

2008 Annual Report Summary Format

1. Product Line Log Frame (MTP 2008-2010).

The Product Line aims 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 improve the competitiveness of small scale farmers, and the uptake of research results. 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, which include many female farmers in Africa, Asia and Latin America.

The tropical world is characterized by considerable variation at many scales.

Agroecological conditions tend to be most varied in hillside agriculture. Markets are often undeveloped, distant, poorly informed, and especially imperfect in the way they serve the poorer, small farmers. Institutions at all levels from village to region tend to be numerous, and at varying levels of effectiveness, inclusiveness and governance. Small farmers' livelihoods range from near-subsistence to small scale commercial, and households may seek or have opportunities to emerge from poverty in ways that differ according to their composition, agroecological situation and socioeconomic circumstances.

Both social and biophysical outcomes are needed to achieve widespread impact under these conditions. Development and research practitioners need tools that enable them to work at different scales, and to discriminate effectively among rural populations and environments. Many of the most appropriate tools will be interdisciplinary in nature, and in general need to be derived through iterative interdisciplinary research processes.

Agricultural science practice cannot be successful if it is disconnected from development practice, and some of these research processes need to be embedded in development (research for development R4D) in order to yield robust and international public goods.

PA1: Linking Smallholder Farmers to Growth Markets aims to address several aspects of the system Priorities 3, 4 and 5, by addressing key research questions around systems approaches (targeting, systems integration, organizational models, reaching end users, learning approaches and impact assessment). We expect outputs from PA1 to increase the effectiveness of other product lines of CIAT, as well as the wider R4D community. Some outputs contribute directly to those of other Product Lines through teamwork with biophysical scientists, and may be reported elsewhere. This Product Line bring together skills on *Tropical fruits, Crop and agroecosystem health management, Rural agroenterprise development, and Participatory research approaches.*

CIAT MARKETS, INSTITUTIONS AND LIVELIHOODS PRODUCT LINES PA-1 (2008-2010)

Targets	Output	Intended User	Outcome	Impact
OUTPUT 1	Institutional arrangements and mechanisms for targeting, increasing and evaluating impacts	Agricultural and environmental research organizations, development and environmental organizations, civil society groups, policy makers at regional, national and local scales	Greater incorporation of the interests of the poor in the design and implementation of R&D projects	R&D investments have larger impacts, of which a larger share goes to the poorest beneficiaries
Output Targets 2008	A method for tracking change, improving learning, accountability, relevance and impacts of agricultural innovation systems tested in at least two countries in Africa and Asia	Complex R4D research programs and projects, eg. CPWF, SSA CP, PABRA, EULACIAS Project (led by Wageningen Uni), KS Project, Cambio Andino Project; ERI projects in Eastern and Southern Africa with NARES; civil society organizations; formal and informal farmers' organizations; rural service providers (extension services; NGOs, agro-processors, agro-dealers, financial institutions	Institutions responsible for complex R4D research projects and programs use these methods to monitor, evaluate and strengthen the networks that they build and foster	More efficient use of research-for-development funds to foster innovation; higher quality 'learning selection' in projects and programs using the tools; improved relevance and impacts of agricultural innovations systems through better expression of user-demands; improved and sustainable livelihoods through faster and more equitable innovation processes
	A set of good practices derived from Colombia and Kenya for strengthening the participation of the poor in land and water management institutions	R&D organizations working for pro-poor land and water management in tropical watersheds	Poor are empowered in land and water management and their interests are reflected in rules and policies	Empowerment of the poor; more equitable management of land and water resources

Targets	Output	Intended User	Outcome	Impact
	Two studies published assessing levels and dimensions of social capital and approaches that are critical for promoting pro-poor market linkages, farmer experimentation, social inclusion, and investment in natural resource management in Eastern Africa	ERI projects in Eastern and Southern Africa: NARES; Civil society organizations; Formal and informal farmers' organizations; Rural service providers (extension services; NGOs, agro-processors, agro-dealers, financial institutions	Increased efficiency and number of actors including vulnerable/ disadvantaged farmers participating in the resource to consumption chain	Empowerment of formal and informal farmers' organizations and faster development and adaptation of more appropriate technologies leading to improved sustainable livelihoods, especially for the rural poor
Output Targets 2009	Lessons for strengthening and weaving effective networks for influence and pro-poor impact put into use in at least one R4D program	Complex R4D research programs and projects, eg. CPWF, SSA CP, PABRA, EULACIAS Project, KS-in-Research Project, Cambio Andino Project; ERI project collaborators in Eastern and Southern Africa	Complex R4D research projects and programs use network methods developed to monitor, evaluate and strengthen the networks that they build and foster	More efficient use of research-for-development funds to foster innovation; higher quality 'learning selection' in projects and programs using the tools; improved relevance and impacts of agricultural innovations systems through better expression of user-demands (see above)
	Methodological framework for testing and evaluating innovation platforms (multi-stakeholder partnerships between private-public-CSOs) and other forms of partnerships for facilitating small holder participation in high value market chains	National agriculture research and extension systems; civil society organizations; decentralized local Governments and local institutions; rural service providers	Increased capacities of organizations / institutions to develop and promote integrated agro-enterprise development solutions for wealth creation	Effective multi-stakeholder partnerships with skills in innovative approaches for linking farmers to markets, improved performance of the research for development, better delivery of quality services, accelerated uptake of agricultural innovations and feedback to research and development priorities

