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CIAT PROJECT SN – 3

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PROJECT SN-3: PARTICIPATORY RESEARCH
PROJECT DESCRIPTION

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

Outputs:

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

Gains:

- Users involved at early stages in decisions about innovation development.
- Methods available for incorporating user preferences. Participatory methods applied on a routine basis in CIAT research. At least three LA universities with the capacity to teach PR methods.
- New and better links between farmers group and local markets.
- At least 15 links and agreements with grass root farmers organizations, NGO's and R&D to settlet down PM&E in four macroregions in Bolivia, as a contribution to new bolivian technologycal system (SIBTA).
- Preliminar impact study about CIAL influence both communities with CIAL and without CIAL, taking in count factors like education, ownership land, ownership animals, literacy, yield improvement, woman participatory and scaling out.
- Building on the lessons from LAC, Participatory Monitoring and Evaluation (PM&E) Systems at both community level and project level are being tested in three pilot learning sites (Kisii, Kitale and Mtwapa), with seven projects.
- Building capacity of partners in applying Enabling Rural Innovation approaches to strengthen their work with communities. in Malawi, Uganda and Tanzania.
- The research has been on understanding the various dimensions of social capital as a strategy for strengthening the decision-making capacity of communities.
- At least 1000 trainees and 40 trainers able to apply these methods in the region.
- Contribution of PR to technology-adoption rates measured in restricted areas.
- A methodology for constructing and learning from innovation histories was developed.
- Lessons learned, and methodologies and materials disseminated globally, jointly with the Systemwide Program on Participatory Research and Gender Analysis for Technology Development and Institutional Innovation (SP-PRGA), convened by CIAT.
- A comparison of the innovation histories of CIALs in Honduras and Colombia, the two countries with the most CIALs, was begun and yielded some initial findings.
- On line tool developed based on database that is fed through information that is given by our partners based on results from different CIALs and second order organizations in five Latin American countries.

Milestones:

2004 Capacity of national partners to implement and support PM&E and PR processes established within R&D institutions in at least two countries in Latin America and at least two countries in East Africa.
Lessons from resource to consumption (R-to-C) framework tested and validated in at least two countries in Latin America.

A methodology for conducting Impact Assessment of PR methods developed and tested in at least two countries in Latin America
Impact assessment analysis to derive lessons and impacts of PR methods on livelihoods, conducted in at least three countries in Latin America.

2005 Capacity of national partners to implement and support PM&E and PR processes established within R&D institutions in at least two countries in Latin America and at least two countries in East Africa
Lessons from resource to consumption (R-to-C) framework, tested and validated in at least two countries in Latin America
Lessons from at least two innovation histories documented and internalized by the participants in the respective innovation processes

2006 National team of trainers/facilitators formed and scaling up of PM&E and PR processes at national level
Local capacity to identify demands and develop projects that respond to these demands, that feeds into Bolivian national agricultural research and technology transfer systems
Results of impact assessment studies to derive lessons and impacts of PR methods on livelihoods, disseminated widely and applied to scale PR activities in other countries
PM&E systems evaluated and lessons applied to develop guidelines and principles appropriate for Africa
An approach developed for documenting innovation histories and using those histories to foster ILAC by the stakeholder organizations

2007 Approach, methods and tools for analyzing and learning from innovation ecologies to accelerate rural innovation developed and being applied by at least one learning alliance
Social technologies for strengthening community-based organizations developed, tested and results published
Participatory evaluation and monitoring methods, training and materials in use in at least three national systems
Impact of PM&E methodologies on enabling resource-poor farmers to make effective demands on R&D providers, demonstrated and documented in Bolivia
A book that synthesizes lessons from at least four histories of differing types of innovation as well as documents the ILAC that has resulted from stakeholder analysis of the findings, published

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

Collaborators: NARS, NGOs, universities, SP-PRGA, SP-IPM, national agricultural extension services, KS-ILAC initiative, TSBF.

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

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

Project Objective:

To develop and disseminate participatory methodological approaches, analytical tools, autochthonous knowledge and organizational principles that strengthen the capacity of R&D institutions to respond to the demands of stakeholder groups that contribute to improving levels of well-being and integrated agroecosystem management and conservation (IAEMC)

OUTPUTS	1. Participatory methodological approaches, analytical tools and autochthonous knowledge that lead to the incorporation of farmers' and other end-users' needs in IAEMC, developed for interested R&D institutions	2. Organizational strategies and procedures for PR, developed	3. Professionals and others trained as facilitators of FPR
ACTIVITIES	✓ Adapt strategies for building capacity of local communities in establishing and supporting PM&E systems: Lessons from Africa and Bolivia ✓ Develop approach to build leadership capacity of communities; build strong groups; gender awareness and training; and mainstreaming through inclusion of women and men in the ERI (Enabling Rural Innovation) Committees ✓ Develop methodology for mapping and participatory analysis of innovation networks in rural communities ✓ Develop methodology for mapping and participatory analysis of advice and research networks in R&D organizations ✓ Knowledge-sharing methodologies for pro-poor agricultural innovation.	✓ Scale up impacts: Experiences with testing PM&E model in Colombia ✓ Establish PM&E Systems in Bolivia to contribute to the strengthening of the new Bolivian system ✓ Establish criteria for selecting pilot areas and expansion of activities for establishing participatory focuses in Bolivia ✓ Develop a model to build capacity in FPR and PM&E in Bolivia ✓ Document results and progress in the research done by the CIALs in Nicaragua, Bolivia and Colombia ✓ Recover biodiversity by the women's CIAL "Las Cruces" through case study on the quinoa crop ✓ Improvement of animal nutrition as a consequence of the participatory diagnosis in Roldanillo, Valle (Colombia) ✓ Enabling rural innovation in Africa: An approach for integrating farmer participatory research and market orientation for building the assets of the rural poor ✓ Facilitating participatory processes for policy change in NRM: Lessons from the Highlands of Southwestern Uganda ✓ Strengthening the institutional change process by intensifying the participation of farmers in R&D process: Lessons and experiences from the field	✓ Strengthen capacities in participatory methodologies for partner entities in Bolivia and Africa (FDTAs, NGO suppliers, organizations of requesters) ✓ Develop local capacities for implementing PM&E systems with grassroots organizations (farmers and technicians) ✓ Hold PM&E internal evaluation workshop to derive lessons and develop appropriate model for Bolivia ✓ Announce workshop on reflection and reinforcement of participatory methodologies announced on the CIAT-IPRA Web page ✓ Report Ecuador workshop on learning alliances with institutions and grassroots organizations ✓ Workshop entitled "Participatory methodologies of interaction with community organizations," with representatives of the countries Haiti, Dominican Republic, Honduras and Mexico ✓ Evaluating existing PM&E systems applied by different projects to identify critical issues, gaps, opportunities and a strategic plan for intervention (available in IPRA web site) ✓ Experiences and lessons learned from community training and empowerment activities

		✓ Strengthening participatory monitoring and evaluation processes in KARI ✓ Strengthening community learning and change: The role of community-driven participatory monitoring and evaluation systems ✓ Experiences and lessons from community training and empowerment activities in Malawi and Tanzania ✓ Enhancing innovation processes and partnerships ✓ Empowering communities through participatory monitoring and evaluation: Lessons from Colombia ✓ Linking farmers to markets: The case of the Nyabyumba potato farmers	in Malawi and Tanzania (CC) ✓ Summary report on the status of monitoring and evaluation systems in selected KARI centers and some intervention strategies ✓ Facilitation skills and gender analysis in Jinja ✓ Agroenterprise Workshop for Community and Market Facilitators in Uganda, Tanzania and Malawi ✓ Guide for Documenting Experiences with Participatory Monitoring and Evaluation
OUTPUTS	4. Material and information on participatory methodological approaches, analytical tools, autochthonous knowledge and organizational principles, developed	5. Impact of IPRA Project activities, documented	6. Support and strengthen internal projects and other institutions in conducting PR
ACTIVITIES	✓ Promote and distribute material developed by IPRA ✓ Present papers at international meetings and congresses ✓ Write articles for diffusion of results of the research on participatory methods and tools ✓ Update and reorganize the IPRA Web Page to enhance it's effectiveness in disseminating information ✓ Announce Priority-Setting Workshop on the CIAT-IPRA web page (www.ciat.cgiar.org/ipra/inicio.htm) and distribute a CD of proceedings among participants ✓ Publish two articles in the newspaper "Communal Power," put out by Federación Sindical Única de Trabajadores de las Comunidades Campesinas de Tarija (FSUTCCT) bimonthly and distributed in the State of Tarija as a mechanism for	✓ Baseline studies for Bolivia, Ecuador ✓ Baselines of the sites of the FOCAM project ✓ Case study of CIAL El Diviso (rural agroenterprise) ✓ Report on the institutionalization of CIALs in Ecuador ✓ Undergraduate thesis that evaluates effects of PM&E in the PITAS on the poorest of the poor and on the system of innovation Bolivia ✓ Impact evaluation of CIALs in Cauca Province, Colombia ✓ Impact CIALs on poverty in Honduras	✓ Hold annual national meeting of CIALs in Honduras, Ecuador, Bolivia and Colombia ✓ Provide technical backstopping and support to CORFOCIAL ✓ Develop an interactive CIAL database system where farmers and technicians can make consultations and exchange information ✓ Hold workshops to implementation of PM&E with grassroots organizations through workshops of reflection and reinforcement for trainees in participatory methodologies in Bolivia ✓ Accompany processes of implementing PM&E by partners and trainees by the FOCAM project in Bolivia ✓ Assist other projects in CIAT and organizations outside CIAT; improve their performance in enabling rural innovation through the participatory construction and analysis of innovation histories.

	socializing advances of the interinstitutional work that the project is developing. ✓ Exchange experiences between technicians and farmers of the Province of Yunnan, China and countries from the Andean zone on PR in the management and conservation of natural resources ✓ Write manual for implementing PM&E ✓ Develop a method and write a guide called "A Guide to Constructing Innovation Histories" ✓ Write journal article entitled "Introducing Integrated *Striga hermonthica* control into Northern Nigeria. 1. An evaluation of a participatory research and extension approach" ✓ Write journal article entitled "Introducing Integrated *Striga hermonthica* control (ISC) into Northern Nigeria. 2. Impact on farmers' livelihoods" ✓ Write a journal article comparing and contrasting the CIAL innovation history in Colombia and Honduras, with particular attention to issues of sustainability and scaling-up		
OUTPUT	7. Capacity of the IPRA team, strengthened		
ACTIV.	✓ Hold planning workshop for IPRA ✓ Train FOCAM team in PM&E ✓ Support doctoral thesis analyzing PM&E as an institutional innovation in the framework of SIBTA ✓ Maintain functional structure for horizontal leadership (co-coordinators)		

CIAT: SN-3 PROJECT LOG FRAME (2004-2007)

PROJECT: **PARTICIPATORY RESEARCH**
PROJECT MANAGER: **CARLOS A. QUIRÓS (ACTING)**

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
Goal To develop and apply knowledge, tools, technologies, skills and organizational principles that contribute to improving human well-being and AES health	Application of participatory methods, analytical tools, and organizational principles by R&D organizations that result in incorporating farmers and other end-users' needs in integrated agroecosystem management and conservation (IAEMC) Use of project products at additional reference sites in two AES (hillsides and forest margins) of CIAT's mandate in 5 years Use of project products by a minimum of three institutions outside LAC at end of year 5 Improvement in end-users' well-being at the respective reference sites	Projects, plans, and reports of national public-sector entities, donors, NGOs and community-based organizations in the three reference sites and mandated AES of CIAT's mandate, which refer to their use of project products	
Purpose To develop and disseminate PR principles, approaches, analytical tools, indigenous knowledge and organizational principles that strengthen the capacity of R&D institutions to respond to the demands of stakeholder groups for improved human well-being and agroecosystem (AES) health	R&D organizations applying participatory methods, analytical tools and organizational principles Entities in LAC teaching participatory methods Meetings among stakeholder groups Participatory projects implemented by R&D institutions	Impact study Institutional reports Publications Proceedings	Institutional economic stability. Financing for training activities and publication and dissemination of materials. Institutions willing to prepare and support facilitators and to share information End-users—above all, farmers—willing to participate
Output 1 PR approaches, analytical tools, and indigenous knowledge that lead to the incorporation of farmers and other users' priorities in R&D agendas developed for interested	Two methodological approaches developed or adapted and analytical tools developed for IAEMC	Project reports Publications	Good coordination and integration among collaborators

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
institutions.			Minimal conflicts for meeting demands Full participation of stakeholder groups Field staff fulfilling true facilitator roles Data available from reference sites Internet system functioning well
Output 2 Organizational strategies and procedures for PR	Two procedures for PR adopted and adapted	Project reports Publications	
Output 3 Professionals and others trained as facilitators of PR	Nearly 200 professionals, promotors and technical personnel trained in eight events conducted in LA countries	Project reports	Institutions willing to prepare and support facilitators Funding available
Narrative Summary	**Measurable Indicators**	**Means of Verification**	**Important Assumptions**
Output 4 Material and information on PR approaches, analytical tools, indigenous knowledge, and organizational principles developed	No. of visits to Web sites Nearly 80 national and NGO groups reached with information, training materials and consultancies Five new publications on PR and PM&E themes released	Project reports Publications	
Output 5 Impact of SN-3 project activities documented	Dependent on nature of study, e.g., for CIALs: no. of host countries; total no. of initiated, inactive, and mature CIALs; research and self-management capacity; no. and diversity of institutions facilitating CIALs; gender composition; diversity of research themes; no. of beneficiaries, microenterprises formed, community services performed, facilitators and trainers trained, second-order organizations formed, and requests for publications and training materials	Case studies, M&E reports and databases, impact studies	Staff have time, suitable methodologies and funds available
Output 6 CIAT projects and other institutions	CIAT projects incorporate PR methods into their research initiatives Five second-order		

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
supported and strengthened in conducting PR	organizations established to support CIALs sustainability Three national R&D institutions and NGOs have established PR processes within their current programs	Project reports Publications of internal projects and of other institutions	
Output 7 Capacity of SN-3 team strengthened	Research initiatives proposed by young members of the group approved for implementation Individualized and group training events correspond to identified needs Annual report contributions from team members reflect increased ability to prepare technical reports	Project reports	

OUTPUT 1. PARTICIPATORY RESEARCH APPROACHES ANALYTICAL TOOLS AND INDIGENOUS KNOWLEDGE THAT LEAD TO THE INCORPORATION OF FARMERS' AND OTHER END-USERS' NEEDS IN INTEGRATED AGROECOSYSTEM MANAGEMENT, DEVELOPED FOR INTERESTED R&D INSTITUTION.

Reflections on human and social capital when establishing PM&E within the framework of a PITA

Researchers: V. Polar [1], C. Luna[2], E. Gandarillas[3], J. Almanza[4]

Introduction

All development projects or interventions should have a system of participatory monitoring and evaluation (PM&E) that allows beneficiaries to determine the progress being made in activities and take the measures necessary to solve problems, making the required adjustments in the objectives and activities. This system should also allow an adequate flow of the process at community level, considering the formulation of indicators based on local criteria as well as gathering and recording of corresponding information. Analyses of the results of the M&E done by the community should make possible the determination of appropriate times for interaction and discussion between the community and the local institutions in order to reorient the interventions according to the beneficiaries' needs.

In 2003-2004 the FOCAM[5] project began a series of experiences linked to establishing PM&E systems within the framework of Applied Technological Innovation Projects (PITAs),[6] tendered for by the Bolivian Government through the Bolivian System of Agricultural and Livestock Technology (SIBTA). The purpose is to adapt the PM&E system to the Bolivian reality in order to bring about its institutionalization at the level of SIBTA, thereby optimizing the results generated by the projects.

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[5] FOCAM stands for "Promoting Change" and is the short name of the project "Participatory monitoring and evaluation (PM&E) for rural innovation in Bolivia." FOCAM proposes to balance the demand for agricultural research from low-resource farmers with the supply of agricultural and livestock research so that this research responds more clearly to the population of low resources. FOCAM is supported financially by the British cooperation (DfID-RLD) and is executed by the International Center of Tropical Agriculture (CIAT-Colombia) and the Imperial College of the University of London, England.
[6] According to SIBTA's (2003) definition, PITA represents a set of activities based on the agroproduction-chain approach and a program vision that comprises the validation, adaptation and transfer of process, product, management and technical assistance technologies for their adoption with the objective of promoting integrated change in an agroproduction chain.

Although it has been possible to determine the need for a PM&E system and the characteristics that this should have, at the moment of its implementation, numerous difficulties have been found that should be analyzed in order to find ways to make its establishment viable.

Objective

The objectives of this research are to determine the factors that limit the establishment of PM&E systems with the PITAs in the high Andean plateaus of Bolivia; analyze the problems that occur during this process; and propose alternatives for counteracting the effects of these problems in order to optimize the processes and results generated by the PITAs. Parallelly, it seeks to analyze experiences in order to develop guidelines and principles that minimize these adverse factors, permitting the diffusion of PM&E within the framework of SIBTA.

Research questions

This paper analyzes the following research questions:

- What social factors limit the establishment of PM&E systems?
- What human factors affect the establishment of PM&E systems?
- What other factors limit the establishment of PM&E systems?
- What alternative measures can be taken to counteract the limiting factors?

Conditions for applying the methodology

Every PITA is established starting with a demand made by a requester.[7] Eligible requesters are considered to be the different actors of the agroproduction chains such as producers' organizations, small farmers' and indigenous organizations, territorial grassroots organizations, cooperatives, agroindustries, merchants, etc.

There is a legal framework that should be clearly defined before a PITA can begin its activities. This framework consists of the following:

- The signing of a contract between the Foundations for Agricultural and Livestock Technological Development (FDTA)[8] and the provider of services, in which the products and expected results are stipulated clearly in a logical framework and a plan of milestones.
- The signature of a document in which the legal representative of the providers is committed to making a cash payment of 15% of the total value of the project to FDTA.

[7] All organized actors from any of the links in the agroproduction chain that can benefit a PITA. The concept also includes their capacity to make demands on the system.

[8] The FDTAs are nonprofit institutions of a mixed nature: private and public-interest, without political or religious ends, created within the SIBTA framework. Autonomous in their technical and administrative management, they are in charge of administering and procuring resources to finance the PITAs from different sources, among which are the Bolivian State, organisms of multilateral, bilateral and other cooperation. Their commitment is to promote a system of dynamic, competitive, efficient, participatory technological development in each macro ecoregion, giving priority to the demands of the actors from the agrofood chains, with which they define their priorities for interventions.

Despite the fact that the legal requisites necessary for the organization to be awarded a PITA are clearly established, there are some gaps that undermine the process. These gaps begin with the gathering of the requesting organizations' demands. There is no methodology for this purpose, and it is not possible to determine how genuine the demands are. While the operational regulations define that there should be a signature of nonobjection by the organization's legal representative before beginning the project, it is also clear that the legal representative has the power to decide the outcomes of the project and that there is no mechanism that transcends the legal and that permits greater interaction with the grassroots groups.

During the execution of the PITA, the corresponding FDTA is in charge of doing the M&E to ensure compliance with the milestones that determine the progress in reaching the results and obtaining products. The requester's signature of nonobjection for each milestone completed is also contemplated in the regulations. This mechanism makes successive disbursements viable in order to continue the execution of the project. As in the previous cases, the form of operating this mechanism has not been defined. A well-defined system does not exist that permits the requester to object to the project based on data of all the beneficiaries.

PM&E was adapted to the needs of application in the context of the PITAs (Gandarillas et al., 2004) and applied in diverse intervention s of the FOCAM Project in Bolivia. For purposes of this document, the limiting factors linked to the different capitals are analyzed within the framework of sustainable livelihoods (DfiD, 1998).

The requesting organization

The Avaroa Provincial Association of Milk Producers (APPLA) is a small farmers' economic organization affiliated to the Coordination, Integration of Small Farmers' Economic Organizations (CIOEC-Bolivia), which promotes the development of all their affiliates. This organization, which groups the dairy producers from the Province in 29 "Dairy Modules", was founded in February 1999. The grassroots organizations that the dairy producers formed in one or several communities are known as "Dairy Modules." They have a director whose maximum authority represents the Module. As governing, executive and administrative bodies, they have the following hierarchical levels: Provincial Congress of Producers, General Assembly, Advisory Board, Directory of the Association, Director of the Module and Provincial Assembly Meeting. Details of the organizational structure of the Association are given below (Fig. 1).

