This position, reporting to the DDG-R, would carry responsibilities for nurturing the PPP alliances (currently CLAYUCA, FLAR,

FLIPA) and IPR management for contract negotiations for research projects. This position would link closely with relevant scientists and staff in Corporate Services in facilitating development of contracts for research projects and ensuring alliance of projects with CIAT's strategic research agenda.

(ii) ***Senior economist/impact specialist.*** The present weakness of CIAT in this area has been noted above. *The Panel suggests that a senior economist be assigned as a staff person reporting to the DDG-R with responsibility to coordinate monitoring and impact of research.* The DDG-R would use this staff expertise to conduct special ex-post and ex-ante impact studies needed for setting research priorities. This is a function that existed as a project until 2004, but work in this area appears to have stopped. CIAT has a modest level of staff, or counterpart capacity in some of the regions, to execute monitoring and impact studies. What appears to be lacking is senior scientist level expertise to coordinate and focus these studies.

(iii) ***Spatial analysis specialist.*** CIAT has conducted extensive research in spatial analysis and has developed significant capacity in this field. However, this has consumed significant unrestricted core funds over an extended period (US$3.2M since 2003). The capacity that has been built provides unique analytical value. However, it is the Panel's view that this activity should now focus solely on supporting outcome lines within programs on a demand-driven basis. *Hence, the Panel suggests that spatial analysis expertise of the minimum size required for this service role be maintained within the office of the DDG-R*. Where significant capacity is required within this field in outcome lines in the regions, then specialist staff or collaborators should be engaged there to meet this need.

8 ORGANIZATION AND MANAGEMENT

This chapter examines CIAT's leadership, organization and management. It begins with a discussion of leadership and the organization, addressing the organizational structure, decision-making, and CIAT's organizational culture and morale. This is followed by a discussion of research management, and the management of corporate services. The Panel's assessment draws from our interviews, observations, CIAT documentation, and a staff survey. The survey, conducted during the course of the EPMR, was sent to all CIAT staff; 166 staff participated (43 internationally-recruited staff (IRS) and 123 nationally-recruited staff (NRS)). Annex 6 presents the results – excluding the many written comments from staff, which are reflected in this report.

8.1 Leadership and the organization

Organizational structure

CIAT's organizational structure has changed a number of times since the last EPMR, most recently in April 2007. A consolidated version of the new structure is shown in Figure 1.1. As it indicates, the DDG of Research, DDG of Corporate Services, and the Director of Public-Private Partnerships (PPP) report to the DG. The DDG of Corporate Services is a new position, comprised of the consolidation of the former positions of Director of Finance and Director of Administration. Further details and discussion of the research structure are in section 8.2, while discussion of the administrative structure is presented in section 8.3.

Leadership and decision making

The current DG joined CIAT in 2000, shortly after the last EPMR. His accomplishments during this period have included the establishment of CIAT programs in Africa, particularly the highly successful TSBF, and the development of the strategy for a CIAT program in Asia. In addition, he has mainstreamed participatory research at CIAT and more generally fostered innovative research. The DG's commitment to CIAT's mission, his vision, capacity to communicate compellingly and inspire others, and his collegial nature have been strengths that have served him well in leading CIAT. Broad aspects of leadership and management – and financial management in particular – have been weaknesses.

CIAT's current Management Team consists of the DG, the DDG-Research, the DDG-Corporate Services, and the Director of PPP (as well as the DG's assistant as resource person and the Board secretary as secretary). The newly appointed DDG-Corporate Services, who joined CIAT on June 1, 2007, replaced the Director of Administration (and the former Director of Finance) on this team. The position of Director of Cooperation, who had been on the Management Team, was terminated in 2006. The Management Team meets on a weekly basis to discuss key issues facing CIAT, and advise the DG.

In the Panel's view, the Management Team has not operated effectively as a team in recent years. The team has lacked the full mix of skills needed for sound institutional decision-making – in particular in finance and management. And it has not strategically led CIAT through the period of financial crisis. Likewise, the DG has not approached major strategic issues facing CIAT in recent years, most notably the financial ones, with a clear plan and prompt, decisive action. Tough decisions – that required priority action – were not taken in a timely manner, and the problems evolved but were not satisfactorily resolved. The rationale

for difficult decisions, such as downsizing, was not clearly communicated to staff – and the process lacked transparency. In addition, staff perceive that decision-making on operational matters, particularly personnel matters, is not systematic and transparent; this has affected morale. These shortcomings in leadership and management, along with a proposed course of action, are discussed further below.

Management at CIAT below the senior management level has been decentralized in recent years to project managers. Scientists are not trained as managers. Their role is discussed in section 8.2. In addition, senior management makes use of several committees to support decision-making. There are five committees on the research side (Research Management, Biosafety, Laboratory and Agrochemicals, IPR, and DDG/Project Managers). There are 17 committees supporting Corporate Services in key aspects of financial management, personnel management, information management, and institutional security, as well as four personnel advisory groups/union. In the Panel's view, management should review the value and opportunity cost of these 17 committees, and possible means to streamline them.

Organizational culture and morale

Despite the difficult challenges that CIAT currently faces, the Panel found that CIAT management and staff remain committed to the center's mission and their work, and are proud of the center's accomplishments. At CIAT, there is a culture of open discussion, and innovation, entrepreneurship, partnership, equity and excellence are valued. But the culture at CIAT is currently characterized by contradictions. These are the consequence of management practices related to leadership and decision-making, which are not conducive to research excellence or positive morale.

Innovation and teamwork

At CIAT, a majority (59%) of staff respondents to the EPMR staff survey agreed that they find the work environment conducive to innovative research. The Panel heard that researchers have been given a lot of autonomy to do their work. On the other hand, opinions are mixed as to whether the work environment is conducive to teamwork; opinions may vary by work area. Staff and management alike commented that the center's approach to project management – which encourages individual entrepreneurship – creates disincentives for teamwork, both because inter-project collaboration is not supported and managers are at times competing for resources.

Transparency and equity

CIAT's culture and policy framework value equity, openness and participation. However, only 19% of staff surveyed agreed that decisions regarding downsizing were fair – 33% of IRS felt they were fair whereas only 14% of NRS did. Fewer (14%) of those surveyed agreed that the downsizing decisions were transparent (16% of IRS and 13% or NRS); 21% agreed that these decisions were strategically oriented. While the Panel consistently heard that discussion at CIAT is open, we also heard that decision-making is not transparent and the rationale for decisions is not consistently clear. The Panel heard the sentiment, "everything is negotiable," all too often. While equity is valued in principle, in practice CIAT's policies are not applied consistently.

Autonomy and controls

While project managers have a fair amount of autonomy, they have been hampered in their

work by the weak control environment. Only 21% of IRS surveyed agreed that CIAT has effective management systems and controls; among NRS, however, 56% of respondents agreed that CIAT has effective management systems and controls. The Panel observed that at CIAT information systems do not readily provide information needed for project decision-making, across the institute. Poor controls and unsustainable financial management resulted in the imperative to cut costs and terminate staff. These institutional-level decisions have impacted the authority and autonomy of CIAT managers, and the research environment more broadly.

CIAT's financial situation and the nature of subsequent decisions have demoralized staff at CIAT. This problem is more severe among IRS than among NRS. Among staff who responded to the Panel's survey, only 26% of IRS have good morale as a CIAT employee, while a larger 46% of NRS do. The Board and management are aware that morale is a problem, and indicated that it is a result of the financial situation, downsizing, and the atmosphere of uncertainty. The Panel agrees that these events precipitated the downturn in morale. However, the Panel notes that the last EPMR of CIAT (as well as that in 1995), commended management for its handling of staff cuts – in particular for the care shown to staff; that report also stated that the Panel overwhelmingly heard from staff that people in CIAT are treated fairly and equitably.

In the view of the Panel, the downsizing process was not well managed. It should have been more proactive rather than reactive, and more holistic and strategic rather than incremental in approach. The process should have entailed broader participation, clear rationale for position cuts, and effective communication geared to instill trust and buy-in. The Panel sincerely hopes that lessons learned will strengthen management and decision-making processes going forward.

In the view of the Panel, in order to restore staff morale, significant changes are needed to restore staff confidence in CIAT leadership and management. Only 32% of staff surveyed believe that relations between staff and management at CIAT are positive. Only 23% of those surveyed have confidence in CIAT leadership (DG and the Board). Restoring staff confidence in leadership will be a major challenge of CIAT's Board and management in the coming period. The majority of CIAT staff have patiently weathered a prolonged period of budgetary constraints and rounds of retrenchment. Unless there is an appreciable change in CIAT's governance and leadership situation, CIAT risks the loss of a critical number of key scientists over the next few months. The Panel considers this the number one risk to CIAT's future.

[*#13*] *The Panel strongly recommends* that the CIAT Board take rapid and bold actions to reconstitute CIAT leadership and management in the short term. The Panel also recommends that a specific action-plan be put in place to follow up on the implementation of this recommendation by 1 March 2008 in close consultation with the CGIAR.

8.2 Research management

Organization of research

In 2000, at the time of the last EPMR, CIAT had a project-based research management structure built around 16 self-sufficient project groups. Projects were managed by project managers, who were given considerable responsibility with accountability. The project

managers reported to one of two research directors. The EPMR recommended that CIAT seek mechanisms to foster intra- and inter-project integration. CIAT's response was that this would form an input to the strategic planning exercise it was about to undertake.

The sequence of changes in organization of research over the following six years has been described in detail earlier (Ch 2). In 2002, TSBF in Africa became part of CIAT and regional coordinators were appointed. This commenced the building of greater emphasis in regionally based teams. In 2004, CIAT established three Research for Development Challenges (RDCs) that clustered the remaining project teams. The RDCs were designed as platforms for enhanced integration. In 2006, the three RDCs were reduced to the current two – People and Agroecosystems RDC, and Sharing the Benefits of Agrobiodiversity RDC – and were formalized into structures with an appointed leader with budget and personnel authority. By this time, CIAT's research program consisted of 11 projects.

In 2007, in response to the recommendation of a CCER, CIAT reorganized its research around the product concept, which is intended to better focus and integrate major elements of CIAT's research. The six product lines have designated leaders within the existing RDC structure, but the transition from projects is still occurring, as evidenced by some references to old project codes in the current MTP and positions of some staff groupings, which retain their project alliances. However, as noted and discussed throughout this report, CIAT continued to struggle with how to organize its research to achieve the desired integration. Recommended remedies to this situation have been detailed in Chapter 7. Currently, organization of research at CIAT is underpinned by the Research Committee, which is chaired by the DDG Research and has the RDC leaders, Regional Coordinators and TSBF leader as members. The evolution of the organization of research over the last six years is symptomatic of the limited guidance afforded by the existing strategic plan and the need for its renewal (as noted in Chapter 2).

CIAT has started to move towards this renewal. In November 2006, the Board held a strategy retreat. The DDG-R prepared three scenarios of possible futures that focused CIAT's research agenda and accommodated an anticipated saving of about US$2M in the research budget for 2007. The Board and management then developed a revised vision statement (Chapter 2), which they characterized at a February 2007 meeting as a "living document." The Panel views these as positive steps towards a renewed research strategy. However, these steps lagged behind CIAT's changed financial circumstances and its pre-2007 downsizing. The failure to integrate financial planning and management with research strategy and organization has been at the core of the troubles befalling CIAT since the last EPMR.

Focusing the research agenda

Research staff at CIAT numbered 73 IRS and 397 NRS in 2000, and they number 73 IRS and 399 NRS in 2007. Despite the constancy of size in the research staff in 2000 and 2007, the interim has been a time of great flux and, recently, turmoil at CIAT. Between 2000 and 2007, CIAT first expanded its research activity, and increased its staffing greatly (maximum of 108 IRS and 722 NRS in 2005), only to be forced into the present contraction due to financial imperatives. Between 2001 and 2005, subsidized special projects rose from US$11.7M to US$29.2M. Contraction in 2006 and 2007 has resulted in the termination of 25 IRS and 106 NRS research personnel. Such swings come at great cost to staff morale, to the confidence in CIAT of employees, donors and the CGIAR, and fuel the perception of the institute as being unstable.

The expansion of research activity came at a time that management and Board were receiving annual letters from the CGIAR Secretariat warning that low reserves placed CIAT in a perilous position, vulnerable to a change in financial circumstance – precisely the scenario that unfolded in 2005. Today CIAT reserves stand at approximately US$1M compared to US$5M at the time of the 5th EPMR; US$10M (90 days reserve) is approximately what CIAT's reserves should be according to CGIAR guidelines. The Panel wonders whether much of the recent turmoil would have been avoided had CIAT focused on building reserves and stayed closer to its research mission rather than expanding on it.

CIAT Board and management must improve procedures for balancing research ambition with financial reality. From 2000-2005, CIAT expanded its activities, often in areas outside of its traditional core research mission of genetic improvement and NRM. For example, between 2003 and 2006, more than US$1M of unrestricted core was spent annually on Rural Agroenterprises, GIS, and the Rural Innovation Institute. There may be need for CIAT involvement in these areas, but attention must be given to the appropriate scale, potential for impact, sustainability of the resource commitment, and cohesion of the activity with the center's strategic plan. None of these research areas were subject to formal ex-ante evaluation, careful monitoring of impact, or ex-post analysis and none has achieved overall integration with CIAT research outcomes. All three areas have now either been discontinued, or are being downsized subsequent to unfavorable external reviews. Despite these examples of the cost of poor planning, CIAT still has no rigorous formal priority setting system in place, project monitoring is haphazard, and CIAT lacks an appropriate strategic plan *[per Rec. #1].*

The Panel suggests, in conjunction with Recommendation #1, that CIAT formalize and implement procedures for priority setting, research monitoring and impact analysis that inform the process of formulating CIAT's strategic plan.

8.3 Corporate services and management

Corporate Services came into being in June 2007 with the arrival of the new DDG of Corporate Services. It is a consolidation of services that had reported to the Director of Administration and the Director of Finance, as well as two units – Corporate Communications and Capacity Strengthening (CCC) and Information Systems Unit (ISU) – that were previously housed in other parts of the CIAT organization. The department currently has 188 staff, including the DDG (Table 8.1).

The 2007 budget for Corporate Services is approximately US$5.4M, of which US$1.0M is charged to service users. The department's five IRS include the DDG, plus heads of Grants Management, CCC, ISU, and the Gender and Diversity Specialist (in CCC). A discussion of Corporate Services follows.

Financial services

Leadership and structure

CIAT's financial management structure has been in a state of flux since the first quarter of 2006. CIAT decided in early 2006 to abolish the positions of the Finance Director and Director of Administration and created a new post, DDG of Corporate Services.

Table 8.1: Corporate services – staffing in 2007

Unit	Staffing
Finance	22
Grants Management	17
Human Resources	17
Central Services	79
Corporate Communications and Capacity	25
Information Systems	26
Office of the DDG	2
Total	188

Until the DDG of Corporate Services position was filled, management appointed an Interim Finance Director on a part time basis. The Interim Finance Director was also the Director of Public-Private Partnerships (PPP). The Interim Finance Director, an agricultural economist by profession, provided leadership to the finance team and supported the Board and management during the period from April 2006 to January 2007. On 26 January 2007, the DG announced that "CIAT must identify cuts at all levels to adjust to a new budget reality. The post of Director of AGRONATURA and PPP will be part of the 2007 cuts." As a result, the Interim Director of Finance was to be relieved of these duties. The DG announced that until the DDG-Corporate Services was on Board in May, 2007, two mid-level managers would share the responsibilities of financial management. A few days later, on 2 February 2007, the DG announced that "Management, in consultation with members of the Board, has decided to budget scarce resources to bring a management consultant to lead finances from 1st March to 30 April 2007." The two mid-level managers were no longer interim leaders of financial management. After the management consultant completed his two-month assignment, the former Interim Finance Director, whose post as Director PPP was no longer on the cut list, continued to assume the Interim Finance Director role until the new DDG of Corporate Services joined CIAT on 1 June 2007. All these actions occurred during the time of the Board intervention, discussed in section 9.4.

The management consultant provided the Board and management with valuable advice in devising a Business Plan for the financial recovery of CIAT, proposed an indirect and direct cost recovery policy and methodology as well as a partial restructuring of the finance department, and more specifically the establishment of the Grants Management Unit. The Grants Management Unit is responsible for the administration of restricted research funds, from proposal development through execution and reporting; it supports donor relations and acts as a focal point for financial administration to regional offices.

The new DDG of Corporate Services comes from years of successful private sector management experience with expertise in business development and marketing. He has no substantive financial management, human resources and information technology expertise, which form the major parts of his portfolio at CIAT.

The Panel has tried to make sense of management's actions from April 2006 to date in the areas of financial management leadership. Management's action was intended to primarily correct the perceived weaknesses that were assumed to have contributed to the current financial situation. In the Panel's view, the decisions that were taken were reactive, unsystematic and did not address the underlying issues faced by CIAT. They may have even compounded the problems. One member of the Board, in an informal interview, characterized such actions as "knee-jerk management." It is very difficult to understand CIAT's decision to abolish the Finance Director's post and hire a DDG of Corporate Services with skills in business development and marketing at a time when the financial management issues faced by the organization should take center stage. The rationale for aggregating the functions of the project office, grants administration, donor relations and regional financial administration under Grants Management Unit is questionable. Grants' financial administration was previously housed under the Financial Controller of CIAT. The newly structured Grants Management Unit is led by an international staff with limited experience and no qualification in financial management. The Panel struggled to understand the business logic in such restructuring and assignments of responsibilities.

CIAT's Finance Department until March 2006 was led by a Finance Director with units responsible for accounting (controller's unit), restricted project administration, a treasury function and a budget management unit. It is staffed with very competent personnel and is in a position to produce monthly, quarterly and yearly financial and management information. It is highly focused on processes and the production of various reports. The implementation of Oracle financials has strengthened the department's service provision and keeps proper books of accounts. The provision of financial information and strengthening of internal financial controls are likely to be further enhanced when the remaining modules of Oracle financials and reporting tools are fully implemented. The Finance Department has provided information on the underlying financial performance of the organization over the years to management and the Board. However, the finance leadership was not forceful, assertive or clear enough in its presentation for management and the Board to fully grasp the impending financial difficulties and take appropriate corrective measures early enough. Further, as noted elsewhere, the Board and the DG lacked the financial competence to understand and take action on the underlying issues. The Finance Department, in fact, contributed to the problem by crafting a 'creative accounting' solution to balance the books year-on-year by using the so-called "full cost recovery" methodology and consequently just postponing the inevitable problem to a later date.

The Panel believes that the current structure and leadership require major adjustments for the Finance Department to deliver on its key organizational objectives.

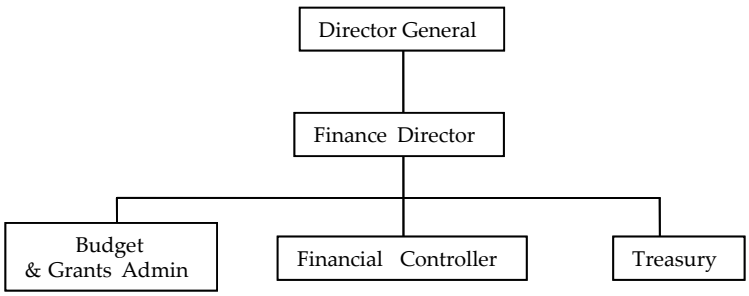
[*#14*] *The Panel recommends* that: (i) CIAT establish a Finance Director position and recruit an experienced financial manager with an internationally recognized professional accountancy qualification. The Finance Director report directly to the DG to ensure the relative independence of the position and to enhance internal financial controls, and should be a member of the Management Team. (ii) The recently established Grants Management Unit should be abolished and its functions disaggregated.

The focal point for financial administration of regional offices should be placed with the Financial Controller's Unit. The current Budget office could be reconstituted as the Budget

and Grants Administration Unit so that the financial planning, monitoring and reporting of activities under different funding sources are managed in a coherent manner.

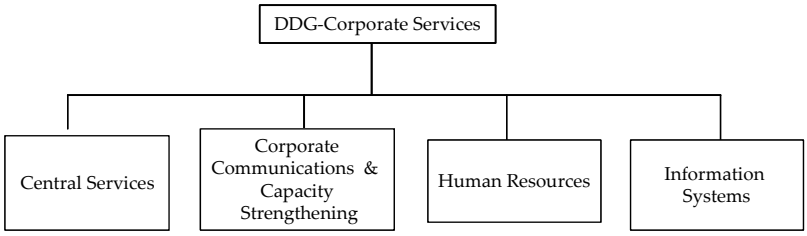
It is important that the Finance Director sets up a mechanism whereby project proposals and donor reporting go through proper vetting and clearance processes, and that the DDG-Research and the Finance Department work very closely. The Budget and Grants Administration Unit should be charged with the responsibility to give clearance to budgetary provisions in project proposals with due attention to making sure that all elements of direct and indirect costs are included. A proposed organizational structure for the finance department is shown below.

Figure 8.1 Proposed finance organizational structure



As a result of moving finance out of Corporate Services, the new structure for Corporate Services would be as shown in Figure 8.2. Corporate Services would incorporate retained services as a result of the dissolution of PPP, including the administration of AGRONATURA.

Figure 8.2 Proposed corporate services organizational structure



Provision of financial information

The provision of relevant, useful and timely financial information to all levels of management and the Board is critical for decision making. This is a key responsibility for the finance function. Currently, CIAT finance staff provide lots of financial statistics on the basis of what they consider required by management and the Board. The Board and management request additional analysis on an ad hoc basis. There are no agreed and standardized formats.

The Finance Department needs to re-examine its financial information provision critically. *The Panel suggests the Finance Department develop a reporting package including the following: (i) Cash flow analysis by currency phased by month at each reporting period with adequate commentary on the impact of currency on both receipts and expenditure; (ii) Critical highlights of statutory financial statements emphasizing risk items such as overdue receivables, provisions; and (iii) Budget performance reporting, providing detailed variance analysis (aggregated and disaggregated depending on the user of the information).*

In the formulation of budgets, *the Panel suggests that CIAT adopt formats that clearly indicate the build-up of (i) Projected revenue by source of funding and by currency including phasing either on a monthly or quarterly basis; (ii) Assumptions, that are explicitly stated, regarding the build up of revenue projections; (iii) Costs by source of funding and types/objects of expenditure (staff, activities).*

The Panel suggests that CIAT draw lessons from other CGIAR centers where budgetary information and actual financial performance include quarterly reporting, variance analysis, and forecasts which revise Approved Budgets in the light of actual performance, supported by appropriate commentaries.