Targets	Output	Intended User	Outcome	Impact
Output Targets 2010	An assessment of the potential of payment for environmental services generated from agriculture to both improve the environment and rural livelihoods	Agricultural extension, Organizations working on pro-poor development, conservation organizations, managers of downstream water systems (irrigation and potable water)	Where appropriate, farmers will receive additional incentives to adopt soil and water conserving practices	Upland agriculture is more productive and sustainable and downstream water supplies are improved
OUTPUT 2	Diagnostic, targeting and information tools that improve market value chain management for the economic and environmental benefit of smallholder farmers and the poor	Policy-makers (public, private & donor), farmer organizations, NGO's, researchers in CIAT and partner organizations	Improved conceptual and empirical understanding of how impact occurs is used to design more effective research and development interventions	R&D efforts lead to more effective, equitable and sustainable development in the tropics
Output Targets 2008	Three sets of frameworks, methodology and tools to target staple crops and higher value products to environmental and socioeconomic niches developed and tested for at least 15 crops (General spatial analysis tools, as well as CIAT's Canasta and Homologue software tools, adapted to a range of crops; concepts expanded to Africa)	Policy-makers (public, private & donor), NGO's, researchers in CIAT and partner organizations, farmer organizations	Tools developed by CIAT are used for the identification of environmental niches that support the implementation of supply chains of staple crops and differentiated high value crops.	More effective locating and targeting of germplasm in response to environmental and market conditions leads to higher welfare and environmental benefits

Targets	Output	Intended User	Outcome	Impact
	Three improved supply chain governance prototypes – organizational forms, contractual arrangements and information management – to link farm enterprises into the agri-food chain in a more equitable manner identified and validated with development partners, private sector buyers and state organizations in LAC and Asia	Policy-makers (public, private & donor), NGO's, farmer organizations, researchers in CIAT and partner organizations	Improved market linkages achieved among supply chain actors based on comparative advantages, improved access to information and stronger relationships	Rural populations benefit from sustainable and equitable market links that generate demand for products, value adding opportunities and on and off farm employment
Output Targets 2009	At least three analytical frameworks, methodology and tools for assessing the benefits, costs and risks of targeted staple and high value crops applied to research and development projects on key production constraints (drought, pests, diseases) , GMOs (as required in CBD, for LAC countries)	Policy-makers (public, private & donor), farmer organizations, NGO's, researchers in CIAT and partner organizations	Tools are used for identification of genetic resources that are deployed to support agricultural development.	More effective locating and targeting of germplasm leads to higher welfare and environmental benefits

Targets	Output	Intended User	Outcome	Impact
	One guide to improved knowledge management and innovation in agri-chains for linking smallholder farmers into higher value markets developed and validated with development partners, private sector buyers and state organizations in LAC and Asia	Policy-makers (public, private & donor), NGO's, farmer organizations, researchers in CIAT and partner organizations	Supply chain actors learn to innovate collaboratively, communicate in a transparent fashion and take advantage of differentiated product niches in national and international markets with targeted state support	Increased participation of smallholders in dynamic markets leads to income and employment gains in rural communities.
Output Targets 2010	Use of spatial analysis to develop a protocol for screening and selecting germplasm developed, published and applied for 15 staple crops (globally), 5 high value crops (globally) and 4 GMOs (in LAC)	Policy-makers (public, private & donor), farmer organizations, NGO's, researchers in CIAT and partner organizations	Method is widely adopted to establish high value product supply chains for medicinal plants.	More effective locating and targeting of germplasm leads to higher welfare and environmental benefits
	At least five sustainable supply chains linking smallholders and key corporate buyers developed, evaluated for equity and environmental effects and outscaled through links with business partners, development and donor agencies in Africa, LAC and Asia	Policy-makers (public, private & donor), NGO's, farmer organizations, researchers in CIAT and partner organizations	Equitable business arrangements investigated, adapted and mainstreamed by strategic private sector partners and outscaled to other businesses as 'good practice'	More inclusive supply chain models in place in Africa, LAC and Asia that permit smallholder market participation in an equitable, sustainable and dynamic fashion contributing to rural livelihoods
OUTPUT 3	Approaches, tools and technologies for improving the	Scientists and research managers; development	Decision-makers gain better understanding of high value	R&D efforts more effectively and systematically targeted.