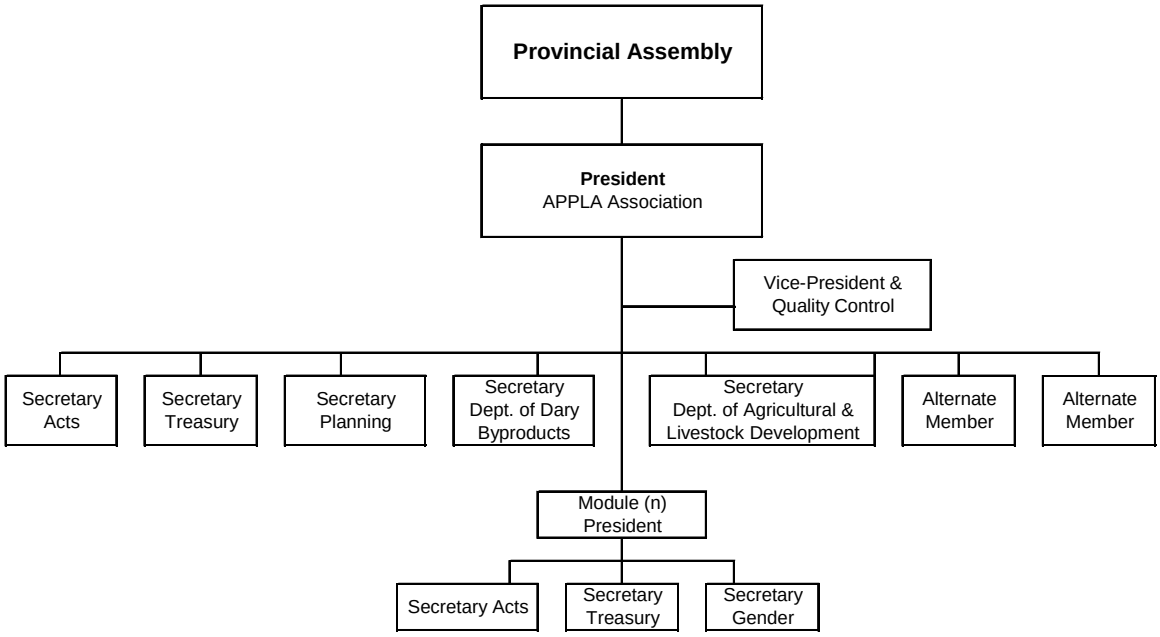

Figure 1. APPLA's organizational structure.

To support the Association and give advice on its work, it has a technical team consisting of a manager and a chief accountant. One-fourth of their salaries comes from APPLA resources, while the remaining 75% comes from the Royal Embassy of Denmark through the Dairy Development Program for the High Andean Plateaus (PDLA), an institution that has been supporting the Association on a provincial scale and the Federation at the state level.

Several institutions have carried out training projects in the zone. The producers received training at different levels on topics related to dairy production; however, this continues to be a topic of interest for producers. For this reason, the Association has been seeking funding for various projects supporting the dairy sector with entities such as the Royal Embassy of Denmark through the PDLA, the FDTA high Andean plateaus and others.

At present, there are several projects under way: Forming Veterinarian Promoters and Techniques for Conserving Forages generated by the FDTA high Andean plateaus; Dairy Farm Management, Implementation of Alfalfa Seed, Construction of Stables, Haylofts, Provision of Buckets, Harvesters and Pails, Training in Dairy Byproducts, Health and others, generated by the PDLA. Collaboration has also been received from the Japanese volunteers program of the Japanese International Cooperation Agency (JICA), which supports women in making dairy byproducts.

Problems during the incorporation of PM&E within APPLA

During the different phases of incorporating PM&E within APPLA, the following problems arose:

Introductory motivation meeting

- Total lack of knowledge about SIBTA, the FDTAs and the PITAs in terms of what they are and what they do
- Total lack of knowledge about the scope of the PITAs in execution (logical framework, plan of milestones or others)
- Unawareness of the processes that make the execution of a PITA viable (operational regulations)
- Nonpresence of the President of APPLA and the technical officials for lack of time

Definition of evaluation criteria and preparation of formats

- Various criteria that vary according to the level of education and the community of origin
- Difficulty in assigning responsibility for the activities for lack of time
- Difficulty in assigning responsibility for the follow-up for lack of time
- Unawareness of the project's activities and expected products

Evaluation

- Absence of the Module presidents at the prescribed monthly meetings
- Change of Board in the different Modules
- Absence of the President of APPLA during the evaluation process
- Absence of the Board of Directors of APPLA at the monthly meetings

Presentation of results

- Difficulties in finding a time for getting together for the presentation of results
- Unawareness of the results on the part of the President of APPLA
- Problems in perceiving the spirit of the evaluation (It is seen as an inspection more than as a constructive process.)

Relationships and attitudes toward evaluation

Conflicts for establishing PM&E were detected at the level of the different actors, the details of which are given below:

Requesters

- Nonfunctional organic structure. (Only the president attends.)
- Nonoperational internal regulations and bylaws. (No one knows them.)
- Incongruence between the terms of the Association's Board of Directors and of the Module Boards. (The Module Boards are renewed yearly, but with no set date causing constant changes within the assembly of Module presidents.)
- Discontinuity of actions in the renewed Module Boards (The outgoing directors do not inform about current topics.)

- Lack of communication among the Director of APPLA, the Module presidents and the grassroots groups.
- Low motivation due to inconsistency between the demand to which the project responds and the effective demand of the grassroots groups.

Providers

- Conducive attitude regarding ongoing evaluations
- Attitude of susceptibility, trying to evade the evaluation
- Lack of adequate technological supply to meet the beneficiaries' demands
- Lack of internal M&E mechanisms to ensure the quality of the service they provide
- Limited openness to alternatives or modifications proposed by the requesters

FDTA

- Lack of human resources and time for interacting to make the evaluation and presentation of results viable

Answers to the research questions

What social factors limit the establishment of PM&E systems?

Within the framework of sustainable livelihood, social capital is understood as the social resources that support the people in the search of their objectives. These are developed through networks and connections, participation in more formalized groups, and relationships of trust, reciprocity and exchange (DfID, 1998). According to Putnam (2002), "social capital is a set of aspects or characteristics of social organization such as norms, systems and trust, which facilitate coordination and cooperation for mutual benefit."

Social capital is closely linked to structures and transformation processes; for this reason it is the principal variable of analysis when evaluating constraints for establishing PM&E systems.

In general, when working with PITAs, PM&E is applied with more formalized groups—a situation that implies the individuals' adherence to rules, norms and sanctions. This would appear to constitute an advantage as it makes the execution of the project viable in an organized, normative framework. However, when this situation is analyzed in greater depth, there are elements that hinder the proper establishment of PM&E.

Given the conditions of the formal organizations in terms of hierarchies and responsibilities, it is expected that the director is the one who implements the PM&E processes. The difficulty lies in the fact that the connection between the directors and individual beneficiaries is not always optimal losing; thus a wealth of information is lost in the process. At the same time, the functions that are delegated to the directors' are always excessive so that there is a risk that the PM&E will not be valued or executed properly.

If the existence of a formal organization is to be considered as an advantage for establishing PM&E systems, it has to have functional organic structures, as well as operational norms in effect. Weak formal organizations constitute a constraint at the moment of establishing PM&E with their members.

In every social milieu an M&E culture of some sort exists, as well as an internal system of information flow. These local systems should not be excluded when the grassroots groups are brought together to construct formal organizations and/or establish PM&E systems. The formation of formal structures outside the local traditional structures can generate confusion, exclusion and be a source of greater inequality. The establishment of PM&E parallel to local processes generates duplicity although this may not be readily perceived. This duplicity cannot only lower the participants' motivation but the process can also lose importance for them.

What human factors affect the establishment of PM&E systems?

Human capital is represented by aptitudes, knowledge, working capacity and good health, which together permit the populations to undertake different strategies and reach their objectives with respect to livelihood (DfID, 1998). These aptitudes, knowledge and capacities affect the establishment of PM&E systems in the PITA framework.

The quality and amount of time available are factors that influences human capital and that parallelly influence the establishment of PM&E systems directly within the framework of the PITAs. Given that it takes a great deal of time if the parties interested in PM&E are to be able to participate in a significant way (Banco Mundial, 2004), those groups of beneficiaries whose productive activity demands greater attention and takes up a large proportion of their time will be less disposed to participate in the M&E of their projects. Activities such as the dairy or intensive cattle production, which require permanent attention, will face greater difficulties when it comes to forming the M&E committees, as well as for the beneficiaries finding time to attend events of this nature. Even if they show interest in participating and evaluating the projects, their limited time is a constraint that will hold back their participation in activities whose economic income is not quantifiable and immediately visible.

Variability in the level of schooling is another factor that affects the establishment of PM&E systems, primarily due to the people's different interests and capacities. People with higher levels of instruction seek to evaluate aspects related to the distribution of the technicians' time, the resources, and the subject of the interventions; whereas people with lower levels of schooling are interested in evaluating aspects of a quantitative nature, related to execution, such as workshops held, assistance to events, yields, etc. This divergence of criteria results in the individuals' losing interest in the evaluation when they do not understand or do not find some of the criteria relevant.

As long as the individuals do not have good knowledge about PITA, they will be limited in the sense that they will not be able to take full advantage of the project and the implementation of PM&E. The lack of information or inappropriate flow of knowledge with respect to the conditions of establishing a PITA, in terms of the financing of the same, their objectives, goals and products; causes confusion among the individual beneficiaries. The people feel susceptible

about evaluating a "donation" or do not know the products and cannot therefore emit judgments with respect to its scope.

It is also important to point out that SIBTA's operational regulations[9] establish that the demands of the organizations should be identified in a participatory fashion; however it is clearly evident that given the beneficiaries' ignorance with respect to the project and the system overall, that it is at the level of the directors where the demands are formulated and the processes are made viable. There are serious difficulties in the flow of information toward the grassroots groups, due to the ineffectiveness of the bylaws and regulations of the formal organization.

What other factors limit the establishment of PM&E systems?

In addition to the social and human aspects, there are other factors that limit the establishment of PM&E systems. Among some of them are:

- A mechanism for identifying demands. SIBTA's operational regulations[10] establish clearly that determining the demand should be framed within the principles of prioritization, focalization and participation. However, the methods to be followed for making effective participation of the beneficiaries viable in the process of gathering of the demand are not defined clearly.

  The difference between the demand identified and addressed by the project and the real expression or actual needs of the beneficiaries is a critical factor that will determine the level of participation in PM&E. The beneficiaries whose real demands are not addressed by the project will be less disposed to participate in the M&E of activities and processes that do not respond to their needs.

- Mechanisms that permit requesters to express their nonobjection based on data of all the beneficiaries.

  In general, there is a lack of mechanisms that allow the requesters to express their nonobjection with data that reflects the perception of the majority of the beneficiaries. Most of the time, these decisions are taken at the level of the leaders of the organizations while their representation of beneficiaries is highly variable.

- Inclination of the providers to be evaluated. Some providers feel susceptible to the evaluation. This translates into attitudes that are either conducive towards evaluation or obstruct channels and times destined to this activity.

- Inclination of the FDTAs to provide sufficient time to the requesters so that they express the results of their evaluation

- Availability of human and operational resources in the FDTAs

[9] Operational Regulations of the Competitive Fund for Technological Innovation of SIBTA.
[10] Operational Regulations of the Competitive Fund for Technological Innovation of SIBTA.

What alternative s can be taken to counteract the limiting factors?

To initiate PM&E and counteract the presence of some factors that limit the process, it is necessary to verify the following aspects:

- Recover the local knowledge about M&E for beginning the construction of the PM&E system about the principles and structures of the local practice. According to Estrella and Gaventa (1998), most of the literature about PM&E cites the difficulties that arise when the process is perceived as extractive. These can be overlooked if the beneficiaries are involved from the design of the project, passing through the implementation, M&E.

  This alternative of proposing the participation of the beneficiaries as early as the design of the project onward will ensure that there is a real and effective demand, thereby avoiding future problems related to the execution of projects that do no respond effectively to the target group's needs for innovation.

- Analyze the conditions of the formal institutions to strengthen them and make them operational before initiating the process. Parallelly, other opportunities that go beyond the established legal framework should be sought to ensure greater interaction of the grassroots groups in the different stages of the process.

- Establish PM&E from the onset, through the providers, in order to make the process sounder from the perspective of both the provider and the requester. The requesters will show greater interest and dedicate more time to the activities that the provider and/or the FDTA offer directly; and the providers will feel less controlled and with greater commitment.

  Participation should be part of the design of the project from the beginning and generate a spirit of collaboration and interaction among the different interest groups during the life of the project or program in execution (UNDP, 1997). For the participatory approaches to be truly effective, they need to be incorporated into the project and executed on a continuous and iterative basis (Rietbergen-McCracken and Narayan, 1998).

  The planning of PM&E from the early stages is essential to ensure that it is incorporated gradually into the cycle of the project instead of being added on at the end. This also has important implications for gathering baseline information, which should be done before the onset of activities or at least in the initial phases of implementation of the project (Pasteur and Blauert, 2000).

- Execute the PM&E activities as part of the events with the provider (at the beginning or end) in order to make good use of the requesters' time and avoid overloading them with meetings.

- Ensure that the flow of information is viable by making the documentation and the processes open, providing copies of the material as required.

- Changes are needed at the level of operational regulations of the competitive Fund for innovation so that the PITAs do not confront the interest groups with the local organizations

(communities, *ayllus*, etc.). These changes should promote the use of PM&E among the providers and the FDTA.

Conclusions

We are aware that the processes of extension and generation of technology face conflicts of a social, cultural and economic nature that limit their optimal execution. For this reason, the FOCAM Project wishes to contribute its grain of sand to help confront these problems in the best way possible.

Based on the analyses of problems and constraints summarized in the preceding paragraphs, the need to begin the process of PM&E was identified. In the in-depth exploration of the demands for PITA, local knowledge and the traditional channels of M&E should be considered as well. At the same time, it is important that the formal organizations of requesters be strengthened at the beginning of the projects in order to count on an ally that follows the project's process.

This experience with the introduction of participatory methodologies for the M&E of PITAs shows us that it is possible to give the beneficiaries tools so that they are the ones that define the degree of satisfaction with the projects that they demand and at the same time are more committed to their execution. However, we should also be aware that in giving them tools, we will be the object of their evaluation and should be prepared for it.

Within the framework of the PITAs, PM&E generates an opportunity for redefining development and its implications, creating a channel of communication between the decision-makers and the subjects of development actions. However, to accomplish results, both the decision- and policy makers should accept the idea that their plans and programs can change radically and should be prepared to face these changes.

References

Banco Mundial, Departamento de Evaluación de Operaciones. 2004. Desarrollo de la capacidad de evaluación. Seguimiento y evaluación: Instrumentos, métodos y enfoques. The International Bank for Reconstruction and Development. Banco Mundial, Washington DC.

DfID, 1998. Orientation sheets on sustainable livelihoods. DfID Center of Virtual Resources. www.livelihoods.org

Estrella, M.; Gaventa, J. 1998. Who counts reality? Participatory monitoring and evaluation: A literature review. IDS Working Paper 70. Institute of Development Studies, University of Sussex, Brighton, England.

Gandarillas, E., Fernández, J., Almanza, J. y Polar, V., 2004. El seguimiento y evaluación participativa en el contexto de los proyectos de innovación tecnológica aplicada. Centro Internacional de Agricultura Tropical (CIAT)-Proyecto FOCAM. Cali, CO.

Pasteur, K.; Blauert, J. 2000. Participatory monitoring and evaluation in Latin America: Overview of the literature with annotated bibliography. Institute of Development Studies (IDS), University of Sussex, Brighton, England.

Putnam, R.D. (2003) Better together: restoring the American community. Simon & Schuster. New York.

Rietbergen-McCracken, J.; Narayan, D. 1998. Participation and social assessment: Tools and techniques. The International Bank for Reconstruction and Development. The World Bank, Washington, DC.

SIBTA. 2003. Reglamento operativo Fondo Competitivo Innovación Tecnológica - PITAs. Ministerio de Asuntos Campesinos y Agropecuarios (MACA), Sistema Boliviano de Tecnología Agropecuaria (SIBTA). La Paz, Bolivia. 52 p.

UNDP, Office of Evaluation and Strategic Planning. 1997. Who are the question makers? A participatory evaluation handbook. OESP Handbook Series. United Nations Development Programme. Editorial Board: Sharon Capeling-Alakija, Carlos Lopes, Abdenour Benbouali and Djibril Diallo Managing Editor: Janet Donnelly. One United Nations Plaza, New York, NY 10017.

Institutional innovations for the Bolivian system of agricultural and livestock technology: The case of participatory monitoring and evaluation

Researchers: Edson Gandarillas[11], Juan Almanza[12] and Juan Fernandez[13]

Background

The Bolivian State has created the Bolivian System of Agricultural and Livestock Technology (SIBTA), destined to promote and support technological modernization and the sustainable development of the agricultural and livestock, forestry and agroindustrial sectors, with important participation by the private sector. For this purpose SIBTA finances Projects of Applied Technological Innovation (PITAs)[14] through Foundations for Technological Agricultural, Livestock and Forestry Development (FDTAs)[15] of the Highlands, Valleys, Humid Tropics and Chaco; and Projects for National Strategic Innovation (PIENs) under the supervision of the Office of the Director General of Productive Development of the Ministry of Small Farmers' Affairs, Agriculture and Livestock (MACA).

SIBTA responds to organized requesters[16] and administers a competitive process of awarding productive projects. In this competitive process suppliers[17] of technology (NGOs, foundations, etc.) participate in response to the demands of beneficiaries through the PITA projects. By means of this strategy SIBTA hopes to accomplish the following objectives:

- Reduce rural poverty by improving the producers' income and the people's food security
- Increase sectorial competitiveness
- Contribute to the sustainable use and management of natural resources

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[14] In accordance with SIBTA's (2003) definition, a PITA represents a set of activities with a focus on agroproduction chains and a program vision that comprises the validation, adaptation and transfer of process, product, management and tecnical asistance technologies for their adoption with the purpose of promoting integrated changes in an agroproduction chain

[15] The FDTAs are nonprofit private institutions, with a public interest and mixed in nature with no political or religious orientation, created within the framework of SIBTA. They enjoy autonomy with respect to tecnical and administrative management and are in charge of administering and managing resources to finance PITAs from different sources, among which are the Bolivian state, organisms of multilateral, bilateral and other forms of cooperation. Their commitment is to promote a system of dynamic, competitive, efficient and participatory technological development in each macro ecoregion, prioritizing the demands of the actors from the agrofood chains, with which intervention priorities are defined.

[16] Any organized actors or end-users in any one of the links of the agro-production chain that can benefit a PITA.

[17] An organization, institution or enterprise, alone or associated, with a tecnical and administrative capacity for offering services of applied technological innovation, that participate, in alliance with a demand, in the competition for the final design and execution of PITAs.

- Contribute to modernizing rural producers' associations (institution-building) as basic representatives of the process of formulating demands for technological innovation

Since SIBTA was established four years ago, the regulations of the competitive fund for innovation have been adjusted several times. Because this is a novel system, it has required periodic methodological adjustments, which have sought to increase the participation of the beneficiaries, nonexclusion, equity, greater efficiency and strengthening of the competitive market of suppliers so that they can respond better to the demands of the Bolivian small farmers.

Given this panorama, the project Promoting changes (FOCAM)[18] promotes the implementation of the methodology of participatory monitoring and evaluation (PM&E) as an institutional innovation that can be used for the SIBTA requesters so that they can "control and participate" more effectively in the projects (PITAs) of which they are beneficiaries. At the same time FOCAM is evaluating the effect of the interventions (PITAs) on the livelihoods of the requesters (human, social, financial, natural and physical capital; vulnerability, livelihood strategies and development products) in order to obtain evidence of the impact of SIBTA's interventions and its contribution to alleviating poverty.

This article presents the PM&E methodology implemented by FOCAM and the adaptations made for its use in the context of the PITAs with which they are working, together with the FDTAs.

Institutional innovations

Within the New Institutional Economy (NIE), the term "institution" means "rules of the game." These can be formal or informal and "define the incentives and sanctions that affect the people's behavior and interactions" (Dorward et al., 2002, p. 5). Thus the organizations are the "the game players," groups of individuals joined by a common purpose to accomplish shared objectives. These organizations can be political, economic and social (North, 1990; Dorward et al., 1998). Another important distinction within the NIE is between the institutional environment and the institution's agreements (Davis and North, 1971; Stockbridge, 2001): The institutional environment is the set of general rules with which the people and the organizations develop and implement institutional specific arrangements in a society. The institution's agreements are forms of contracting that were created for specific transactions among contracting parties that govern the way in which they cooperate or compete.