The current Oracle system in place is yet to be utilized to its maximum. There are many opportunities for such an Enterprise Resource Planning system to provide useful and timely information. CIAT should explore the possibility of using Web-based reporting, almost in real time, to support researchers and managers.

Human resource management

Since the time of the last review, human resource management for NRS and IRS has been consolidated into one office, led by the Human Resources (HR) Manager – who formerly led the HR function solely for NRS. The office handles personnel management, staff development, occupational health and industrial safety, and employee/family social welfare for CIAT employees. In recent years, as the Human Resources Manager notes, his office has focused largely on its administrative functions at the expense of strategic involvement in staff planning and development, and related organizational change efforts. This section reviews CIAT staffing, human resource policies and practices, and strategic human resource management.

Staff composition and downsizing

To effectively recruit, develop and retain high-caliber staff, CIAT's approach to human resource management must remain responsive to its programmatic needs. Since the time of the last review, major changes that impact human resource management have included increased decentralization of operations, financial constraints and the need to downsize, and an increase in project-funding relative to unrestricted income. Trends in staffing are reviewed in light of these developments.

In 2007, CIAT has 86 IRS, 621 NRS (based in Colombia), and 91 locally-recruited staff (LRS) at sites outside of Colombia. The number of IRS is virtually the same as it was at the time of the last EPMR, while the number of NRS has decreased by 6%. Staff numbers increased dramatically in the interim, primarily due to successes in project-based fundraising. In 2005, CIAT had 108 IRS and 722 NRS, prior to the 2006 and 2007 downsizing.

Table 8.2 presents staffing since the last EPMR. As it indicates, overall staffing of research has increased, with a 15% increase in NRS positions, although IRS positions declined slightly (by 3%) during the period. Concurrently, NRS positions in research support declined by 26% and in management and finance declined by 31%. Since the last review, the number of IRS positions in research support and in management/finance increased by four positions, with the bulk of those in the management/finance areas; the proportion of IRS in these areas increased from 12% in 1999 to 18% in 2007. The current DG assumed authority in 2000; research staffing in 2000 and 2007 is comparable, as is NRS staffing in research support. NRS administrative staffing has declined in the interim, and a number of shifts occurred in IRS management positions.

Table 8.2. Staffing by organizational area

Area	1999		2000		2007		Change from 1999 to 2007	
	IRS	NRS	IRS	NRS	IRS	NRS	IRS	NRS
Research	75	346	73	397	73	399	-3%	15%
Research Support	6	119	3	87	7	88	17%	-26%
Management and Finance	3	193	9	162	6	134	100%	-31%
Total	84	658	85	646	86	621	2%	-6%

While the majority of CIAT staff are based at headquarter in Colombia, staff are located in a total of 16 countries. CIAT is becoming increasingly decentralized; in 1995 25% of IRS were out-posted; in 2000 31% were out-posted, and in 2007 47% were out-posted. Much of this change has been associated with the growth in the regional operations of CIAT (Chapter 5).

CIAT has a truly international staff, with 35 nationalities represented. The national origin of CIAT IRS has shifted since the time of the last review, in parallel with the move towards greater focus of operations in the key regions. Since 2000, there is an increase in representation from Africa and Asia, and a decrease in representation from the Americas (particularly North America), among CIAT's IRS, as shown in Table 8.3. At the time of the last EPMR, US nationals and Colombian nationals constituted the two largest groups (27% and 14% respectively). As of June 2007, these two nationalities remain the largest groups, although US nationals have declined to 16% of CIAT IRS, and Colombian nationals are now approximately 12% of IRS.

Staff downsizing, in response to CIAT's financial constraints, resulted in the elimination of 27 IRS and 130 NRS positions during 2006 and 2007. Some of the individuals in these positions retired or were at the end of their CIAT contract; some individuals returned to CIAT in other positions. The distribution of staff cuts is shown in Table 8.4. As it indicates, 25% of IRS positions were cut from the pre-downsized December 2005 level, including 24 of 93 research positions (26%). Among NRS positions, 18% of positions were downsized from the December 2005 level, with the greatest proportion (23%) in research support. Women comprised 19% of IRS positions in 2005 – and held 19% of positions terminated. Among NRS, women comprised 38% of the staff in 2005 – and held 37% of the NRS positions terminated.

Table 8.3. Region of origin of CIAT IRS – 2000 and 2007

Region	2000	2007
Africa	14%	**27%**
Europe	29%	26%
Central & South America	21%	19%
North America	31%	**17%**
Asia	2%	7%
Oceana	2%	5%
Total	100%	100%

Table 8.4. Positions terminated in 2006 and 2007 by area

Area	2006 Terminations		2007 Terminations		Total Terminations		Total Dec-05 staffing		Cuts as % of Dec-05 staffing	
	IRS	NRS	IRS	NRS	IRS	NRS	IRS	NRS	IRS	NRS
Research	14	42	10	40	24	82	93	466	26%	18%
Research Support	1	12	0	12	1	24	8	103	13%	23%
Management and Finance	2	11	0	13	2	24	7	153	29%	16%
Total	17	65	10	65	27	130	108	722	25%	18%

As noted in Section 8.1, the vast majority of staff who responded to the EPMR survey felt that decisions concerning the downsizing were not fair, equitable, or strategically oriented. A key factor in downsizing decision-making was the funding source of each position, and the nature of the staff contract; freeing up unrestricted funds was a priority, as was terminating positions that had a lower associated termination cost. Unfortunately, this approach did not necessarily coincide with programmatic priorities. In addition, professional NRS research staff felt particularly targeted by the cuts – as did Latin American IRS. Among IRS who left during the downsizing, four were retirees. Excluding these four, 39% of the remaining 23 IRS staff in positions downsized were Latin American and 30% were North American; of these 23 individuals, 35% were Colombian and 22% were from the United States. The Panel notes that the downsizing of Colombian IRS – in the absence of transparent rationale – did not send a positive message regarding CIAT's commitment to Colombia or Latin America.

CIAT's overall staff turnover has been elevated since 2006, due to the downsizing. Taking a longer view, staff turnover (percent of staff leaving each year) averaged 12% for IRS and 16% for NRS from 2001 through 2006, which are reasonable rates. During this period, turnover among female staff at CIAT was considerably higher than that among male staff, for both IRS and NRS, as is shown in Table 8.5. Turnover was also higher among female than male staff during the prior review period, from 1995 through 2000. Turnover averaged 19% for IRS women from both 1995 through 2000 and from 2001 through 2006; for NRS women, turnover declined from an average of 27% to 23% during these two periods. Turnover was comparable among male IRS and NRS, during both periods. As CIAT does not consistently survey or document exit interviews of departing staff (although this has begun to change), the Panel

cannot explain the difference between female and male turnover rates. Our impression is that higher turnover rates among women are generally related to personal factors – age, stage in career, family interests, other job opportunities – as opposed to CIAT's work environment. CIAT's upcoming Gender and Diversity Audit could explore this question further.

Table 8.5. Average turnover over two periods

	NRS	IRS
1995-2000		
Male	19%	18%
Female	27%	19%
Total	22%	18%
2001-2006		
Male	11%	10%
Female	23%	19%
Total	16%	12%

Since the time of the last EPMR, the proportion of CIAT's IRS who are women has declined slightly from 23% to 21%. The last EPMR commented that the proportion of women decreases as one goes up the organization ladder. Currently, 28% of senior scientists are women, although only 7% of regional coordinators or unit heads are women, and none of the senior management are women. Among NRS, the proportion of women has increased slightly from 35% to 37% since the time of the last EPMR; 38% of NRS supervisors and managers are women, although only 17% of the 12 senior NRS managers are women.

Policies and practices

The last EPMR Panel was favorably impressed by CIAT's personnel policies. Many of these are now in need of updating. Leadership is needed to rethink policies, update systems, and ensure that policies are consistently applied and support CIAT's values and programmatic objectives. Brief comments on selected CIAT policies and practices follow.

Recruitment and contracting. As CIAT programs have become increasing project-driven and decentralized, human resource management has become more complex and related policies have not been systematically applied. Overall, decision-making regarding recruitment and contracting is decentralized, but management can override decisions. The HR office's role varies, depending on the staff group.

- ***For IRS*** – the HR office plays an advisory or support role; decisions are taken by the relevant project manager, director, the DDG, or the DG.
- ***For NRS*** – the HR office works with the relevant manager through the process; typically the HR office recommends a salary and in most cases but not all the manager accepts this recommendation.
- ***For LRS*** – the HR office is not involved; the recruitment and contracting are handled directly by the regions.

Since 2000, CIAT has reduced considerably the number of IRS and NRS on continuing appointments and on contracts of more than one year in duration, and has increasingly

employing staff on contracts of one year or less in duration, in response to financial constraints. In 2000, only 6% of IRS were on contracts of one year or less in duration; in 2007, 46% of IRS are on such contracts. In 2000, 34% of NRS were on contracts of one year or less; in 2007 53% of NRS are on such contracts. In 2000 while one IRS was on a part-time contract, seven are currently on such contracts. In addition, newer contracts have clauses that enable CIAT to terminate employee contracts on short notice, such as 30 days, in case of termination of donor funding. Short-term contracts and contingency clauses can be highly detrimental to staff morale, commitment and productivity – and can affect CIAT's ability to recruit staff as well, particularly where relocation is involved. CIAT management should expeditiously review its contracting practices and take measures possible to avoid the related potential loss of staff.

As discussed in section 5.5, in the Panel's view, CIAT has not progressed to a global institution in its administration of human resources. In recruitment, contracting, and other policy and service areas, CIAT's human resources office is oriented largely towards headquarters. As recommended in Chapter 5, CIAT's administrative systems need to be revamped so as to more responsively support the region's operations. The result, in the area of human resource management, should be a system that is consistent, coherent and equitable across CIAT's programs, globally.

Compensation. CIAT salaries for IRS have not increased for seven years. While IRS are eligible for bonuses, these have not been consistently awarded and, in recent years, have been modest and contingent upon available funding. Salaries of new recruits are market comparable, which has resulted in internal inconsistencies and, in some cases, the upward adjustment of salaries of comparable positions. Salaries also may be adjusted upon promotion. CIAT's salaries for IRS were below 2005 CGIAR averages, and their position has presumably eroded further in the past two years.

IRS do not all have the same benefit package, as it has been modified a few times over the years for new recruits. Differences in conditions among regions have not been adequately considered. Management and the Board have discussed moving IRS to a single benefit package, with monetization of benefits – although the proposal has not moved forward yet. Such a policy can provide new incentives or disincentives for prospective employees to choose to work at CIAT – and for current employees to choose to stay. In light of the potential impact of changes in the benefit package on CIAT's capacity to attract and retain staff, the Panel believes that proposed changes on that front should be thoroughly reviewed and should have support of CIAT's Principal Staff Association.

The compensation for NRS union employees, who comprise from 25% to 30% of total NRS, is adjusted every two years following negotiations. For non-union positions, salaries are reviewed and adjusted periodically based on market conditions and associated staff turnover. In general, compensation of NRS is competitive, and CIAT is considered a good employer.

*Performance appraisal and development***.** The last EPMR Panel found the performance appraisal system at CIAT to be excellent. In 2006, the process was not fully carried out for all employees; management considers the system in need of updating, and has plans to do so. According to respondents to the EPMR staff survey, 58% of IRS agree that performance appraisal at CIAT is systematically and fairly carried out, 56% of NRS do not agree. Only 22%

of NRS and 19% of IRS agree that performance appraisal at CIAT is clearly linked with rewards. While 54% of NRS agree that CIAT provides good opportunities for professional advancement, 56% of IRS do not agree.

While CIAT's policies encourage professional development, in recent years financial constraints have limited opportunities for training and staff development. According to the CGIAR Performance Measurement reports, in 2004 and 2005 CIAT led CGIAR centers in terms of average number of days IRS and NRS staff spent in training (seven to eight days per year), and the percent of the budget that the center spent on training (more than 3%). In 2006, CIAT's training budget dropped significantly – and in that year the center was one of only two without an active leadership development program covering current and prospective staff in managerial positions.

The last EPMR commented on the creation of the Staff Development Fund, which opened up training and educational opportunities to staff for job-related and personal development. That Fund's budget has declined steadily from US$0.14M in 2000 to US$0.069M in 2006, and is projected to decline further yet in 2007. Likewise, the number of people trained through this fund declined from roughly 600 in 2000 to half of that in 2006.

In the Panel's view, while recent shortcomings in the performance appraisal and development front at CIAT were triggered by financial constraints, they appear symptomatic of a broader lack of strategic management of human resources, discussed further below.

Gender and diversity initiatives

Since 2000, a series of activities have been carried out at CIAT around gender and diversity (G&D) issues, aimed at building awareness and improving the organizational climate. This work at CIAT is aligned with the CGIAR G&D Program. Initiatives at CIAT have included training, mentoring, awareness-building events and initiatives, support groups, and input to CIAT policies – such as a revised draft recruitment policy and improved new staff orientation. A related initiative was the establishment of a day-care center on the CIAT campus in 2001, which has been particularly beneficial to women employees (both IRS and NRS) with young children. CIAT tracks and the DG reports to the Board on data associated with gender staffing, recruitment and retention. The DG is committed to the issue, although budgetary constraints have hindered initiatives. Plans are underway for a G&D Audit at CIAT that, in the Panel's view, should provide valuable insights for organizational development.

In 2006, CIAT implemented a harassment policy, in line with a new Colombian law. The center has taken this policy seriously and the Panel is pleased to see this development. CIAT's G&D Committee has worked on a campaign against sexual harassment, which included seminars and workshops. These are important steps. The Panel, however, heard complaints about work-place harassment. While the Ethics Committee formally deals with such issues, in the view of the Panel, an individual who is seen as neutral, confidential and independent should be designated to handle such complaints. This individual – who could be an ombudsman – would listen, serve as an information resource, offer options, and help solve the problem.

Spouse employment continues to be an issue for IRS at CIAT headquarters. The spouse of a CIAT employee based in Colombia is not permitted to work in Colombia, in accordance with

CIAT's headquarters' agreement and Colombian law. Under some arrangements, the spouse can work at CIAT – if a suitable opportunity arises. The constraints to spouse employment impacts CIAT's ability to attract and retain employees of two-career couples. The issue was pursued by the former DG, up to the ministerial level of the Colombian government, to no satisfaction. In light of efforts that have been made in the past and the high rate of unemployment among professionals in Colombia, the current DG is not optimistic that efforts would result in policy change.

Strategic human resource management

CIAT spent some US$10.1M in "phase out costs" associated with staff terminations since 2003 (US$5.8M of which was in 2006 and 2007). The downsizing that occurred at CIAT in the late 1990s cost an additional US$10.0M over four years, as reported in the last EPMR. In both cases the cost of terminating staff was largely the result of former policies and local labor laws. However, the potential high cost of doing business at CIAT underscores the need for strong leadership and planning on the human resource front. In recent years, human resource management has lacked the attention and support of CIAT leadership. It has largely been an administrative function. The Human Resources Manager has had limited authority, and the decentralization of decision-making on this front has caused inequities, reduced transparency, and weakened morale. This is directly linked with issues of leadership and decision-making more broadly at CIAT, as discussed in section 8.1. Ultimately, deficient human resource policies and management can damage staff productivity and retention.

[#15] *The Panel recommends* that human resource management become a priority at CIAT; this should entail aligning human resource planning with broader program and financial planning efforts, streamlining human resource business processes to improve service delivery, and renewing policies and their consistent application.

Specific initiatives could include the following.

- ***Human resource planning*** – should be integrated with programmatic and financial planning. This should begin with an assessment of staffing needs in the short and long-term, relative to existing competencies. It should link a strategic institutional perspective with development plans for teams and individuals. Leadership and management development, as well as G&D, should be integral elements of this plan. The planning process can help align individual and team aspirations with program strategy and budgetary priorities.
- ***Human resource business processes*** – should be examined for opportunities to improve service delivery and operational efficiency. Currently, CIAT staff – particularly those in the regions – are frustrated with what they perceive as the HR Office's lack of responsiveness; likewise, the HR Office has frustrations with the demands placed on them by managers and staff. The business-process review should aim to streamline the HR Office's operating procedures, clarify needed changes in roles and responsibilities (for the office and their customers), and improve service delivery.
- ***IT opportunities*** – should be explored, as part of the business-process review, to enhance the capability and efficiency of the HR Office and to enable CIAT managers and staff to readily access team and personal HR information. In particular, human resource management in the regions should be integrated with that in headquarters.
- ***Policy renewal*** – has been initiated, and the process should move forward expeditiously. It should be accompanied by procedures that are consistently applied and ensure

transparent and equitable treatment. In particular, CIAT's policies and procedures associated with recruitment, contracting, compensation, and performance management should be designed to attract, develop and retain high-caliber employees. Policies should be aligned with new program needs and financial considerations, and should be easy to administer.

- ***Employee feedback mechanisms*** – should be broadened to include regular use of staff surveys. CIAT has an impressive tradition of communication between management and staff, which has been fostered through staff associations and the union. Staff attitude and customer satisfaction surveys can be valuable, low-cost tools for learning that can complement existing mechanisms. According to the CGIAR Performance Measurement report of 2006, CIAT was one of only three CGIAR centers that did not use such all-staff surveys in 2005 or 2006, and share results with staff. Such initiatives should be developed in consultation with staff. An associated process should be put in place to systematically document staff exit interviews.

Administrative services

The former Director of Administration was involved in the founding of CIAT in 1967, and has been a central player in its management for the past 40 years. It will be a challenge to the new DDG of Corporate Services to draw from his predecessor's institutional experience – and incorporate new ideas and approaches to the way CIAT does business.

All administrative service areas have faced budget reductions in recent years, along with staff downsizing. Services offered and the associated organizational arrangements are similar to those at the time of the last EPMR. Prior to that review, the administration had undergone major changes in terms of reductions in staffing and budget, and development of new ways of doing business, including outsourcing and a strengthened service orientation.

The EPMR staff survey results presented a mixed view concerning the effectiveness of CIAT's administrative services (Annex 6). A split of 48% of staff surveyed agreed that services are effective, whereas 48% disagreed (with 17% strongly disagreeing). Responses of IRS and NRS were similar, although IRS were a bit more critical. Comments to the Panel focused on the perceived high cost of administrative services and their management. In the Panel's view, the DDG of Corporate Services should assess the need, rationale, quality, and cost effectiveness of services, and opportunities for improvement that address customer-service concerns. He should take a fresh look at further opportunities for consolidation and incorporation of new technologies. Further, as CIAT's research strategy and staffing plan unfolds, opportunities should be explored to further develop partnerships for increasing use and sharing costs of CIAT's headquarter facilities (as discussed in section 6.5), or closing underutilized facilities.

A brief discussion of CIAT's administrative services follows.

Maintenance

The maintenance group covers the physical plant, automotive workshop, and transportation. Its services include utilities (water, electric, and telecommunications), building and water network maintenance, air conditioning, and lab equipment. Most of the services are contracted out, and some of these contracts are with cooperatives formed by former CIAT employees (as described in the last EPMR). In response to budgetary constraints, measures have been taken to reduce utility use (electric, water, lighting, gasoline), and this has included

installation of new systems or equipment. In addition, operational and maintenance schedules of CIAT's infrastructure have been reduced. The signs of deferred maintenance are evident in the CIAT campus. It is essential that management make well-calculated decisions when deferring maintenance to ensure that unnecessary risks are not taken and that schedules can resume in a timely manner.

Food and housing

CIAT's Food and Housing Unit provides cleaning, food and beverage services, receptionists, and housekeeping for the accommodations. Most of the services are outsourced, an arrangement that has been in place since the time of the last EPMR. Food and housing services are self-financed, while cleaning services are not. Cleaning services have been reduced to cut costs, which is a source of customer dissatisfaction.

Purchasing

Two separate units handle purchasing for CIAT – the office of Maintenance and Procurement, in Cali, and the CIAT-Miami International Purchasing and Logistics Office. In total, these offices purchased US$8.1M in 2006, including local purchases (US$2.4M), contracting (US$4.6M), and international purchases (US$1.1M, managed primarily through Miami). The CIAT-Miami Office focuses on specialized supplies. CIAT purchases account for roughly 60% of purchase costs in the Miami Office; CIP, WARDA, and other CGIAR centers also use the service. In Cali, CIAT contracts out administrative services (cleaning, gardening, security, among others), as well as research support; some of these services had been handled in-house prior to the last EPMR. Since the time of the last EPMR, further efforts have been made to cut costs and improve procurement services through better planning, negotiation with suppliers, simplification of processes, implementation of Oracle, and staff training. The Miami office has made strides in covering virtually all of their costs through service fees, which was not the case in the past. That office is exploring the use of Web-based and other technology to improve service. The CIAT Procurement unit in Cali also provides warehousing, fixed assets control, vehicle fleet administration, and oversees the mail office. In the view of the Panel, the DDG of Corporate Services should take a fresh look at possible additional opportunities for cost-saving and consolidation of CIAT's purchasing operations.

Institutional protection

The security conditions in Colombia have improved overall in recent years, as is reflected in the increase in foreign investment. However, information provided by CIAT management indicates that Cali is the most insecure City in Colombia (in terms of homicides) as it is on the drug trafficking route to the coast. While CIAT staff are conscious of security risks, the Panel did not sense a climate of concern. To the contrary, staff seem comfortable moving about in Cali, although they are less comfortable traveling into the countryside and there are some parts of the country that they consider off limits due to security risks. Like other CGIAR centers, CIAT has field operations in locations where risks are elevated, although none presents a particular risk at the current time. CIAT's Institutional Protection unit focuses on incident prevention. The unit develops security guidelines and procedures, and provides security of CIAT's headquarters and research sites in Colombia, using a force of CIAT security guards (12) and contracted guards (9). As a result of recent budget cuts, services provided to CIAT staff have been cut, such as surveillance of homes of IRS. The Panel agrees with a decision taken at the recent Board meeting that prior to downsizing in security, Management should evaluate the risks.