Targets	Output	Intended User	Outcome	Impact
	competitiveness of smallholder producers of high value commodities including tropical fruits	planners and practitioners; producer associations; policymakers; donors	crop systems and performance, and thereby take informed decisions on resource allocations	Increased productivity of high value, readily-marketed products
Output Targets 2008	A methodology for participatory selection of elite clones of high value perennial fruit species implemented (based on model crops of naranjilla, Andean blackberry and avocado)	Research and development agencies, farmer organizations	Farmer associations and members engaged in evaluating agronomic characteristics of pre-selected elite clones	More decentralized and participatory evaluation of germplasm leads to increases in welfare and environmental benefits
	A methodology and two prediction models to target higher value products to environmental niches developed and tested with at least 5 crops in LAC	Decision makers in farmer associations, NGOs, and GOs	Tools are used for identification of genetic resources deployed to support agricultural development	More effective locating and targeting of germplasm leads to higher welfare and environmental benefits
Output Targets 2009	A methodology for mass propagation of elite clones of naranjilla, Andean blackberry and avocado established	National research agencies	Propagation methods adapted to individual species (or clones) of local interest	Wider and more rapid adoption and impact of preferred clones
	A protocol for screening and selecting medicinal plants developed, published and tested in at least 3 supply chains in LAC	Decision makers in producer associations, NGOs, and GOs	Method is widely adopted to establish high value product supply chains for medicinal plants	More effective targeting of germplasm leads to higher welfare and environmental benefits

Targets	Output	Intended User	Outcome	Impact
Output Targets 2010	Assessment of elite clones of naranjilla, Andean blackberry and avocado for disease resistance completed. Rural nurseries of naranjilla and Andean Blackberry established by at least 10 farmer associations	Smallholder farmers, local nurseries, national agricultural R&D agencies	Producers have access to planting material with known resistance characteristics	Rural nurseries become viable businesses
	One database for accessions and performance of at least 4 high market value, underutilized crops and/or tropical fruit species established	National agricultural and environmental NGOs and GOs. Researchers internal and external to CIAT.	Identification of environmental niches based on established databases that support the implementation of high value crop supply chains	More effective targeting of germplasm leads to higher welfare and environmental benefits
OUTPUT 4	Technologies for better product and environmental quality through management of diseases and pests	National research and development agencies; and farmer associations in Latin America and Africa	Cost-effective and environmentally friendly practices and tools promoted by national R&D agencies and in use	Increased rural income through increased yield, higher market values and reduced production costs
Output Targets 2008	A biological pesticide suitable for Africa tested	NARI researchers in Africa	Cost-effective and environmentally friendly bio-pesticide option available to farmers in Africa	Increased and stabilized production

Targets	Output	Intended User	Outcome	Impact
	An assessment of the major pest and disease constraints for a model tropical fruit in selected countries in Latin America	Farmers and producers of biological inputs and planting material in LAC	Safe propagation of planting material; lixivium and other ecological practices applied in management of pest and diseases	Increased and stabilized production
Output Targets 2009	A method to quantify one pathogenic Pythium species validated and adapted to evaluate disease management strategies	NARI researchers in Africa	Efficient and integrated approaches in use for managing Pythium root rot	Increased and stabilized production
	Disease management components and strategies developed for the major pest and disease constraints identified for the model tropical fruit for Latin America	Farmers, researchers and private sector in LAC	Cost-effective and environmentally friendly bio-pesticides for different production systems implemented	Reduction of economic losses by tropical fruits growers in LAC
Output Targets 2010	Disease management strategies verified for the model fruit expanded for testing with farmers growing naranjilla, Andean blackberry and avocado under a range of conditions	Farmers, researchers and private sector in LAC	Cost-effective and environmentally friendly bio-pesticides for different fruit production systems implemented by farmers	Reduction of chemical use in orchards in LAC. Technologies available for Africa and Asia.