The NIE framework favors the understanding of the institutions' roles in Research and Development (R&D) in two aspects:

[18] FOCAM means promoting changes and is the short name of the project "Participatory monitoring and evaluation (PM&E) for rural innovation in Bolivia." FOCAM intends to balance the demand for agricultural research from the low-resource farmers with the supply of agricultural and livestock research so that this research responds more clearly to the target poblation. FOCAM receives financial support from the British (DfID-RLD) and is implemented by the International Center of Tropical Agriculture (CIAT- Colombia) and the Imperial College of the University of London, England.

- In the context of the markets, the institutions (rules) can be used to improve the exchange of services and products.
- In the context of science and technology, the institutions refer to the set of rules and norms that govern the interactions among different actors (politicians, farmers and providers of R&D services) in the R&D process.

In the case of Bolivia, SIBTA is considered to be an R&D system based on a competitive mechanism of free markets. Therefore, in terms of NIE, the institutional environment comprises the law of popular participation, the strategy for reducing poverty (Blackburn and Holland, 1998) and the operational regulations of SIBTA's competitive fund for technological innovation. The economic agents that will make the transactions are the farmers (associations and Territorial Base Organizations (OTB, acronym in Spanish), also referred to as requesters), the providers of R&D services (suppliers), municipalities and the FDTA. The institutional arrangements in the context of PITAs currently in force are the contracts that are signed by the three agents when they reach an agreement for developing a PITA. The adjustments that are made in the operational regulations of the Competitive Fund for Innovation so that the PITAs comply with their product commitments are referred to as institutional "innovations" (Hall et al., 1998). These innovations set norms for the agents (i.e., the FDTA, requesters and suppliers) so that the interactions among them will be more efficient.

Participatory monitoring and evaluation

The literature review found that there was not just one definition of PM&E; in fact there are a diversity of interpretations and meanings that differ with the person, ethnic group, etc. (Abbot and Guijt, 1997; Campilan, 1997).

The different groups interested in undertaking PM&E are included, including the local people. Through PM&E, they decide how progress should be measured, define the criteria for success, and determine how the results should be used (Guijt and Gaventa, 1998). PM&E is an internal learning process which permits the people to reflect upon their past experience, examine present realities, redefine objectives and define future strategies, recognizing the different needs of the stakeholder groups and negotiating the diversity of demands and interests. In conclusion, as soon as the organization defines clearly the meaning of PM&E, there are no problems in having variations in the definitions (Guijt, 2000). The most important thing is to ensure that the local people are empowered by the process.

There are several reasons for using PM&E:

- Improve the exchange of knowledge (i.e., provide an environment that permits the different stakeholder groups to make their viewpoints known)
- Increase their commitment, sense of ownership and self-determination
- Strengthen the organizations and promote institutional learning
- Increase the public responsibility of the local and national programs toward the communities

- Promote institutional reforms toward more participatory structures
- Motivate the donors to reevaluate their objectives and attitudes through understanding and negotiating the perspectives of the stakeholder groups in an undertaking, etc.

In this context, PM&E is less an instrument of control; rather it is a means that permits the organizations and groups to take ownership of their progress, build their success, improve their capacities for self-reflection, learning and social responsibility (Estrella, 2000, p. 7). Therefore, PM&E is used more as a way of transformation/emancipation that supports learning and self-determination among those who use it. PM&E is constructed on the basis of participatory processes, where the beneficiaries are present in all the stages and where participation and empowerment are considered as ends in themselves. It is based on four principles: participation (Estrella and Gaventa, 1998; Hussein, 2000), learning (UPWARD, 1997; Ward, 1997), negotiation (Marsden and Oakley, 1990) and flexibility.

PM&E is a process of negotiating, based on the premise that the different stakeholder groups have different demands, understandings and topics that change in accordance with the social context and these groups' values. Moreover, it is, to a great extent, a political exercise that necessarily addresses issues of equity, power and social transformation, cutting across at different levels (e.g., family, community, local government). It also increases interinstitutional linkages and collaboration among all the participants. Therefore, negotiation is perceived as a contribution toward the building of trust and a change of perceptions, behavior and attitudes among the stakeholder groups.

There are no formulas for undertaking PM&E; on the contrary, it is a process that is continually evolving and adapting to specific circumstances and needs. Multiples stakeholder groups with different expectations make it difficult to use any one methodology; thus the facilitators should be flexible and willing to adapt.

PM&E at CIAT

The International Center of Tropical Agriculture (CIAT), through the IPRA project, has developed the PM&E methodology, initially applied to the work of the Local Agricultural Research Committees (CIALs)[19] in Central America and Colombia and then to other participatory research undertakings in South America and Africa.

The methodological steps that comprise PM&E for research, development and technology transfer (RD&TT) are the following (Guijt, 2000: FOCAM, 2002):

[19] The Local Agricultural Research Committees (CIALs) are organizations created within the local farmers' organizations. They have the role of implementing research processes on agricultural and livestock topics that concern the families that form the local organization. The comunity delegates said task to men and/or women who have research abilities and skills, who then form part of the CIAL.

1. Identification of groups interested in RD&TT (including providers of RD&TT and their clients); reference is made to identifying the actors involved in RD&TT
2. Exploring and strengthening the knowledge of the groups interested in monitoring, evaluation, participation and indicators. This refers to recovering the local knowledge with respect to M&E, input that is used to strengthen the concepts of PM&E.
3. Diagnosis and development objectives for livelihood, development objectives and R&D priorities of the groups interested in RD&TT. Reference is made to the collective construction of the local organizations' objectives.
4. Definition of and agreement about the indicators to be used for monitoring. Reference is made to the establishment by consensus of the parameters that will be the subject of the monitoring.
5. Organization of a PM&E committee to direct the definition and use of indicators. This refers to the delegation of roles to a group representative of the local organization implementing the PM&E.
6. Data gathering and analysis of indicators
7. Comments, lessons learned and design of adjustments in RD&TT and PM&E. Reference is made to the analyses of the data obtained in the previous stage.
8. Feedback for RD&TT providers and clients. Reference is made to the socialization of the results of the monitoring and evaluation to the parties interested in the undertaking.
9. Beginning of a new cycle of PM&E with the revision of Step 3.

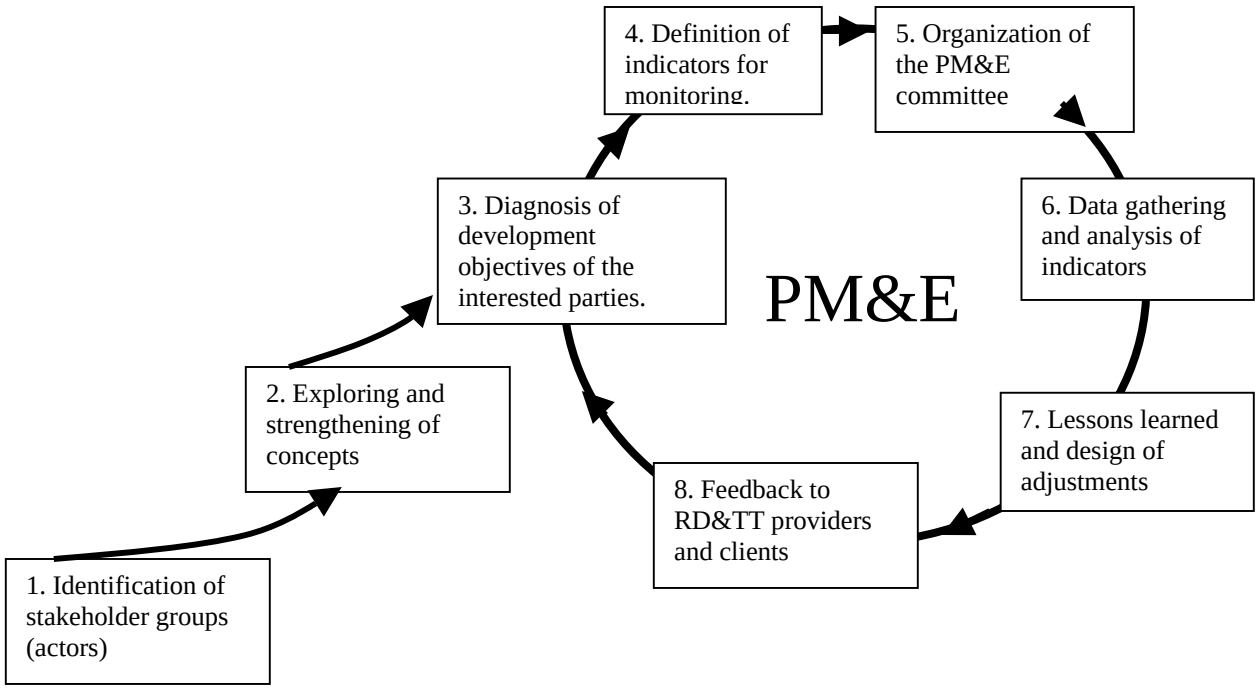

Figure 1. Methodological steps for establishing PM&E in a process of RD&TT.

V. Context of PITA

The implementation of PM&E, as it has been generated in CIAT, should be framed within the particular conditions of SIBTA. It should be noted that the organizational practices developed by the FDTA in strict compliance with the rules of the Competitive Fund for Innovation and the current juncture of requesters and suppliers in Bolivia presents a different, more complex context. Some characteristics of the system that gave rise to the adjustment of the proposed PM&E are as follows:

- The FDTA and the supplier of innovation services sign a contract to begin the activities of the PITA. This contract makes reference to the expected products and results proposed, all of which are summarized in the of the PITA's logical framework and milestones. Similarly, each milestone accomplished requires a document certifying that there are no objections to the quality of the same on the part of the requesters. This is an indispensable condition for the FDTA to approve the disbursement of funds to the supplier to work on the next milestone of the project.
- The requesters' legal representative signs a document where he/she is committed to disbursing 15% of the value of the project in agreement with a plan of payments during the project, as well as a contribution to the total FDTA fund.
- During the execution of the PITA, the FDTA monitors and evaluates the suppliers' actions, basically to ensure that the PITA reaches its milestones and plan of payments to the requesters. The actual M&E process varies according to the strategies of each FDTA; e.g., in Valles, workshops are held where the requesters have the opportunity to make known their impressions with respect to the supplier's performance and the products obtained. These workshops are held once or twice during the PITA.
- During the execution of the PITA, the suppliers basically concentrate on complying with the PITA's milestones and indicators, all based on the contract signed with the FDTA. In agreement with the plan of milestones, the suppliers recur to the requesters for the signature of nonobjection to the milestones that have been finished. Similarly, the suppliers participate in coordination meetings and write financial and technical reports at the request of the FDTA.
- During the execution of the PITA, the requesters should attend the events organized by the suppliers to the extent that the supplier complies with the proposed milestones. The requester's legal representative should sign a document of nonobjection to the finished milestone. Similarly, the requesters participate in meetings or workshops called by the FDTA with the purpose of evaluating the actions of the supplier's personnel and technological supply.

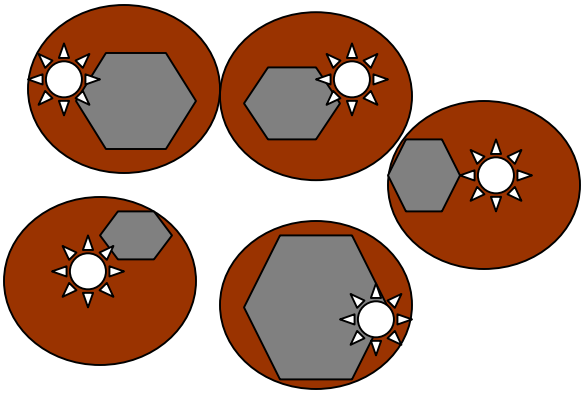

Figure 2. Scheme of the relationship of the communities and associations in the context of the PITA.

- To be able to gain access to a PITA, the requesters should be organized entities; therefore the requesters organize associations of producers (e.g., Association of Producers of Hot Chili Peppers and Peanuts-APAJIMPA; Avaroa Provincial Association of Producers of Milk-APPLA) in a given geographic area. These associations are stakeholder groups of two or more communities of farmers, which means that there are families of farmers excluded by the system for different causes (opportunity, poverty, etc.). Then, within the communities there are families that are beneficiaries of PITA and others that are not. Moreover, as the PITAs require reaching sufficient beneficiaries (more than 100 families), the associations group families from more than one community. In that sense, these stakeholder groups name a governing board that has the legal representation of the partners before the suppliers and the FDTA.
- The gaps generated between the beneficiaries and the excluded are different in nature. They can be **technological** in the sense of access to new "knowledge and inputs" (technology based on inputs such as varieties or knowledge such as integrated pest management). They can also be **economic** due to the effect of the use of the technology. Surpluses are generated that were not possible before and that permit a different allocation to improve the people's quality of life. The **social** differences that are generated represent another component of the gap. Some examples are the different degrees of empowerment between both parties, differences in well-being in the communities, the use municipality co-participation funds to pay the 15% contribution to the FDTA "basket" fund, etc.

Adaptations of the PM&E to the PITA

PM&E was adapted to the needs of application in the context of the PITAs. Figure 3 shows the generic methodological process of implementing PM&E in the context of PITA (the numbers bear a direct relati[20]on to the order of the steps); while Figure 4 provides greater detail about the "moment of reflection," which we feel is the key point in the process.

[20] Union: grouping formed for the defense of the common economic interests.

1. **Collective construction of the future situation**. Referred to by the farmers as a "dream," more technically vision, goal, development objective or product of sustainable livelihood. The families of beneficiaries construct their dream, responding to the question "Where do we want to go?" and "why?" For the families that make up APAJIMPA, their dream is: "*Improve our production in quality and quantity, improve the system of commercialization, and increase our income to improve the living conditions of our associates and communities.*" This construction is carried out with the representatives of the stakeholder groups (partners presidents of each community that forms part of the association) due to the fact that the associations bring together many families (1200-600), which makes it very difficult to construct a common dream. On the other hand, the dream of the association revolves around its needs; in other words, with more weight on the economic variables (quality, commercialization, income, etc.). It is quite different from constructing an objective at the community level, where the variables with the most weight are social (food security, well-being, etc.) and where a majority of its components participate.

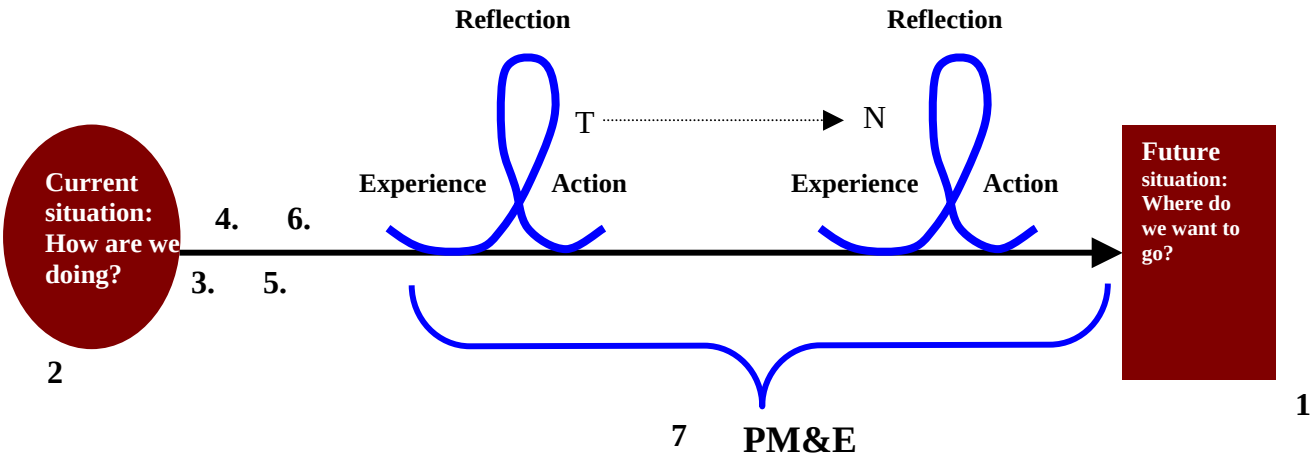

Figure 3. Process of establishing PM&E in the context of PITA.

2. **Analysis of the current situation**. In this stage, the partners answer the question: How are we doing? Partners and the FOCAM facilitators plan events where tools of Participatory Rural Diagnosis (e.g., participatory making, problem trees, focal groups, cost-benefits) are used to generate a form of baseline that helps the partners determine the effects of PITA's work and how these contribute to the attainment of the association's dream.

3. **Local knowledge about M&E**. In this stage the local conceptualization of monitoring, evaluation and participation is explored, in addition to the mechanisms and methods used for this purpose in settings such as the association, the union[20], etc. The inputs identified are used later in the implementation of the PM&E system so that a totally alien process is not inserted; rather elements that will improve the existing system are inserted. As the Association is a new organization, the partners are not clear as to the processes of how to carry out the M&E although it is in the Association's bylaws.

4. **Analysis of actors (importance and influence).** Given that the Association's actions are mostly economic, it is indispensable for the partners to identify the actors and their importance and influence with respect to the processes in which their organization is involved. On the other hand, the analysis of actors is also done within the Association, trying to identify the different levels of well being that exist. All this work is necessary to ensure that all the important, influential groups and the different levels of well-being can participate effectively in the Association's PM&E system.

5. **Socialization of the scope of the PITA**. When the beneficiaries of the PITA establish the M&E system, it is indispensable that all the partners of the requesting entity know the work that PITA will be doing. It is worth noting that the partners should be able to explain the expected results that PITA seeks when we say the farmers "*should understand PITA's promises well in order to be able to implement better controls*." Unfortunately, in all the cases in which FOCAM is working directly with PITA's requesters, they did not even know the origin or the meaning of PITA, much less the specific "promises" that they bring for their organization.

6. **Construction of the activities and indicators**. In this process the Association's partners generate indicators with respect to the desired progress of the PITA (process indicators), as well as indicators that show the progress with respect to the dream (impact indicators). For each indicator, the partners construct formats to obtain the information, which are revised periodically (in accordance with the meetings previously set by the associations). In the case of the process indicators, these may be monthly or every two months; in the case of impact indicators, opportune moments are set for that purpose; e.g., at the middle of the crop cycle (they evaluate the suppliers' knowledge and the technical validity of the technological proposals) and at the end of the cycle (evaluating the effect of the technology on economic aspects and how it brings them closer to their dream).

7. **Implementation of PM&E**. This stage consists of three steps, which are related to the theory of Paulo Freire[21] and Kolb's[22] learning cycle. The first, referred to as "**experimentation,**" which in terms of M&E, is the process whereby the beneficiaries of PITA "have the experience" of working together with the supplier in PITA's activities. In this stage, the beneficiaries monitor the process indicators (activities of PITA) and use the formats generated in Step 6. These formats are the subject of analysis in Step2, referred to as "**reflection,**" where the governing board of the associations and the representatives

[21] Paulo Freire was born September 19, 1921. He grew up in the Northeast of Brazil where his experiences deeply influenced his life work. The world economic crisis forced Freire to know hunger and poverty at a young age. He recalls in Moacir Gadotti's book, *Reading Paulo Freire*, "I didn't understand anything because of my hunger. I wasn't dumb. It wasn't lack of interest. My social condition didn't allow me to have an education. Experience showed me once again the relationship between social class and knowledge" (5). Because Freire lived among poor rural families and laborers, he gained a deep understanding of their lives and of the effects of socio-economics on education.

[22] David Kolb grew up in the New York City suburbs, with interludes here and there, and eventually received his PhD in philosophy from Yale University, and is the author of The Critique of Pure Modernity: Hegel, Heidegger and After, Postmodern Sophistications, Socrates in the Labyrinth, Currently he is writing a combination book/hypertext about place and community that discusses the nature of places, and disagrees with some attacks on today's new kinds of places, in particular themed places and suburban sprawl.

(presidents) of the stakeholder groups in the communities are convened to "make decisions" as to the reorientation or the strengthening of PITA's activities. These decisions are made in the Step 3 of the implementation of PM&E; which is, the "**action**." Taking action has to do with the feedback of the process to the actors (e.g., the suppliers or the FDTA); in the former case, negotiating the reorientation of activities and in the latter, informing about the performance of the supplier and complementing the M&E of the FDTA with qualitative information from the viewpoint of the requesters.