Legal

CIAT has a full-time lawyer representing the center on legal matters. This includes advising on legal issues and documents, representing the center in its negotiations with the union, and supporting work with CIAT's collaborative networks (such as FLAR). The lawyer oversees CIAT's insurance coverage for headquarters; the regional offices coordinate this elsewhere. An area in which CIAT is finding an increasing need for legal counsel is intellectual property management. While CIAT's current lawyer provides support in this area, it is one in which he is not a specialist and CIAT is likely to need outside counsel occasionally, as is discussed in section 6.4. The same could be said for other specialized legal areas.

Information technology

The Information Systems Unit (ISU), under Corporate Services, provides information technology and communications support to CIAT scientists and management. It is staffed with skilled local professionals whose expertise includes software development, IT infrastructure maintenance and support skills. Since 2000, the ISU has made excellent progress in several areas, including the following:

- Strengthened procedures and software applications associated with institutional memory, to organize, store and provide data and information created in research and administrative processes within CIAT.
- Development and implementation of IT applications that provide support to research, such as: Genetic Resource Unit, Project Manager Software, and Information System for Analytical Labs.
- Storage of data and information resulting from CIAT's research projects, creating scientific databases that are readily and securely available.
- Implementation of administrative and financial information systems based on open, online, integrated and web-based systems; the purchase of an Enterprise Resource Planning (ERP) system (Oracle Financial) together with the development and integration of the other systems.
- In telecommunications and network infrastructure, CIAT changed from proprietary systems to services held by external providers that use best practices and permit CIAT to have secure systems with continuous service and 24 hour support.
- CIAT became part of the local university network, as well as national and regional high-speed networks, connected via the Internet, which provide economic, technical and educational benefits.

CIAT must continue to make strategic investment in IT and communications systems, including upgrades to its ERP Financial Systems to further help improve productivity to support researchers, disseminate knowledge and improve its administrative and financial management. The Panel commends the ISU for its achievements obtained with limited resources.

Corporate communications and capacity strengthening

The Corporate Communications and Capacity Strengthening Unit (CCC) was formed in March 2006 as a merger of three units: Communications and Graphic Arts, Training and Conference Services, and the Library. The aim was to better integrate information and knowledge sharing initiatives, and find cost savings through consolidation. CCC has responsibility for a range of functional areas including communications, library, knowledge sharing, media, scientific training, conferences, and graphic arts. The unit consisted of a team

of 34 in December 2005, and is targeted to end 2007 with 20 staff, following downsizing and retirements.

Following input from within CIAT, CCC defined its new focus to consist of three areas – in which the team has begun to make progress:

- External communications – media presence and revitalizing CIAT's corporate image
- Internal communications – reactivating the Intranet and making it relevant to the regions
- Training – e-learning and university partnerships

There have been several developments in the area of CCC since the time of the last EPMR. CIAT has capitalized on new technologies and opportunities for collaboration. In the past six years, CIAT has completed the electronic cataloguing of all CIAT authored publications, which now may be accessed online. The CGIAR Virtual Library has enhanced access of CIAT researchers and collaborators to information from other centers – and enhanced access of others to information generated from within CIAT. As the Internet has improved access to information, the use of CIAT's online library resources has increased (as confirmed by regularly monitored web statistics), while researchers' physical visits to CIAT's library have declined.

In terms of external communications, CIAT produces press releases and works with TV and radio teams, mainly in Colombia and Latin America. Some stories have been translated and adapted to non-Latin audiences and disseminated more widely in collaboration with the CGIAR Secretariat's communication team. CIAT, in collaboration with the CGIAR Secretariat and seven CGIAR centers, has posted a media specialist in East Africa, who develops stories in consultation with researchers, for media release. In addition, CCC has modified CIAT's annual report structure and content, and the tagline (from "Solutions that Cross Frontiers" to "Partners in Research Cultivating the Future").

Concerning internal communications, CIAT's Intranet has been further developed and is now launched in both English and Spanish. CCC has enhanced the coverage and reach of CIAT's internal newsletter ARCOS. In 2003, CIAT's Annual Review Week was renamed Knowledge Sharing Week. This annual event is designed to improve communication, relationships, and collaboration within CIAT. Staff from CIAT headquarters and the regions participate in the week's meetings, information fair, informal networking, and social events; the week, which culminates with awards, generates discussion and excitement around CIAT's programs.

In terms of training, in 2005 CIAT organized its first multi-institutional distance education course, in collaboration with the National University of Colombia, Bioversity International (former IPGRI), and REDCAPA. This initiative was followed by a distance learning program between CIAT and the University of Florida, in which CIAT researchers are serving as thesis supervisors; CIAT's first distance education student will graduate from this program in April 2008. CIAT has also continued to offer training opportunities at headquarters, in which over 2,600 students and professionals have participated in short courses or carried out thesis research at CIAT (BS, MS, PhD), during the last five years.

The Panel is pleased to see the organizational development and outputs of CCC in recent years. The unit has reengineered processes and initiated creative outsourcing in order to continue to offer its primary services with a reduced staff. We are impressed by the

innovative collaborative arrangements, within the CGIAR and with other institutions, which leverage resources, talent, and access to relationships. The Panel encourages the head of CCC to continue to explore promising opportunities on this front.

The Panel agrees with the priorities of CCC going forward, and believes that there is much work ahead. Concerning training, the Panel cautions that CIAT's programs should continue to drive the training strategy and agenda, despite CCC's new place in CIAT's organizational structure.

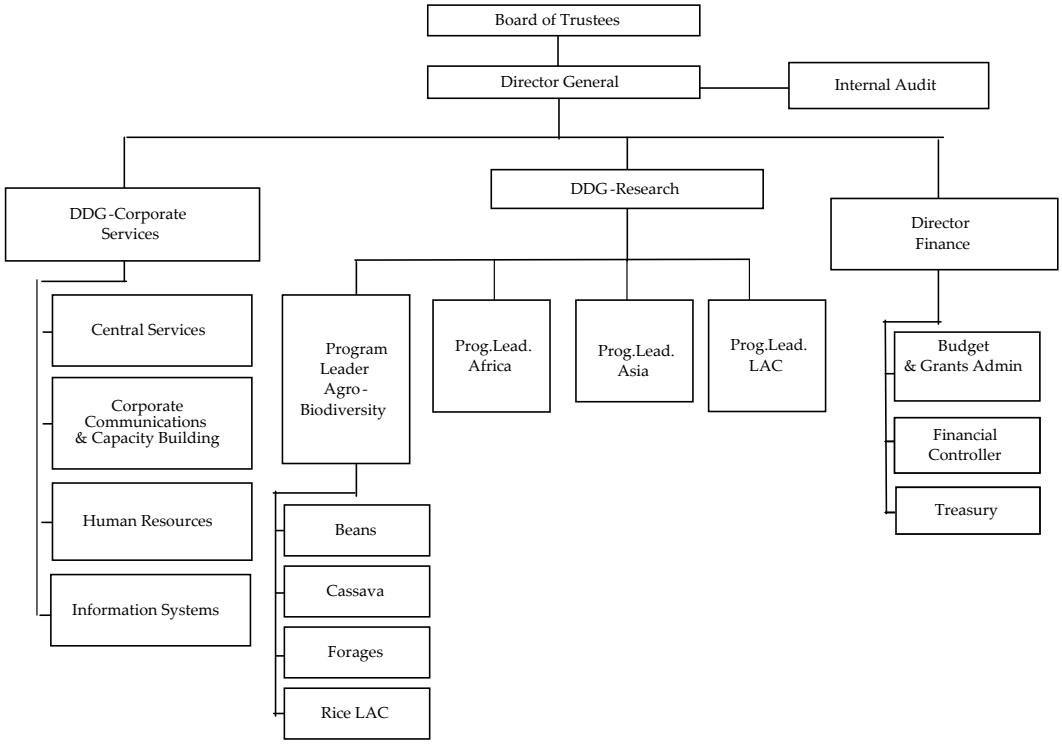
Concerning external communications, in the Panel's view, the head of CCC has an appropriate role and is capable of leading her expanded team, although the reduction in staff may cause constraints. Leadership is needed on the corporate communications front. The Panel received volumes of material and presentations from CIAT – and while much of the material was highly valuable, it did not present a consistent or coherent corporate message – targeted to the needs of its audience. *The Panel suggests that the head of the Corporate Communications and Capacity Strengthening unit be given authority to play a leadership role in driving CIAT's external communications, working with the DG and relevant managers.*

The Panel believes that the relationship-building component of external communications needs greater focus within the organization – particularly in regards to donor relationships. The DG leads this effort and others in CIAT are involved in various aspects. The Panel sees the need for a focal person, within the Office of the DG, to support the DG in this work. This would not be a new position but rather a reorganization of existing roles within the DG's office, following the development of CIAT's next strategic plan. This individual would then develop the accompanying fundraising strategy and coordinate its implementation, track targeted relationship-building efforts, and ensure that CIAT presents a consolidated front to its donors and other important institutional alliances. *The Panel suggests that CIAT reorganize existing roles in the Office of the DG and appoint a special assistant for institutional alliances and donor relations.*

8.4 Recommended organization structure

The recommended structure for CIAT, which brings together the recommendations in research management and corporate services, is presented in Figure 8.3.

Figure 8.3. Proposed organizational structure



9 GOVERNANCE

This chapter examines the past performance of the CIAT Board, its current positioning, and opportunities for improvement. It explores the Board's size and composition, its structure and operations, and the Board's role. It closes with a discussion of challenges in governance and controls.

9.1 Board size and composition

CIAT's current Board of trustees is presented in Annex 7, a discussion of which follows.

Board size

According to CIAT's by-laws, the center's Board is comprised of no more than 17 members, including four ex-officio members (the DG and three representatives of the Colombian government), and a Colombian national elected by the Board. Currently the CIAT Board has 14 members. Since the last EPMR, the Board's size has ranged from a high of 16 in 2000 to a low of 12 members in early 2007. (In addition, CIAT has a non-voting *emeritus* Board member, who was a member of CIAT's founding Board in 1968.) Variations in Board size during the review period have been due to the timing of term completions, resignations and appointments – and to a decision taken in 2005 to reduce Board size to 14 members (10 at-large and four ex-officio), in accordance with the recommendations of a CIAT Board task force on Board structure and operations. It should be noted that while the Board officially has 14 members, two ex-officio host-country Board members have not attended meetings in recent years. While the Board is currently at its target size, eight of 10 at-large Board members will complete their second term between 2009 and 2011. In order to level future turnover at one to two Board members per year, the Board plans to expand during the coming two years and then stabilize at 10 members at-large by 2010.

Board composition

CIAT's Board has expertise across a wide range of scientific disciplines, and experience spanning the regions in which CIAT works. Board members have had strong knowledge of science and, for most of the period since the last EPMR, limited financial expertise. In 2005, the Board began to focus on this gap.

The CGIAR defines professional qualification in financial management for CGIAR Board membership as (1) a recognized professional qualification in finance (preferably CPA, CA or equivalent), and (2) substantive experience in directly managing significant financial matters in the public or private sector. In 2005, CIAT appointed a Board member with broad financial planning and management expertise, but without the CGIAR-defined qualification. In 2006, CIAT appointed a Board member with such expertise, although that individual subsequently resigned. At the close of the May 2007 meeting, the Board appointed a highly accomplished individual whose experience meets the CGIAR's qualification in financial management. The Board recognizes the need to strengthen itself further in this area, and is seeking a nominee who is a CPA or the equivalent. The Panel agrees with this assessment, and believes that such expertise is essential for providing oversight of CIAT's accounts and financial controls.

Board members have been selected largely from outside of the CGIAR system, as independence was a priority. In 2005 the Board decided to limit CGIAR Board nominees from three to two, in order to provide more flexibility to the Board in the member selection process. Latin Americans continue to dominate the Board in terms of nationality mix, due to the host country agreement (requiring three ex-officio Colombians plus an additional Colombian Board member). Since the last EPMR, membership of Europeans has declined considerably and, as total Board size has also declined, the proportion of developing country representation on CIAT's Board has increased, as Table 9.1 illustrates.

Table 9.1. Board composition by region – full Board

Region	2000-2001	2007-2008
South America	6*	6*
North America	2	3**
Europe	5**	2
Africa	1	2
Asia	2	1
Total	16	14
% developing country	50%	64%

* Includes 4 Colombians

** Includes the DG

There also has been a shift towards a more regionally balanced Board. This is particularly evident when the trend is viewed excluding the ex-officio (four) and additional (one) host-country Board member, as Table 9.2 shows. While noting that it would be desirable to increase Asian representation on the Board, particularly in light of CIAT's growing presence in that region, the Panel is pleased to see the overall trend towards a more regionally representative Board.

Table 9.2. Board composition by region – excluding host country and ex-officio members

Region	2000-2001	2007-2008
South America	18%	22%
North America	18%	22%
Europe	36%	22%
Africa	9%	22%
Asia	18%	11%
Total	100%	100%

While the proportion of Board members from developing countries has increased since the last EPMR, their role in Board leadership positions has not. Currently, each of the four Board members from a developed country holds a position of either Board or committee chair – while none of the chair positions are held by Board members from developing countries

(although that of vice chair is). The Panel encourages the Board to strive for a broader mix in its leadership.

In 2000-01, six of CIAT's 16 Board members (or 38%) were women – or 50% of the (12) members at-large; currently, four of CIAT's 14 Board members (or 29%) are women – and 40% of the (10) members at-large. It should be noted that two women left the Board in 2006, due to competing demands on their time, and that the Board is seeking to add a woman as its next recruit. The Panel notes that in addition to a decline in women Board members since the last EPMR, the number of women in leadership positions at the center has also declined (see section 8.3). The Panel urges CIAT to redouble efforts to reverse this trend.

9.2 Board structure

The CIAT Board has five committees, discussed below, which report to the full Board: Executive and Finance Committee, Program Committee, Audit Committee, Nominating and Governance Committee, and Risk Management Committee. The Board also has a sub-Committee on Compensation, and a sub-Committee on Security Matters. In addition, the Board appoints a Scientific Advisory Committee for the TSBF Institute (as discussed in section 7.5).

Executive and Finance Committee

The Executive and Finance Committee acts on behalf of the Board between meetings, and serves as the Board's finance committee. Members include: the Board chair, vice chair, the DG, and the chairs of the Program Committee, Audit Committee, and Nominating and Governance Committee, as well as one additional Board member. The committee has assumed a prominent role in overseeing CIAT's financial situation and associated changes, which was the focus of their deliberations during the Panel's visit.

While minutes were recorded for the majority of interim Executive and Finance Committee meetings, these were not circulated to the full Board prior to the May 2007 meeting. As a result, at least some Board members who were not in the committee felt ill-informed and on the periphery at the May meeting. The Panel underlines a comment made in the CCER concerning the importance, particularly during the current situation, of documenting interactions and keeping the whole Board up to date.

During the Panel's visit, the Committee did not receive sufficiently relevant and useful information in advance of the meeting. This hampered members' ability to contribute. Further, while committee members were aware of the financial issues, they lacked the financial expertise to challenge underlying assumptions to conclusions and projections.

Program Committee

All Board members serve on the Program Committee, which advises the Board on CIAT's research strategy, programs, and scientific quality. More than half of CIAT's five-day Board meeting is typically devoted to program-related matters – two times per year. In addition, Board members are encouraged to attend the annual program review (or Knowledge Sharing Week) held a week before the spring Board meeting. The committee interacts with scientists, management and partners, is very committed to its role, and has a deep understanding of CIAT's programs.

The Program Committee tackled an ambitious agenda during the Panel's visit, including the Medium Term Plan, research organization, regional integration, partnerships, CCER follow up, specific programmatic issues, staff awards, and more. Despite the duration of the formal meeting (two days) and strong facilitation by the chair, the time seemed insufficient to delve fully into many items. This was due to operational issues in some cases (late documents or lengthy presentations), a big volume of material, and a large number of participants – the full Board and some staff. The discussions tended to be wide-reaching, and did not sufficiently focus on selected strategic issues.

Audit Committee

The Audit Committee is normally comprised of three or four Board members, excluding the Board chair and DG. The committee provides oversight of CIAT's annual financial audit, and establishes and monitors internal financial controls and reporting, and management policies, systems, and procedures. The Audit Committee works closely with the Executive and Finance Committee; the former is concerned with monitoring compliance and controls, using information about past and present performance, while the latter is forward looking and focused on budgets, financial planning, and funding prospects.

The Audit Committee, which the Panel observed in May 2007, is led by a chair who is an experienced management consultant with a general understanding of financial management. The Audit Committee as a whole, however, did not have sufficient financial management skills to probe management and auditors in sufficient depth. The Panel was told by the BOT that the current Audit Committee chair has the required financial expertise. The Panel, however, notes that the CGIAR's 2006 Performance Measurement (PM) Indicators clearly stated that CIAT's Audit Committee chair "does not meet the definition provided in the PM instructions."[14] In other words, the Audit Committee chair does not have professional expertise in financial management.

The Committee did not follow a systematic approach in its interaction with the internal auditor, external auditor, or interim director of finance. The Panel was informed that the chair of the Audit Committee in 2006 and 2007 held two private sessions each year with the senior Audit partner from the external audit team. The previous Audit Committee chair met annually, in private (outside of the committee agenda), with the senior Partner from the external audit firm. Good audit committee practice suggests that such closed sessions are held with all committee members present and not with the chair alone.

The Audit Committee, like the Executive and Finance Committee, was not provided with relevant and useful information in advance of the meeting, to aid its deliberations. The documentation consisted of PowerPoint presentations. The external auditor's presentation included a clean audit opinion – and no discussion of the center's financial difficulties. The Audit Committee did not raise this omission or engage the auditor in discussion of CIAT's financial difficulties. Additional discussion regarding the Audit Committee may be found in section 9.4.

[14] Report on the Verification of Selected CIAT 2006 CGIAR PM Indicators, a note sent to the DG of CIAT dated June 18, 2007.

Risk Management Committee
The Board's Risk Management Committee (RMC), which was established in 2006, consists of three Board members, including one representative of the Program Committee and two representatives of the Audit Committee. The RMC reports to the full Board. Its role is to advise and monitor risk management at CIAT as well as to review the proposed annual statement of the Board on risk management. The RMC is expected to base its activities, analyses, and suggestions on the outcome of the semi-annual center-wide assessment of major strategic, operational, and financial risks – conducted by the CIAT Internal Risk Management Committee (CRMC) – as well as the likelihood and exposure of the center to these risks.

The committee, which works with the CIAT (staff) Risk Management Committee, has made progress in identifying risks, but has not yet assessed or begun to monitor these. The role of this committee will be critical to effective Board oversight of risk, and to incorporating risk management more broadly into Board decision making. Additional discussion regarding risk management may be found in section 9.4.

Nominating and Governance Committee
In 2006, the Board renamed the Nominating Committee as the Nominating and Governance Committee, and broadened its terms of reference. The committee, which is comprised of at least four Board members, nominates candidates for Board membership, nominates the Board chair and vice chair, and advises the Board on governance-related issues. The committee also oversees induction of new Board members. During the Panel's visit, the committee considered current Board composition and member tenure, developed a plan for succession and renewal through 2010, drew up a profile of a desired nominee, and considered Board member assignments in non-research areas.

In the view of the Panel, this committee has brought an impressive mix of new members to the Board. The committee has aimed to seek broad input to its nominating process, such as by seeking nominations from staff, donors, and partners. In addition, the Board weighs not only the candidate's profile and expertise, but the candidate's commitment, fit, and availability to serve – which is gauged through interviews. Once identified, the nominee is invited to observe a meeting, to gain a realistic understanding of the time involved, before agreeing to serve. The prospective Board member is also provided with a valuable orientation of the center and the Board, and is matched with a Board "buddy" for coaching. The Panel commends the Board's approach to member induction. In addition, the Panel is pleased to see the "Governance" role added to the Nominating Committee, and feels that this role should be developed more fully.

9.3 Board operations

This section comments first on CIAT's Board policies and procedures, then reflects on broader aspects of Board operations and practices that impact upon Board performance.

Policies and procedures
The 2006 CCER on Governance, Management, and Finance commented on the strong effort the Board has made since 2001 to create a comprehensive framework of policies and procedures, which are in keeping with best practices in CGIAR centers. The CCER noted, however, that although the Board Manual includes a policy on Staff Concerns (p. 73), there is

no clear distinction between a process for "whistle-blowing" and the role of the Board as "court of last resort" for personal grievances. The Board has begun to move forward on this front. The EPMR Panel underlines the importance of the CCER recommendation, and urges the Board to adopt a policy and procedures to cover the situation of whistle-blowing and consider the appointment of an ombudsperson or other means of providing this role.

Board operations and practices

CIAT's Board is comprised of highly accomplished individuals, and the chairs are skilled at facilitating meetings. BOT meetings are characterized by an open, collegial atmosphere, hard work, mutual respect, quality deliberations, and a strong sense of commitment and purpose. Senior staff attend BOT meetings, and Board members make opportunities to talk with staff and understand CIAT's programs and operations. The BOT was supported for 15 years by an excellent secretary (who retired in 2007), as evidenced by the quality of minutes and records, and the up-to-date BOT manual. In addition, the committees and the BOT take self-assessment seriously.

In order to strengthen performance, in recent years the BOT has increased the number of meetings (from one to two per year), expanded interactions with management and scientists, broadened BOT engagement between meetings, instituted retreats to focus on important issues, expanded the Board's skills' mix to include management and finance, and instituted self-assessments at the end of each committee and BOT meeting. The Panel commends these developments.

In the Panel's view, while the quality of deliberations is high, the Board's time is not optimally spent and operational matters hinder Board performance. Particular areas that could be enhanced include information provided to the Board, the Board's workload and agenda, and performance measurement.

Information provided to the Board

Documents prepared for the May 2007 BOT meeting were not consistently provided in advance and their quality was uneven. Several documents were handed out during committee or the BOT meetings. Financial documents did not clearly lay out assumptions or include scenario planning. A draft of the new CIAT MTP (2008-10) was circulated during the week of the meeting. Staff presentations to the BOT were uneven; many were too long and few highlighted key issues for Board discussion. A more orchestrated effort is needed to ensure that documentation and presentations are designed and delivered to optimize use of Board time and facilitate strategic discussions.