Targets	Output	Intended User	Outcome	Impact
OUTPUT 5	Policy guidelines, tools and innovations for adaptation to risk, high stress and vulnerability.	Policy-makers (public, private & donor), farmer organizations, NGO's, researchers in CIAT and partner organizations	Improved conceptual and empirical understanding of how policy enables effective research and development interventions	R&D efforts lead to effective, equitable and sustainable development in the tropics.
Output Targets 2008	Standard protocol to examine how farmer linkages to markets affect investments in NRM (currently in use in Malawi, Uganda, Zimbabwe, Mozambique)	Policy-makers (public, private & donor), NGOs, researchers in CIAT and partner organizations, farmer organizations	Tools developed are used for the identification of development policies and associated investments that support the implementation profitable and resilient land uses	Effective policies that account for environmental, social and market conditions thereby leading to enhanced welfare and environmental benefits
Output Targets 2009	Socio-economic and agronomic vulnerability and hotspots identified under current climate variability and future climate change (pilot sites identified)	Policy-makers (public, private & donor), farmer organizations, NGOs, researchers in CIAT and partner organizations	Tools developed are used for the identification of development policies and associated investments that support the implementation profitable and resilient land uses	Improved efficiency of development interventions in increasing the adaptive capacity of agricultural systems to climate variability and change
Output Targets 2010	A set of instruments (seasonal forecasting, insurance, policy), agricultural technologies and practices for coping and adapting to climate change identified and promoted in pilot sites	Policy-makers (public, private & donor), farmer organizations, NGOs, researchers in CIAT and partner organizations	Innovations contributing to enhanced resilience in agricultural systems to climate variability and change	Less vulnerability of rural communities, especially in marginal areas, to climate variability and change

2. A list of the 2008 output targets:

PRODUCT 2: *Three improved supply chain governance prototypes – organizational forms, contractual arrangements and information management – to link farm enterprises into the agri-food chain in a more equitable manner identified and validated with development partners, private sector buyers and state organizations in LAC and Asia.*

> 75% achieved:

New Business Models for Sustained Trading Relationships background paper developed and accepted for publication by FAO. The models from this paper are being adapted and used with buyers of beans (Ethiopia), flowers (Kenya) and cocoa (Ghana / Ivory Coast).

Improved governance prototype functioning in Guatemala (Costco-LA Salad-Cuatro Pinos) in the form of a self-funded social development fund to women's health and education.

Improved governance prototype functioning in Guatemala (Walmart-AMICELCO-Henkle-Mabli S.A.) for new product development and market development.

Two new governance prototypes under active development in northern Nicaragua (roots and tubers and beans) with CRS ACORDAR, Aldea Global, LAFISE and others.

An improved supply chain prototype has been developed with DAKFOCAM (an agribusiness firm that owns two cassava starch factories). As a result there have been very substantial improvements in the governance of contracts (design, implementation, communication and transparency) between the Yang Kang Tapioca factory, 1,600 contract growers and traders. This has generated tangible benefits to contract and non-contract growers. DAKFOCAM has also started piloting long season cassava, which has the potential to generate significant income benefits to a large number of cassava farming households.

Work with An Lac, the largest potato processing company in Vietnam has led to significant improvements in one of their contract farming schemes, although these still need to be validated and sustained over the coming years. Improvements included better communication and coordination between the company, local staff and farmers, a contract design that is more favorable to farmers, and improvements in the provision of technical and marketing services.

About 450 ethnic minority farmers are involved in the contract farming scheme. These experiences will be documented in 2009.

Evidence: SADU Donor Report. FAO papers (unpublished).

PRODUCT 3:

- *A methodology for participatory selection of elite clones of high value perennial fruit species implemented (based on model crops of naranjilla, Andean blackberry and avocado).*

> 75% achieved:

Methodological approach is being tested in Naranjilla and Andean Blackberry, two andean crops. The approach for identifying important and relevant traits for selection of germplasm and clonal selection is

being tested with growers, traders and processors. More case studies in other regions will be considered and a complete analysis will be available at the end of 2009.

Evidence: Donor Reports Fontagro Proyecto, 2009. Final Donor Report. MADR, 2008.

PRODUCT 4

- *A biological pesticide suitable for Africa tested.*

Deferred:

Funding to complete this task has not been secured. Proposals were submitted and will continue to seek funding to complete the product in the near future. The product, however, has been tested in LAC.

- *An assessment of the major pest and disease constraints for a model tropical fruit in selected countries in Latin America.*

Fully Achieved:

Work on pest and disease assessment is ongoing in Plantain, Soursop, Naranjilla, Andean Blackberry and avocado. Focus on characterization of the pathogen agent, germplasm characterization for disease resistance, induced resistance and alternative to chemical control methods.