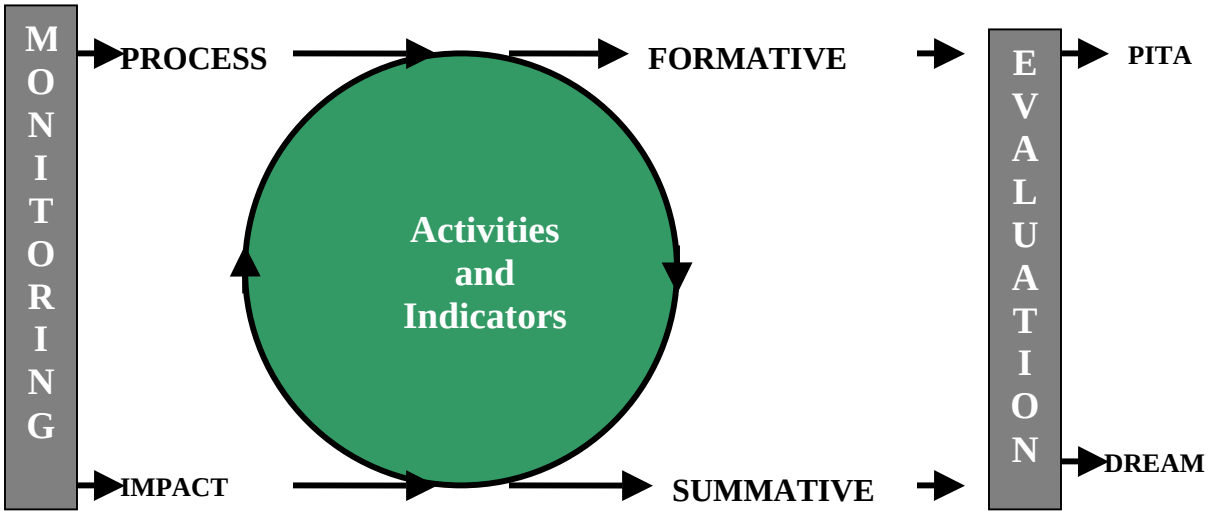

Figure 4. Moment of reflection within the PM&E process.

This process is also applied when the monitoring of PITA's impact indicators is done. The difference lies in the frequency of the moments of reflection; that is, the monitoring of the process indicators and formative evaluation with respect to PITA's products have a monthly or bimonthly frequency; while the monitoring of the impact indicators and summative evaluation with respect to the dream are done twice during an agricultural cycle.

Figure 4 refers to the moment of reflection that is generated in the PM&E. As explained previously, the establishment of M&E is parallel to processes and impact. By processes is understood those events, products, projects, etc. that will contribute to the attainment of the dream (impact); e.g., the activities of a PITA contribute to improving the knowledge about the control of a pest, but parallelly this contributes to the strengthening of the people in their human, social and financial capital, which will have repercussions on achieving the dream of improving their quality of life (impact).

Conclusions

- The collective construction of the dream at the level of the communities is completely different from the dream at the Association. The former is mostly concerned with social variables (poverty and well-being); the latter with economic variables (income and commercialization).
- The implementation of PM&E in the context of the PITA requires a parallel application of monitoring PITA's activities (process) and impact, due to the fact that its contributions are only a part of the farmers' families dream.
- The application of the continuum "experimentation-reflection-action" provides the component of learning to the focus and, therefore, sustainability. In other words PM&E is taken as a learning process, by means of which the facilitation helps the beneficiaries of PITA "discover" concepts and applications, which redounds in sustainability of the process.
- As stakeholder groups are PITA's beneficiaries, the effect of PITA is creating gaps in relation to the nonbeneficiaries who are found in the same communities.
- More complex challenges arise when the organizations decides to adopt the principles and practices of PM&E and find that there can be widespread repercussions (Guijt et al., 1998). The interest in PM&E is growing to the point where the organizations understand that they have to learn more about the internal processes and external impacts if they are to develop better.
- PM&E requires considerable resources in both time and effort. Data collection and analyses in PM&E appear to have less priority than urgent production activities. It has also been proven that the results tend to be underutilized and rarely influence decision-making (Probst, 2002).
- As an institutional innovation in the system, PM&E has proven to be efficient by permitting the requesters to make themselves heard in the project of which are beneficiaries. From the viewpoint of the suppliers, PM&E represents something more than "control" (usually manifested by small or recently formed entities), but its value has also been recognized as a tool that enables them to do their work better (manifested by more consolidated entities). The FDTAs also have expectations with respect to the results of applying PM&E in the PITAs.

References

Abbot, J.; Guijt, I. 1997. Changing views on change: A working paper on participatory monitoring of the environment. Working Paper. International Institute for Environment and Development. London. 70p.

Blackburn, J.; Holland, J. (eds.) 1998. Who changes? Institutionalising participation in development. Intermediate Technology Publications, London.

Campilan, D. 1997. Making participatory monitoring and evaluation (PM&E) work: Thirteen vignettes from the field, pp. 57-70. In Self-assessment: Participatory dimensions of project monitoring and evaluation. UPWARD, Los Banos, Philippines.

Davis, L.E.; North, D.C. 1971. Institutional change and American economic growth. Cambridge, Cambridge University Press.

Dorward, A.; Kydd, J.; Poulton, C. 1998. Smalholder cash crop production under market liberalisation, a new institutional economics perspective. CAN International, Wallingford, UK.

Dorward, A.; Poole, N.; Morrison, J.; Kydd, J.; Urey, I. 2002. Critical linkages: Livelihoods, markets and institutions. In Seminar on Supporting Institutions, Evolving Livelihoods, pp. 29-30 May. Bradford Centre for International Development. Bradford, UK.

Estrella, M. 2000. Learning from change. In Estrella, M.; Blauert, M.; Campilan, D.; Gaventa, J.; Gonsalves, J.; Guijt, J.; Johnson, D.; Ricafort, R. (eds.) 2000. Learning from change, Issues and experiences in PM&E. Intermediate Technology Publications, London.

Estrella, M.; Gaventa, J. 1998. Who counts reality? Participatory monitoring and evaluation: A literature review. IDS Working Paper. Institute of Development Studies, London.

Fomentando Cambios. 2002. El seguimiento y evaluación participativos para la innovación rural en Bolivia. Project Document. Centro Internacional de Agricultura Tropical (CIAT). Cali, CO. 14 p.

Guijt, I. (2000) Methodological issues in participatory monitoring and evaluation. In Estrella, M.; Blauert, M.; Campilan, D.; Gaventa, J.; Gonsalves, J.; Guijt,J.; Johnson, D.; Ricafort, R. (eds.) 2000. Learning from change, issues and experiences in PM&E. Intermediate Technology Publications, London.

Guijt, I.; Gaventa, J. 1998 Participatory monitoring and evaluation: Learning from change. IDS Policy Briefing. Institute of Development Studies, Brighton, UK.

Guijt, J.; Arevalo, M.; Soladores, K. 1998. Participatory monitoring and evaluation: Tracking changes together. IIED. PLA Notes 31:28-36.

Hall, A.J.; Silamahan, M.U.K.; Clark, N.G.; Taylor, S.; Bockett, G. 1998. Institutional developments in Indian agricultural R&D systems: Emerging patterns of public and private sector activities. Science, Technology & Development 16:51-76.

Hussein, K. 2000. Monitoring and evaluating impact on livelihoods: Lessons from experience. Working Paper. Overseas Development Institute, London.

Marsden, D.; Oakley, P. 1990. Evaluating social development projects. Development Guidelines 5. Oxfam, Oxford.

North, D.C. 1990. Institutions, institutional change and economic performance. Cambridge University Press, Cambridge.

Probst, K. 2002. Participatory monitoring and evaluation: A promising concept in participatory research? Margraf Publishers, Weikersheim. Germany.

SIBTA. 2003. Reglamento operativo Fondo Competitivo Innovación Tecnológica PITAs. Ministerio de Asuntos Campesinos y Agropecuarios (MACA), Sistema Boliviano de Tecnología Agropecuaria (SIBTA), La Paz, Bolivia. 52 p.

Stockbridge, M. 2001. Rural development, guiding course file. Imperial College, Wye: University of London.

UPWARD. 1997. Interfacing PM&E with the research and development process: An introduction, pp 7-12. In Self-assessment: Participatory dimension of project monitoring and evaluation. UPWARD, Los Banos, Philippines.

Ward, P. 1997. Getting the right end of the stick: Participatory monitoring and evaluation in an organisational context. Paper prepared for the International Workshop on Participatory Monitoring and Evaluation: Experience and Lessons. Cavite, Philippines, Nov. 24-29.

Developing capacity in CIAT to carry out social network analysis

Researchers: Boru Douthwaite,[23] Nina Lilja,[24] Douglas White[25]
Collaborators: Valdis Krebs,[26] June Holley[27]

Highlights

- Two senior staff trained in the use of InFlow social network mapping software and its application to strengthening rural innovation ecologies

Rationale

Fostering rural innovation requires improving the capacity of rural innovation systems to innovate. Social network analysis (SNA) is a tool that allows researchers and other actors in rural innovation systems such as farmers and NGOs to visualize the linkages that already exist and identify ways to improve their networks. SNA is a key component in the proposal that PRGA and IPRA sent to BMZ, called "Strengthening Rural Innovation Ecologies." The Rural Innovation Institute wishes to develop its capacity in quantitative and qualitative research approaches in innovation and knowledge management research. For these reasons Boru Douthwaite and Nina Lilja spent three days in Athens, Ohio in September learning how to use and apply the software. Funding came from USAID linkage funds.

Objectives

1. Train CIAT scientists in computer-based tools for SNA and knowledge management.
2. To train CIAT scientists in the application of these tools to research and foster rural innovation and knowledge management.
3. To link with USA researchers who are actively developing and applying innovation theory to underdeveloped areas in the USA and explore with them the applicability of their approaches to developing countries and vice versa.

Partners

The Appalachian Center for Economic Networks (ACEnet) is a nonprofit organization in southern Ohio that is networking with others to create a healthy regional economy, with particular emphasis on the poor. ACEnet focuses on food/agriculture and technology to help entrepreneurs start and expand innovative businesses. ACEnet uses three complementary strategies of (1) linking small businesses with high value markets; (2) creating a network of firms and service providers within communities; and (3) enabling community small business assistance programs to work collaboratively and learn from each other's experiences. In short, ACEnet's activities are extremely relevant to CIAT's work.

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Orgnet is a management consultant company and the developer of InFlow, a software-based, organization network analysis methodology that maps and measures knowledge exchange, information flow, communities of practice, networks of alliances and other networks within and between organizations. This technique allows managers to understand less tangible social associations and relationships via systematic analysis that produces quantitative and graphical results. Orgnet is working with ACEnet to apply these approaches to help communities identify their innovation networks and how they can be strengthened.

Next steps

1. Fulfill the commitment to train other CIAT staff in the InFlow SNA software and its application.
2. Analyze collaborative networks at CIAT.
3. Adapt and apply the technique for use with rural communities.

Participatory monitoring and evaluation in a rural economic organization in Chuquisaca, Bolivia

Researchers: Juan Fernández R.[28]; Walter Fuentes[29]; Edson Gandarillas[30]

Introduction

The importance of implementing a participatory monitoring and evaluation (PM&E) system in rural productive organizations lies in the need for a methodological tool that can make available information on the progress being made in the activities programmed in each of the components that form part of a project or undertaking. These should be generated by the beneficiaries themselves in order to contribute to the accomplishment of the organization's objectives as well as those of the specific projects being executed.

The majority of people, in one way or another, conduct M&E activities in their daily lives. Each one has his/her own system or method, depending on the complexity of the activities being carried out and on the proposed objectives. In groups of people and above all in the organizations of agricultural and livestock producers, putting M&E systems into practice is much more complex. According to Hernández (2003), this complexity is due to the following reasons:

- ✓ There are various actors that have different viewpoints, expectations and visions, particularly if they belong to different social classes, communities, cultural contexts or ethnic groups, etc.
- ✓ In a group or collective project, the activities are more complex; there are many tasks to be done and sometimes the different individual actors lose an overall perspective of what they want to evaluate.

According to Reuben (2003), PM&E provides more complete and in-depth information, increases transparency and renders accounts, reinforces the commitment to implement corrective changes, the shared learning improves the performance of the institutions that deliver services and the effects of the same, and increases the sense of ownership, autonomy and organization.

The purpose of this article is to show the progress made in a process of implementing a PM&E system in the Association of Producers of Hot Chili Peppers and Peanuts in the Municipality of Padilla (APAJIMPA), Department of Chuquisaca, Bolivia.

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Materials and methods

Location and characteristics of the zone of study

The municipality of Padilla is located in the Province of Tomina in the Department of Chuquisaca, 187 km from the city of Sucre. The main highway communicates it with Monteagudo, Camiri (Department of Santa Cruz) and Yacuiba (Department of Tarija) (Moya, 2003). The agroclimatic characteristics of valleys predominate; nevertheless, there are subtropical and barren upland (*puna*) areas.

The principal crops are potatoes, maize, hot chili peppers and peanuts. These last two stand out for their profitability and their potential for increasing demand for both the national market and for export to countries such as Argentina, Uruguay and Paraguay. On a lesser scale common beans, wheat and barley are grown. The technological management of the crops is, however, inadequate, especially for peanuts.

The municipality of Padilla was selected as a pilot zone by the project FOCAM based on the following relevant aspects: presence of Projects of Applied Technological Innovation (PITAs), financed by the Foundation for Agricultural and Livestock Technological Development of Valles (FDTA-Valles), their degree of poverty (moderate) is 85-95% (INE, 1999), and the presence of rural economic organizations (OECAs).

The Association of Producers of Hot Chili Peppers and Peanuts of the Municipality of Padilla (APAJIMPA)

APAJIMPA is a producers' organization that has a Board and an Expanded Board. The Board meets regularly on the 18th of each month and, the Expanded Board, every two months. According to the bylaws, the Board should be renewed each year; however, considering that to be a very short time and in order to provide continuity, it was recommended that they be changed every three years (HECOP, 2001).

The organization provides direct service to its members in the commercialization of their products and sale of agrochemicals at wholesaler-supplier prices. The organizational structure of the association consists of the assembly, the Board and the Expanded Board (Fig. 1). In the last group, representatives of 24 member communities participate.

Figure 1. Meeting of the APAJIMPA Expanded Board, with the participation of community representatives.

APAJIMPA is implementing the PITA to increase the production and improve the postharvest handling of hot chili peppers in the valleys of Chuquisaca (Phase 2 begun in October 2003) and to improve the productivity and competitiveness of the agroproduction chain of peanuts in the Municipality of Padilla (as of December 2003).

Process of implementing PM&E in APAJIMPA

- *At the organizational level*. The methodology used in the implementation of the PM&E was proposed by the IPRA Project of the International Center of Tropical Agriculture (CIAT), with adaptations to the social context and the PITA. The methodological steps that comprise the PM&E for research, development and technology transfer (RD&TT) are the following:

  - ✓ Identification of groups interested in RD&TT
  - ✓ Exploring and strengthening the knowledge of the groups interested in monitoring, evaluation, participation and indicators
  - ✓ Diagnosis and milestones for livelihoods, development objectives and R&D priorities of the groups interested in RD&TT
  - ✓ Definition and agreement on the indicators that will be monitored
  - ✓ Organization of a PM&E committee to direct the definition and use of indicators
  - ✓ Gathering of data and analyses of indicators
  - ✓ Commentaries, lessons learned and design of adjustments in RD&TT and PM&E
  - ✓ Feedback for suppliers and clients of RD&TT
  - ✓ Beginning of a PM&E new cycle with the review of the third step

The FOCAM[31] project has agreements of interinstitutional cooperation with the FDTA-Valles, PROINPA Foundation and the Municipal Government of Padilla. Within that framework, a letter of understanding was signed with the Valles Foundation in October 2003 so that FOCAM supports the implementation of PM&E in the PITA on peanuts and hot chili peppers in the municipality of Padilla.

Once the cooperation and coordination between FOCAM and the institutions committed to the aforementioned PITAs was formalized, the process of action training was begun with the

[31] FOCAM means promoting changes and is the short name of the project "Participatory monitoring and evaluation (PM&E) for rural innovation in Bolivia." FOCAM intends to balance the demand for agricultural research from the low-resource farmers with the supply of agricultural and livestock research so that this research responds more clearly to the target population.

APAJIMPA Board on the process of implementing the PM&E system. For this purpose, the ordinary meetings of the APAJIMPA Board were taken advantage of. The process of action training contemplates the following steps:

- ✓ Definition of relevant concepts. The concepts objective, monitoring, evaluation, participation, activities and indicators were constructed collectively and participatively.
- ✓ Determination of APAJIMPA's objective. Brainstorming was done on the basis of the following questions: Why are we organized as APAJIMPA? Where do we want to go as an organized group of producers?
- ✓ Analysis of the key words (or key phrases) and results in the objective chain to identify the principal activities to be done in order to reach the proposed objective
- ✓ Identification of indicators by objective in order to evaluate the quality of their execution
- ✓ Preparation of monitoring formats, which are the responsibility of the Board.

- *Strategies for implementing PM&E in the communities*. To implement PM&E systems in all the "member" communities, the 24 communities were divided into four sectors or subzones, in each of which the action training was done, using the same approach with promoters and community representatives (presidents) to the Association.

  The trained promoters who are implementing the PM&E together with the community president of APAJIMPA were initially named by their communities and trained by PROINPA to support the training and technical assistance in the crops of peanuts and hot chili peppers. In the implementation of PM&E, however, some promoters were designated by the members of the community to carry out activities specific to PM&E.

  The people who received training had the obligation to implement the PM&E or contribute to its implementation in their communities. To facilitate and support the additional effort made by the promoters, FOCAM provided them with working material consisting in a shoulder bag, flashlight and folder for recording the data. The use of these materials was regulated by the Board, promoters and members of APAJIMPA. The use of the materials is for exclusive use in implementing PM&E. If for any reason one of the promoters or presidents that received the materials resigns, they should be returned to the community to turn them over to the new promoter or president.

- *Use of participatory techniques*. During the process of motivation and implementing the PM&E system, the following techniques were used: brainstorming; dynamics such as "gallina ciega" to understand and reflect upon the terms of PM&E and "playing roles" to understand and reflect on the term participation; sociodramas; and drawing situations they have lived. All these techniques were accompanied by a process of reflection by the facilitator, members and promoters, who related the content of these techniques with their daily lives.

Results

PM&E in the context of the APAJIMPA Board

Four short (approximately 1.5 hours each) workshops were held over a four-month period, taking advantage of the meetings of the Board and the Expanded Board that are held monthly. The progress made in the training process was as follows:

- Collective, participatory construction of the following concepts with APAJIMPA:
  - ✓ Objective: Accomplishment or goal that a person or a group wishes to reach
  - ✓ Monitoring: Following up on the things that the group has decided to do
  - ✓ Evaluation: Score the good or the bad that we have done in our community and in the work with the institutions. This should also be done during the implementation or execution of a project, at key moments to see whether we are on the way to accomplishing what we planned.
  - ✓ Participation: Commitment to an undertaking, project, etc. True participation lies in taking part in the decision-making.

After defining each term, the concept (PM&E) that evolved as a result of the participatory process was the following: ***PM&E is a permanent, active, consensus-oriented and participatory accompaniment of programmed activities subject to evaluation to ensure the accomplishment of the objective laid out.***

The objective constructed for APAJIMPA was: ***Improve our production in quality and quantity, improve the system of commercialization, increase our income in order to improve the living conditions of our associates and communities.***

Then the following concepts were defined:

- ✓ Activities: the actions that are undertaken to accomplish the objective laid out.
- ✓ Indicators: signs that indicate the extent to which we are going in the direction of accomplishing the proposed objectives.

To identify the activities that are key for reaching the organization's objectives, the following question was asked to those present: What does it mean or how can we improve our production in quality and quantity? The brainstorming in this respect was:

- **Activities fundamentally related to the members of APAJIMPA**
  1. Through the integrated management of our crops
  2. Using good seed
  3. Applying the technologies disseminated by PROINPA
  4. Planting ecotypes according to the agroclimatic sectors of the zone

- **Activities fundamentally related to the supplier PROINPA**
  5. Backstopping and training promoters in the communities

6. Permanent monitoring of the application of technologies transmitted by the supplying institution
7. Appropriate technologies provided or implemented for drying hot chili peppers
8. Promoting the formation and consolidation of small businesses
9. Monitoring of promoters

This list of activities reflects the farmers' perception with respect to PITA. Later, in a meeting among the supplier, the Board and FOCAM, the relevant activities with which the supplier should comply to reach the products indicated in the project were identified (Table 1) and that these contribute to the accomplishment of the organization's objective.
Table 1 shows the indicators of the degree of compliance with the activities foreseen in the project (PITA Peanuts), reached by consensus between suppliers and the APAJIMPA Board: These "process" or "intermediate" indicators, which add to the data obtained by the evaluations done by farmers in the activities developed in the communities, provide valuable information that will enable the Board to take decisions that contribute to the success of the projects.