The Board's workload and agenda

In addition to serving on the full Board, the majority of CIAT's BOT members at-large are on at least three Board committees (because all are on the Program Committee and a majority is on the Executive Committee). Each BOT member also provides oversight of particular research and non-research areas within CIAT. The breadth of information that Board members need to process and discuss is significant. In addition, the time available for in-depth strategic discussions is limited. Further, the open nature of Board meetings, while a positive reflection of CIAT's culture, can at times hinder the actual openness and focus of discussion. On this point, the Panel was surprised to learn that the Board did not have a closed, full-Board session to discuss CIAT's financial situation. Suggestions for addressing these concerns include:

- Ensuring that the role of individual Board members, in their ongoing oversight of specific research and non-research areas, is clear and linked with Board priorities
- Assigning members to introduce and provide strategic focus to complex agenda items
- Dividing into parallel sessions to address specific topics in depth
- Selectively, making more use of closed Board and committee sessions to foster focused, frank discussion of issues

Performance measurement
In the past year or two the BOT has elevated its attention to performance indicators, particularly those associated with CIAT's financial health. These indicators have driven performance on the financial front in a manner that wasn't evident in prior years. The Panel believes that the BOT, in consultation with management, should broaden this practice and establish key performance targets for CIAT's programs and management, and track progress against these according to an agreed timeframe. Doing so will clearly communicate the Board's priorities and expectations, and help motivate performance accordingly.

[*#16*] *The Panel recommends* that the Board, in consultation with management, institute measures to strengthen Board operations and strategic focus; measures should address information shortcomings, the Board's heavy workload and agenda, and priority performance indicators.

9.4 CIAT in distress – and the Board's role

This section focuses on the Board's role during the time of financial and related stresses at CIAT. It begins with an overview of the role the Board has played in recent years, including its intervention, its strategic leadership, and its appraisal of the DG. This is followed by a discussion of the nature of governance and the control environment at CIAT, including what catalyzed the recent financial crisis, the evolution of the problem and response since 2000, internal controls and risk management. It closes by looking forward – with recommendations relating to governance and the control environment.

The Board's role
Intervening mode
Since the time of the last EPMR, the BOT has evolved from a role that was described as overly respectful of the line between Board and management, to an intervening mode in which the BOT has become intensely involved in discussions of critical issues and decision-making. A marked shift occurred in late 2005, when the BOT became aware of the gravity of CIAT's financial situation, which it had failed to fully understand or act on prior to that time. During the past 18 months, the BOT chair has been speaking on a weekly basis with the DG, the Executive and Finance Committee has met frequently (10 times in 2006 and 10 times from January through May 2007), and the full BOT has increased meetings from one to two per year. During this time, the BOT has provided oversight and guidance to management relating to the financial crisis, and the BOT has aimed to ensure that financial decisions were aligned with research strategy.

However, a BOT intervention is not "business as usual." As of mid-July 2007, there is uncertainty concerning the duration of this intervention. While the Board chair's May 2007 letter to the Interim Director of the CGIAR indicated that the BOT will maintain its current level of engagement until May 2008, some other BOT members and management do not

seem to be fully aware of this expectation – and explicitly told the Panel that they expected the intervention to end in 2007. In the Panel's view, CIAT will not be perceived as a stable institute until it emerges from BOT intervention.

The Panel has reflected considerably on the efforts that CIAT has made in the past 18 months, since the BOT intervention began. In the Panel's view, the Board's dedication to CIAT and commitment to shepherd the center through this difficult period have been exemplary. The Panel's assessment, however, is that the intervention has not resulted in the resolution of CIAT's underlying problems. While scientific programs at CIAT continue to be impressive, financial and management challenges continue to loom large. Since March 2006, the center has not had a permanent Director of Finance or the equivalent – which is essential in the view of the Panel – and no plans are underway to recruit one (as of mid-July, 2007). Only 23% of staff surveyed by the EPMR Panel expressed confidence in CIAT leadership (DG and the BOT), and the Panel believes that the center risks the resignation of a critical number of key scientists over the next few months. The Panel has concluded that fresh approaches are needed in terms of leadership and governance at CIAT, and that the BOT should end its intervention as soon as possible.

[#*17*] <u>The Panel strongly recommends</u> that the Board lay out clear parameters and a timetable to end, as soon as possible, its intervening mode so that normality can return to CIAT.

Strategic leadership and oversight

While the CIAT Board's active involvement in the financial realm is a recent development, since the last EPMR the Board has provided ongoing guidance to the center on the research program. The 2000 EPMR urged the Board to refocus its attention on strategic issues of resource allocation and the monitoring of implementation. The Panel believes that the growth of project-funded activity at CIAT, from 2000 through 2005, was not strategically driven and weakened CIAT's research focus. Further, the downsizing that followed was conducted in successive rounds and overall has not resulted in a clear strategic repositioning. As previously noted, only 21% of CIAT staff surveyed by the EPMR considered the staff downsizing to have been strategically-oriented, and only 14% of staff agreed that it was transparent.

The Panel believes that the BOT did not provide strong strategic leadership and oversight for much of the period since the last EPMR. More recently, management and the current BOT have initiated steps to strengthen oversight and renew the research strategy. The Panel considers that this process, integrated with improved financial and human resource planning, should move forward expeditiously.

Appraisal of the DG's performance

The DG is currently in the middle of his second five-year term at CIAT. In May, 2006 the Board instituted a new approach for appraising the DG. Each Board member completes an assessment form ranking 21 aspects of the DG's performance. The Board chair reviews these and provides a summary to the DG, in the presence of the full Board. Prior practice entailed the chair seeking informal input from each Board member then having private conversation with the DG (of which there was no record). The Panel observed the BOT session in May 2007 in which the Board chair synthesized and presented Board members' feedback, and the DG provided a brief response. This was followed by a one-on-one conversation between the

DG and the BOT chair. CIAT staff was provided an opportunity to complete a questionnaire regarding the DG's performance, although the process did not feed into the Board's assessment this year.

The Board's appraisal of the DG's performance, which the Panel observed, appeared balanced, indicating both strengths and weaknesses. However, while the appraisal identified crucial leadership and management weaknesses, the Board did not take commensurate measures to rectify these vital soft spots in general management that had a significant bearing on CIAT's past performance and its future success. *The Panel suggests that the process for appraising the performance of the DG should be conducted against pre-agreed measurable goals, should incorporate staff feedback, and should result in concrete actions designed to deal with identified weaknesses.*

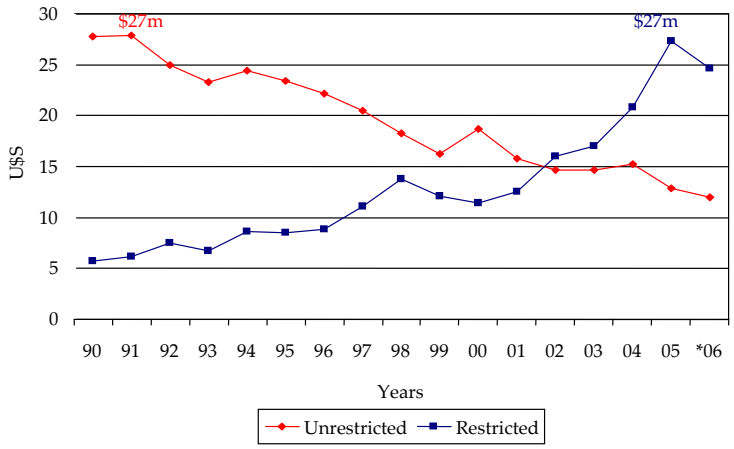
Challenges – governance and controls

A discussion follows of what catalyzed the recent financial crisis, the evolution of the problem, the center's response, and internal controls and risk management.

The catalyst of the crisis – the funding trend

As Figure 9.1 indicates, CIAT's funding mix has changed significantly since 1990. In 2000, when the current DG assumed leadership, the funding trend was clear and a corresponding adjustment to the cost structure was imperative. *Why did it take so long for the CIAT Board and management to chart the right financial management strategy?*

Figure 9.1 Unrestricted and restricted funding 1990 – 2006 US$M



The evolving financial problem and response

In a memorandum of May 3, 2007, the CIAT Board chair wrote to the Interim CGIAR Director requesting support of US$1.5M to help CIAT out of its financial crisis. In this memorandum, the Board chair affirmed that the CIAT business plan would resolve the center's solvency problems by 2008. The memorandum asserts that *"the main source of financial problems in the recent years has been diagnosed as inadequate budgeting and project management processes, not helped by deficiencies in information systems. …* [Although] unrestricted income had been fairly stable between 2001 and 2004, this crisis that hit in 2005 could have been foreseen because of the rapid increase in subsidized special projects

between 2001 and 2005, from US$11.7M to US$29.2M. *Board and management did not react in a timely fashion to this evolution. The Board did not get fully engaged until late 2005*" (Panel's emphasis).

While the Board did not get fully engaged until late 2005, there were clear indicators of financial problems and internal control breakdowns requiring strategic and sustained response from the Board and management to bring CIAT to a healthy financial position. Management began to take stop-gap measures, back in 2002 and 2003, but the response and the Board's oversight were not sufficient. Some examples follow.

- The Third Quarterly Financial Report of 2002 to the Board stated that the DG convened an all-staff meeting at which he presented CIAT's funding trends from 1993 to 2002, including the decline in unrestricted contributions and increase in restricted funding. The DG concluded that the "Center cannot continue operating under the present cost structure. … CIAT is not facing a crisis at present; however the distribution of costs must be recognized."

- At the Board meeting in December 2002, the DG reported on the need for structural adjustments in response to the decline in unrestricted funding over the prior 10 years. He explained that "the strategy adopted to face these changes in the funding structure were on the one hand to come up with ideas and measures to make savings in expenditures, and on the other to move more expenses to restricted funding through [a] full cost recovery (FCR) mechanism, whereby special projects would be charged what things really cost and which have been historically heavily "subsidized" by core funds." [15] He further stated that the Fifth EPMR recommended that CIAT elevate the priority assigned to the redesign of its financial information systems, processes and procedures, and that the financial system's core module – Oracle General Ledger – was expected to be implemented in early 2003.[16] (As of mid-2007, implementation is still not fully complete.)

- In December 2003, the DG reported to the Board that the "CGIAR Centers' finances are managed under a high degree of uncertainty. The management team is proposing implementing reductions in core allocations for 2004 and 2005. This will compensate part of the imbalance between income and expenditures in unrestricted funds."[17] Any measures taken were insufficient to offset CIAT's financial difficulties.

The financial indicators used by the CGIAR, short-term solvency and adequacy of reserves, showed that CIAT was at no point during the period 2000 to 2006 in a healthy position. Regular quarterly and monthly financial information provided to management during the period indicated clearly the financial difficulties faced by the center. The DG's reports to the Board and to its Executive and Finance and Audit Committees highlighted a number of times the precarious financial situation. The CGIAR Director wrote to the CIAT Board chair and management at the end of every financial year and following the annual review of centers' performance indicators that CIAT needed to take corrective measures to solve its financial problems. This did not result in a considered financial strategy designed to put the center's finances in a more sustainable footing.

[15] Report of the DG to the BOT: Meeting BOT 48: 2-6 December 2002, page 40

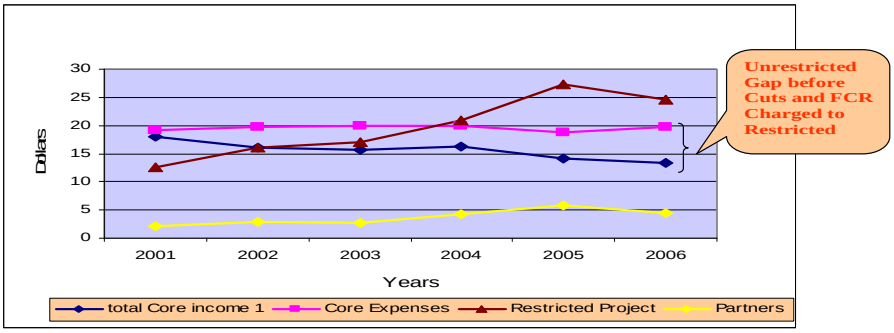
[16] Ditto, page 41

[17] Report of the DG to the BOT: Meeting BOT 49 (4-5 December 2003, page 43)

While management recognized the underlying structural shift of funding from unrestricted core to restricted project funding several years ago, it did not understand the implications of this shift to the sustainability of the center's financial health, and did not take appropriate or timely measures to correct the situation. Instead, the center continued to live beyond its means and adopted the method of FCR to balance its books at the end of each financial reporting period. The FCR method, as employed by CIAT (from 2002 until 2007), is unconventional and inconsistent with the normal usage in the financial management profession.

CIAT's FCR method consisted of two elements. The first was to transfer part of the excess expenditure that could not be met by unrestricted funding to special projects to the extent that these costs could be legally covered in accordance with projects agreements. The second element involved 'internal borrowing'; the Finance Department and Project Leaders would 'negotiate' passing certain expenditures which were not absorbed by unrestricted funding to special projects in one financial period with the understanding that these funds would be returned to projects in the following year. The 'rich' project leaders became internal bankers to the center. The cumulative internal debt to special projects reached close to US$4.0M in 2005. The inability to pay this unconventional internal debt was compounded by the strength of the Colombian Peso against the US dollar, which resulted in increases in local costs, and by the cancellation of expected "program restricted[18]" funding in 2005 from a major donor.

Figure 9.2 Unrestricted Gap 2001-2006 US$ Million



1 Unrestricted income + self-generated

Figure 9.2, which was presented by management to the 2007 EPMR Panel and the Board, clearly shows that CIAT was living beyond its means since 2002. CIAT's core expenses were consistently higher than its unrestricted revenue. Management's response was typically reactive. It entailed cost cutting and staff terminations at the end of the financial years in 2003 (US$2.5M) and 2004 (US$1.8M). Such actions could not stop further drastic measures in what CIAT management calls 'phase out costs' amounting to US$2.8M in 2006 and US$3.0 M in 2007. Since 2003, CIAT effectively spent some US$10.1M in restructuring costs.

[18] "Program Restricted" is a funding arrangement that is half-way between core/unrestricted and project restricted funding. Depending on the donor, the program restricted could be allocated to a particular program or region. It is more flexible than project restricted funding.

In May 2007, CIAT management and Board agreed to meet financial milestones, upon which half of the World Bank's US$1.5M emergency funding is contingent. Foremost among these is the need to complete staff restructuring, improve estimates of income, improve estimation of restricted project implementation, implement cost recovery policy, restrict capital spending, and prepare a sound 2008 budget. Management and the Board have committed themselves to meeting these milestones.

The Panel reviewed Board minutes, management reports and held discussions with Board members, management and staff to fully comprehend the underlying causes of the current financial difficulties at CIAT and the responses thereon. **The Panel concludes that various players contributed to the financial distress.**

(i) The DG and senior management recognized the significant shift in funding from unrestricted to restricted revenue and the need to make corresponding 'structural adjustments' to CIAT's cost base. However, they failed to comprehend the full implications of the funding shift or to take timely and appropriate corrective actions, which should have included building adequate reserves. The DG, who recognizes his weakness in financial management, was not helped by the finance team, which did not insist on a resolution of the problems. It is very clear that CIAT currently lacks professional financial management expertise at a senior level.

(ii) The financial management of the center provided management and the Board with timely financial information highlighting gaps between core income and expenditures. The financial reports, however, failed to articulate and interpret in clear and unambiguous manner the long term implications of this persistent gap. The financial management team was not confident enough to push for necessary changes. It assumed a role of simply informing. Further the team adopted the FCR method, which management and the Board accepted without fully understanding the mid- to long-term consequences. While the FCR policy may have helped shift some costs from unrestricted expenditure to special projects, it led to unsustainable internal borrowing. These 'creative accounting' techniques were unsustainable, contrary to best financial management practice, and precipitated the latest financial crisis.

(iii) The external auditor gave an unqualified opinion on CIAT's financial statements during the review period. While the Auditor made a series of recommendations in a number of areas, there was only one reference to the FCR method and this did not convey a serious concern. The Auditor recommended that CIAT "register, as accounts receivable from the donors for the projects, only those expenses approved by them, particularly when assessing the possibility of registering a full cost recovery." The Auditor stated that "CIAT booked expenses in restricted projects, which subsequently are not recognized by the donor. This generates accounts receivable and revenues that are not real."

(iv) The Board of Trustees, and its Executive and Finance Committee and Audit Committee, were informed of the financial situation at CIAT through the DG's Reports, quarterly financial reports and the Financial Director's presentation at formal sessions. The reports provided to the Board indicated that management was taking measures to overcome financial difficulties and subsequent years would be better. The Board took these reports at

face value. The center responded to the CGIAR Secretariat's letters to the CIAT Board chair and management on the center's financial situation with optimistic updates on corrective measures that were being and would be taken. The Board did not have the financial expertise to understand the magnitude of the financial challenges that CIAT faced, and drew comfort from unqualified external auditor's reports. The use of terms, such as FCR, in non-conventional ways made financial reports less understandable and at times may have even misled some Board members.

(v) The CGIAR system has performance indicators that detect warning signs of impending financial crisis. However, the CGIAR does not have strong incentives to influence a center's response to such warnings. The CGIAR Secretariat sent letters to CIAT concerning these warnings, and provided technical support to the center in the preparation of its 2006 business plan. In 2007, after CIAT's financial performance indicators had shown warning signs for five years, the center approached the World Bank for emergency funding. At that stage, the World Bank made its emergency funding to CIAT contingent upon the center's performance in meeting milestones; the World Bank provided a clear message with incentives that have motivated CIAT to respond accordingly.

The CIAT Board chair's memorandum to the CGIAR Interim Director stated that, ***"the main source of financial problems in the recent years has been diagnosed as inadequate budgeting and project management processes, not helped by deficiencies in information systems.*** While these deficiencies contributed to CIAT's financial problems, along with those listed above, the single most important shortcoming was weak independent Board oversight of the center's financial management and an overly optimistic management in dealing with financial issues. "A key feature of any effective financial management system in a Center is a strong, independent thinking standing committee drawn from the Board of trustees to provide the necessary overview and control of the Center's finances."[19]

Internal controls and risk management

CIAT's financial challenges are symptomatic of a weak control environment and insufficient risk management systems. Management has begun to address some of these issues. Work remains on critical ones, including:

- The need to establish an appropriate policy framework, procedures and processes for decentralized project budgeting, management, implementation, monitoring and reporting;
- The need to complete implementation of an integrated financial management information system that incorporates regional administrative systems with those at headquarters.

Because these issues were not dealt with effectively, they have resulted in the current financial crisis. If these issues are not addressed in an effective manner and with a sense of urgency, they are likely to lead CIAT into yet another financial crisis and irreparably damage the reputation of the organization as a credible research institution.

CIAT began to address risk management in 2004, although progress has been slow. Their

[19] CGIAR Financial Management, Financial Guidelines Series, No. 1, Revised February 2007, page 4.

efforts coincided with those of other CGIAR centers[20]. CIAT has undertaken risk analysis and a plan of action to manage risk, with the help of the CGIAR Internal Audit Unit. The analysis was primarily done by staff with some guidance from the Board. In May 2007, the Board adopted a statement on Risk Management and Internal Control. The key risk areas identified include: quality of science, financial compliance and administrative and legal integrity. The major risk identified is the changing funding environment; the statement indicates that the 2005/2006 financial crisis came about largely because the center did not adequately identify or respond to decreasing unrestricted funding from traditional donors. The mitigation plan includes a series of governance, management and administrative plans that, *if fully implemented*, will bring CIAT back to financial health.

The Panel was pleased to see risk management prominently on the agenda of the Board. However, the Panel believes that the Board needs to play a more strategic role in its oversight of risk. The Board should undertake in-depth reviews of risk identification, assessment and mitigation plans and challenge management on its assumptions. As noted in the 2006 CCER on Governance, Management and Finance, "in the words of the Board's own minutes, an effort should be made to 'introduce risk management into decision-making.'"

Looking ahead – governance and the control environment

The current Board inherited problems that pre-date the terms of its current members. The Panel believes that there is a strong chance of financial recovery provided the Board and management continue to take deliberate and timely actions in the near to medium term. This will only be possible if the Board and management have a clear understanding of the underlying causes of the current problem and take appropriate actions, including major adjustments to roles and responsibilities for financial management, risk management and internal control throughout the institute.

In the Panel's view:

(i) The Board and management should develop an Internal Control Policy framework, clearly defining roles and responsibilities for financial management including budgetary planning, approval and regular review at different levels of the organization; the policy should spell out the type and frequency of financial information provided to the Board and management and the decisions required at each stage of the review process;.

(ii) The Board, in line with its recent decision, should strengthen its financial oversight role by appointing a Board member who is experienced in financial management, with an internationally recognized certified/chartered accountancy qualification; this individual should serve on both the Executive and Finance Committee and the Audit Committee.

(iii) The Audit Committee should hold closed, private sessions at all of its meetings with the External Auditor, the Internal Auditor and the Director of Finance separately, probing deeper into the functioning of the internal control system; the Audit Committee could use the guidance notes provided for such purpose by the American Institute of Certified Public Accountants and/or the Institute of Internal Auditors.

[20] The CGIAR Secretariat included in its Financial Guidelines Series 1 the COSO (Committee of Sponsoring Organizations of the Treadway Commission) Internal Control Framework encouraging centers to implement appropriate internal control polices. The Financial Guidelines also emphasized the development of an adequate financial management system within the CGIAR Centers' as a key element in ensuring that financial risks are managed.

(iv) Risk management issues should become a standing agenda item of the Board, discussed by the full Board following prior expert review by the Audit Committee.

In response to CIAT's financial management weaknesses, **[*#18*] *the Panel strongly recommends* that CIAT strengthen the Board's expertise in finance/accountancy, establish an internal control policy framework, hold closed sessions of the Audit Committee to probe deeper on the functioning of internal controls, and make risk management a standing agenda item of the Board.**

It is the Panel's considered view that the BOT fell short of good governance practice in two of its critical responsibilities. First, the Board's oversight of the performance of top management was not sufficient to identify weaknesses early and take decisive, appropriate and timely actions to resolve these in the long-term interests of CIAT. Second, the Board's membership did not include financial expertise that could have helped it spot early signs of financial difficulties and unconventional accounting practices. In this regard, the BOT was not provided with clear and explicit advice from internal or external professional advisors.

[*#19*] *The Panel strongly recommends* that the Board reflect critically on lessons learned from the recent period of distress and move expeditiously, in consultation with the CGIAR, to reinvigorate the leadership of the Board and its committees, as needed.