Evidence:

Arenas, A., Alvarez, E., Afanador, L., Mejía J.F., Gonzalez, A. 2007. Especies de *Colletotrichum* asociadas con la antracnosis de la mora de castilla (*Rubus glaucus* Benth) en el Valle del Cauca. Fitopatología Colombiana 31(1):7-14

Alvarez, E., Gonzalez, A., Llano, G., Mejia, J.F. 2008. Morphological, Genetic, and Pathogenic Characterization of *Colletotrichum gloeosporioides*, Causal agent of anthracnose in soursop (*Annona muricata*) in production areas of Valle del Cauca, Colombia. (Plant Disease)

Donor Reports, Annual Report 2008.

3. Research Highlights 2008.

These should be presented in short paragraphs. Please prepare a maximum 3 highlights per project with no more than 200 words per highlight. These can be especially important for communication to the BOT and are often the basis for subsequent public awareness products.

a. New Business Models for Sustainable Trading Relationships

Linking Farmers to Markets is a common theme in the R&D community. However this approach has contributed to relatively modest changes for women and the rural poor. Recent research indicates that a lack of scaleable models is a critical issue. How can supply chains be structured in such a way that they provide *both* business benefits and development benefits? How can successful business linkages be leveraged to support large-scale processes of inclusive social development that benefit women and the rural poor? How can such changes be measured and fed back into decision-making by multiple actors to scale up positive results or reorient less successful activities?

CIAT and the International Institute of Environment and Development (IIED) conducted a thorough review of existing knowledge to identify critical underlying principals in successful market linkages between smallholders and buyers across the developing world. These principles are being applied to specific supply chains via action research in four countries in Africa and two in Latin America with the active participation of ACOS, ASDA Walmart, Unilever, Sysco, Kraft and Hershey's and major INGOs. The goal of this research is to provide guidance for the large-scale participation of the rural poor in sustained beneficial trading relationships.

b. Genetic variation in pathogenicity of phytophthora strains affecting avocado in Colombia.

Root rot caused by the pseudo-fungus *Phytophthora cinnamomi* is the most limiting disease in avocados (*Persea americana*). Commercial production of this tree crop occupies large areas in subtropical zones, and is highly developed in more industrialized countries. This crop has gained the interest of smallholder producers in tropical countries as well. However, current commercial practices applied on tropical countries are focused on the commercial varieties grafted on unknown rootstocks. Commonly used rootstocks are of unknown origin, and therefore unknown characteristics to resistance to this devastating pathogen. Therefore, trees planted could suffer severe infections several years later, representing economic losses. Under a Colombian Minister of Agriculture funded project, and in cooperation with Corpoica and a commercial nursery, Vivero Profrutales, CIAT is assessing the genetic variability of the pathogen and testing its pathogenicity in avocado germplasm collected in the country, and in internationally known rootstocks. Initial testing of root rot susceptible (cv Hass) and resistant avocado (cv Duke 7, G755) has confirmed that 1) CIAT methodology for assessing genetic resistance against *P. cinnamomi* correlates with known characteristics of the germplasm, and 2) different strains of *P. cinnamomi* have differential effect on the same germplasm, suggesting that some regions might harbor more pathogenic strains of *P. cinnamomi* in this country.

4. Project outcome.

Use of compost lixivium from plantain rachis by farmers in Colombia and El Salvador. Alternatives to manage fungal and bacterial diseases in plantain.

This outcome is the result of Output 2, “Pest and Disease Management components and IPM strategies and tactics developed” of the former Pest and Disease Management Project, and presented in the MTP 2003-2005.

In a CIAT research project with participation of farmers associated to FEDEPLATANO, the Colombian Institute for Agriculture and Livestock (ICA) and the Colombian Corporation for Agricultural Research (CORPOICA), the biological effect of a compost lixivium from plantain rachis was determined. For the past two decades, the lixivium has been produced by farmers in plantain crops located in department of Quindío (Colombia). Initially, farmers designed a simple composter that allowed collecting the lixivium liquid, which was used as fertilizer.

The liquid was evaluated as an non-chemical alternative to manage Powdery Mildew (*Sphaerotheca pannosa*) in roses (Alvarez et al 2002), under greenhouse and commercial fields. Results indicated that lixivium had a better control effect compared to the chemical treatment.

The Moko disease, caused by *R. solanacearum*, was killing plantain fields. Therefore, in 2004, farmers and FEDEPLATANO, created the Moko club, a broad alliance looking for measures to diagnose and control the disease. The initial alliance was extended to include CIAT, ICA and CORPOICA. Producers were concerned about the toxic effect of formaldehyde (one of the treatments recommended for killing bacteria in the soil. It was continuously used in the zone), because of negative effects on human health and the environment. CIAT found that lixivium reduced the population of *Rashtonia solanacearum* in the soil by 32%, and achieved a complete inhibition of the bacteria *in vitro*, (Arenas et al 2004). In 2004, the CGIAR awarded FEDEPLATANO for the results of the alliance farmers-CIAT-National Institutes.