Table 1. Format for monitoring the peanut project by the APAJIMPA Board.

Activities	Indicators	Dates	Responsible
- Training promoters-representatives of the communities to the peanut project in crop management technology - Training members of the peanut project in the communities about crop management technology	- 24 promoters trained - 2 training events per crop cycle - A course per community per month - No. of farmers trained	- By cycle The date and number vary according to the community	PROINPA technical team, peanut project PROINPA technician assigned to the community
Technical assistance in field	- no. visits per month* - no. farmers visited	Each month	PROINPA technician assigned to the community
Establishment of validation plots of calcium sulfate	10 plots established	July 2005 evaluation trials	PROINPA technical team, peanut project APAJIMPA Board
Implementation of technology demonstration plots	At least 1 demonstration plot implemented per community	January 2005	PROINPA technical team, peanut project
Strengthening of the training done by mass media Radio programs – Bulletins for farmers	– Five radio programs – no. of times each program is repeated – Five bulletins – 500 copies of each bulletin	1 slot per month during the cycle 1 summary bulletin per training session	PROINPA technical team, peanut project PROINPA technical team, peanut project
Implement a sheller and three roasters in Padilla	Plant installed	July/2005 subject to space	PROINPA technical team, peanut project Pablo Moya

Activities	Indicators	Dates	Responsible
			(technical consultant)
Contact with potential buyers	- Contacts established with at least 3 organizations - At least 2 meetings between producers and potential buyers	July/2005 July/2005	PROINPA team, peanut project APAJIMPA Board
Transformation - Identify at least one line of transformation of peanuts - Include the peanuts in the school breakfast	Line of transformation identified Take the necessary steps before the corresponding authorities, done	July/04 April/05	PROINPA team, peanut project APAJIMPA Board
Participatory diagnosis of the organization Prepare strategic planning Training in administration and accounting	Diagnosis done Strategic planning of peanut project in APAJIMPA, updated 5 members of APAJIMPA, trained	July/05 July/05 At the end 11/04	Team, peanut project Team, peanut project APAJIMPA Board Team, peanut project

The number of visits to be carried out in each community varies according to the number of members that participate in the peanut project and the stage of the crop. Thus, for example, in the community of La Ciénega, two visits will be made because the number of members in the peanut project is 47, and the technician should visit each farmer at least once.

The information contained in Table 1 constitutes a guide or general information for APAJIMPA to monitor the principal activities by components. To record the information, they have a notebook for exclusive use of PM&E, where they note the details of the monitoring done, the positive and negative aspects and the observations.

To the extent that the process of implementing the PM&E system in the organization advances, they will evaluate the indicators so that they can visualize the degree of satisfaction and compliance of the proposed objectives by the association. In this way the will be in a position to evaluate the impact of the intervention process for the projects in the zone.

Recording primary information

In the process of action training at the level of communities (by sectors), the following progress was made: There are formats for recording the M&E process, generated participatively during the training process. The procedure for recording information on the formats is as follows: After the training done by the technician of the supplying institution, the participants in the event

"grade" the development of the same and make suggestions.[32] Table 2 gives an example of format used to evaluate the training activities of the supplier.

Table 2. Format for monitoring the training activities in the communities.

Community…*Padilla*……
Activity…Organizational strengthening workshop Date… 17/05/04
Responsible…
Indicator …Degree of learning

☹	😐	☺	**Positive Aspects**	**Negative Aspects**	**Suggestions, Recommendations**
×	×××××× ×××××× ×××××× ××××	×	Learn a new methodology of planning	* I did not understand well * The SWOT procedure was done too quickly.	* Explain more slowly what was done with the SWOT cards * Get us to participate more
Total 1	22	1			

As this format was filled in after a training course in Padilla, the promoter of this community should take this information to the meeting of the Expanded Board, where they will construct a consolidated table as shown in Table 3.

Table 3. Consolidated information of participatory evaluations of training activities.

Community	**Training Activity**	☹	😐	☺	**Conclusions/ Recomendations**
San Julián					
Mojotorillo	Organizational Strengthening Workshop	1	22	1	Some have not understood the procedure of the SWOT methodology
La Ciénega	" "	1	4	15	
Etc.					
Total		**2**	**26**	**16**	

The total reflects the perception of the "quality" of the activities done in all the communities. This consolidated report is socialized every two months at the meetings of the APAJIMPA Expanded Board.

Thus far no consolidated reports have been made because the process has just begun. Nevertheless, during the accompaniment, it was observed that the promoters are complying with their task to facilitate the filling out of the evaluation formats.

[32] The community president or the promoter writes a synthesis of recommendations based on the comments made by the participants about the scoring that they did.

As for the relevance of the recording of information by the local actors, D'Arcy (1993) stated that the gathering and analysis of the information are done in the community; thus the information is available at the time of making decisions. When the information is opportune, the possible problems can be identified, and the solutions can be found soon.

Changes in the perception of the APAJIMPA Board with respect to PM&E

At the onset of implementing PM&E through the training activities, the APAJIMPA Board paid no attention to PM&E. However, at present they consider it to be an indispensable "tool" for accomplishing their objectives as an organization, given that the results of the M&Es done, enables them to give feedback to the technicians of the supplying institution of the PITA, as well as among themselves.

With respect to the importance of implementing PM&E in the organization, IDS (2000) indicates that PM&E is not just the use of participatory techniques in a context of conventional M&E. It is more a matter of rethinking radically who initiates and executes the process, and who learns or benefits from the results. In this respect, Coupal (2000) states that the goal of the PM&E is quadruple:

- ✓ Strengthen the capacity of the local beneficiaries of the project to reflect, analyze, propose solutions and act
- ✓ Learn, readjust and act, taking the corrective measures that are imposed to obtain results such as add or delete activities or change their strategy
- ✓ Render accounts at all levels: the collectivity, organization and people in charge of getting the project off the ground and financing it
- ✓ Celebrate the successes and take advantage of them

Principal difficulties

- One of the main difficulties for implementing PM&E in the context of the APAJIMPA Board, is that the members live in very disperse places. After the meetings, they rarely meet to exchange criteria, and the monthly meetings are not sufficient to control all the activities that the projects imply.

- The number of topics considered in the meetings of the APAJIMPA Board is very large so that the Board requires a rapid analysis of the same. This was one of the reasons why they assigned so little time to deal with PM&E.

- In some communities the *sindicato* leader does not form part of the PITA so he/she gives little importance to these activities, as is the case of PM&E. At the same time, in some communities there is a lack of leadership by the community representatives to PITA.

Positive aspects

- Agreements to interact and coordinate the work with respect to the process of implementing PM&E were reached among the supplier, the APAJIMPA Board, FOCAM

and the Municipal Government of Padilla. Nevertheless, APAJIMPA would like greater participation in their meetings by the last entity.

- APAJIMPA decided to include the application of PM&E in their bylaws and create a "space" for the representatives of the communities to present ample reports at the meetings about the PM&E process in their localities. This important progress is due to the interest shown toward PM&E by some leaders of the organization.

- There are agreements and good coordination with the FDTA-Valles to build a database on the M&E process done in the PITA. This could also provide valuable information to the M&E Planning System (SIPSE) of the Valles Foundation.

- There is an "openness" and good coordination with the technicians of the supplying institution for implementing PM&E, both in the APAJIMPA Board and in the communities. Nevertheless, a greater commitment is expected through the component "Organizational Strengthening" for greater attention and analysis of PM&E in APAJIMPA's meetings.

Conclusions

- In the context of the rural area, where the farmers-actors directly linked to the adoption of innovations, take their time to adopt or reject the technologies, the notion of process should be understood in its true magnitude. This means undertaking training processes that include the use of simple terms, repeating the number of times necessary to make a concept or idea clear, using logic and giving local examples.

- When the farmers are convinced that they are truly the protagonists and "owners" of the projects, they become interested and see the need to implement PM&E systems. Once they appropriate the PM&E system, they feel they have more capacity to participate in development processes from their family level to their economic and *sindicato* organization.

- The strategy taken between the Board and FOCAM to train promoters by sectors (groups of communities) not only made it possible to train the promoters, but also the *sindicato* leaders and farmers in general. In this way it was possible to minimize the distances and strengthen the local capacity.

- Implementing PM&E requires investment in resources (fundamentally human and time) at the onset of the process until there is empowerment by the members, promoters in the communities and the Board at the Association level.

- In many cases the PITA covers several communities and therefore members; thus in order to establish PM&E systems, it is important to generate and adapt strategies to each context.

References

Coupal, Françoise. 2000. Seguimiento y evaluación participativos basados en los resultados. www.mosaic-net-intl.ca/article-PMEes.pdf

D'Arcy Davis Case. 1993. Conceptos, métodos y herramientas para el diagnóstico, seguimiento y la evaluación participativos en el Desarrollo Forestal Comunitario. Manual de campo № 2. Organización de las Naciones Unidas para la Agricultura y la Alimentación (FAO).Rome.http://www.fao.org/documents/show_cdr.asp?url_file=/DOCREP/007/X9996S/X9996S00.HTM.

Fundación para el Desarrollo Tecnológico Agropecuario de los Valles (FDTA-Valles). 2004. Memoria 2003.Cochabamba, Bolivia.

HECOP (Hábitat Ecología con Producción). 2001. Plan de Desarrollo Municipal (PDM) de Padilla, 2001. Honorable Alcaldía Municipal de Padilla. Proyecto de Desarrollo de Comunidades Rurales (PDCR II). Organizaciones de base. 529 p.

Hernández, L.A. 2003. Sistemas de seguimiento y evaluación participativa (Mimeo). IPRA, CIAT, Cali, Colombia.

IDS (Institute of Development Studies). 1998. El seguimiento y evaluación participativos. Cómo aprender del cambio. Boletín de Síntesis Informativa No. 12 www.ids.ac.uk/ids/particip

INE/MDSP/COSUDE. 1999. Atlas estadístico de municipios. Edición Centro Internacional de la Papa (CIP). 485 p. La Paz. Bolivia.

Moya, P. 2003. PROINPA. Resultado de un diagnóstico y planificación estratégica sobre organización y mercadeo.Cochabamba. Bolivia.

PROINPA. 2003. Resultado de un diagnóstico y planificación estratégica sobre organización y mercadeo (Mimeo). Cochabamba. Bolivia.

Reuben, W. 2003. Seguimiento y Evaluación Participativo (SEP). Grupo Participación y Sociedad Civil Banco Mundial. www.worldbank.org/participation.

Knowledge-sharing methodologies for pro-poor agricultural innovation: From PITAs to marginal farming communities in Bolivia

This project contributes to IPRA's project results:

1. *PR approaches, analytical tools, and indigenous knowledge that lead to the incorporation of farmers and other users' priorities in R&D agendas developed for interested institutions..*
2. *Professionals and others trained as facilitators of PR.*
3. *Material and information on PR approaches, analytical tools, indigenous knowledge, and organizational principles developed.*

Vicente Zapata[33]

The newly organized Bolivian Agricultural and Livestock Technology System (SIBTA) faces the challenge of bringing the poorest of farmers into the technological development process. This process takes the form of two types of projects that are financed by means of external funding[34]: the Applied Agricultural Technology Innovation Projects (PITAs) and the National Strategic Innovation Projects (PIENs).

Although this system is open to capturing a wide range of technological demands from farmers, the PITAs reach only privileged groups of organized farmers who are able to pay or have the power to find support to provide the matching funds that enable them to be beneficiaries of such projects (financial ceiling of US$100,000). A major difficulty for many poor farmers to gain access to technology is their null organization and inability to pay the 15% of the total project costs. Moreover, the technology transfer (TT) processes use vertical communication models in which the key actors are groups of technology-service providers, and farmers play a secondary role. An initial review of PITAs concluded or ongoing reveals that participating farmers do not have an active (participatory decision-making) role in constructing the knowledge they need to apply to overcome poverty.

This project is engaged in gathering field-based evidence for policy formulation. A set of Bolivian actors coming from the Foundations for Agricultural and Livestock Technological Development (FTDAs), the Board for Technological Development (DDT) of the Ministry for Rural Agriculture and Livestock (MACA), agricultural technology service-providing agencies and farmer leaders are jointly finding methods to improve access of marginalized farmers to agricultural innovation. To this end, the project is identifying a set of "knowledge-sharing methodological arrangements" useful for responding to the technological knowledge needs of farmers not yet benefiting from PITAs but who demand the knowledge generated therein.

Three methodological arrangements will soon be tested at seven sites within the four agroecological regions where the respective FDTAs have PITAs under way or are expanding

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[34] SIBTA operates thanks to two sources of funding: an IDB loan to Bolivia and matching funds from a pool of European donors.

original PITA results to other farmer groups demanding such knowledge. To derive understanding of principles and practices for rapid inclusion of the poor, the project is leading the networking among the key actors of the SIBTA system. It is expected that exchanging methodologies, experiences and lessons learned will promote change towards the formulation of new norms vis-à-vis the forthcoming review of the SIBTA law. Other project outcomes include the content analysis of PITA results in terms of their relevance to be included in the project's knowledge-sharing process, the organization of knowledge-sharing facilitator teams that include farmers and PITA providers to apply and evaluate the methodological arrangements; the production of methodological guides to describe ways to apply these arrangements; and the presentation of the new knowledge-sharing schemes to promote the establishment of systematic scaling-out processes through FTDAs to SIBTA actors.

Background

Three central objectives of SIBTA are:

- ✓ Contribute to reducing social and regional inequalities in terms of access to technological development
- ✓ Guarantee active participation of key actors in the demand and supply of RD&TT services
- ✓ Consolidate its own institutional development in a sustainable way

DfID-FIT expects that the research being financed in Bolivia will achieve maximum expected impacts. Through lessons learned on how to improve pro-poor RD&TT, it should contribute to pro-poor policy formulation and investment in Bolivia.

CIAT has been working on three fronts in Bolivia, all of them geared to ensure stakeholder participation in rural innovation:

- ✓ Pioneering work carried out by IPRA with PROINPA resulted in the creation of a large number of CIALs in very poor communities. Based on their needs, farmers in poor communities have been able to do research to identify agricultural production alternatives that result in increased production and income.
- ✓ In 2002-2003 CIAT dedicated time and effort to identifying key partners who could join in future agricultural innovation and natural resource management developments. With a group of seven institutions and groups, CIAT formed a Consortium for Rural Development in Bolivia (CIDERBO). Members of this group are now participating in the Water Challenge Program and others have joined the Support Group of FOCAM (the "Promoting Changes Project") in order to provide guidance and support to CIAT initiatives in Bolivia.
- ✓ Finally, FOCAM supports the creation of a pro-poor, demand-driven system for agricultural R&D. Toward this end, the project is working to enhance the ability of organized groups of small farmers to (a) express their demands and convey feedback from PM&E of research and TT products; (b) adapt new technologies to local requirements through the application of PR and TT strategies and methods; and (c) draw on relevant products from R&D service providers—all this within the framework of the Bolivian SIBTA. Major partners in this project are SIBTA, the FTDAs and a large variety of institutions including NGOs, universities and municipalities.

CIAT, through its experiences with FOCAM, is aware of the limitations of the poorest farmers to access technological knowledge. Organizational, system-normative and economic factors inhibit poor farmers to participate in the SIBTA actively. It is therefore necessary to develop knowledge-sharing methods based on a synthesis of good local practice and proven participatory extension approaches (e.g. CIALs, Farmer-to-Farmer and Farmer Field Schools) that can be assimilated by the FTDAs themselves to ensure that poor farmers have access to new knowledge and technology. The participative creation and testing of such methods is the objective of this project. The TT approaches will be developed with successful PITAs so that their research results can be shared with resource-poor farmers for whom the results are relevant.

Research questions

This project intends to respond to the following research questions:

- ✓ What type of methodological arrangements—alternative to the traditional TT methodologies—can be designed and applied that facilitate access of marginal farmers to technological innovations?
- ✓ Are these new ways to share knowledge with marginal farmers easy to apply by local knowledge-sharing teams and cheaper for beneficiaries?
- ✓ Can field-based evidence regarding the previous questions sensitize the SIBTA decision-makers to promote the inclusion of research findings and recommendations into the new SIBTA law?

Literature review on extension methodologies

Technology transfer is the process whereby existing knowledge, facilities and capabilities developed under an R&D funding system are utilized to fulfill public and private needs (FLC, 1999). As one of the forms of agricultural extension, TT is part of a knowledge system that includes research and agricultural education. FAO and the World Bank call it AKIS/RD: Agricultural Knowledge and Information Systems for Rural Development. Scholars in this field suggest that the three elements of the triangle: transfer, research and education should be treated as a system, not as separate entities (Eicher, 2001). Linking these with farmers also requires systematic planning; however much has been written on implementing AKIS/RD linkages, especially in research and extension (Kaimowitz, 1990; Prey and Echeverría, 1990; Crowder and Anderson, 1997) without any significant results. In this age of change, a promising idea appears to be promoting linkages through incentives that promote cross-institutional activity between AKIS/RD systems and farmers. AKIS/RD systems link people and institutions to promote learning, share and use agriculture-related technology and knowledge. According to the AKIS/RD *Strategic vision and guiding principles* (FAO/World Bank, 2000) the system integrates farmers, agricultural educators, researchers and extension workers, enabling them to harness knowledge and information from various sources to improve farming and rural livelihoods. The relationship between agricultural extension and research is very close for the knowledge that is transferred usually comes from adaptive and applied research. In a strict sense the main purpose of agricultural extension is to disseminate information to raise the production and profitability of the farmers. Nevertheless, an extension system should also encourage the empowerment of farmers, including participation in program planning and decision-making.

Several areas need to be defined when dealing with the concept of agricultural extension: (a) the technical aspects of extension that concern knowledge and information delivery and (b) the level of organization reached by farmers. In the case of SIBTA, organization along with the capacity to share the cost of PITAs is a requisite that must be met in order to access innovation. A long tradition in agricultural extension is group promotion and organization; in fact one of the ways to promote people's participation in development is through rural development associations (Van Keck, 1990).

In his *Guide on Alternative Extension Approaches*, Axinn (1988) describes eight approaches to extension and their criteria for success:

- ✓ the general agricultural extension approach, in which success is measured in terms of the rate of take-up of the recommendations and increases in production
- ✓ the commodity-specialized approach, whose success is the increase in production of a given crop
- ✓ the training and visit approach where success is measured by increases in production of the particular crop covered by the program
- ✓ the agricultural extension participatory approach, where success is measured by the numbers of farmers actively participating and benefiting and by the continuity of local extension organizations
- ✓ the project approach in which short-term change is the measure of success
- ✓ the farming systems development approach in which the success criterion is the extent to which farmers adopt the technologies developed by the program and continue using them over time
- ✓ the cost-sharing approach, where success is measured by the farmers' ability and willingness to share the costs of extension organizational units, either personally or through their local government
- ✓ the educational institution approach, where the measure of success is the attendance of farmers in the school's agricultural extension activities

Agricultural extension involves many different approaches and methodologies. Methods differ according to content areas, and it is delivered through a variety of institutional arrangements. It can be argued that no single approach best suits extension development in all circumstances.

The role of governments in providing extension services has been significantly reduced during the last decade. Privatization and shortage of resources on the technology-development side have crippled the State's capacity to reach poor farmers. Extension in many cases is conducted by NGOs, many of whom do not have the knowledge capabilities to respond to farmer needs adequately. SIBTA, through the development of PITAs and PIENs, is bound to make an important contribution to knowledge sharing and application. Globalization has occurred with the speed of telecommunications. Alongside, there has been a "power shift" (Mathews, 1997) from public sector dominance to private sector hegemony. A new paradigm towards market-driven reforms with an agrobusiness orientation has resulted from this, severely affecting the funding and delivery of agricultural and rural extension. This has had an impact in terms of the way public sector extension is conceived and practiced. Several questions need to be addressed: Who will pay for rural extension services? Who will deliver these services? Who is to be served?

How will they be served and for what purposes?