Annex 1
CIAT 6th EPMR (2007) Panel membership

EDUARDO VENEZIAN (Chile) – ***Panel Chair***
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Experience: 2000-present.; Assistant & Associate professor. Dept. of Agricultural Economics and Rural Sociology, Auburn University. 1990-2000; Research Assistant/Instructor. Center for

Agricultural and Rural Development (CARD), Iowa State University. September 1985 - June 1988; Research Assistant. Dept. of Agricultural and Applied Economics, University of Minnesota. June 1984 - August 1985. CIMMYT 1996-2003 Affiliate Scientist. Economics Program; July-Aug, 1993 & June-Aug, 1996 Visiting Scientist. Econ Program; 1988-1990 Pre-doctoral Research Fellow. Economics Program.

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Name: RUBEN ECHEVERRIA - ***Panel Secretary***

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Annex 2
Terms of Reference for External Program and Management Reviews (EPMR) of CGIAR Centers (as endorsed by the CGIAR in 1997)
&
CGIAR Science Council: Strategic Issues for the 6th EPMR of CIAT (October 2006)

Background

Context

The Consultative Group on International Agricultural Research (CGIAR) is an informal association of over 50 members that supports a network of 16 international research Center in agriculture, forestry and fisheries. The CGIAR aims, through its support to the Center, to contribute to promoting sustainable agriculture for food security in developing countries. Because the Center constitute the core of the CGIAR, the effectiveness of each Center is crucial to the continued success of the CGIAR (as a System).

Each Center is an autonomous institution operating within the mandate assigned to it by the CGIAR, and is governed by a legally constituted Board that has full fiduciary responsibility for managing the Center. To ensure accountability in an essentially decentralized system, each Center is expected to be responsive to the CGIAR, which provides financial support for its work.

The CGIAR has established a tradition of External Program and Management Reviews (EPMRs) to provide a mechanism of transparency and accountability to the Members and other stakeholders of the CGIAR System. EPMRs are the joint responsibility of SC and the CGIAR Secretariat, and are conducted for each Center approximately every five years. As each Center is autonomous, EPMRs provide a measure of central oversight and serve as an essential component of the CGIAR's accountability system.

Integrated System of Reviews of Each Center

Besides the EPMRs, Center Commissioned External Reviews (CCERs) are undertaken at each Center. These CCERs are commissioned by the Center Boards to periodically assess the quality and effectiveness of particular aspects of a Center's work. The terms of reference (ToRs) for each CCER are determined by the Center, based on broad principles endorsed by the CGIAR at ICW95 (ref. document entitled *Improving the Quality and Consistency of CGIAR's External Center Reviews*, dated October 24, 1995).

EPMRs complement the CCERs by providing a CGIAR-commissioned and comprehensive external assessment of the Center's program and management, especially its future directions and the quality and relevance of its research. The ToRs for the EPMRs (which update the "standard ToRs" endorsed by the CGIAR at MTM95) are provided below. Guidelines for undertaking the reviews are issued separately.

CGIAR Terms of Reference for EPMR

Objectives and Scope

EPMRs seek to inform CGIAR members that their investment is sound, or recommend measures to make it so. Members of the CGIAR and other stakeholders can be informed whether the Center is doing its work effectively and efficiently. EPMRs are both retrospective and prospective; and help ensure the Center' excellence, relevance and continued viability, and the CGIAR System's coherence. Each review is expected to be strategic in orientation and as comprehensive as the situation warrants.

The broad objectives of EPMRs are to: a) provide CGIAR members with an independent and rigorous assessment of the institutional health and contribution of a Center they are supporting; and b) to provide the Center and its collaborators with assessment information that complements or validates their own evaluation efforts, including the CCERs.

The EPMR Panel is specifically charged to assess the following:

a) The Center's mission, strategy and priorities in the context of the CGIAR's priorities and strategies;

b) The quality and relevance of the science undertaken, including the effectiveness and potential impact of the Center's completed and ongoing research;

c) The effectiveness and efficiency of management, including the mechanisms and processes for ensuring quality; and

d) The accomplishments and impact of the Center's research and related activities.

The topics expected to be covered by the EPMRs are listed below.

Topics to be Covered

A Mission, Strategy and Priorities

- The continuing appropriateness of the Center's mission in light of important changes in the Center and its external environment since the previous external review.
- The policies, strategies, and priorities of the Center, their coherence with the CGIAR's goals (of poverty alleviation, natural resources management, and sustainable food security), and relevance to beneficiaries, especially rural women.
- The appropriateness of the roles of relevant partners in the formulation and implementation of the Center's strategy and priorities, considering alternative sources of supply and the benefits of partnerships with others.

B Quality and Relevance

- The quality and relevance of the science practised at the Center.
- The effectiveness of the Center's processes for planning, priority setting, quality management (e.g. CCERs, peer reviews and other quality and relevance assurance mechanisms), and impact assessment.

C Effectiveness and Efficiency of Management

- The performance of the Center's Board in governing the Center, the effectiveness of leadership throughout the Center, and the suitability of the organization's culture to its mission.
- The adequacy of the Center's organizational structure and the mechanisms in place to manage, coordinate and ensure the excellence of the research programs and related activities.
- The adequacy of resources (financial, human, physical and information) available and the effectiveness and efficiency of their management.
- The effectiveness of the Center's relationships with relevant research partners and other stakeholders of the CGIAR System.

D Accomplishments and Impact

- Recent achievements of the Center in research and other areas.

- The effectiveness of the Center's programs in terms of their impact and contribution to the achievement of the mission and goals of the CGIAR.

CGIAR Science Council: Strategic Issues for the 6th EPMR of CIAT

1. The SC suggests that the Panel gives the highest priority to addressing the issue of Center direction and focus, broadening of its funding base and structure the Board, management and staff in a way that maximizes and rewards funding the mission.
2. A major recommendation of the last EPMR was to ensure that CIAT maintained adequate support for its regional and global research on commodities. To what extent has CIAT maintained the right balance between its commodity and NRM research? And its global and regional focus.
3. A large component of CIAT's portfolio is made up of small and discrete activities which may lead to inefficiencies in the deployment of resources. In response to SC criticism of having a large number of apparently unrelated projects, it appears that CIAT, rather than completing and/or eliminating these projects, has merely subsumed them under one program. The SC encourages the EPMR to assess how CIAT could rationalize, concentrating on fewer, well-selected areas of strategic international research with high potential benefit to the poor in the tropics.
4. Are CIAT's activities in agroenterprise development contributing to IPG in this area? Is CIAT's current and proposed research agenda consistent with CIAT's comparative advantage?
5. Is CIAT's proposed expansion of research on tropical fruits well focused to deliver IPGs? Does it draw adequately on experience elsewhere in this new area of research? What areas of CIAT's commodity research will be forgone to embrace new research in tropical crops? How were such tradeoffs decided?
6. As a result of a recent major funding shortfall there are some substantial resource shifts among projects but the criteria for these reallocations is not clear. The Center states that research on genetic improvement will "not be fundamentally changed". However, changes in project funding projections for 2007 do not quite support such a statement. Some projects have greatly increased funding projected for 2007 from MTP06-08 (beans, tropical fruits, rural agroenterprise development, and participatory research); others have major reductions (rice, cassava).
7. Is the work of the TSBF integrated into other projects such as the communities and watershed project? Does CIAT have the right balance in NRM research—between biophysical and social, between the landscape/watershed and the management of the resources at the "crop based system" level, between understanding driving processes (IPG) and local activities?
8. What are the working relations between CIAT and other centers with similar crop focus? Specifically what's the relationship with the cassava research of IITA and the tropical pasture research of ILRI?

Annex 3
Itinerary and People Contacted by the 6th EPMR Panel

Itinerary

From May 18 through May 25 of 2007 the Panel worked at CIAT-Cali Headquarters for the initial phase of the EPMR. Throughout the week Outposted Scientists, Principal Staff Scientists and Management gave presentations on their mission, vision, goals, organization, strategic plans and other themes. The Panel also met with individual Staff members to discuss project activities, operational functions and support services at CIAT. The Panel Chair and the Governance and Finance Members attended CIAT's Board of Trustees meetings at CIAT headquarters May 21-25. The Panel also met with the association of International Staff, National Staff, the Workers' Union and the association of CIAT Secretaries.

In June, subgroups of the Panel visited CIAT's Regional Staff and Collaborators in Central America, Africa and Asia. During their visit to **Central America**, in Tegucigalpa-Honduras the group participated at a workshop in Quesungual, interacted with the MIS Consortium and ARDINet Partners (including Mexico and the United States). Meetings where organized with: Honduras CIAT Staff, DICTA and UNA Olancho, CIPRES and Soghum producers, Totogalpa partnerships CIRAD-CIAT-CIPRES, Agrosalud project partners (NGOs producers and Somoto – seed production and distribution), INTA Regional Las Segovias , Funica , Posaf partners and CRS Nicaragua and CIAT Staff. Field visits were organized to see INTA irrigated rice research station (including rain fed rice germplasm development) and the livestock farmer group El Tule (Condega).

During the visit to CIAT activities in **Africa**, meetings were organized in Nairobi with TSBF/CIAT scientists, ICRAF, and partners. TSBF activities at Maseno area were visited as well as bean research activities in Kakamega. The team visited, Kawanda and Namulonge, Lilongue where the saw activities of ERI, PABRA and TSBF.

The visit to Asia included Vietnam (Hoa Binh Providence) to see the SDC-funded Smallholder Agroenterprise Development in the uplands (SADU), linking farms to market in various value chains and market extension, and other CIAT activities, such as IFAD –funded PRDU project, IFAD-funded SLP Village Livestock Project, Government Partners (VAAS, IPSARD, NIAHG, MARD), Donors (SDC and IFAD), Partner Projects (ETSP, Oxfgam-Hong Kong). The team went to Laos (Luang Prabang) were they saw CIAT's activities connected to SADU(paper mulberry) L4PP (legumes for pigs), Cassava and Capacity Building (forages and livestock) in Pak Ou snd Xieng Ngeun Districts. They had final discussions in Vientiane.

The Panel reassembled at CIAT Headquarters on July 3 of 2007 for the Main Phase of the review. During this period Panel members had short individual meetings with CIAT Staff.

On July 9, the Panel Chair and the Panel Secretary had a series of meetings in Bogotá with Colombian organizations (**CORPOICA**, CENIPALMA, MIDAS, and Ministry of Agriculture) and with several Colombian international agricultural research experts with knowledge about CIAT and the CGIAR.

On July 18th, the Panel Chair presented to all CIAT staff present at Headquarters a summary of the main conclusions, recommendations and suggestions included in the Report.

People Contacted

Tin Maung Aye	CIAT - Asia
German Arias	CIAT - Legal Advisor
Jaqueline Ashby	No longer CIAT employee - Director of Rural Innovation
Andre Bationo	CIAT - TSBF / AfNet Coordinator
Stephen Beebe	CIAT - Bean breeder and Project Manager
Emilia Boncondin	Board Member Designate
Robin Buruchara	CIAT - Regional Research Leader Africa
Hernan Ceballos	CIAT - Cassava Breeder / Project Coordinator
Rowland Chirwa	CIAT-PABRA, Malawi, Africa
John Connell	CIAT - Asia
Fernando Correa	CIAT - Rice Improvement Project Manager
Jesus Cuellar	CIAT - Administrative Director
Luz Stella Daza	CIAT - Internal Audit
Daniel Debouck	CIAT - Genetic Resources Unit
Shaun Ferris	CIAT - Project Manager - Agro-enterprise
Louise Fortmann	Professor of Natural Resource Sociology
James Garcia	CIAT - Statistic Consultant
Ivan Gomez	CIAT - President Union Leadership
Sibel Gonzalez	CIAT - Head Institutional Protection Unit
Carolina Gonzalez	CIAT - Research Assistant
Alonso Gonzalez	CIAT - Tropical Fruits Project
Ken Giller	Chair of the Programm Committee, Professor, Plant Production Systems
Edith Hesse	CIAT - Head of the Inforcap Unit
Carlos Jara	CIAT - President Associates Assistants
Andrew Jarvis	CIAT - Senior Scientist - Spatial Analyst
Segenet Kelemu	CIAT - Project Manager
Roger Laing	CIAT - Leader, People and Agroecosystems RDC
Kathryn	CIAT - Head Project Office
Rod Lefroy	CIAT- Regional Research Leader Asia
Zaida Lentini	CIAT - Genetisist, Senior Research Scientist
Mark Lundy	CIAT- Agroenterprise Development Specialist
Carlos Meneses	CIAT - Chief Information Office
John Miles	CIAT - Genetist
David Miron	President, TDM Consultants
Angela Molina	CIAT - President Secretaries Associates
Julian Montoya	CIAT - Administrative Assistant Miami Office
Cesar Moreno	CIAT - Financial Controller
Sonat Natee	ICRAF
Thomas Oberthur	CIAT - Project Manager
Ablassé Ouedraogo	Board Member Designate - Conseiller du Président pur l'Afrique
Douglas Pachico	CIAT- Deputy Director General,
Helena Pachon	CIAT - Human Nutritionist
Jorge Peña	CIAT - Buget Office
Gustavo Peralta	CIAT - Human Resources Manager
Michael Peters	CIAT - Tropical Forage Germplasm Specialist
Ounkeo Phathamavong	CIAT - Asia
Phonespaseuth Phensgsavanh	CIAT - Asia

Roberto Porro	CIAT - Senior Scientist and Executive Secretary – Amazon Initiative Consortium
Rafael Posada	No longer CIAT emoployee
Mario Rengifo	CIAT - Financial Project Manager
Maria José Sampaio	Researcher, Special Advisor for Policy Affairs
Nteranya Sanginga	CIAT - TSBF - Tropical Soil Biology and Fertility Institute
Luis Roberto Sanint	CIAT- Deputy Director
Yves Savidan	Chairman of the Board of Trustees
Axel Schmidt	CIAT - Regional Research LAC
Mary Scholes	Vice-Chair - Professor, Dept of Animal, Plant & Environmental Sciences
Werner Stur	CIAT - Asia
Joseph Tohme	CIAT - Research leader of the Agrobiodiversity RDC
Jorge Uribe	CIAT - Head of Procurement and Maintenance Units
Gavin Varney	CIAT - Asia
Gloria Vasquez	CIAT - Head Food and Housing Unit
Arturo Vega	Appointed in September 2005 – Executive Director (CORPOICA)
Joachim Voss	CIAT - Director General
Tiago Wandschneider	CIAT - Vietnam
Claudio Wernli	Executive Director - Millennium Science Initiative
Douglas White	CIAT - Economist - Senior Research Fellow
Gonzalo Zorrilla	CIAT - FLAR Executive Director
Álvaro Uribe	Sub-director de Innovación y Desarrollo Territorial – CORPOICA
Carlos Fernando Ortiz	Director in charge of CORPOICA
Juan Lucas Restrepo	Sub-director MIDAS Project
Lose Ignacio Sanz	Executive Director of CENIPLAMA
Juan David Ortega	General Secretariat of Ministry of Agriculture
Fernando Arbelaez	Vice minister of Ministry of Agriculture
Roger Kirkby	CIAT - Leader of PA, Uganda
Reuben Otsyula	Breeder KARI-Kakamega, Kenya
Gideon Rachier	Agronomist, Director KARI-Kakamega
Paul Kimani	Regional breeder ECABREN, Uganda
Pascal Sanginga	CIAT-Kawanda, Social Scientist
Rachel Muthoni	CIAT-PABRA, PM&E
Martha Nyagaya	CIAT-PABRA, Nutitionist
Sarah Nassozi	CIAT-PABRA, Research Assistant
Claire Mukankusi	PHD Student, Univerity of Natal, Research Assistant
Stephen Bua	CIAT-PABRA, MSc Student, Makerere University, Research Assistant
Allan Male	CIAT-PABRA, Research Assistant
Suleiman Sebuliba	Kawanda
Francoise Murorunkwere	MSc Student, University of Rwanda
Pheonah Nabukalu	CIAT-PABRA, MSc Student, Makerere University
Virginia Gichuru	CIAT-PABRA, MSc Student, Makerere University
Pheonah Nabukalu	CIAT-PABRA, MSc Student, Makerere University
Moses Onim	Breeder and Managing Director Coordinator bean, Lagrotech seed Company
Setegn Gebeyehu	Program Coordinator Bean, EIAR
Michael Ugen	Program NARO, Namulonge

Isaac Mugaga	Research Assistant, Coordinator, Bean, NARO, Namulonge
Mbikayi Nkoko	Program INERA
Denis Kyetere	General Director NARO
Seyfu Ketema	Excecutive Secretery, ASARECA
Mackson Banda	Director DARS – Malawi
Wilkson Makumba	DARS – Malawi
Eric Mazuma	DARS – Malawi
Hilda Kabuli	DARS – Malawi
Kenneth Chaula	DAETS – Malawi
Linda Mphande	DAETS – Malawi
Amos Banda – PM Kasungu ADD	DAETS – Malawi
Grace Malindi	DAETS – Malawi
Kennedy Kanenga	ZARI – Zambia
Catherine Madata	ARI-Uyole, Tanzania
Susan Kaaria	CIAT – ERI, Uganda
Jemimah Njuki	CIAT – ERI, Zimbabwe
JeanClaude Rubyogo	CIAT – PABRA, Malawi
Shamie Zingore	CIAT – TSBF, Malawi
Mariam Mapila	CIAT – ERI, Malawi
Lizzie Kalolokesya	CIAT – ERI, Malawi
Ruth Magareta	CIAT – ERI, Malawi
Tennyson Magombo	CIAT – ERI, Malawi
R Okalebo	Soil Scientist, Moi University, Kenya
D Mugendi	Soil Scientist, Kenyatta University, Kenya
A Esilaba	Soil Scientist, Kenya Agricultural Research Institute (KARI), Kenya
N Mungai	Soil Scientist, Egerton University, Kenya
J Ndufa	Agroforestry Specialist, Kenya Forestry Research Institute (KEFRI), Kenya
J Huising	TSBF-CIAT, Coordinator Belowground Biodiversity (BGBD) network, Kenya
J Chianu	CIAT-TSBF, Economist, Nairobi, Kenya
P Okoth	CIAT-TSBF, Information manager BGBD project, GIS specialist, Nairobi, Kenya
O Ohiokpehai	CIAT-TSBF, Nutritionist, Nairobi, Kenya
P Pypers	CIAT – TSBF, Soil Scientist, Nairobi, Kenya
J Jefwa	CIAT-TSBF, Soil Microbiologist, Nairobi, Kenya
D Lesueur	CIAT-TSBF, Soil Microbiologist, Nairobi, Kenya +CIRAD
K Roing	CIAT-TSBF, Soil Scientist, Nairobi + SLU (Sweden)
R Meyo	CIAT-TSBF, Administrator, Maseno, Kenya
J Mukalama	CIAT-TSBF, Research Assistant, Maseno, Kenya
L Nyambega	CIAT-TSBF, Research Assistant, Maseno, Kenya
J Kihara	CIAT-TSBF, PhD student, Nairobi, Kenya
R Buruchara	CIAT Africa Coordinator, CIAT, Kampala, Uganda
M Musambi	Ministry of Agriculture, Mumias District, Kenya
Helen Nyamai	Ministry of Agriculture, Butere District, Kenya
NGO's Africa	Various representatives of farmer groups and NGOs.
B Vanlauwe	CIAT-TSBF, Soil Fertility Specialist
Luis Arango	Consultant
Henry Shands	

Ronnie Coffman	
Anthony Cavalieri	
Jennifer Nelson	
Carmen De Vicente	
Farmers Somoto	Beans/Agrosalud, Nicaragua
Farmers Totogalpa	Sorghum, Nicaragua
Farmers El Tule	Forages, Nicaragua
Aracelly Castro	PhD candidate, UNAL, Honduras
Oscar Ferreira	MSc candidate, UNAL, Honduras
Javier Gamez	Local government Candelaria, Ex Mayor, Honduras
Juan Carlos Rosas	Bean breeder, Zamorano, Honduras
Amando Lopez	Teacher, ITC-Guarita, Honduras
Cesar Alvarado	Director Tatascan Journal, ESNACIFOR, Honduras
Carlos Zelaya	Admin Director, FAO, Honduras
Luis Alvarez	Technical Director , FAO, Honduras
Elisabeth Huber-Sanwald	Soil specialist-degradation, IPICYT, Mexico
Steve Fonte	Candidato PhD UNAL, University of Davis, California, USA
Irma Sequiera	Part. Plant breeding Sorghum, CIPRES, Nicaragua
Silvio Aguirre	Part. Plant breeding Sorghum, CIPRES, Nicaragua
Oscar Poveda	Field technician SAQ, INTA, Nicaragua
Jellin Pavon	PhD candidate, soils, INTA, Nicaragua
Jose Alberto Paredes	Field coordinator SAQ Nicaragua, INTA, Nicaragua
Octavio Menocal	National Research director, INTA, Nicaragua
Raul Laguna	Field technician PESA-Agrosalud, INTA, Nicaragua
Armando Herandez	Office director Somoto, INTA, Nicaragua
Fatima Rodriguez	In vitro cultivation specialist, INTA, Nicaragua
Rene Jarquin	Director Zone las Segovias, INTA, Nicaragua
Lesbia Rizo	Economist, INTA, Nicaragua
Lazaro Narvaez	Rice breeder, INTA, Nicaragua
Martin	Forage specialist, INTA, Nicaragua
Alexander Mena Benavides	Forage specialist, INTA, Nicaragua
Julio Molina	Beans/Agrodsalud, INTA, Nicaragua
Juan Alberto Molina	Agroenterprise Development, CRS, Nicaragua
Santos Palma	Agroenterprise Development, CRS, Nicaragua
Jorge Castellon	Agrosalud, CRS, Nicaragua
Felix Miranda	Agrosalud, CARITAS, Nicaragua
Alexis Herrera	Agrosalud, CARITAS, Nicaragua
Alejandro Arevalo	Agrosalud, FIDER, Nicaragua
Danilo Rivera	Agrosalud, IMPRHU, Nicaragua
Glenda Bonilla	University Professor, UNA, Nicaragua
Matilde Somarriba	University Professor, UNA, Nicaragua
Jairo Morales	University Professor, UNA, Nicaragua
Bismark Mendoza	University Professor, UNA, Nicaragua
Ursina Galbusera	MSc candidate, Swiss College of Agriculture, Switzerland
Geo Galbusera	MSc candidate, Swiss College of Agriculture, Switzerland
Edgar Amezquita	CIAT, Colombia, Consultor TSBF
Idupulapati Rao	CIAT, Colombia, Consultor TSBF, Plant physiologist
Mariela Rivera	CIAT, Colombia, PhD candidate SAQ