CIAT continued working on the effects and uses of the lixivium (CIAT annual reports, 2005-2006-2007), and has found that it induces resistance to the bacteria when used as a foliar spray 15 days before bacteria inoculation (Llano et al 2007). The lixivium was evaluated in a commercial plantain farm as an alternative to manage fields affected by Moko disease; the fields were rendered useless to further plantain cultivation. The lixivium, when mixed with *Tagetes patula* and phosphate rock, was 100% effective to recuperate *R. solanacearum* infested soils and allowed new plantain plantings in those fields. Using fluorescence microscope techniques, it was shown that the lixivium caused cell death of the bacteria (Llano et al 2007). Based on these research results, a bulletin was disseminated to farmers and technicians indicating how to use the lixivium to manage Moko, as an integral component of a strategy for integrated disease management (CIAT and ICA 2008).

The use of lixivium to control black sigatoka, a devastating disease in plantain and banana has extended, and is reducing the dependence on chemical inputs to the crop.

Some commercial farmers are using up 75% less commercial chemical and instead are using the lixivium prepared in their own farms to control this devastating disease. Up to date more than 30 lixivium systems have been built in Quindío (Colombia), where farmers are using it as a fertilizer, to manage Moko disease and, additionally, to manage Black Sigatoka. At least 5 lixivium systems there exists in the eastern plains of Colombia (Fedeplátano, 2008 personal communication of Silverio González). Two systems were built in Valle del Cauca and Risaralda to manage Bacterial Disease (*Ralstonia solanacearum*) in Heliconia, another species of the musacea family (Loke and Mesa 2008; Ceniflores, 2009). In El Salvador, a group of farmers built three systems for production of lixivium to control Black Sigatoka in plantain (Advisory from CIAT and Fedeplátano May and August 2008). In a collaborative project, ESPOL (Escuela Superior Politécnica del Litoral, Ecuador) is using different lixivium sources to control Black Sigatoka (María Isabel Jiménez, ESPOL 2008); in the same project, INIA – Venezuela will build a system to produce lixivium in order to evaluate its use to manage Black Sigatoka. Because of the information generated jointly by CIAT and collaborators, about 35000 farmers in Colombia, Ecuador and Venezuela benefited from this technology and are implementing the use of lixivium in their production systems. Farmers in Quindío department, have reduced chemical applications in 75% to control Black Sigatoka, using lixivium.

5. A list of 2008 publications.

Articles in refereed journals

- Alvarez, E.; Loke, J.B.; Trujillo, R. 2007. Avances en la caracterización patogénica de *Phytophthora* spp. Asociado al complejo pudrición de cogollo en palma africana *Elaeis guineensis* Jacq. Fitopatología Colombiana 31(1): 15-28.
- Alvarez, E.; Llano, G. A.; McAdam, E. L. 2008. Controlling cassava root rots with the participation of Tukano communities in the Mitú area of the Colombian Amazon. Gene Conserve No. 28: 426-455.
- Alvarez, E.; McGee, Denis C.; Harrington, T. 2008. Molecular variation and pathogenicity of isolates of *Fusarium* spp. affecting corn seed quality. Fitopatología Colombiana 32(1): 11-17.
- Alvarez, E.; Gómez, E.A.; Llano, G.A.; Castillo, F. 2007. Utilización de fosfitos de potasio en el control de *Peronospora sparsa*, causante de Mildeo vellosa de rosa. Fitopatología Colombiana 31(2): 49-52.
- Arenas, A.; Alvarez, E.; Afanador, L.; Mejía, J.F. 2007. Especies de *Colletotrichum* asociadas con la antracnosis de la mora de castilla (*Rubus glaucus* Benth) en el Valle del Cauca. Fitopatología Colombiana 31(1):7-14.

- Alvarez, E.; McGee, Denis C.; Harrington, T. 2008. Molecular variation and pathogenicity of isolates of *Fusarium* spp. affecting corn seed quality. *Fitopatología Colombiana* 32(1): 11-17.