At this juncture, farmers need to be convinced that extension services and the knowledge they generate and communicate are valuable for income generation and for improving their livelihoods. Accompanying resource-poor farmers in the development and adoption of appropriate technology may bring them the opportunity to increase productivity and income; and in some cases it may slow down rural-urban migration. Through extension services farmers may (a) be able to intensify and diversify their farming systems, (b) have more chances to enter the market economy, (c) be encouraged to practice agricultural sustainability, and (d) organize themselves around their mutual production interests (Swanson, 1997).

There is a growing consensus that to create a "demand-driven" technology system, farmers must be directly involved in identifying problems, establishing priorities and carrying out on-farm research and extension activities (Rivera et al., 2000). Extension approaches include:

- ✓ FFS was originally associated with promoting IPM work at the grassroots level to advance the principle of stakeholder participation in decision-making with a view to giving full responsibility to stakeholders for program development. Quizon et al. (2000) provide an interesting perspective on FFS as an alternative problem-solving approach
- ✓ Farming systems development (FSD) began in the 1980s as Farming Systems R&D. On-farm research was seen as a link between farmers, researchers and extension people (Collinson, 1984). This approach has a dual character. Sometimes it is hailed as a multi-institutional team approach; at other times it is considered a production-oriented approach (Berdegué, 2000)
- ✓ Distance education tools to extend information are another approach to extension. Computer-based distance education can also promote learning-by-doing. Distance learning is a major development in information and communication technologies (ICTs) and is already a leading instrument for extending information and knowledge.
- ✓ Socioeconomic and Gender Analysis (SEAGA)

The AKIS/RD vision is supported by nine guiding principles: economic efficiency; a careful match between the comparative advantages of organizations and the functions they perform; clear spread of costs; careful assessment and optimal mixing of funding and delivery mechanisms; pluralistic and participatory approaches; effective linkages among farmers, educators, researchers, extension workers and other AKIS stakeholders; building human and social capital; and sound M&E. The other principles are more related to program management: participation of stakeholders in decision-making, cost efficiency, human development and training, and social resource enhancement. Throughout, participation is both a development philosophy and an instrument (Nagel, 1992). As a philosophy it describes the action by which all participants are involved in attaining a common goal. As an instrument, it focuses on involving stakeholders in decision-making such as situational analysis, planning, implementation and evaluation.

Narrative summary of the Project

Goal

SIBTA, FDTAs, service providers and farmers will improve the access of the poorest farming communities to agricultural innovation by means of policy debate for including the poor in agricultural innovation based on evidence provided by this project

Purpose

Poorest farmers in four agroecological regions will use relevant technological knowledge by means of participatory, locally grounded knowledge-sharing mechanisms

Outputs

- Institutional platform (FDTAs, DDT, SIBTA, partners and stakeholders) agreed upon, including participants' responsibilities at each level, to ensure sharing of knowledge-management strategies and results
- A digital document dedicated to knowledge-sharing methodologies and their application in marginalized contexts making reference to gender equity and ethnic issues dealt with by the Project
- Knowledge facilitators trained to apply knowledge-management approaches incorporating technical knowledge from PITAs
- Knowledge-facilitation methods, tested participatorily, prove their capacity as TT instruments among poor farmers in the project's area of influence.
- SIBTA, MACA and DDT leaders, as well as partners and stakeholders—sensitized about the potential of methods tested and their applicability—propose adjustments to norms and policies.

Project milestones and deliverables

Dates	Milestone	Deliverables
30 June 2004	Agreements with Foundations, DDT and technology service providers formulated, and conditions for technical cooperation within the project agreed upon	Signed documents endorsed by CIAT, partners and collaborators
Sept. 2004	Document on knowledge-sharing methodologies applicable to Bolivia prepared	CD with a review of methodologies for distribution among partners and stakeholders
Dec. 2004	Three proposals for methodological arrangements designed, and an experimental design for comparing methods defined	Document that describes the methodological arrangements
Feb. 2005	Manual on knowledge-management strategies available, and seven teams of knowledge facilitators trained	Copies of manual available for distributing among partners and stakeholders
Mar.-Sept. 2005	Experimental application of methods completed First M&E reports available by July 2005	Written reports on the application of methods available for distribution. M&E reports available
Oct. 2005	Analytical and evaluative report about the methods, the performance of knowledge facilitators, and adoption results completed	Copies of document available for distribution
Nov. 2005	Synthesis of case studies covering content, methods, experiences and instruments completed	Document published and distributed among partners and stakeholders
Dec. 2005-Feb. 2006	Two final workshops conducted with higher education actors and SIBTA to prompt proposals for applying successful practices in the System's rules and regulations	Reports of workshops and final analysis prepared and distributed

First methodological steps

The project started in April 2004. During the period 1 April-30 June, the Project Coordinator and his Bolivian counterpart (Eduardo Nogales) were dedicated to two different kinds of activities: (a) socializing the project among different stakeholder groups and (b) organizing the project "platform." In both activities, face-to-face encounters were preferred to Internet dialog by most of the counterparts.

The socialization of the project took place in a variety of forums that included project coordinator meetings with the four executive directors of the FTDAs, two workshops to exchange ideas about the project with FIT project coordinators and other groups of stakeholders, convened by the Bolivian FIT Coordinator, Miguel Angel Pedregal; several encounters with the DDT and with the FIT Program Coordinator as well as visits paid by the Bolivian Coordinator to groups of six technical assistance-service providers that included negotiation of their participation.

The socialization process was a difficult task. Several stakeholders and some collaborators understood this project as "a quick way to replicate a PITA"; others thought the project would contribute its resources to Foundations so that they would be able to repeat successful PITAs to wider farmer audiences. Some were hesitant to collaborate given their understanding that the project would provide mechanisms for farmers to access PITAs for free. It was an interaction-intense task to help everyone understand that this project was interested in improving the quality of the methodological relationship between technical- service providers and farmers in order for the latter to improve their quality of learning and adoption. Improving methods and knowledge-sharing strategies was a less threatening goal for some of the foundations´ leaders. The fact that foundations would have better tools to reach larger audiences in a more efficient way and could incorporate recommendations on the use of these tools by technical-service providers and new tools to monitor the results of PITAs was widely accepted as a project goal.

The institutional platform was organized around the four FTDAs. Technical personnel, financed by FIT 8, are carrying out the planning, M&E of activities along with the PITA service providers. Both the FTDAs and service-providing groups have agreed to host the project in terms of the use of their physical premises and other facilities. The Bolivian project coordinator is in close contact with these people to keep track of activities and provide support to forthcoming events. The Program for Research on Andean Products, (PROINPA), given its extensive experience with FFS and Agricultural Research Committees (CIALs), was invited to work on a set of knowledge-management methodological guidelines, which will be inputs for training knowledge-sharing facilitators. Agreements have been reached to make payments to both the FTDAs and the technical assistance-service-providing agencies for their participation in the project. Nearly ₤40,000 will be invested in the participation of partners and collaborators in this project.

It is important to note at this early stage of the project that charges for FTDA and technical-assistance providers are higher than initial estimates. The same is true for the number of trips and initial investments made in setting up the institutional platform. This fact has forced us to reduce the budget for other activities such as workshops and publications. We hope to be able to find additional funds to cover for the tight budget we presented in this first sixth-month report.

Current Project status

At the end of the first reporting period, all actors are on stage and ready to initiate the learning process. Beneficiary farmers are expecting to start as soon as possible, but in several sites we will have to wait for the planting season. The service providers expect that the new methodologies to be field tested will improve their work from here on. Many nonparticipating service providers have asked to attend the training sessions. The FTDAs have made all the necessary administrative decisions to hire a professional to carry out the planning, M&E of the project at the field level.

During the months of August-September a review of literature was conducted to cover topics such as the training of facilitators, facilitation and leadership, participation, participatory action-research, poverty, FFS, farmer-to-farmer methodology, AKIS, strategic extension and other related topics.

The study PROINPA will conduct (Synthesis of knowledge-sharing methodologies and a proposal for new methodological arrangements) will provide us with additional up-to-date literature in our area of interest: "Pro-poor RD&TT methods and methodologies."

FIT 8 as a research endeavor has also been promoted among the project's stakeholders. FTDA leaders demonstrate their eagerness to reach efficient and quick solutions to agricultural innovation. One of these leaders suggested implementing the extension methodologies the project was expecting to evaluate in a particular macroregion. This perception shows how important it is for development agents to use innovative ideas to improve their work, but at the same time lessens the appreciation for research as a basic tool for decision-making in development processes.

There are a good number of assumptions and risks to be dealt with throughout the project implementation. These have been identified at each level of objectives in the log frame. The following are outstanding:

Risks and assumptions

- It is essential to the success of this project that the different actors involved—including municipal authorities and farmer groups and associations—be willing to participate in an institutional development process that demands:
  - ✓ commitment to incorporate the projects activities into the agendas of FTDAs, DDT, service providers and farmers
  - ✓ collegiate attitudes on the part of FTDAs and service providers to share knowledge generated by their PITAs
  - ✓ willingness of marginalized farmers to enter the technological innovation cycle
  - ✓ a collaborative attitude on the part of service providers and PITA farmers to engage actively in knowledge-facilitation activities for marginalized farmers
- A major assumption regards the quality of knowledge that stems from the PITAs that have delivered results. Each one of the PITA's technical reports to be used in the project will be evaluated according to their technical and scientific quality in collaboration with Bolivian experts. The corresponding evaluation may suggest the need to include additional information before its content is translated into didactic material to be included in the knowledge-sharing processes.
- A limitation this study has is the limited number of PITAs completed or under way; therefore results will be analyzed as case studies from which hypotheses can be later formulated.
- During different meetings held with SIBTA actors, a concern was expressed in terms of the Project's creating new amplification mechanisms without taking into consideration SIBTA´s norms and procedures. In a continuous dialog with partners and stakeholders ample explanations have been given about the true objectives of this project. The central quest is to test new knowledge-sharing arrangements, which in turn can be later used by the technical and professional personnel to disseminate knowledge applying user-friendly approaches.

This is research on methods to improve access to technological knowledge by poor, marginalized farmers. The people responsible for this project expect that the new methodological arrangements will be efficient and easy to use so to raise the interest of the SIBTA system to include them in the norms and procedures to propose and execute PITAs.

OUTPUT 2. STRATEGIES AND ORGANIZATIONAL PROCEDURES FOR PR, DEVELOPED

Strengthening social capital for improving decision-making in natural resource management in the highlands of southwestern Uganda

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Introduction

Social capital is one of the five capital assets (natural, financial, physical, human and social) that form the asset pentagon of the sustainable livelihood framework (Carney, 1998). Social capital is defined as the features of social organizations (social networks, social interactions, norms, social trust, reciprocity, cooperation) that facilitate coordination and cooperation and that enable people to act collectively for mutual benefit (Narayan and Pritchett, 1999; Woolcock and Narayan, 2000). It encompasses the nature and strength of existing relationships between members, the ability of members to organize themselves for mutual beneficial collective action around areas of common need and to manage the social structures required to implement such plans; and the skills and abilities that community members can contribute to the development process (Uphoff and Mijayaratna, 2000).

Recent research has shown the importance of social capital foundations for successful policy interventions, NRM and community development (Pretty, 2003). Efforts to examine the theoretical and methodological aspects of measuring social capital are still relatively recent (Grootaert, 2001; Narayan and Pritchett, 1999; World Bank, 2000). Obtaining a single measure of social capital is difficult given the comprehensive, multidimensional and dynamic aspects of social capital. A key objective of this study was to contribute to the literature on empirical assessment and measurement of different levels and dimensions of social capital.

Diagnosis and assessment of social capital

The project's exploration of social capital involved a combination of research approaches. Household case studies have been analyzed and interpreted in conjunction with complementary data from household surveys and participatory rural appraisal exercises. This has generated understanding of the:

- ✓ Different dimensions, levels and types of social capital
- ✓ Strength of social capital and potential for community joint action
- ✓ Differentiation in livelihood patterns
- ✓ Forms of inter- and intra-household support, village level interactions and wider scale linkages
- ✓ Gender roles, responsibilities and resource access

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- ✓ Patterns of participation and interest in NRM initiatives and norms formulation by different stakeholder groups.
- ✓ Constraints to adoption/compliance with bylaws for different groups, particularly women, the elderly and the poor

The decision to conduct case studies in the four pilot communities (Muguli and Kagyera in Mugandu parish, Habugarama in Kitooma parish and Karambo in Buramba parish) relates to the diverse nature of social capital, in particular the need to explore informal social capital and complement survey approaches. Through case study analysis, the existing patterns of social capital were identified, and opportunities for building and extending its role in NRM management were explored. The case study approach also allowed a broadening of the focus on social capital from constituted groups to the wider network of social relations. The selection of households across wealth ranks and gender ensured inclusion of households that are not often represented in groups or participatory activities, especially those headed by poorer women. This was necessary for developing an understanding of how poor women can be more involved in decision-making on NRM and of the gender implications of NRM policies, bylaws, technologies and constraints.

Having stratified the households according to wealth rank and gender of the household head, the case study households were randomly selected within the strata. From 5-7 households were selected in each village, making a total of 24 households (10 of which were female headed). A second reserve sample was taken for substitution in case a selected household was unable or unwilling to participate. Full data sets were obtained for 20 households.

A checklist format for the household case studies was constructed around the livelihoods framework. It was designed to explore how social relationships and social capital influence access to assets, natural resources, food security, loans, information, job opportunities and sourcing labor. Discussions were held concerning the social relationships involved in NRM decisions; e.g., between the owners of neighboring plots on a single hillside.

The design of a flexible checklist used on repeat visits over a 6-month period allowed for the build-up of trust and cross-checking information, which is difficult in one-off questionnaire surveys. It allowed discussion of more sensitive issues such as gender roles and responsibilities, group membership and credit arrangements, strategies for coping with poverty, and how short-term plans were put into action. It also allowed comparisons of attitudes to NRM expressed on an individual, private basis with those voiced in public discussions.

Types and dimensions of social capital

Pretty (2003) distinguishes three types of social capital: bonding, bridging and linking capital:

- ✓ Bonding social capital, which describes the relationships between people of similar ethnicity, social status and location, refers to social cohesion within the group and community based on trust and shared moral values, reinforced by working together.

- ✓ Bridging social capital refers to relationships and networks which cross social groupings, involving coordination or collaboration with other groups, external associations, mechanisms of social support or information sharing across communities and groups (Narayan and Pritchett, 1999).

- ✓ Linking social capital describes the ability of groups or individuals to engage with external agencies and those in a position of influence, either to draw on useful resources or to influence policies (Pretty, 2003).

At the individual and household levels, Uphoff and Mijayaratna (2000) distinguish between structural and cognitive forms of social capital. Structural social capital refers to the networks, linkages and practices within and between communities. In contrast, cognitive social capital refers to the attitudes, values, beliefs, social norms and behaviors that exist within a community (Grant, 2001). Both structural and cognitive social capital must be combined to represent the potential for mutually beneficial collective action that exists within a community. Any analysis of NRM and policy needs to consider all these different aspects and dimensions of social capital as this will determine whether communities can act as a cohesive unit (bonding), whether it has links with other community organizations (bridging) and can access institutions with more power and resources (linking).

Results and discussion

Bonding social capital

The main type of social capital characterizing the household level was bonding social capital, where relationships between kinsfolk, clan members and neighbors form a socially cohesive and mutually supportive network. The basic social organization of the *Bakiga* people of Kabale uses the agnatic lineage structure based on the principle of patrilineal descent, which forms the core of social organization and permeates practically every aspect of life. The clan is an exogamous patrilocal unit. Clan identity is transmitted through the father, but women keep their own clans. Sons can marry from their mothers' clan, but a daughter cannot marry into her mothers' clan. Relationships between clansmen cut across neighborhoods. Neighbors may be from the same clan or mixed. There are several clans in each village although two or three may be dominant.

The responsibilities of a clan member are to help in emergencies, sickness, assist at burials and resolve conflicts and disputes between clan members. Clans play an important role as an important feature of social organization that facilitates coordination, cooperation and managing the social structures that are required to resolve conflicts. Clans form the basis of social networks, thrust and social norms of reciprocity and cooperation that facilitates bonding social capital. As we will see in the following sections, clan elders and members constitute the basis that facilitates traditional or customary conflict-resolution mechanisms. Historically, conflicts at the local level were often dealt with through customary and traditional dispute-resolution mechanisms. With the penetration of the state, urbanization, population pressure and market economy, other mechanisms for facilitation of collective action and resolving conflicts are emerging. These include formation of informal and formal social organizations.

Bonding social capital was important for clan-based savings groups, for assistance between relatives and neighbors in accessing financial assistance, food, tools, seeds, labor sharing, childcare, water, firewood, livestock grazing, livestock products and land. These relationships were described in terms indicating high levels of trust and the values of mutual support and assistance to the poor (cognitive social capital) and were found across wealth ranks and age groups, although appear to be stronger in the lower wealth ranks. Bonding social capital is particularly important for the care of older people.

Nevertheless, tensions exist. Older people expressed some distrust of youth, and there were indications that economic success can bring perceptions that clansmen and neighbors are resentful or jealous, in some cases expressed in allegations of witchcraft. Other tensions arose where widows or wives had a poor relationship with their in-laws, often because they are using land resources accessed through their husbands' family. A mixed picture emerged of how far clans provide support. Clan organization and influence was reported as strong in some villages, while in others (e.g., Habugarama), people perceived that their influence was receding and that linking capital and neighborly relations were more important.
Evidence from the case studies shows that both bridging and bonding social capital are important in a crisis—people draw on the support of kin and friends in the village and outside and seek financial support from savings groups.

Bridging social capital

Bridging social capital, involving relationships and networks which are not based on clan or kinship, was expressed through membership in village-based groups without exclusive clan membership, such as savings groups and farmers' groups organized around a common interest (e.g. pyrethrum growing, fish farming, beekeeping). One important indicator of social capital is diversity of membership in community groups and local organizations. We found that a considerable proportion of farmers belong to several groups. In Habugarama village alone, we identified about 10 local groups and organizations comprising labor parties, credit and savings groups, pig rearing, farming groups, swamp association, "Determined women," drumming and singing groups. There were also others including church-based groups, heifer group, mothers' union and another for nonlegally wedded women. About 40% of households interviewed are members of executive committees in different groups and as expected, with about twice as many more men than women.

Over 70% of the groups are mixed, and there are also exclusively women's groups, sometimes with one or two men who act as public relations officials, sponsors or advisers. Few men-only groups were found in Ikumba for beekeeping. Sanginga et al. (2001) analyzed the type and trend of participation in farmer research groups in Kabale. There were interesting gender dynamics in the life cycle of groups with women progressively forming the majority of membership in farmer research groups, while the proportion of male dropouts becomes considerable as the groups move from forming to the storming and norming stages (Sanginga et al., 2002).

Although groups and social organizations were equally present in all four subcounties, we found that there were notably many more groups and social organizations in Rubaya and Bubare than in Kashambya and Ikumba. In the first two subcounties, 74.5% of the households belonged to groups

and social organizations specifically concerned with NRM, compared to 56% in the last two. In the same vein, more households (84%) in Rubaya-Bubale participated in extension and dissemination activities in relation to NRM, compared to Kashambya-Ikumba (74.5). In Ikumba, however, a higher number of households were involved in NRM activities offered by external organizations such as CARE Development Through Conservation (CARE- DTC) project.

Collective action is a strong indicator of social capital. It translates thrust, cooperation and participation in community activities in more tangible outcomes: coordination and cooperation that enable people to act collectively for mutual beneficial collective action around areas of common need (Uphoff and Mijayaratna, 2000). The commonest form of collective action found in virtually all the villages was the community work "Burungi bwansi" and "Engozi." Collective action related to agriculture and NRM tended to be limited to members of active groups only. This included rotating exchange labor or group labor for a number of farm operations such as planting, weeding and harvesting. Only one out of four farm households reported active participation in organizing collective action to improve NRM in their communities for the benefits of others.

The majority of households (83.6%) are increasingly sharing assets and resources within their communities. Table 1 shows the main resources being shared within the four subcounties. The resources commonly shared by the majority of farm households are labor (50%) and agricultural tools (50.7%) as well as money (47.6%) Sharing of land (both farmland and grazing land) and labor is more common in Ikumba than anywhere else, while wetlands seem to be more a common pool resource in Kashambya. There are complex arrangements, obligations and rights for resource sharing. In some communities specific bylaws have been formulated, while in others conflicts resulting for the management of common pool resources are intensifying.

Table 1. Resource- sharing issues in the study communities.