Filander Rodriguez	CIAT, Honduras, Administration Assit.
Vilia Escober	CIAT, Honduras, Administrator
Marco Trejo	CIAT, Honduras, Consultor TSBF
Miguel Ayarza	CIAT, Honduras, Consultor TSBF
Edwin Garcia	CIAT, Honduras,
Peter Lentes	CIAT, Honduras, Economist/Geographer/Forages
Juan Carlos Mercado	CIAT, Nicaragua, Administration Assit.
Patricia Carillo	CIAT, Nicaragua, Nutrionist Agrosalud
Rein van der Hoek	CIAT, Nicaragua, Forage Agronomist
Zildghean Chow	CIAT, Nicaragua, Agronomist Rice/Sorghum
Maria Eugenia Baltodano	CIAT, Nicaragua, Economist
Roger Urbina	CIAT, Nicaragua, Seed specialist Agrosalud

Annex 4
List of Documents Reviewed by the 6th CIAT EPMR Panel

Readings

1. Science Council of the CGIAR Strategic Issues for the 6th EPMR of CIAT
2. Terms of Reference and Guidelines for External Program And Management Reviews of CGIAR Centers
   CIAT Management Team meetings 05
   - CIAT Management Team meetings 06
   - CIAT Management Team meetings 07
   - EPMR Guidelines 2006_final
   - EPMR Terms of Reference
3. Most recent External Program & Management Review of the Center
   - 2. CIAT 5th EPMR 2000
4. Summary of actions taken in response to the last EPMR
   Summary Recommendations of Fifth EPMR and CIAT Responses Vs MARCH 30 2007
5. CGIAR Research Priorities 2005 – 2015
   - CGIAR Research Priorities 2005-2015
6. The latest Board Approved Strategic Plan of the Center
   - Summary Strategic Plan 2001-2010
   - Strategic Plan 2001-2010
7. Medium-Term Plan of the Center for the Period of the Review
   - CIAT MTP 2001 - 2003
   - CIAT MTP 2002 – 2004
   - CIAT MTP 2003 - 2005
   - CIAT MTP 2004 - 2006
   - CIAT MTP 2005 - 2007
   - CIAT MTP 2006 - 2008
   - CIAT MTP 2007 – 2009
   - CIAT MTP 2008 - 2010
8. SC Commentaries of the Center's Medium Term Plans
   - CIAT MTPs_SC Commentaries 2006-2001
9. Center-Commissioned External Review Reports plus Center Responses
   - CCER Agrobiodiversity 2006
   - CCER Agrobiodiversity and Agroecosystems Response Summary Apr24
   - CCER Agrobiodiversity Response
   - CCER Agroecosystems 2006
   - CCER Agroecosystems Response
   - CCER Governance Management and Finance 2006 Response
   - CCER Governance Management and Finance 2006
   - CCER Response Summary Apr24 (2)
   - CCER Rural Innovation Institute 2006
   - CCER Rural Innovation Response
   - CCER Spatial Analysis 2003
   - CCER Spatial analysis at CIAT_Center response
10. Donor-Commissioned External Review Reports
    - BP2 – PMP Final 5 Sept 05
    - IP1 – PABRA Response to Jeep Recommendations Jan
    - IP1 – THE PAN-AFRICA BEAN RESEARCH ALLIANCE (P
    - IP5 – ekomment-ciat-forage-response-final
    - IP5 - ekomment-final-ciat-forage

- IP5 – Final Draft Report Mid Term Evaluation of the C
- IP5 – Mid Term Evaluation of Enhancing Beef Product
- PE2 – Mid –term eval BGBD
- SB1 – Interim GPG Rehabilitation Project Phase I-Gen
- SB1 – Interim GPG Rehabilitation Project Phase I-Gen
- SB1 – Report on an Audit of the Genebank Rehabilitat
- SW3 - PRGA external review 2000

11. List of achievements outputs publications peer review and other, research breakthroughs as recognized by peers, germplasm
    - List of achievements – Outputs by program
    - List of Non-Thomson peer review publications 2006
    - List of peer review publications with NARS 2006
    - List of Thomson peer review publications 2006
12. A paper by Center management and Board (1)
    - VisionStrategy for EPMR
13. The current organization chart, with brief description of the Center's internal management structure, including the composition and terms of reference of each major committee (3)
    - CIAT Committees 2006
    - CIAT Committees ToRs 2006
    - CIAT06 Business Plan-BOT11
    - Organigram product lines for EPMR 07
14. Other Recent EPMR Reports of CGIAR Centers
15. Most recent CGIAR stripe studies involving the Center (to all or relevant Panel members)
16. Most recent Annual Report of the Center and comparable research reports of the Programs if available
    - CIAT 2006 Project Reports
    - Ciat annual Report 2005-2006
17. The latest Annual Funding Request.
    - CIAT MTP 2007 - 2009
    - CIAT tables MTP 2007-2009 TABLE 7 ANNUAL FUNDING REQUEST
18. List of Professional staff with short CVs including standard set of information as instructed the SC Secretariat (Publica
    - CIAT Staff LIST
    - List of professional staff short CVs
19. List of reports of major planning conferences, internal reviews, expert meeting, which have had a major influence on t
    - List of reports of major conference
20. List of agreements for cooperative activities with other Centers and institutions
    - List of Agreements
21. List of ongoing and recently completed contracted projects
    - Ongoing and Recently completed contracted projects
22. SWEP - Systemwide Farmer Participatory Research and Gender Analysis (PRGA)
    - CIAT BOT meeting brief ed1
    - External Review Summary d4
    - PRGA External Review Report
    - SC commentary on PRGA external evaluation

Governance and Management

1. Most recent CGIAR financial guidelines and manuals
    - Financial Guidelines Series no. 4 Guidelines for preparing the 2007-2009 MTPs and 2007 Financing Plans

- Financial Guidelines Series no. 1 Financial Management
- Financial Guidelines Series no. 2 CGIAR Accounting Policies and Reporting Practices Manual
- Financial Guidelines Series no. 3 Audit Policies
- Financial Guidelines Series no. 5 CGIAR Indirect Cost Allocation Guidelines
- Financial Guidelines Series no. 6 Procurement of Goods Works and Services
- SC and CGIAR Secretariat Cover Memo on 2007-2009 MTPs

2. Reference Guides for CGIAR International Agricultural Research Centers and their Boards of Trustees
   - CGIAR Guide for BOT_Board Self-Assessment
   - CGIAR Guide for BOT-Building Effective Board Committees
   - CGIAR Guide for BOT_choosing a Director General
   - CGIAR Guide for BOT_Creating a wellbalanced Board
   - CGIAR Guide for BOT_Evaluating the Director General
   - CGIAR Guide for BOT_Role of the Board Chair
   - CGIAR Guide for BOT_Role responsib and accountabil
3. Charters and other basic documents establishing the Center along with subsequent amendments
   - By – Laws
   - HostCountry Agreement
   - IBRD - UNDPAgreement
4. Table showing composition of the Board over the last five years, along with an indication of the term of office for current
   - EPMR Table on Board Composition
5. Board handbook of rules of procedure
   - Board Policies Procedures Manual Number 8 December 2006
6. Table showing allowances, benefits and salary ranges for each category of staff
7. Table showing personal data on professional staff by Program including job title-incumbent's location-IRS NSR LSR status
   - Table showing personnel data
8. Table Summarizing turnover of staff over the last five years by staff category
   - Turnover
   - Turnover2000-2007
9. List of international vacancies and how long positions have been vacant
   - Vacancies
10. Set of minutes covering Board and Board Committee meeting since the last External Review (and reports of Board committees t
    - BOT 47 - 2001
    - BOT 48 - 2002
    - BOT 49 – 2003
    - BOT 50 – 2004
    - BOT 51 – 2005
    - BOT 52 - 2005
    - BOT 53 - 2006
    - BOT 54 - 2006
    - BOT 55 - 2007
11. Staff manual or a description of current personnel procedures for international an locally recruited staff
    - Link to staff policy Manual
12. Local compensation survey used by the Center
    - CGIAR compensation phase3 report 2005 11

- Compens.1
- Compens.2
- Explanatory note
- Final Report

13. Reports of external auditors, including management letters, and financial officer's reports to the Board since the last Exte
    - CIAT-1120 Presentación Comité Nov06-V3 Ingles 2006
    - CIAT-Resumen ejecutivo-Comité-final-Mayo-05-T-2005
    - KPGM – Informe dic 2001-r
    - KPGM – Informe mayo 2001-r
    - KPMG – Informe Mayo 2003-r
    - kpmg presentación may 2002
    - Kpmg2 May 2004
    - Presentación kpmg 2003 dec
    - presentación kpmg dic 2002
    - presentation audit committee 2005
    - presentation audit committee 2006
    - presentation audit committee-deloitte December 2004
14. Most recent internal audit reports
    - CIAT GPG1 Project Report (Final) 2006
    - FW Audit of Processing of Candidate Evaluations
    - I-19-06 Laos Report General June 2006
    - I-20-06 TSBF informe de viaje junio 2006
    - I-21-06 Revision usuarios SGH 2006
    - I-22-06 Revisión perfiles As 400 – sep 06
    - I-23-06 Revisión usuarios OF – sep06
    - I-24-06 Revisión Conc Bancarias-2006 Sept
    - I-25-06 Report on an Audit of the HarvestPlus Challenge Program – CIAT Component
    - I-26-06 IPGRI Draft Report Aug 2006
    - I-28-06 Risk Management – reunion CRMC 4 ago 06
    - I-29-06 risk management status report to the Board oct. 2006
    - I-31-06 Seguimiento a recomendaciones de Auditoria externa 2005
    - I-31-06 Seguimiento recomendaciones AE -activos fijos 2005
    - I-32-06 Observaciones lote 64
    - I-33-06 Uganda seguim puntos visita July 06
    - I-34-06 Revision de los sistemas de pagos electrónicos
    - I-36-06 Inventario físico Almacén
    - Propuesta reducción 06
    - Provisiones 2006
    - Revisión inventario Activos Fijos-2006

Surveys conducted by the 6th EPMR

1. CIAT Staff Survey
- CIAT EPMR Staff Survey English
- CIAT EPMR Staff Survey Spanish
- Link Survey - Link Encuesta
- Results of the Staff Survey
- Staff Survey Commentaries

2. CIAT Stakeholders Survey
- English CIAT 6th External Program and Management Review Stakeholder survey

- Español CIAT 6ta Revisión Externa y Programas de Administración Encuesta a Stakeholder
- Stakeholders Survey Open Questions
- Results of the Stakeholders Survey

CIAT Reports to 6th EPMR Panel

1. Presentations
   - Board Presentations
     - Climate Change by Andy Jarvis
     - High Value Crops Fand V by Alonso Gonzalez
     - Integration in Africa by Robin Buruchara
     - Pachico
     - PPPs by Luis Roberto Sanint
     - Presentation-Dr Tohme
     - PRGA to PC by Janice Jiggins
     - Reg Integration by RL
     - TSBF-CIAT Report by NS
   - May CIAT Administrative Presentations
     - Administrative Director - Jesus Cuellar
     - Food And Housing Gloria Vasquez
     - Human Resources Gustavo Peralta
     - Institutional Protection Sibel Gonzalez
     - Legal Office German Arias
     - Maintenance And Procurement Jorge Uribe
     - Miami Office Julian Montoya
   - May Presentations to EPMR
     - Amazon Initiative. Porro
     - Bean Improvement. Beebe
     - Cassava Improvement. Ceballos
     - Central America. Schmidt
     - CIAT in Context. Evolution and Innovation. SC Issues 1 and 3 and 6. Voss
     - Financial Overview. Sanint
     - Genetic Resources. Debouck
     - Opportunities for Research on High Value Commodities. SC Issues 4 and 5. Oberthur EPMR_07-05
     - Opportunities for Research on High Value Commodities. SC Issues 4 and 5. Kirkby
     - Regional Research Strategy. partnership in Latin America. Sanint
     - Regional Strategy Asia. Lefroy
     - Regional Strategy. Africa. Buruchara
     - Research Program. Recent Development and Further Directions. Pachico
     - Rice in Latin America. SC Issue 8. Correa
     - Sharing the Benefits of Agrobiodiversity. Tohme
     - Tropical Forages. SC Issue 8. Peters
     - Tropical Soils Biology Fertility in Africa. SC Issue 7. Sanginga
2. Documents
   - CIAT 06 Business Plan-BOT11
   - CIAT DG REPORT TO BOT11
   - CIAT strategic vision jan 30- 07 final draft
   - TEAM REPORT 4
   - Agreements

    - Acta de conformacion del FLAR 1995
    - Acuerdo CIAT-FLAR nov 04
    - Clayuca
    - FLAR
    - Heads of agreement FLAR 1995
    - Jircas
    - Papalotla
    - Reglamento FLAR 1995
- CIAT Annual Report 2005-2006
    - CIAT annual report 2005 - 2006 text only
    - CIAT anual report 2005 - 2006
- Funacion Instituto de Innovacion Rural
    - Acta De Constitucion Iir Version Final
    - Estatutos Fundación Iir Version Final
    - IIR - Convenio de sede FINAL
    - Reunión Aclaratoria Sobre FIIR y sus implicaciones
    - The Rural Innovation Institute
- Impact Studies
    - 13_pres_farhney
    - 3A and 3B PM Indicators for 2005 and 2006
    - Asia-- Contribution to IP-5 Annual Report (2006)
    - Assessing the Impact of IPDM-Draft- W Kenya
    - CIAT 2005 Impact Submission (3A3B)
    - CIAT 2006 Impact Submission (3A3B)
    - CIAT Impacts 2005
    - CIAT-WB Indicators 2006
    - CIAT-WB Indicators 2006 IA 6 (2)
    - Honduras LBS adoption
    - Impact Study 1
    - Impact Study 2
    - Presentación ALPA
    - Regional Impact Highlight - Dissemination and Adoption of Improved Bean Varieties - Lessons for PABRAs Wider Impact Strategy
    - The Impact Of Improved Bean Production Technologies In Rwanda
    - The Impact Of Improved Bush Bean Varieties And Management Technologies In Uganda
- Human Resources
    - CIAT Performance Indicators Publications 2004-2005-2006
    - CIAT Staff Turnover
    - Disciplinary Breakdown Table 9.2
    - HR office - salary and benefits analysis vs market
    - IRS - December 2006
    - IRS -Termination-Resignation 2005 – 2007
    - NRS Resignation 2005-2007abr
    - Table 9.1 CIAT Staffing 2000-2006
    - Professionals trained at HQ 2002-2006
    - Turnover1999-2007 No.31 -NRS
- MTP's
    - CIAT tables MTP 2008-2010 PL
    - MTP 2008-2010 CIAT June 15 2007
    - MTP Output target 2006-2008 2007-2009 y 2008-2010

  - SC comments in brief CIAT MTP 2007 - 2009
  - Table 5 MTP
- TSBF
  - CIAT TSBF Achievements 2002-2005
  - CIAT TSBF Strategy 2005-2010
  - Excerpt TSBF-SAC Revised TORS
  - SAC-07 Report - final
  - TSBF agreement

For a comprehensive list of all CIAT publications during the period covered by this EPMR (2000-2007) see: http://www.ciat.cgiar.org/biblioteca/index.htm

Some citations link to full texts, whenever the library has obtained the authorization by publishers or authors, or because they are open access. All items listed including those published prior to 2006, are accessible via http://ciat.catalog.cgiar.org/ciat_catalog.htm

Annex 5
Center Response to 5th EPMR and 6th EPMR Panel Commentary

Recommendation 1

Because of the global responsibility assumed by CIAT for its germplasm collections held in trust, and the urgent need to upgrade the genebank and its operation, the Panel ***recommends*** *that CIAT give urgent priority to obtaining necessary funds to comply fully with the Systemwide Genetic Resources Program on upgrading CGIAR genebanks; that a timetable of 5 years be set to complete the upgrade effort; and that Board and Management examine needs - staffing, special equipment, etc. - to ensure that upgrading is carried out successfully.*

Center Response

CIAT agrees with the need to accelerate the upgrading of the germplasm collections it holds. A timetable for the upgrading of the genebank and the in-trust collections was presented to CIAT BOT and Senior Management as early as 1996. CIAT provided capital funds to upgrade GRU facilities (such as the seed viability and the in-vitro laboratories, a drying room, and an additional cold store). CIAT houses an average size germplasm collection and allocates the second highest amount of unrestricted resources among the 11 genebanks held in the CGIAR. Within this very high allocation of unrestricted resources, CIAT will update the 1996 up-grading plan to comply with the EPMR recommendation. This plan will contain three elements: First, greatly increase the number of accessions renewed and stored yearly. Secondly, since 1998, as part of the systemwide activities of SGRP (and following the recommendations of the 1995 and 1998 reviews), CIAT has participated actively in the preparation of the Upgrading Plan for the 10 genebanks of the CGIAR. The final version of this plan was submitted to TAC in Mar'00 for its endorsement and funding. And thirdly, CIAT will also prioritize additional fund raising activities to support the upgrading plan.

6th EPMR comment - Satisfactory progress, ongoing

Progress was made during the phase 1 of the CGIAR Genebank Upgrading (2003-2006) against three major indicators: i) regeneration against seed aging, ii) long-term conservation at CIAT, and iii) security back-ups at CIMMYT (for the seed collections of beans and forages) and CIP (for the cassava collection. As indicated last May (echoing the reviews of November 2005 and October 2006), the effort should be continued during Phase 2 (2007-2009).

Recommendation 2

Because CIAT holds in trust the largest global collection of cassava among its total collections of over 50,000 accessions; because the storage and management of this vegetatively propagated crop is costly due to high labor inputs, and because storage in tissue culture, even with slow-growth methods, poses some risks to the genetic stability and safety of the germplasm, the Panel ***recommends*** *that CIAT direct major effort to develop a reliable cryopreservation method to cut costs and to guarantee the long-term safety of these collections.*

Center Response

CIAT agrees that cryopreservation is an economic alternative, and once operational permits secure germplasm storage, including safety duplications. The Projects SB-01 (GRU) and SB-02 have invested in cryoconservation research in liquid nitrogen (LN) of cassava shoot tips for the long-term conservation of the cassava collections. Protocols are currently working for about 45% of the clones of a sub-set of the core collection. Thus, in the short term, the introduction of about 45% of the cassava collection into LN storage is feasible with the consequent benefits regarding safety and savings in maintenance cost. Because cryoconservation methods are also of interest to

IITA, INIBAP, and CIP, CIAT has presented a project to SGRP in order to have a systemwide research project for the cryoconservation of vegetatively propagated crops. SGRP has so far only approved funds for meetings, one in Tsukuba (October 1998) and another one in Leuven (May 2000). A concept note was submitted for joint research in 2000 to the University of Leuven. Cryoconservation research is also included in the Upgrading Plan. Fundraising efforts for research on cryopreservation continue, but have been without success so far. While this takes place, as an intermediate safety measure, CIAT is considering duplicating the entire collection in vitro (under slow growth conditions) as a "black box" in another location.

6th EPMR Comment – Satisfactory progress

Recommendation 3

Because biotechnology research at CIAT generates a new class of genetic resources; e.g. clones, sequences, probes, transgenic organisms, and associated information; because these new genetic resources are as valuable as "traditional" genetic resources; and because they will become increasingly more important for research and technology development, the Panel recommends that CIAT adopts the broader concept of agrobiodiversity to include the new class of genetic resources, and develop appropriate policies and protocols to manage their conservation, exchange and use.

Center Response

The broader concept of agrobiodiversity in CIAT is managed mainly in Project SB-02. It manages the "new class" of genetic resources, such as probes, gene constructs, plasmids and DNA clones. SB-2 has initiated a database for these materials, including proprietary restrictions on their use. The goal is to implement a system for assembling, characterization and storage, including facilities and procedures. CIAT has developed a policy for the handling of and experimentation with transgenic organisms. Specific clauses will be added to CIAT's IPR Policy to expedite the management of these resources. Implications for the in-trust germplasm collection need to be examined. Moreover, relevant outcomes of the Center's IP Audit (in progress) will be useful in this regard. In addition, efforts are underway in the genomics area, especially to generate cassava EST's involved in starch biosynthesis/quality, in collaboration with the Montpellier Genomics Platform, and in developing cassava lines with high levels of carotene.

6th EPMR Comment - Completed

Recommendation 4

Because agrobiodiversity conservation, enhancement and use is central to the mission and international research responsibilities of the CGIAR and CIAT; and because the emergence of the private sector as a major technology provider within the new global regimes of intellectual property and biosafety has profound and pervasive implications on the generation of international public goods, the Panel recommends that CIAT, within the framework of the CGIAR, develop at the earliest possible time a comprehensive policy, operational strategy and capacity to manage its research and development efforts on agrobiodiversity to ensure maximum access to and freedom-to-operate in the use of genetic resources, biotechnology applications and information, and the safe deployment and use of products derived from them.

Center Response

The approval by the BOT of the CIAT policy on IPR in December 1998 is one step in that direction. Access to genetic resources and elite materials is regulated through Protocols 1 and 2, respectively, of that policy. The ongoing IPR audit will assist CIAT to build a framework on the improvements of its current IPR policy, to develop internal mechanisms for facilitating effective access to other IPs, and to develop procedures aimed at exercising and benefiting from its own IPs; all the way from employment policies through laboratory protocols. In addition, CIAT will

seek the collaboration of the Central Advisory Service housed in ISNAR for across-center issues, as well as the assistance of law firms, which have offered valuable services free of charge.

6th EPMR Comment – Incomplete

Inadequate CIAT capacity to deal with complicate IPR issues. Inconsistencies observed in compliance with IPR obligations

Recommendation 5

Because of the strategic importance of CIAT's mandate commodities to the wellbeing of the world's poor; because CIAT is a major if not the only nucleus of international research on these commodities; and because research and development on commodity improvement requires consistent, long-term and adequate efforts, the Panel recommends that the Center Board and Management commit, secure and provide sustained and adequate support to the Center's global and regional commodity research responsibilities.