Articles in non-refereed journals

- Alvarez, E.; Castillo, F.; Gómez, E.; Llano, G.A. 2008. Mejoramiento del manejo nutricional de la rosa para el control preventivo de *Peronospora sparsa* Berkeley, causante de mildew veloso. *Revista Asocoflores* 71:19-29.
- Fahrney, K. and R. Lefroy. 2008. Improved production, processing and use of root crops intensify livestock production and improve food security in Lao PDR. *Making a Difference in Asia and the Pacific (IFAD Division Newsletter) Special issue - October 2008: Supporting Agricultural Research through Grants.*
- Vorley, B., Lundy, M., MacGregor, J. 2008. Business Models for Small Farmers and SMEs. *Global Agro Industry Forum 2008. FAO, IFAD and UNIDO. 4 p.*
- Vorley, B., Lundy, M., MacGregor, J. 2008. Business Models that are Inclusive of Small Farmers. *Global Agro Industry Forum 2008 book chapter. FAO, IFAD and UNIDO. 35 p.*

Book chapters

- Meijer, M.; Rodriguez, I.; Lundy, M.; Hellin, J. 2008. Supermarkets and small farmers - the case of fresh vegetables in Honduras. In Ellen McCullough, Prabhu Pingali and Kostas Stamoulis (eds), *The Transformation of Agri-food Systems: Globalization, Supply Chains, and Smallholder Farmers*, Earthscan, London.
- Walker, D. J., Hodges, R. J. and T. Wandschneider (2007), “Local and Regional Food Aid Procurement: Development Impact and Implications for Future Policy”, in W. Hout (ed.) *EU Development Policy and Poverty Reduction: Enhancing Effectiveness*, Ashgate Publishing Limited: Aldershot. (peer-reviewed)
- Wandschneider, T. (forthcoming), “The Role of Contract Farming in the Development of a Competitive and Sustainable Cassava Sub-Sector in Vietnam: Implications for Research and Development Projects”, in: R. H. Howeler (ed.) *A New Future for Cassava in Asia: Its Use as Food, Feed and Fuel to Benefit the Poor*, Proceedings of the 8th Regional Cassava Research Workshop, held in Vientiane, Lao PDR, October 20-24 2008.

Articles and abstracts in proceedings

- Alvarez, C.; López, X.; Fernández, A.; Díaz, A.; Gibert, O.; Dufour, D. 2008. Comportamiento de las musaceas colombianas en la cocción en agua : Estudio de textura. In: *Noveno congreso nacional de tecnología de alimentos, “Alimentos bien pensados: salud y bienestar”*, Asociación Colombiana de Ciencia y tecnología de alimentos, 8-10 mayo 2008, Bogota, Colombia.

Papers presented at formal conferences and workshops with external attendance

- “Working with Cassava Starch Processing Enterprises: The Experience Of SADU Vietnam” at the PRDU Completion workshop, held in Luang Prabang, Lao PDR, 3 July 2008.
- “The Role of Contract Farming in the Development of a Competitive and Sustainable Cassava Sub-Sector in Vietnam: Implications for Research and Development Projects” at the 8th Regional Cassava Research Workshop, held in Vientiane, Lao PDR, 20-24 October 2008.
- “Diversification to High-Value Crops in the Uplands of Vietnam: The Experience with Chayote in Tan Lac, Hoa Binh” at the Mekong Sub-Regional Workshop on Linking Farmers with Markets: Intermediation Models, Policy and Networking, held in Hanoi, 17-20 November 2008.
- ‘Improved marketing of large ruminants in Xieng Khouang, Lao PDR: building on the impacts of production system improvements.’ Alison Wilson (CIAT) and Viengsavanh Phimpachanhvongsod (NAFRI). (CIRAD Regional Workshop on Conservation Agriculture, Laos.
- Fahrney, K., R. Lefroy, Tian Y.N., L. Thao, D.V. Son, T. Wandschneider, and B. Ospina. 2008. Opportunities for improving livelihoods and intensifying production by linking smallholders to cassava agro-industries. Presented at the 8th Asian Cassava Research Workshop, 20-24 October 2008. Vientiane, Lao PDR.

6. List of proposals funded in 2008,

Funded project proposals 2008

Outcome line 1

Project	Donor	Total Budget	Total CIAT in 2008
Small Scale Agro-Enterprise Development in the Uplands of Lao PDR (SADU) Phase II	SDC	511,000	434,000
Raising smallholder farmer income in the developing world: New business models for sustainable trading relationships.	RAINFOREST ALLIANCE	531,276	124,061
Diseño y ejecución de una metodología rápida para el fortalecimiento empresarial y organizativo de un grupo de proyectos productivos de pequeña escala.	CREA	80,614	80,614
Mobilizing innovation platforms for bringing more quality benefits to more people in post-conflict Central African Great Lakes Region	DIOBASS	80,000	40,000