RESOURCE SHARING	Rubaya (%)	Ikumba (%)	Bubale (%)	Kashambya (%)	Total (%)
Agricultural tools	48.6	57.5	47.6	48.1	50.7
Labor	48.6	65.0	40.5	44.4	50.0
Money	47.2	50.0	50.0	40.7	47.6
Grazing land	10.8	37.5	23.8	29.6	25.3
Farmland	27.0	42.5	26.2	25.9	30.8
Seeds	13.5	25.0	9.5	25.9	17.8
Swamps/wetlands	16.2	12.5	2.4	22.2	12.3
Woodlots	8.1	15.0	14.3	14.8	13.0
Trees	5.4	10.3	11.9	14.8	10.3
Crops	16.2	15.0	4.8	7.4	11.0
Livestock	5.4	12.5	4.8	3.7	6.8

Different people and stakeholders are involved in sharing resources. Analyses showed that resources are generally shared with group members (66.1%), neighbors and friends (52%), as well as relatives (41%) and other community members (38.3%), with a combination of the above depending on the type of resources. In many cases neighbors are also relatives and friends, often belonging to the same groups.

The most common form of collective action in NRM was "*burungi bwansi*" or community collective work, reported in 72% of villages. The level of participation in collective action was generally high, except in Ikumba where only 66% of farmers thought it was regular. Other forms of collective action included tree planting, controlling bush fires, controlling flooding and making soil conservation structures. Collective action on agricultural activities for the benefits of individuals was restricted to group members only (22%). To assess the level of cooperation and collective action in the village further, we asked: "When you have a lot of work on your farm, how do you access additional labor?" In general most people rely on hiring casual laborers or on rotating exchange-group labor for group members, particularly in women's groups.

In terms of institutional efficiency, the majority of farmers reported that the local council system (LC) is very effective and useful at the village level. About one third found it useful, but with some levels of corruption. The majority of male farmers (53%) have been members of the LC executive or have some members of their households in the LC system. However, the findings also show that only one-third of the village members have participated in discussing and making rules about proper NRM.

Linking social capital

Involvement in linking social capital, where people interacted with external agencies for resources or to influence policies, was also found. Examples included membership in groups supported by NGOs, NAADS (National Agricultural Advisory and Development Services) farmers' groups and political representation. Involvement in leadership positions in local councils was found in wealth ranks 1 and 2.

The household survey attempted to break down social capital into its dimensions to generate appropriate measures of bonding, bridging, cognitive and structural social capital. In addition to clan membership, which forms the basis of social networks, trust and social norms of reciprocity and cooperation that facilitate bonding social capital, we found that a considerable proportion of farmers belong to several groups. In Habugarama village (about 55 households), there are about 10 local groups and organizations ranging from labor parties, credit and savings groups, pig-rearing groups, farming groups, a swamp association, to "Determined Women" a drumming and singing group. Table 2 shows the results of a recent inventory of farmers' groups commissioned by the NAADS, which identified over 500 groups with over 10,000 members in Rubaya subcounty.

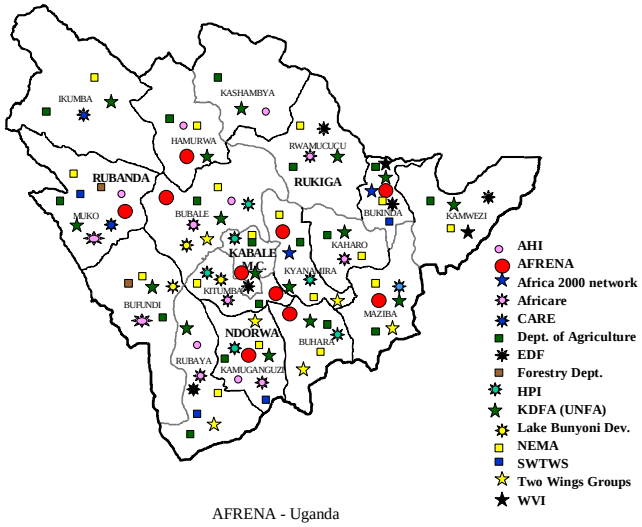
Table 2. Number of farmers' groups in Rubaya subcounty.

Parish	No. of Groups	No. of Registered Groups	No. of Farmers in Groups
Buramba	63	41	1437
Mugandu	54	18	1457
Karujanga	70	34	2408
Kibuga	71	42	1102
Kahungye	50	40	480
Bigaaga	50	40	796
Rwanyana	84	46	2006
Kitooma	65	43	928
Total	507	304	10614

Source: Opondo, 2002.

The level of participation in collective activities was generally high. However, instances of collective action related to agriculture and NRM tended to be limited to members of active groups only. These include rotating exchange labor or group labor for a number of farm operations such as planting, weeding, harvesting, etc. Only one out of four farm households reported active participation in organizing collective action to improve NRM in their communities for the benefits of others. Analysis showed that resources are generally shared with group members (66.1%), neighbors and friends (52%), as well as relatives (41%) and other community members (38.3%), with a combination of the above depending on the type of resources.

The high density of local organizations may suggest a relatively high level of social capital and association life. However, studies of group dynamics have shown that groups have different levels of maturity and social capital (Sanginga et al., 2001), generally experiencing different cycles in the group development process. Venn diagrams produced by farmers' groups also show that many villages are well endowed in bridging and linking social capital and have intensive links with external organizations, mostly NGOs. Kabale is perhaps one of the districts where there is a concentration of NGOs and research organizations working on NRM issues (Fig. 1).



AFRENA - Uganda

Figure 1. NRM organizations in Kabale.

Social capital and access to resources. Social capital, particularly bonding social capital in the form of clan and kinship relations, influences access to land. In addition to patrilineal inheritance, land is acquired through rent and purchase. These relationships are often based on kinship and neighborhood linkages.

The case studies showed marked differences in land access between the richest and poorest households. Wealth ranks 1 and 2 had between 5-30 plots, with two households having consolidated their land in a single area. Wealth rank 2 was more likely to hire land. Wealth ranks 3 and 4 households had from 1-8 plots, and some were also renting land out, reflecting the older dependent age groups in this category. Bonding social capital was also important for accessing reciprocal agricultural labor and labor hire although there were different views. One wealthier household head commented that he avoided relatives when hiring labor as it could cause problems if they did not do a good job.

One of the differentiating factors between the wealth ranks 2 and 3 is the range of sources of income. Wealth rank 3 mainly depends on income from crops and agricultural wage labor. Three households in this group depended on agriculture alone, while others coped by selling wage labor (3 households) or depended on remittances and assistance from kin (3 households). Interestingly, many belong to savings groups although their participation is threatened if they are unable to afford their regular contribution. The main source of livelihood security for the poor is through bonding social capital.

The wealthier households were characterized by multiple sources of income including nonfarm income such as remittances from outside the village; trade (particularly cross-border trade with Rwanda or a skilled profession (teaching, traditional healing/birth attendant) or other artisan skills (bricklaying, brewing, tailoring). They often held leadership roles in farmers' groups or in local politics. Of the twelve households in wealth ranks 1 and 2, four were dependent on agricultural income, but this was diversified. In addition to crops, they were involved in livestock and poultry production, beekeeping, wood and charcoal production. Kin relations were also an important means of accessing job opportunities outside the village (e.g., in Kabale or Kampala). Several households made regular visits to Rwanda, both for business and to visit relatives there.

There were gender differences in social capital and access to resources. Women's networks through which they accessed land, labor and other support were founded on kinship and neighborhood relationships, irrespective of wealth rank. When women marry into a village where their own clans are present, this is an advantage. Those women who do not have their clans in the village, develop relationships based on friendship and neighborhood. Men had more formal networks across wider social groups (bridging) and more contacts outside the village (linking).

As women largely access land through their husbands, they do not have the right to sell land. Widows have to consult their husbands' clan on the sale of resources such as land, trees or livestock. They may also experience insecurity if their deceased husband's family tries to reclaim the land, particularly if there are no children. The degree of women's participation and control over agricultural decision-making varies among households. Crop management is largely in women's hands, although disposal of the crop is often decided by men. Many households operate a division of labor in which women take main responsibility for agriculture activities, while men are involved in nonfarm occupations.

Social capital and NRM bylaws. Detailed discussions with the case study households indicated a widespread awareness of changes in quality of their natural resources, particularly over the last 10 years. Most frequently mentioned factors were the decrease in soil fertility, reduction in yields, drought, over-cultivation and erosion. Several families mentioned a 30% reduction in yields over the last decade.

Discussions with both men and women showed that nearly all had detailed knowledge of past and present bylaws on burning, tree cutting, making terraces and the more recent discussions on controlling grazing on others land, planting agroforestry species and grasses, and management of woodlots and swampland. The extent to which the more recent recommendations were being implemented varied between households and there were similarly different views on enforcement.

Some saw the solution as more sensitization for the community and more commitment to supervision and enforcement on the part of the local councils. "Local leaders should themselves set an example by abiding by the rules, especially on grazing on other land" (Habugarama). The need for participation in bylaw formulation was also mentioned. Rather than just instructions to follow rules, there is a need for developing awareness of the benefits of natural resource conservation. "People just call us and tell us what to do—don't graze, don't burn, have a granary, etc., but we are not allowed to contribute to the bylaws" (Muguli).

Poorer households with limited land, emphasized the constraints to accepting the rules. With respect to grazing, "not all people have enough land, and if you say 'graze on your own land,' this will stop those who want to buy sheep or goats; people who may have no money to buy land, this encourages poverty" (Kagyera). Construction of terraces was also viewed as problematic by some; "for lack of land, people don't want terraces; people end up hating those who are supposed to be implementing the law." Others pointed out the negative aspect of enforcement, which brought the risk of increasing conflict with the village leadership.

This implied that in order to change practices, understanding of the processes of land degradation, participation in formulation of bylaws and finding mechanisms to overcome the constraints were more important than simple information on the rules. Women's participation was vital since their interests were significantly different from men's.

Social capital and adoption of NRM technologies. The study examined the role of different dimensions of social capital and other factors in determining farmers' adoption and use of soil conservation measures. Table 3 shows the factors that positively and significantly influenced the use and adoption of agroforestry technologies. These included gender (men had higher probability of practicing agroforestry than women), income levels, extent of collective action and boundary conflicts.

The effects of social capital variables show mixed results. While bonding social capital as measured by the extent of collective action was positively and significantly related to the adoption of agroforestry, mulching and terracing technologies, the effects of structural and cognitive dimensions of social capital were generally negative. The probability of adopting soil conservation measures decreased significantly with the number of plots. The more plots farmers have, the less likely they will use soil conservation measures. The effects of conflicts were generally not significant, except in relation to agroforestry technologies. Farmers who reported boundary conflicts were more likely to adopt agroforestry technologies to demarcate their land. However, there was a significant inverse relationship between tree conflicts and agroforestry technologies. Understandably, this type of conflict discouraged farmers from planting trees on their farm.

Table 3. Determinants of use of soil conservation technologies by farmers' households.

	Agroforestry	**Mulching**	**Making new terrace bunds**
Gender	2.847***	0.051	1.484**
Age	-0.027	-0.01	0.003
Education level	-1.008	0.096	0.409
Farm income	3.36e-06*	1.506-06	2.19e-06
No. of plots	-0.059	-0.103**	-0.0883*
No. of livestock owned	0.070	0.0703	0.177**
No. of adult males	0.016	0.761	0.235
Subcounty location	-0.041	0.679*	-1.203**
Collective action	0.191***	0.07**	0.228***
Bonding social capital	1.075	0.602	1.756**
Cognitive social capital index	-0.126*	-0.086**	-0.194***
Linking social capital	0.088	-1.081*	-0.939
Structural social capital	-1.577*	-0.103	-2.632***
Tree conflicts	-1.956***	-0.118	0.304
Boundary conflicts	1.353**	-0.062	-0.028
Constant	0.0683	-0.990	

*Significant at 10%; ** Significant at 5%; Significant at 1%.

The role of social capital in minimizing NRM conflicts. The central hypothesis states that social capital is the essence of Common Property Resource (CPR) and conflict management and that the presence of social capital is a necessary condition for conflict management. This hypothesis

was examined with empirical data from conflict case studies, household interviews, key informant interviews and other participatory tools in four subcounties in Kabale District. The results show that social capital mechanisms are an important resource for managing conflicts and improving NRM. Farmers and communities use a plurality of strategies, processes and avenues to resolve conflicts, from avoidance, negotiation, mediation, arbitration and adjudication to coercion and violence.

One of the traditional institutions for managing conflicts is the clan. Traditionally, the basic social organization of the Bakiga people of Kabale utilizes the agnatic lineage structure based on the principle of patrilineal descent, which forms the core of social organization and permeates practically every aspect of life. Clan membership forms the basis of social networks that facilitate coordination, cooperation, reciprocity, trust, and social norms that are required for CPR management and conflict resolution. Clan elders and members formed the basis of traditional or customary conflict resolution mechanisms. Many conflicts between clan members are sorted out through negotiation and conciliation; a voluntary process in which parties reach mutually agreed decisions. Usually what is decided by the clan elders and agreed upon between the two parties is respected. The desire to avoid confrontation often outweighs the individual goals that the parties are trying to achieve. In 34% of the cases, conflicts between clan members are not reported and are handled in private. Avoidance is often used when the conflict is trivial, when confrontation has a high potential for damage, or when clan elders and members can resolve the conflict more effectively (Means et al., 2002).

The interviews and case studies revealed that many gender-related conflicts do not come into public domain and are often resolved at the level of the clan. Because the clan is an exogamous patrilocal unit, conflicts are taken to men's clans. Since power relations within societies are reflected and reproduced in social networks, women find themselves disadvantaged in different ways. First they do not belong to the clan structures and networks that are involved in managing conflicts. The clans operate through male in-groups in masculine social spaces, which exclude women. Because of their socialization into gender roles, women may not be aware of their rights and lack confidence in themselves; they think that they cannot win any case against their husbands or any other male member of the clan.

In a considerable number of cases, bonding social capital mechanisms (clan leaders, neighbors, relatives, village members) are perceived as having a limited capacity for resolving conflicts, as many cases taken to them are often unresolved and often require intervention of local policy structures (LC) for arbitration. This perception was particularly significant for women compared to men, corroborating women's perceptions that local mechanisms are biased against women. A combination of social, economic and political factors have undermined the ability of local mechanisms, clan elders and community organizations to manage conflicts (Means et al., 2002). The decentralization process has established local councils at the village level, which concentrate both political and administrative powers on managing community life including arbitrating disputes and making bylaws and other local policies. Political interference was often cited as a key constraint to the effectiveness of local clan leaders to resolve conflicts. Other problems included corruption and laxity of local leadership. In many instances, some educated and wealthier farmers were not willing to accept decisions by local communities and clan elders, preferring to take their cases to legal and administrative structures at the subcounty level.

Results show that other forms of social capital (bridging), as expressed in the density of farmers' groups, and particularly women's groups, have a relatively higher capacity to resolve conflicts through mediation and negotiation within these groups. It is apparent that these groups also have high levels of bonding social capital (trust and cooperation, norms and rules within groups), as well as bridging social capital (capacity of groups to make links with other groups) and linking with the local political (LC) system. A high density of local organizations may suggest a relatively high level of social capital and association life and a stronger capacity for managing conflicts. However, in the case of supra-community conflicts, low levels of social capital (especially weak bridging and linking social capital) coupled with dysfunctional policies can lead to serious conflict. One important conclusion from these cases is that social capital mechanisms for managing conflicts are not effective for conflicts between local communities and external powerful stakeholders. In these cases formal administrative and political structures substituted for social capital mechanisms.

Many of the formal conflict-resolution mechanisms often have a high social cost for local communities, especially for women and other vulnerable groups, who end up bearing the burden of paying fines and other forms of social exclusion and coercion. Formal mechanisms and policies may work best when, through redistributive, integrative and capacity-building measures, they strengthen the capabilities of stakeholders to enter into voluntary and mutually beneficial collective action and negotiation, sustainable over time. Evans (1996) and Tendler (1997) (in Molyneux, 2002), noted that successfully participatory projects have frequently depended upon a creative synergy between the state (policy) and civil society (social capital). When local policies were combined with social capital mechanisms in a positive sum way, conflicts were likely to be minimized. However, this synergy worked only where there were high levels of social capital, social institutions and well-functioning local policies that were coherent and credible. In the case of conflicts over parks, low social capital (as expressed in bridging and linking social capital) and weak policies led to rampant conflicts and the use of local council powers to resolve conflicts and arbitrate disputes. Achieving a positive synergy between social capital and policy requires effective facilitation to strengthen and build social capital and local capacity for more participatory and collaborative methods of conflict management, and to transform NRM conflicts into opportunities for collective action.

The results also suggest that the capacities of different actors, resource users, local communities, and policymakers to address CPR conflicts can be enhanced. This would require developing and implementing effective approaches, building the necessary human and social capital as well as policy processes for minimizing conflicts. Castro and Nielsen (2003), Means et al. (2002) and Hendrickson (1997), as well as several other scholars conclude that effective prevention and management of conflicts require skills and tools, which are often lacking in many organizations, institutions and communities.

Strengthening social capital. One of the key objectives of this project was to strengthen social-capital (i.e., the self-organizational capacities within communities) and create conditions in which local people are able to formulate, review, monitor and implement appropriate bylaws, and engage in mutually beneficial collective action. One mechanism used for strengthening social capital has been to establish farmers' forums and policy task forces at the different levels, from the villages, the subcounty to the district. Village bylaw committees and policy meetings

have been established and are operational in the four pilot communities. At the subcounty level, there is a policy task force, and work is done through the council and the NAADS farmer forum. Workshops for the policy task forces and policy stakeholders have also been operational. In each pilot community, community land-user groups and farmer research groups were established and are dealing with specific NRM issues and conducting experiments with different NRM innovations. The majority of these groups are active and are increasingly taking on new responsibilities and activities. On average, women constitute over 67% of the membership of these groups and are increasingly taking on leadership positions in mixed groups and farmers' forums. Women represent between 34-50% of the membership in village by-law committees and policy task forces.

Measures to strengthen the social capital of local communities have included support to the organizational capacity of groups, leadership and group development training, conflict management and gender awareness training, creating opportunities for horizontal linkages through exchange visits, facilitating exposure visits and linking local groups to other rural service providers (NAADS, CARE-FIP, AFRICARE). Based on the results of this action learning process, the project has drafted a technical guide for managing group dynamics and social processes (Annex 9 Managing group dynamics and social processes).

Conclusions

The decision to conduct case studies in the pilot communities relates to the diverse nature of social capital, in particular the need to explore informal social capital and complement survey approaches. Through case study analysis, the existing patterns of social capital were identified and opportunities for building and extending its role in NRM management explored. The case studies have increased understanding of how social capital is activated in the pursuit of livelihoods, particularly how access to (or exclusion from) social capital can assist or impede access to other forms of capital and hence influence livelihood choices and outcomes. They have also provided important insights into the interrelationships of gender, social capital and NRM/livelihood strategies. They allowed the examination of the hypothesis that men and women have different kinds of networks, experiences of collaboration and values associated with collaboration. Women were found to have a greater dependence than men on informal networks of everyday collaboration with neighbors and kinsfolk (bonding). Men had more formal networks across wider social groups (bridging) and more contacts outside the village (linking).
The household case studies were analyzed and interpreted in conjunction with complementary data from other surveys and participatory rural appraisal exercises. This has generated understanding of:

- ✓ Strength of social capital and potential for community joint action, and the different dimensions, levels and types of social capital
- ✓ Differentiation in livelihood patterns
- ✓ Forms of inter- and intra-household support, village level interactions and wider scale linkages
- ✓ Gender roles, responsibilities and resource access
- ✓ Patterns of participation and interest in NRM initiatives and bylaw formulation by different stakeholder groups.

- ✓ Constraints to adoption/compliance with bylaws for different groups, particularly women, the elderly and the poor; limited access to land (small areas, limited rights of women and migrants) access to labor, time constraints etc.

Furthermore, the case studies of social capital and livelihood analysis were instrumental in:

- ✓ Finding creative approaches to bylaw formulation and implementation.
- ✓ Encouraging women's participation in policy domain.
- ✓ Reaching consensus around by-laws that have potential conflicts of interests
- ✓ Linking community groups with higher level policy institutions
- ✓ Developing sustainable institutional arrangements for NRM at different levels

While demonstrating the important role of social capital in NRM, the results suggest that social capital mechanisms alone do not possess the resources needed to promote broad-based and sustainable NRM innovations and policies. We therefore suggest the "synergy approach" of social capital (Woolcock and Narayan, 2000) and local policy for managing conflicts. The synergy is based on embeddedness and complementarity between formal mechanisms (policies, government institutions) and social capital (local organizations, and traditional institutions). Embeddedness refers to the nature and extent of the ties connecting people and communities, with formal public institutions. Complementarity refers to mutually supportive relationships between formal and social capital mechanisms, local government and local communities and can operationalize the decentralization policy and devolution of NRM to decentralized structures. However, this synergy works only where there are high levels of social capital, social institutions and well-functioning local policies that are coherent and credible. Achieving a positive synergy between social capital and policy would require effective facilitation to strengthen and build social capital and local capacity to master more participatory and collaborative methods to policy formulation and NRM management, and to transform NRM conflicts into opportunities for collective action.