Center Response

CIAT remains fully committed to its traditional commodities; beans, cassava, rice and tropical forages. The ever scarcer unrestricted resources will be optimally allocated to the CIAT research areas, taking into account possibilities of raising complementary restricted funding.

6th EPMR Comment – Completed

Given current CGIAR (unrestricted vs. restricted funding) and CIAT funding situation

Recommendation 6

Because of advances in technology that allow the modification of the nutritional characteristics of staple food crops, such as the production of vitamin A precursors in rice, and because improved human nutrition would be a major contribution to the welfare of poor consumers in LAC; the Panel recommends that CIAT monitor closely the advances in this technology as well as the surrounding intellectual property issues, and take all appropriate steps to utilize these technologies in appropriate germplasm improvement programs

Center Response

CIAT has been in contact with the authors and institutions of new technological developments in the area of crop product quality (human nutrition and health). CIAT has requested 'golden rice' and iron-rich rice lines for testing in LAC conditions. But no significant research expenditures will be made unless the property issues have been made clear so that this new technology can be applied without legal disputes.

6th EPMR Comment – Ongoing Activity

CIAT has significantly increased its activity in deploying biofortified crops using special project funds (AgroSalud, Harvest Plus Challenge Program).

Recommendation 7

Because of the vulnerability of the highly successful African Bean Project to changes in donor funding and the impression of African NARS partners that CIAT has no long term commitment to the continent, the Panel recommends that CIAT assure the project of long term sustained funding to safeguard continuity and the ability to expand into promising areas such as forages.

Center Response

Unrestricted resources to CIAT have declined every year since 1989. Despite these continuing reductions, CIAT has created for 2000 and onwards one senior scientist position in Africa out of unrestricted resources (to become the Africa-wide coordinator, as was done also for Asia). Three other positions have been added through System-wide Programs funded by CGIAR member

contributions. Additional positions, and research on forages, will have to be realized through prioritized restricted fund raising efforts.

6th EPMR Comment – Partially implemented

Extremely small level of core funds allocated to the African Program, but unclear precisely how much core is allocated to Africa. Some evidence of implementing Forage research in Africa in partnership with ILRI.

Recommendation 8

Because the approach of CIAT's Natural Resource Management research at the farm, community, watershed, and ecoregion levels, is not always clear, the Panel recommends that CIAT develop a rigorous overall research approach with greater integration among projects, define their specific objectives (including the role of reference sites and related activities) more clearly, and establish a clear framework of their hierarchical and functional relations and responsibilities.

Center Response

CIAT plans to pursue vigorously greater integration among projects through the development of the new strategic plan. CIAT will continue to focus on producing strategic research outputs of global relevance based on the integration of improved germplasm, IPM, crop-livestock systems, decision support systems and improved land management. CIAT will organize a high-level expert consultation (or "think tank") for this purpose as part of the planning process to further develop its integrated research strategy, specific objectives and the role of comparative analysis across reference sites.

6th EPMR Comment - Not completed

Comprehensive strategy is not demonstrated despite numerous changes in organization. CIAT has re-organized into Research for Development Challenges, and CIAT's strategy for natural resource management research is now expressed through the strategy of the People and Agroecosystems RDC (P&A RDC) and the associated Tropical Soil Biology Fertility Institute (TSBF), which have the broad role of addressing agroecosystem management challenges. While this reorganization clusters many of the relevant skills, and was partly intended to achieve improved integration, an overall research approach with greater integration is really only evident in CIAT's regional operations in Asia, Africa (including at TSBF), and Central America where on the ground projects cluster the disciplinary mix required from across the organization. These projects tend to focus on livelihood improvement of the rural poor, with resource sustainability improvement as a desirable, but secondary, component. Hence, the clear strategy and framework requested remains elusive.

Recommendation 9

Because the Hillsides Project work developed in Colombia has not yet lived up to its promise in Central America, the Panel recommends that CIAT develop a rigorous and coherent research plan for the Hillsides Project including clear and consistent definitions.

Center Response

CIAT recognizes that there have been challenges in integrating agronomy research in Central America with headquarters decision-support research in the past. A new project manager and coordinator in Central America were put in place to improve this integration. CIAT management has complete confidence in the Project manager and the Central America coordinator who in the space of one year, and in the face of the Mitch hurricane after-effects have already begun to make significant progress. Clear research plans have been developed and are being implemented effectively. CIAT will continue to monitor progress on this research plan.

6th EPMR Comment –Action taken, no longer relevant

Hillsides work terminated for a lack of consistent results. As part of its re-organization and management of funding shortfalls, CIAT has phased out this project and the staff members formerly involved have left the Center. Field research carried out under this project has been largely discontinued. Nevertheless, as part of its participation in the Water & Food Challenge Program, CIAT remains engaged in some of the themes of research related to this project.

Recommendation 10

Because the integration of research on germplasm, natural resources and social science lies at the heart of CIAT's strategy and because CIAT has had a lengthy experience in bringing about such integration, the Panel recommends that CIAT document its experience by assessing the impact of its past integration efforts on its target areas and populations.

Center Response

CIAT agrees with the Panel on the importance of documenting the impact of past integration efforts on its target areas. A major inter-project effort has been launched to assess impact in the ecoregional reference sites where genetic and natural resource research has been integrated.

6th EPMR Comment – Not completed

No evidence of systematic impact analysis. No core capacity to do impact analysis.

Recommendation 11

Because CIAT has had extensive and varied experiences with different forms of research partnerships (e.g. networks, consortia, joint ventures, collaborative projects), the Panel recommends that CIAT carry out an analytical review of this experience to derive lessons for itself and other CGIAR institutions

Center Response

CIAT agrees with this recommendation. In December, 1998 CIAT's BOT approved a policy on "Institutional Cooperation". It set the overall objectives, principles and mechanisms to establish partnerships. This policy provides the conceptual framework for the proposed analytical review. CIAT will invite a reduced number of key partners to participate in the review exercise. This review is planned for the first semester of 2001.

6th EPMR Comment – Partially implemented

Panel has seen no evidence of analytical review of research partnerships however several studies analyzing partnership experiences were carried out with IFPRI.

Recommendation 12

Because integration of research efforts is a cross-cutting issue for the Center, the Panel recommends that CIAT include in its next strategic planning exercise an in-depth examination of the composition of its project portfolio and the mechanisms used to foster intra-project and inter-project integration.

Center Response

CIAT agrees with this recommendation. The development of the new Strategic Plan is taking into account the arrival of the new DG and the outcome of several reviews, including the EPMR and the system review of the CGIAR strategy and vision. These outcomes will form an important input into the Strategic Plan.

6th EPMR Comment – Ongoing

New strategic plan produced in 2001 CIAT has reorganized a few times since 2000, most recently in 2007. Intra-project integration is effective. Integration across RDCs, and between regions and

headquarters continues to be an issue. Scientists' time is closely tied to project funding, and this makes such collaboration difficult. CIAT lacks mechanisms for cross-project/RDC integration. The move to a product focus as suggested in the CCER on Agrobiodiversity was intended to foster integration in research planning and implementation whereby the different skills sets needed in the research development cycle to go from idea to final product in the hands of the user are all deployed in combination around products. However, a clear research strategy on this integration is lacking and many of the products identified are only components needed in a broad-based integrated approach to achieving outcomes.

Recommendation 13

Because the present information systems do not provide the project leaders with relevant, timely and accurate financial information, the Panel recommends that CIAT elevate the priority assigned to the redesign of its financial information systems, processes and procedures.

Center Response

CIAT was aware of this need. Because of the high estimated costs for a complete overhaul of the financial management system, CIAT decided to first focus on being year-2000 compatible. CIAT will now incrementally introduce improved hardware and software to address crucial bottlenecks. Following the EPMR and the Financial Review CIAT will develop a multi-year plan to continue upgrading individual outdated software. It will do so in close collaboration with the CGIAR Secretariat which is conducting a financial software review of the CGIAR system to ensure compatibility with the Secretariat and among centers.

6th EPMR Comment – In progress

Significant progress has been made in the implementation of this important recommendation, although not at priority speed. While CIAT acquired a financial information system based on Oracle e-business suites, it did not adopt a strategic investment approach or dedicate sufficient funds at the outset for implementation. It has taken over six years to complete implementation, and there are still modules to go live and roll out to out posted offices. Connectivity continues to be problematic in certain regional offices.

Recommendation 14

Because all successful research endeavors at the Center, such as participatory management research, are characterized by the maintenance of core competencies and institutional memory, the Panel recommends that CIAT ensure that its research strategy for NRM be explicitly cumulative in nature.

Center Response

CIAT agrees that research strategy must be both cumulative and innovative so that research builds on institutional memory, incorporates new advances in knowledge, responds to the needs of different stakeholders, and adjusts to comparative advantage as partners' capabilities change. CIAT will maintain and adjust core competencies needed to achieve research progress by deploying research competencies across as well as within projects, as required for CIAT's integrated approach to germplasm and natural resource management research. CIAT will ensure systematization of institutional memory by allocating additional resources to complete and maintain the center-wide Data Warehouse for all strategic databases, ensuring full documentation and an IPR protection over the next five years.

6th EPMR Comment – Not implemented

Strategy for NRM remains a major issue in research management in CIAT.

Recommendation 15

Because CIAT has used effectively the products and processes of its participatory germplasm improvement research as an effective entry point to gain the confidence of farmers and facilitate the more complex but equally essential NRM research, as exemplified by the African Bean Program, and because technology and social process are recognized as potentially effective entry points into communities, the Panel recommends that CIAT further develops its "entry point" model to help identify optimal entry points for its NRM research projects.

Center Response

Further development of CIAT's "entry point" model will be undertaken in close consultation with NARS, by CIAT research projects involving crop choice, varietal selection, pest and disease management, soil management, production systems, land use and decision-support. The choice of optimal entry points for this applied research requires careful analysis of tradeoffs between alternative commodities, alternative land use options such as agrosilvopastoral versus pure grazing systems for example, and between production and conservation uses of land, soil, water or bio-diversity. The priorities of different stakeholders about what is optimal will often conflict, and will vary at farm, community, national and regional scales of analysis. Therefore, CIAT has identified one of the optimal entry points for its strategic research as the development of decision-support tools for NARS. This strategic research will continue to assist NARS to identify entry points among applied research options including crop choice, varietal selection, pest and disease management, soil management, production systems, and land use.

6th EPMR Comment – Ongoing

Strategy for NRM remains a major issue in research management in CIAT. However, CIAT works in close collaboration with NARS and a wide range of partners including advanced research institutes, civil society organizations, and farmer organizations from the onset of research activities. The strategic research outputs include improved germplasm, soil-crop-pest management strategies; integrated decision support tools; and capacity building methodologies all of which serve as entry points to CIAT's to farm level improvement. The use of this "entry point" approach is clearly evident in the integrated regional projects, and is leading towards opportunities to engage on natural resource management issues.

Annex 6
Results of the Staff Survey

CIAT's staff were asked to respond the survey on 8 questions by choosing one of five options:

A. Strongly agree

B. Agree

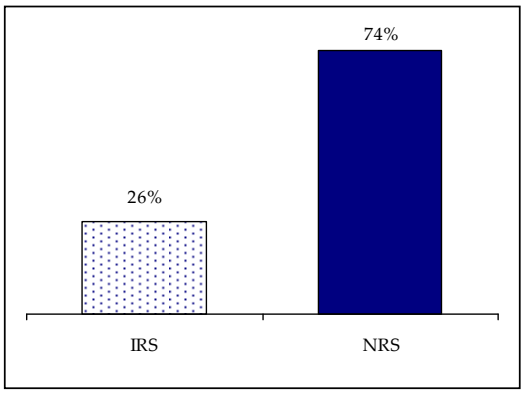
C. Disagree

D. Strongly Disagree

E. Don't' know

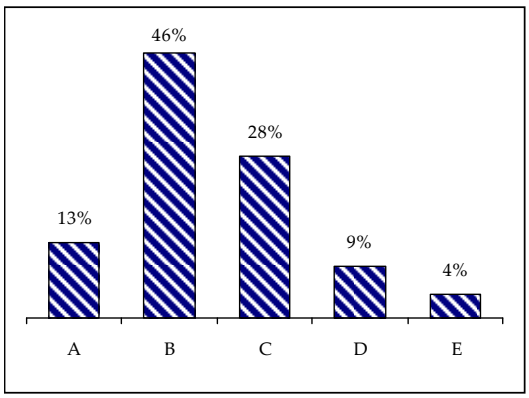
The portion of different responses to each question is shown in the graphs. The number of respondents is given in brackets.

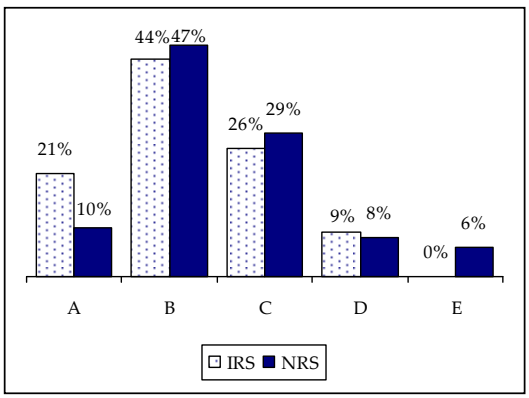
IRS [43] / **NRS** [123]



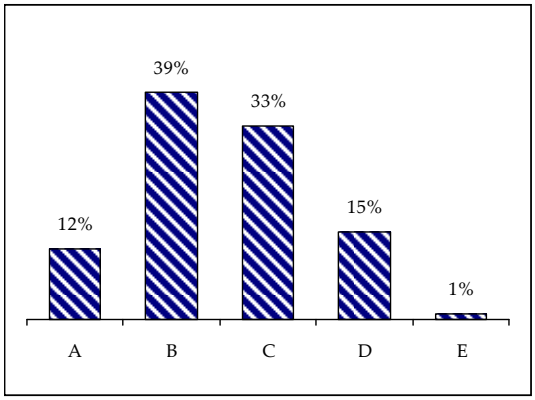
1. CIAT's work environment is conducive to:

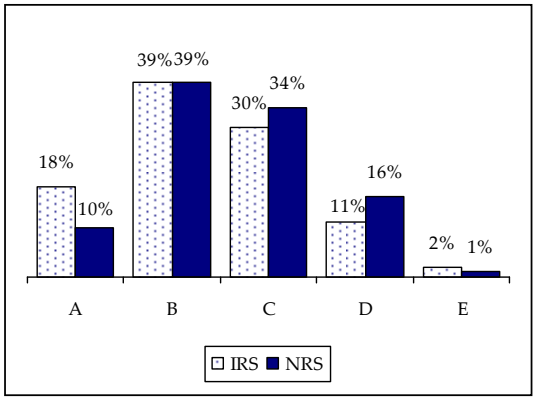
(a) Innovative research [161; IRS-43, NRS-118]



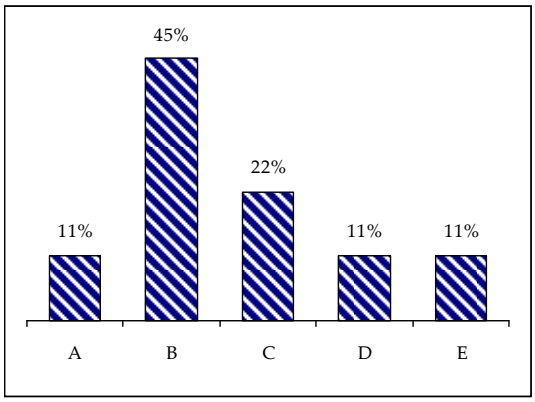


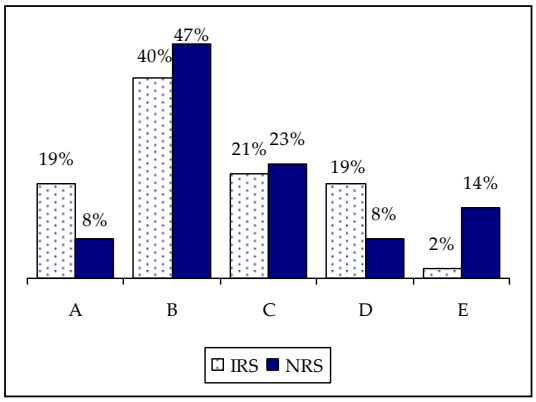
1. CIAT's work environment is conducive to:
(b) Teamwork [163; IRS-44, NRS-119]



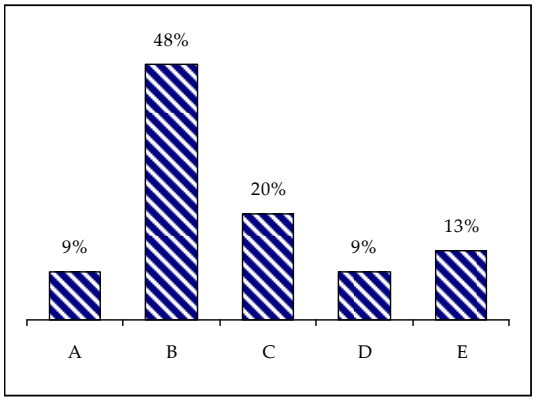


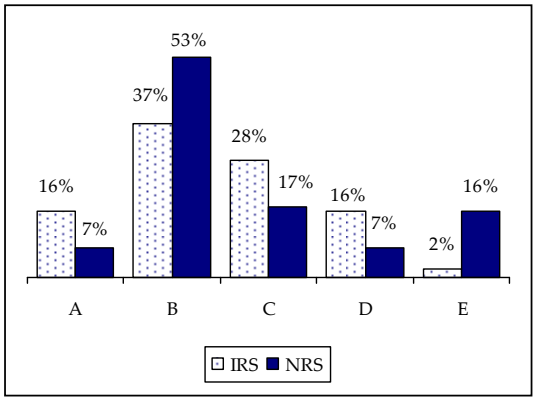
2. I believe that CIAT's reorganization of research will enhance
(a). Overall research focus [161; IRS-43, NRS-118]



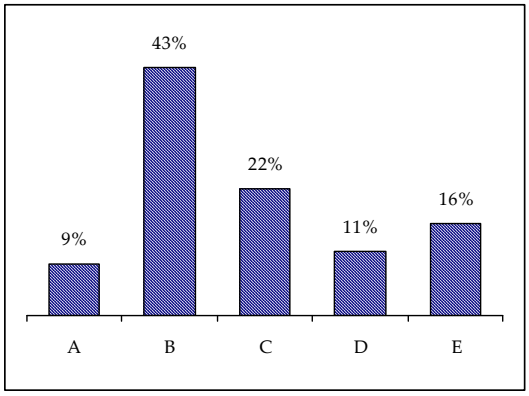


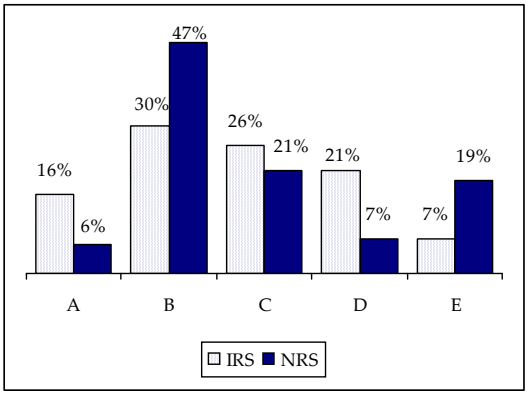
2. I believe that CIAT's reorganization of research will enhance
(b) Research integration [159; IRS-43, NRS-116]



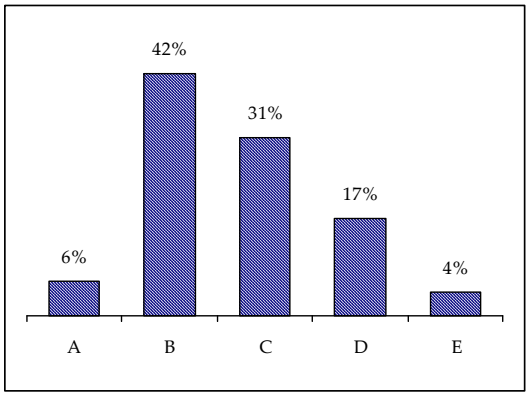


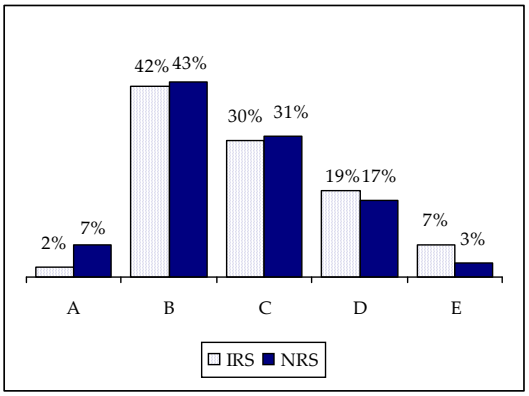
2. I believe that CIAT's reorganization of research will enhance
(c) Research Management [159; IRS-43, NRS-116]



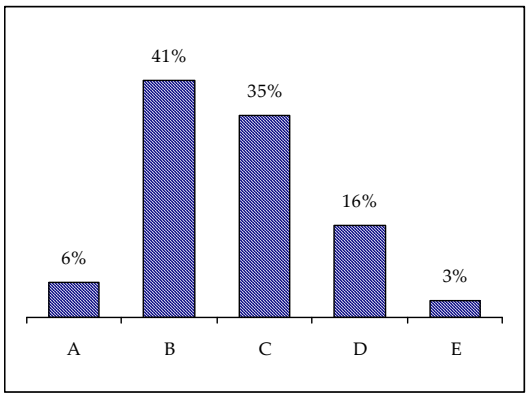


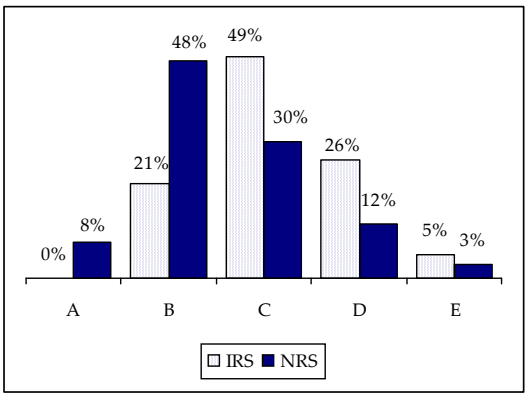
3. CIAT has effective
(a) Administrative services (purchase, food/housing, security, maintenance, ect.) [163; IRS-43, NRS-120]