Transferencia de Tecnología para el mejoramiento del sistema de producción	ARLA	10,032	10,032
Second Phase of the Preparation of an Audiovisual Presentation on Horticultural Marketing for Small-Scale Farmers	FAO	5,000	5,000
Estudios de Epidemiología y Control no Convencional de la Antracnosis del Mango	MADR	7,204	7,204
Mejoramiento de la sanidad y competitividad del cultivo de plátano, mediante el desarrollo de nuevas estrategias de manejo del suelo y la nutrición	MADR	134,090	25,427
Inteligencia de Mercados y Sistemas de Producción Mejorados al Servicio de los Pequeños Productores Rurales para Diversificar sus Sistemas de Producción y Mejorar sus Ingresos	IICA- Nicaragua	117,076	84,576
Programme for Linking Livelihoods of Poor Smallholder Farmers to Emerging Environmentally Progressive Agro-Industrial Markets	IFAD	1,500,000	23,162
Amazon Initiative Ecoregional Program (AI-EP)	WB	300,000	207,000
Total		3,276,292	1,041,076

7. Staff list

IRS

Roger Kirkby (100%) PhD		RDC2 Leader
Alonso Gonzalez (100%) PhD	Ph.D Biologist	Senior Scientist, Project Manager
Elizabeth Alvarez (100%) PhD	Ph.D Pathologist	Senior Scientist, Plant Pathologist
Mark Lundy (100%)	MA Latin American Studies, MSc. Community and Regional Planning	Agroenterprise development (Asia)
Wison Alison (100%)		Market Development Specialist
Tiago Wandschneider (100%)	MSc Economist	Agroenterprise development (Asia)
Roberto Porro (50%) PhD *	Anthropology	Senior Scientist
Eliud Birachi (50%) Ph.D	Economist	Market Economist
Keith Fahrney S. (100%)	MSc. Agronomy	Agronomist
Jemimah Njuki (100%) Ph.D *	Social Scientist	Senior Scientist
Sophie Graefe (100%)	Ph.D Ecology.	Posición CIM

NRS

Adriana Arenas (100%)	BSc. Biologist	Research Assistant 3
Adriana Cardona (20%) *	Economist Administrative	Research Assistant 3
Alvaro Mejía (100%) Ph.D	PhD Cell Biology	Research Associate
Ana Milena Guerrero (100%)	Bilingual Secretary	Bilingual Secretary
Carlos Ostertag (100%)	MSc Business Administration	Research Associate 1
Carlos Quiros (100%)	MSC Agronomist Research	Associate 1
Diego Izquierdo (100%)	BSc Economist	Research Assistant 2
Eliud Kaganzi (100%)	BSc Agroenterprise Development	Research Assistant
Escobar Freddy (100%)		Technician 1
Fernando Lukauskis (100%)	Agronomy Engineering	Administrative Assistant 1
Fernando Rodriguez	MSc Agro-industrial Engineering	Research Assistant 2

Gerardo Arturo Criollo (100%)		Technician 2
German Llano (100%)	MSc Breeding	Research Associate
Harrison Moran (100%)		Laborer 3
John Jairo Hurtado (100%)	BSc Food Technology	Research Assistant 1
Jorge Delgado (100%)		Pool Laborer
Juan Fco. Barona (100%)	BSc. Marketing and International	Research Assistant 3
Juan Fernando Mejia (100%)	MSc Breeding Candidate	Research Assistant 3
Lilian P. Torres (100%)	BSc Business Administration	Administrative Assistant 1
Lucia Afanador (100%)	Ph.D Student	Visiting Researcher
Luis Armando Munoz (100%)	Biologist	Research Assistant 2
Luis Hernandez (100%)	PhD Development	Research Associate 1
Maria Eugenia Buitrago (100%)	Biologist	Research Assistant 3
Mariana Oropeza (100%)	BSc.	Administrative Assistant 1
Oscar Sandoval (100%)	BSc Agro-industrial Engineering	Research Assistant 3
Tennyson Magombo (100%)	BSc.	Research Assistant
Zulma Zamora (100%)		Secretary 4

8. Summary budget prepared by Finances.

ACTUAL EXPENDITURES 2008				
Outcome Line PA-1: Linking Farmers to Markets				
SOURCE	Linking Farmers to Markets		Total US\$	(%)
	HQ + LAC	Asia + Africa		
Unrestricted Core	662,805		662,805	13%
Sub-total Core	662,805	0	662,805	13%
Restricted				
Special Projects		527,058	3,922,393	75%
	3,395,334			
Generation Challenge Program	18,473		18,473	0.4%
Sub Total Restricted	3,413,808	527,058	3,940,866	76%
Direct Expenditures	4,076,613	527,058	4,603,671	89%
Non Research Cost	524,822	67,853	592,675	11%
Total Expenditures	4,601,435	594,912	5,196,346	100%