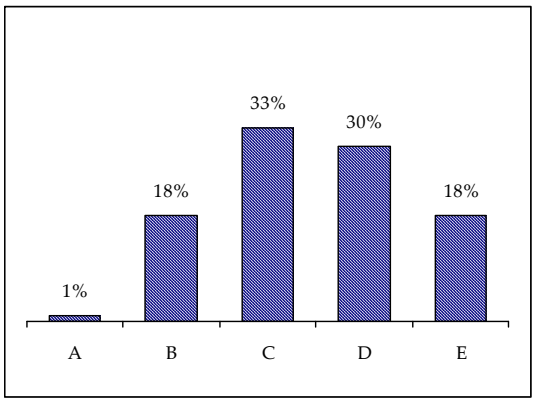


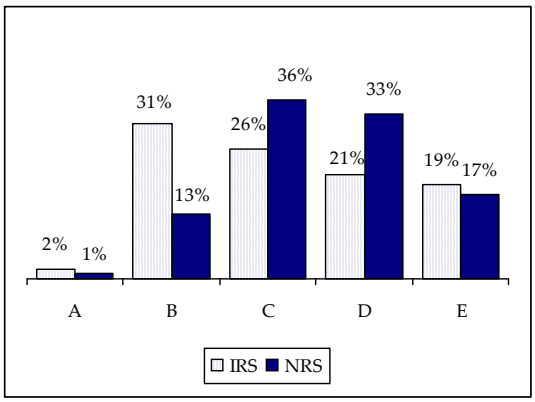
3. CIAT has effective
(b) Management systems and controls [158; IRS-43, NRS-115]



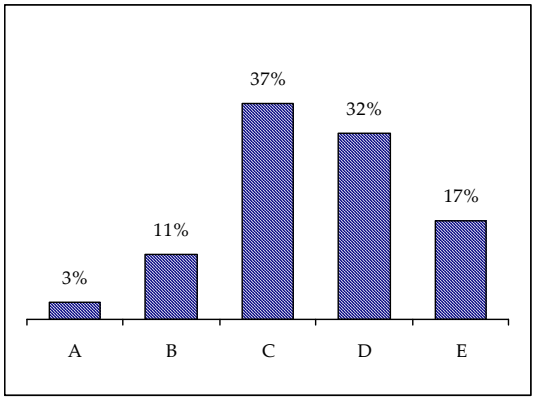


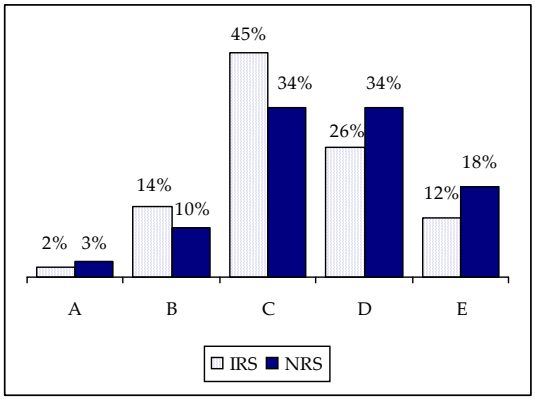
4. Decisions concerning staff downsizing in recent years were
(a) Fair [157; IRS-42, NRS-115]



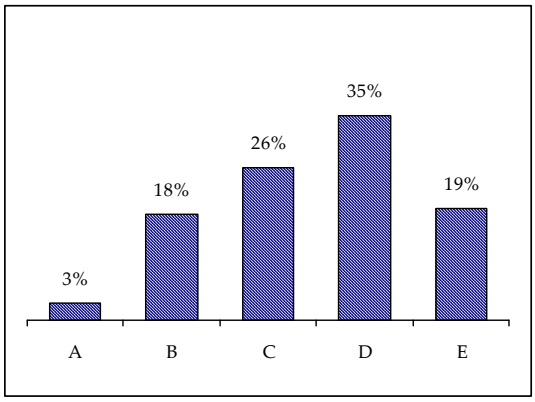


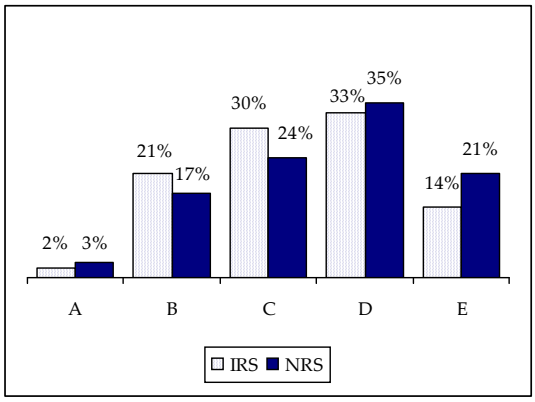
4. Decisions concerning staff downsizing in recent years were
(b) Transparent [157; IRS-42, NRS-115]



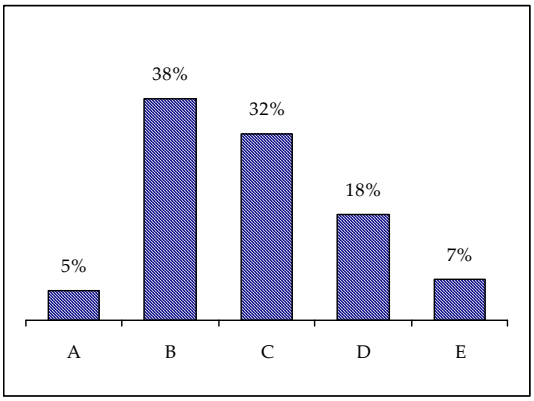


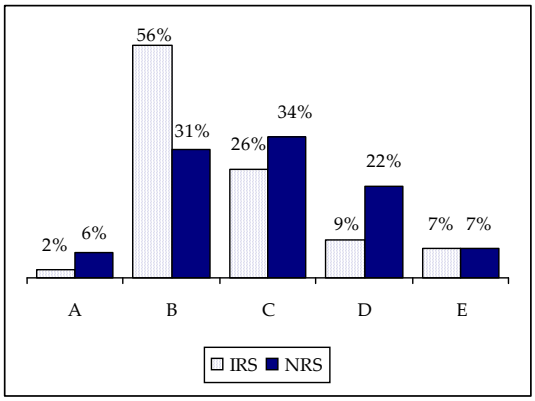
4. Decisions concerning staff downsizing in recent years were
(c) Strategically oriented [159; IRS-43, NRS-116]



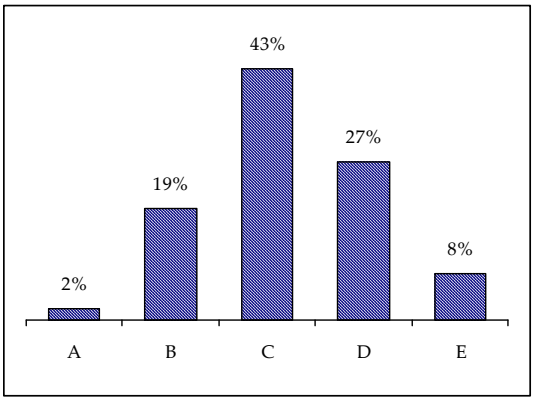


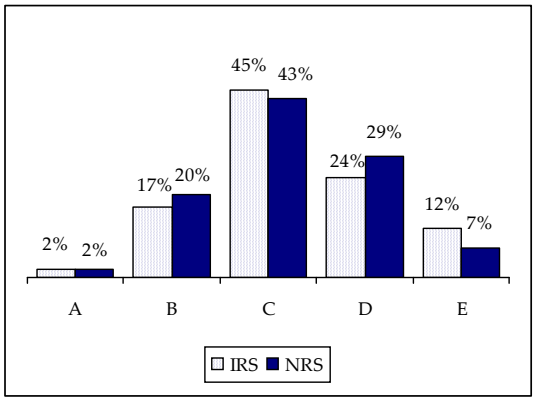
5. Staff performance appraisal at CIAT is
(a) Systematically and fairly carried out [159; IRS-43, NRS-116]



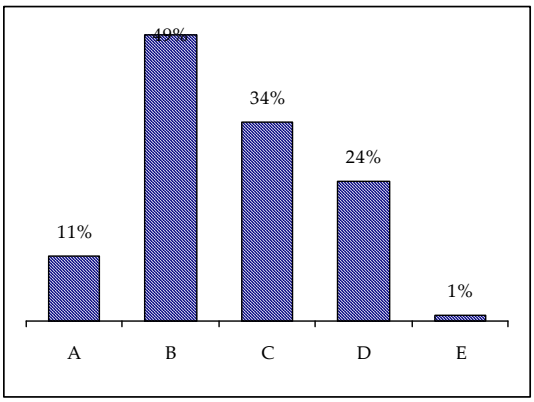


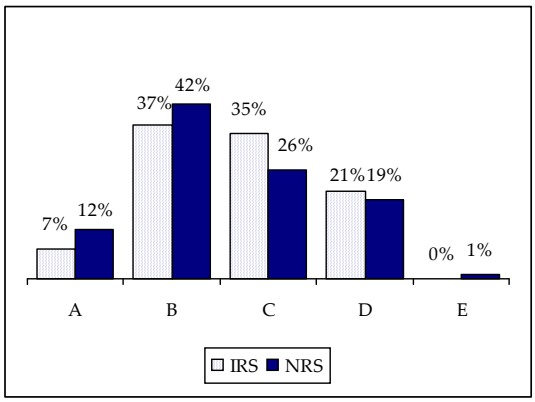
5. Staff performance appraisal at CIAT is
(b) Linked clearly with rewards [157; IRS-42, NRS-115]



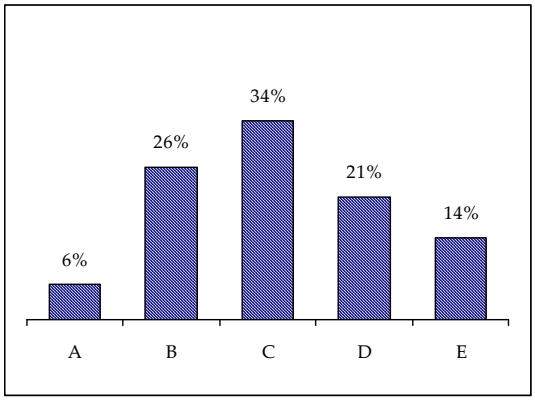


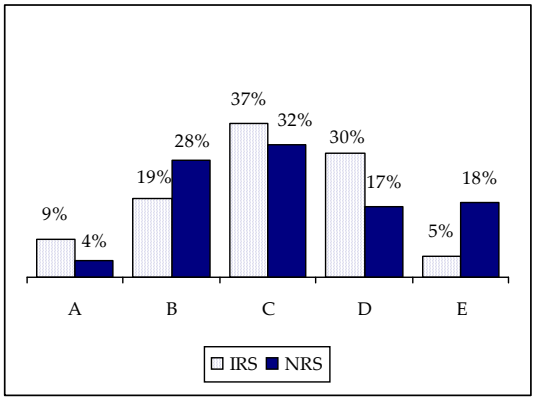
6. CIAT provides good opportunities for professional advancement [161; IRS-43, NRS-118]



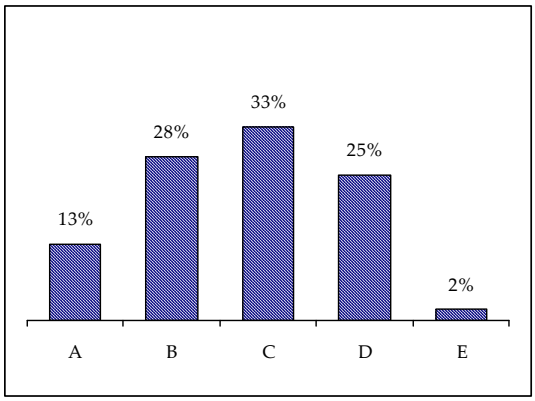


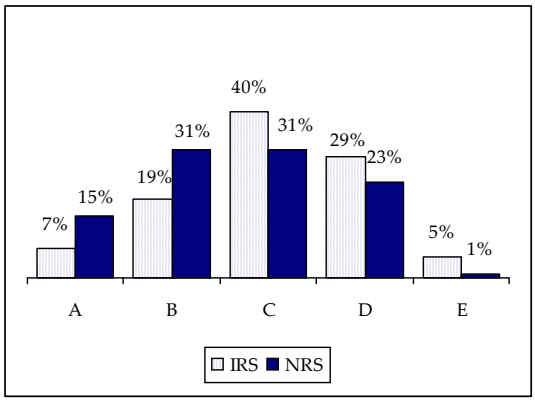
7. Relations between staff and management at CIAT are positive [160; IRS-43, NRS-117]



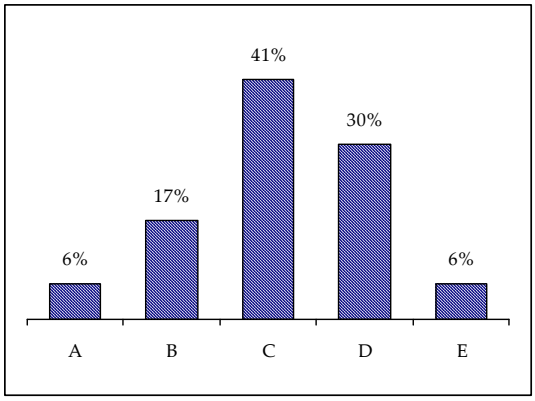


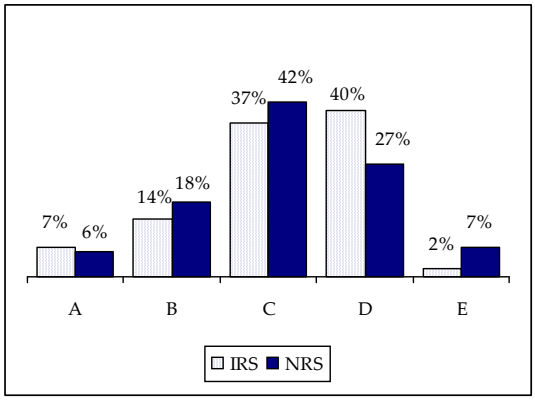
8. Personally, I have
(a) Good morale as a CIAT employee [159; IRS-42, NRS-117]





8. Personally, I have
(b) Confidence in CIAT leadership (DG&BOT) [162; IRS-43, NRS-119]





Annex 7

Board of Trustees Members and Committees Term 2007-2008

Name (Gender)	Country	Committee	Title (Term)	Affiliation (Expertise)
Andres Felipe Arias (M)	Colombia	-	Member (*Ex-officio*)	Ministry of Agriculture (Economics)
Emilia Boncodin (F)	Philippines	b, c	Member* (2010)	Professor National College of Public Administration, and Governance; University of Philippines (Financial Management/ Fiscal Planning)
Louise Fortmann (F)	U.S.A.	a, b, d, j	Chair Nominating/ Governance Committee** (2010)	Professor of Natural Resources Sociology Rudy Grah Chair in Forestry and Sustainable Development, UC Berkeley (Rural Sociology)
Kenneth Giller (M)	U. Kingdom	a, h	Chair Program Committee (2009)	Professor - Plant Production Systems; Department of Plant Sciences, Wageningen University (Agronomy/Soil Sciences)
David Miron (M)	U.S.A.	a, b, c, e, f, i	CGIAR Nominee, Chair Audit Committee, Chair Risk Management (2008)	President, TDM Consultants (General Management)
Ablassé Ouedraogo (M)	Burkina Faso	b, d	Member* (2010)	Consriller du Président pur l'Afrique, African Development Bank (Economist)
Oscar Rojas (M)	Colombia	a, b, d, g	Member (2010**)	Executive Director Fundación ALVARALICE (Public Health)
Armando Samper (M)	Colombia	-	CIAT Chairman Emeritus	CIAT
Maria José Sampaio (F)	Brazil	b, c, e	Member (2008)	Research, Special Advisor for Policy Affairs Genetics Resources, IP, Biotechnology and GMO Biosafety Research and Development Dept EMBRAPA (Molecular Biochemistry/ Biotechnology)
Yves Savidan (M)	France	a, b, d, f, g, i	**Chairman**, Chair Executive and Finance Committee** (2010)	Scientific Advisor and International Relations Officer, Life Science, Agropolis (Genetics)
Mary Scholes (F)	South Africa	a, b, c, e, f	Vice Chair (2009)	Professor, Dept of Animal, Plant & Environmental Science; University of The Witwatersrand (Plant Physiology)
Arturo Vega (M)	Colombia	b, d	Member (*Ex-officio*)	Corporación Colombiana de Investigación Agropecuaria - CORPOICA (Agronomy)
Joachim Voss (M)	Canada	a, g, h	Member (*Ex-officio*)	**Director General** CIAT (Anthropology)
Moisés Wasserman (M)	Colombia	b	Member (*Ex-officio*)	Rector, National University (Biochemistry)

Name (Gender)	Country	Committee	Title (Term)	Affiliation (Expertise)
Claudio Wernli (M)	Chile	b, c, d	Member** (2010)	Executive Director Millennium Science Initiative; Ministerio de Planificación y Cooperación (Agricultural Engineer)

* Appointed to the Board at the close of the May 2007 Board Session
** Ineligible for extension

Committees

a: Executive / Finance
b: Program
c : Audit
d: Nominating / Governance
e: Risk management
f: ExFin Sub-Committee on Compensation
g: Ad-hoc Sub-Committee on security matters
h: TSBF-Scientific Advisory Committee
i: Harvest Plus
j: PRGA Board

Annex 8
Acronyms

ACIAR	Australian Center for International Agricultural Research
AfNet	African Network for Soil Biology and Fertility
AHI	African Highland Initiative
ARI	Advanced research institute
ASARECA	Association for Strengthening Agricultural Research in Eastern and Central Africa
BOT	Board of Trustees (of CIAT)
CA	Central America
CC	Climate change
CCER	Center Commissioned External Review
CENIPALMA	Centro de Investigación en Palma de Aceite, Colombia
CGIAR	Consultative Group on International Agricultural Research
CIAT	Centro de Investigación Agrícola Tropical
CIDA	Canadian International Development Agency
CIFOR	Center for International Forestry Research, Indonesia
CIMMYT	Centro Internacional para Mejoramiento de Maiz y Trigo, Mexico
CIP	Centro Internacional de la Papa, Perú
CIRAD	Center de Coopération Internationale en Recherche Agronomique pour le Développement, France
CONDESAN	Consorcio para el Desarrollo Sostenible de la Ecorregión Andina, Peru
CORPOICA	Corporación Colombiana de Investigación Agropecuaria
CRSP	Collaborative Research Support Program
DDG	Deputy Director General
DG	Director General
DFID	Department for International Development, UK
ECABREN	Eastern and Central Africa Bean Research Network
EMBRAPA	Empresa Brasileira de Pesquisa Agropecuária
EPMR	External Program and Management Review
ERI	Enabling Rural Innovation
ETSP	Extension and Training Support Project
FAO	Food and Agriculture Organization of the United Nations
FLAR	Fondo Latinoamericano y del Caribe para Arroz de Riego
GA	Gender analysis
GRU	Genetic Resources Unit (of CIAT)
ICA	Instituto Colombiano Agropecuario
ICRAF	International Center for Research in Agroforestry, Kenya
ICRISAT	International Crops Research Inst. for the Semi-Arid Tropics, India
ICTA	Instituto de Ciencia y Tecnología Agrícola, Guatemala
ICWG—CC	Inter-Center Working Group on Climate Change (of the CGIAR)
IFAD	International Fund for Agricultural Development
IFPRI	International Food Policy Research Institute, USA
IITA	International Institute of Tropical Agriculture, Nigeria
ILRI	International Livestock Research Institute, Kenya
INERA	Institut de l'Environnement et de Recherches Agricoles, Burkina Faso
INTA	Instituto Nicaragüense de Tecnología Agropecuaria
IPM	Integrated pest management
IPR	Intellectual property rights
IRD	Institut de Recherche pour le Développement, France

IRRI	International Rice Research Institute, the Philippines
IRS	Internationally Recruited Staff
ISFM	Integrated soil-fertility management
IWMI	International Water Management Institute, Sri Lanka
JEEP	Joint External Evaluation Panel
JIRCAS	Japan International Research Center for Agricultural Sciences
KARI	Kenya Agricultural Research Institute
LAC	Latin America and the Caribbean
MADR	Ministerio de Agricultura y Desarrollo Rural, Colombia
MARD	Ministry of Agriculture and Rural Development
MAS	Marker-assisted selection
M&E	Monitoring and evaluation
MIDAS	Programa Más Inversión para el Desarrollo Sostenible
MIS	Management and Information Systems Research Group
MTP	Medium-Term Plan (CIAT)
NARO	National Agricultural Research Organization, Uganda
NCAR	National Center for Atmospheric Research, USA
NGOs	Nongovernmental organizations
NRM	Natural resource management
NRS	National Recruited Staff
PABRA	Pan-Africa Bean Research Alliance
PL	Product Line
PM&E	Participatory monitoring and evaluation
PPB	Participatory plant breeding
PRGA	Participatory Research and Gender Analysis
PROFRIJOL	Programa Cooperativo Regional de Frijol para Centro América, México y el Caribe
RDC	Research for Development Challenge
R&D	Research and development
RII	Rural Innovation Institute
SADU	Smallholder Agroenterprise Development in the uplands
SDC	Swiss Agency for Development and Cooperation
SEARCA	Southeast Asia Regional Center for Graduate Study and Research in Agriculture
SLM	Sustainable Land Management
SLU	Sveriges Lantbruksuniversitet (Swedish University of Agricultural Sciences)
SP	Systemwide program (of the CGIAR)
SP-IPM	Systemwide Program on Integrated Pest Management
SP-PRGA	Systemwide Program on Participatory Research and Gender Analysis
TAC	Technical Advisory Committee (of the CGIAR)
UCR	Universidad de Costa Rica
UNA	Universidad Nacional Agraria, Nicaragua
UNDP	United Nations Development Program
UNIVALLE	Universidad del Valle, Colombia
WARDA	West Africa Rice Development Association
ZARI	Zambian Agricultural Research Institute

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