Results of this research show that to be effective, decentralization must be supported by strong local institutions or mature social capital. Pretty (2003), Uphoff and Mijayaradtna (2000), Woolcock and Narayan (2000) and many others have shown that social capital lowers the cost of working together and facilitates cooperation, trust, and collective action. Therefore strengthening social capital (i.e., the self-organizational capacities within communities) and creating conditions in which local people are able to formulate, review, monitor and implement appropriate bylaws, and engage in mutually beneficial collective action creates the foundations for decentralization and local decision making. One key achievement of this process has been the establishment and functioning of village bylaw committees and local institutions for managing the policy process and facilitating policy dialogues with local government structures and other key stakeholders. These village committees and local institutions have proved to be critical in building support for bylaw review and formulation, mobilizing political, social, human and technical resources that are needed to sustain the participation of local communities in policy dialogue and action and for the adoption of NRM innovations. They are also supporting mutual beneficial collective action and other important dimensions of social capital such as exchange of information and knowledge, resource mobilization, collective management of resources, cooperation and networking and community participation in R&D activities. They are

increasingly becoming a vehicle through which farmers are pursuing wider concerns, initiating new activities, organizing collective action among members and extending relations and linkages with external organizations. They are also increasingly taking the lead in catalyzing the development process within their communities, and are increasingly making demands to R&D organizations.

One key recommendation was to engage in a participatory action research mode to strengthen the social capital within pilot communities and to create conditions in which local people are able to formulate, review, monitor and implement appropriate bylaws that encourage mutually beneficial collective action. The steps included among others:

- ✓ Identifying and supporting farmers' organizations and local institutions in relation to NRM, building their organizational capacities
- ✓ Stimulating participatory visioning and planning through visualization, diagramming and other relevant participatory tools; and stimulating collective reflection and analysis of policies and bylaws, and their NRM practices;
- ✓ Strengthening local capacities (of both communities and government institutions) to initiate, review and formulate more integrative bylaws and local policies, for turning bylaws into use, monitoring and reporting their implementation, and sanctioning non-compliance.
- ✓ Building the capacity of different stakeholders in participatory approaches for alternative conflict management.
- ✓ Facilitating opportunities and space for collective action, and create common platforms and fora for negotiation of NRM issues.
- ✓ Linking community groups with higher level policy institutions and influential organizations to develop sustainable institutional arrangements for NRM at different levels.

References

Carney, D. 1998. Sustainable rural livelihoods: What contribution can we make? Dept. for International Development, London, UK.

Carney, D.; Farrington, J. 1998. Natural resource management and institutional change. Routledge, London, UK.

Castro. E. Nielsen. 2003. Natural Resource Conflict Management Case Studies; an Analysis of Power, Participation and Protected Areas. Natural Resource Conflict Management Case Studies; an Analysis of Power, Participation and Protected Areas A.P. FAO Rome 268 By A.P.. FAO. Rome. Pp. 268.

Coleman, J.S. 1988. Social capital in the creation of human capital. Am. J. Sociol. 94:95-120.

Cornwall, A. 2003. Whose voices? Whose choices? Reflections on gender and participatory development. World Dev. 31(8):1325-1342.

David, S. 2004. Poverty and rural livelihoods in Uganda, Malawi and Tanzania: A baseline study of BAPPA project sites. CIAT (Centro Internacional de Agricultura Tropical), Cali, CO.

Dick, B. 2001. Action research: Action and research. In: Sankaran, S.; Dick, B.; Passfield, R.; Sewpson, P. (eds.). Effective change management using action learning and action research: Concepts, frameworks, processes, applications. Southern Cross University Press, Lismore.AU.

Grant, E. 2001. Social capital and community strategies: Neighborhood development in Guatemala City. Dev. Change 32:975-997.

Grootaert, C. 1998. Social capital: The Missing Link? The World Bank, Washington DC, US. (Social Capital Initiative Working Paper no 3)

Grootaert, C. 2001. Does social capital help the poor? A synthesis of findings from local level institutions studies in Bolivia, Burkina Faso and Indonesia. The World Bank, Washington DC, US. (Local Level Institutions Working Paper no. 10)

Hendrickson, D. 1997. Supporting local capacities for managing conflicts over natural resources in the Sahel. A review of issues with an annotated bibliography. International Institute for Environment and Development, London, UK.

Molyneux, M. 2002. Gender and the silences of social capital: Lessons from Latin America. Dev. Change 33(2):167-188.

Narayan, D.; Pritchett, L.1999. Cents and sociability: Household income and social capital in rural Tanzania. Ec. Dev. Cult. Change 47(4):871-897.

Omamo, S.W. 2003. Policy research on African agriculture: Trends, gaps, challenges. ISNAR, The Hague, NL. (Research Report. 21)

Ostrom, E. 1998. The institutional analysis and development approach. In Loehman, E.T.; Kilgour, D.M. (eds.). Designing institutions for environmental and resource management. Edward Elgar Publishing, Chelthenam, UK. pp. 68-90.

Pretty, J. 2003. Social capital and the collective management of resources. Science 32:1912-1914.

Rasmussen L.; Meinzen-Dick, R.S. 1995. Local organizations for natural resources management: Lessons from theoretical and empirical literature. IFPRI, Washington DC, US.

Raussen T.; Ebong, G.; Musiime, J. 2001. More effective natural resource management through democratically elected, decentralised government structures in Uganda. Dev. Prac.11(3-4):460-470.

Reason, P.; Bradbury, H. (eds.). 2001. Handbook for action research: Participative inquiry and practice. Sage, London, UK.

Sanginga, P.C.; Lilja, N.; Tumwine, J.2001. Assessing the quality of participation in farmers' research groups in the Highlands of Kabale, Uganda. Global. 19p.

Scoones, I. 1998. Sustainable rural livelihoods: A framework for analysis. Institute of Development Studies, Brighton, UK. (IDS Working Paper No. 72)

Uphoff, N.; Mijayaratna, C.M. 2000. Demonstrated benefits of social capital: the productivity of farmers organizations in Gal Oya, Srilanka. World Dev. 28(11):1875-1840.

Wallis A. 1998. Social capital and community building: Part 2. Natl Civic Rev (87)4:317-336.

Woolcock, M.; Narayan, D. 2000. Social capital: Implications for development theory, research and policy. World Bank Observer 15(2):225-249.

World Bank. 2000. Let's talk social capital. World Bank discussion group on social capital. Available at: http://www.worldbank.org/research/growth/social_capital.html.

Strengthening the Local Agricultural Research Committees in San Dionisio, Nicaragua

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Collaborators: Jorge Alonso Beltrán[42] and Carlos Arturo Quirós[43]

Highlights

- 3 new materials of maize, 5 of common beans and 2 of rice in production phase, evaluated in 10 of the 17 CIALs
- 4 CIALs formed by women and experimenting in rice, soybeans, sweet potatoes and common beans
- Exchanges at the local (meeting of CIALs), national (Farmer University, UNICAM) and international (regional meeting of CIALs-Honduras) levels
- Training the CIAL secretaries, treasurers and boards of directors for strengthening their internal activities
- Consolidation of the Commission of Funds for CIAL research (COFOCIC)
- Preparation of 2 research protocols for natural resource management (NRM) by the CIALs

Objective

Strengthen the capacity of the rural communities for decision-making and seeking agricultural and livestock alternatives and solutions to their problems on NRM through research.

Background / justification

Participatory research is a process whereby a group or community identifies a problem or topic of interest, finds out what is known about it, does research on the problem, analyzes the information generated, reaches conclusions and implements solutions (Braun and Hocdé, 1999).

The Local Agricultural Research Committees (CIALs), located in the Calico River watershed, San Dionisio, Nicaragua, since 1997, have been doing research on crops such as common beans, maize and soybeans. The results obtained quantitatively (yields) and qualitatively (selection criteria) have played a very significant role in the producers' final decisions. Other results—product of the monitoring and evaluation—have to do with the strengthening, consolidation and empowerment of the research groups.

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Methodology

The CIAL involves the following stages:

- ✓ Motivation of the community
- ✓ Election of the committee members
- ✓ Diagnosis
- ✓ Planning of the experiments
- ✓ Establishment of the trials
- ✓ Evaluation and analysis of results
- ✓ Information for the community

For greater details on the methodology, see Braun and Hocde (1999) and Tijerino et al. (1997).

Results

Planting cycles

Table 1 summarizes the number of CIALs and the community to which they belong, the crops evaluated in the two cycles (first and second semester). To date there are 17 CIALs, of which 4 were formed in 1997, 4 in 1998, 3 in 2000, 4 in 2001, 1 in 2002 and 2 in 2003. One CIAL formed in 1998 with producers from a region with land tenure problems was dissolved for lack of their own land. The concentration of trials on basic grains reflects the importance that the producers give to these crops. Thus the municipality contributes with 1.24 and 0.78% of the national production of maize and common beans, respectively (Barbieri and Baltodano, 1999).

From 1997-2002 the CIALs have evaluated the maize crop (total 79 lots) in different years and in the first cycle, of which results are presented for 69 lots (87%). Of 118 lots of the common bean crop that have been evaluated, data from 82 (70%) are reported. This was due to the problems of Hurricane Mitch and irregular rains during the first-semester plantings of 1999.

Tables 2 and 3 give the maize and common bean yields in quintales /manzana. As shown in Table 2, the producers of the CIALs Jicaro 2 , Las Mesas, Carrizal and Zarzal have selected the variety Catacama (NB 90-43), which has been delivered in small amounts to other producers of these communities for its adaptation to different soil conditions and altitude (from 380-750 m). Catacama had yields similar to the local check (NB-6); but given the good coverage of the cob, it was preferred by the producers as it tolerates rainy seasons. HQ INTA 993 is in the production cycle by the CIALs from Zarzal and Carrizal because of its high yield.

As can also be observed in Table 3, the variety Compañía 93 has been identified, selected and its seed distributed by the CIALs to producers in the communities of Wibuse, Zapote and Quebrachal. The reasons for its selection and especially its adaptation to different conditions are presented in greater detail in the column on selection criteria. Other varieties such as Tío Canelo and Estelí 150 have presented favorable conditions in the communities of Wibuse and Zapote. In Carrizal and Zarzal new materials such as EAP-9508-41, EAP 9509-29, EAP 9510-77 and the SRC 3-1-3 are in the multiplication phase.

In upland rice the CIALs from Jicaro (women) and El Zapote are in the final phase of research with the production of varieties such as IRAT 349 and IRAT 366.

Table 1. Cycles of evaluation and research in crops by the CIALs in San Dionisio, Matagalpa, Nicaragua. [1]

Name and year initiated of CIAL	Community	2001		2002		2003	
		First	Second	First	Second	First	Second
Wibuse 1997	Wibuse	**Rice**		**Rice**		**Rice**	
San Jose 1997	Jicaro 1	**Maize**		**Maize**		**Maize**	
Mujeres Experimentadoras 1997	Jicaro 1	**Rice**		**Rice**		**Rice**	
Productores Unidos 1997	Piedras Largas	**Maize**		**Maize**		**Maize**	
El Progreso 1998	El Zapote		**Common beans**	**Maize Common beans Sweet potatoes**	**Common beans**	**Maize sweet potatoes**	**Common beans**
19 de Abril 1998	Jicaro 2			**Common beans Sweet potatoes**		**Maize**	**Sweet potatoes**
Productores Experimentadores 1998	Las Mesas	**Common beans**			**Common beans**		**Common beans**
Buena Esperanza 2000	Las Cuchillas		**Common beans**	**Maize Sweet potatoes**		**Maize Sweet potatoes**	**Common beans**
Las Nubes 2000	La Suana	**Common beans**				**Maize**	
Linda Vista 2000	Zarzal	**Maize**	**Common beans**	**Maize Common beans Sweet potatoes**	*Common beans*	Maize	**Sweet potatoes**
Los Girasoles 2001[a]	Zapote			**Rice Sweet potatoes**		**Rice** Sweet potatoes	
Nueva Vida 2001[a]	El Chile	**Maize**		**Maize sweet potatoes**		**Maize** Sweet potatoes	
Santafe 2001[a]	Carrizal	**Maize**	**Common beans**	**Maize Common beans sweet potatoes**	**Common beans**	**Maize**	**Sweet potatoes**

Name and year initiated of CIAL	Community	2001		2002		2003	
Manos Que Ayudan 2001B	El Corozo			**Maize** **Common beans** **sweet potatoes**	**Common beans**	**Maize**	**Common beans** Sweet potatoes
Rio Seco 2002[a]	El Corozo			**Common beans**	**Common beans**	**Common beans** **Sweet potatoes**	***Common beans***
Nuevo Amanecer	Jicaro 2					**common beans** **Soybeans**	***common beans***
La Amistad	Los Limones					**Common beans**	***common beans***

[1] Red = Test trial; blue = confirmation; green = Production.

Table 2. Yields of maize varieties (qq/manzana) in first-semester cycles.

Variety	**Jicaro 2[1]**	**Las Mesas[2]**	**Carrizal[3]**	**Zarzal[4]**	**Chile[5]**	**Selection Criteria (based on 100 producers)**
NB-6 (TL)	52*	53.2*	35.5	33.8	20.0	Plant height (+), coverage of cob (+), resistant to moisture (+), little disease (+), thick cob (+), resistant to pests (+), coarse grain (-)
Catacama NB 90-43	54 *	50*	39.5	34.0	24.2	Plant height (+), thickness of stalk (+), coverage of cob (+), not tolerant to moisture (-), heavy cob full of kernels (+), little lodging (+), adapts to many places (+)
HQ INTA 993			37.8	55.0		Plant height (+), thickness of stalk (+), coverage of cob (+), heavy cob full of kernels (+), little lodging (+), adapts to many places (+)

1 Average of 3 locations, 1997; **2** average of 3 locations, 1999; **3** average of 7 locations, 2001/2002; **4** average of 6 locations, 2001/2002;
5 Average of 8 locations, 2001/2002.
* Average of 2 first-semester cycles.
1 quintal = 50 kg; 1 manzana = 0.706 ha.

Table 3. Yields of common bean and soybean (qq/manzana) varieties in first- and second-semester cycles.

Variety	Wibuse[1]	Zapote[2]	Carrizal[3]	Zarzal[4]	Selection Criteria (based on 150 producers)
Door 364 (T)	20	20.2	14.5	20.7	Grain size (+), shape (+), color (+), shininess of grain (+), taste (+) , market (+)
Estelí 150	20	37.0			Early maturing (+), grain size (+), shape (+). color (+), shininess of grain (+), taste (+)
Compañía 93	25.5	31.8			Grain size (+), shape (+), color (+), shininess of grain (+), taste (+), cooking time (+), adaptation to different conditions (+)
Tío Canela		28.8			Rapid growth (+), heavy grain (+), grain color (+), resistance to diseases (+), hairy and coriaceas (plants ligneous or herbaceous angiospermaes) leaves (+), market (+), resistance to drought
EAP 9508-41			18.2		Heavy grain (+), color of grain (+), resistance to diseases (+), hairy and coriaceas leaves (+), market (+), resistance to drought
EAP 9509-29			17.2	27.2	Rapid growth (+), heavy grain (+),grain color (+), resistance to diseases (+), grain shape (+), market (+)
EAP 9510-77			18.3	24.6	heavy grain (+),grain color (-), resistance to diseases (+), in rainy season loses color (-) market (+), resistance to drought
SRC 3-1-3			24.1	22.6	Rapid growth (+), heavy grain (+),grain color (+), resistance to diseases (+), market (+), resistance to drought

[1] Results averages of 6 locations, 1998-1999; [2] results averages of 9 locations, 2000-2002; [3]results averages of 10 locations, 2000-2002;
[4] Results averages of 6 locations, 2000-2002.

It should be mentioned that the interaction between the Supermarket of Options for Hillsides (SOL) and the CIALs has made it possible for the latter to identify new technological alternatives; e.g., for upland rice and sweet potatoes, in addition to identifying new germplasm for basic grains.

This quantitative information, which is available in the database of the Participatory Research Project, is linked to the results of countries such as Honduras, Colombia and Bolivia, among others.

Meetings and workshops held by the CIALs

Activity	Technicians	Producers	Local Organizations & Institutions	Most Important Results Obtained
CIALs meeting at local level, San Dionisio	4	80	ACV ODESAR PCAC Mayor's Office MINSA (Ministerio de Salud)	Participation of all representatives of each of the 15 active CIALs Participation of ODESAR (NGO) and MINSA. (Ministry of Public Health)
Workshop management of fund for CIAL treasurers	1	16	ACV	Training of the CIAL treasurers in the management of funds
Workshop for training CIAL coordinators and secretaries, 30-04-2003	2	34	ACV	Improved knowledge of CIAL coordinators and secretaries with respect to the appropriate management of the format for PM&E
CIAL meeting, Honduras	2	6	CIALs	Presentation of results in crops such as maize, common beans and sweet potatoes Interest of other participants in this experience, particularly with respect to the preparation of byproducts (bread, small box, etc.) from these crops
Workshop for preparing format for PM&E indicators	3	21	ACV CFOCIC	Standardization of format forms for implementing the process of PM&E that will begin with the participation of 3 CIALs (El Zarzal, Corozo and Jicaro 1) and COFOCIC
Study tour to exchange experiences on PM&E,.UNICAM (Esteli)	5	21	CIAL ACV CFOCIC	Better results obtained with our CIAL with respect to the PM&E process, as well as in the planning and mounting of field trials, than with the UNICAM producers.

References

Braun, A.; Hocdé, H. 1999. Investigación participativa con el agricultor en América Latina: Cuatro casos. In: Proceedings Trabajo con los Agricultores: La Clave para la Adopción de Tecnologías Forrajeras. Australian Center for International Agricultural Research (ACIAR), Cagayan de Oro, Filipinas.

Barbier, B.; Baltodano, M.E. 1999. Modelo de simulación bioeconómica para la subcuenca del rió Calico, San Dionisio, Matagalpa, Nicaragua. Reporte para Informe Annual CIAT. 9 p.

Tijerino, D; Baltodano, M.E; Vernoy, R. 1997. La formación de los Comités de Investigación Agrícola Local en la subcuenca del río Calico, municipio de San Dionisio, Departamento de Matagalpa. In Reportes de progreso 1997. Proyecto CIAT-Laderas. América Central.Managua. Nicaragua.

Indicators[44] System as a part of Participatory Monitoring and Evaluation

Researchers: Luis Alfredo Hernández Romero[45], Jackeline Ashby[46] and Susan Kaaria[47]

Introduction

Indicators are like a "board of lights or signals," not only for representing the state of each variable to be monitored and evaluated, but also for gathering information into an established Participatory Monitoring and Evaluation (PM&E) system. This "board" is considered a basic part of PM&E, ensuring the opportune gathering and flow of adequate information to the people involved in it (Quintero, 2004). Quintero (2002) has classified indicators as follows: profit indicators and management indicators (Fig. 1).

Profit indicators

Profit indicators respond to questions like: "What to do?" "How to do things correctly?" = effectiveness (Fig. 1). The information required to assess profits, success, failures and objectives can be captured through information at three levels: (a) products = results to be given (short-term results or outputs), (b) **effects** = use of products (medium-term results or outcomes), and (c) **impact** = development results (long-term results).

Management indicators

Management indicators determine the efficiency of projects and processes. In other words, it is the fulfillment of the activities and resources degree use to attain the objectives proposed.

Being efficient is to accomplish planned activities, using the methods and procedures established to achieve the objectives and products. Being efficient at the resource level is to use human, physical and financial resources to reach the planned objective. Management indicators respond to the question: "The best way to do it" = efficiency (Fig. 1).

This paper focuses on the profit indicators and presents a proposal of how to obtain them from a PM&E system. In some cases it could be a barrier. This proposal, based on the author's experience in the Province of Cauca in southwestern Colombia ("contingent plan"), describes an alternative for resolving this barrier. More important is to find ways to explain how this apparent obstacle in the process can actually be exploited as an opportunity to enhance the PM&E methodology.

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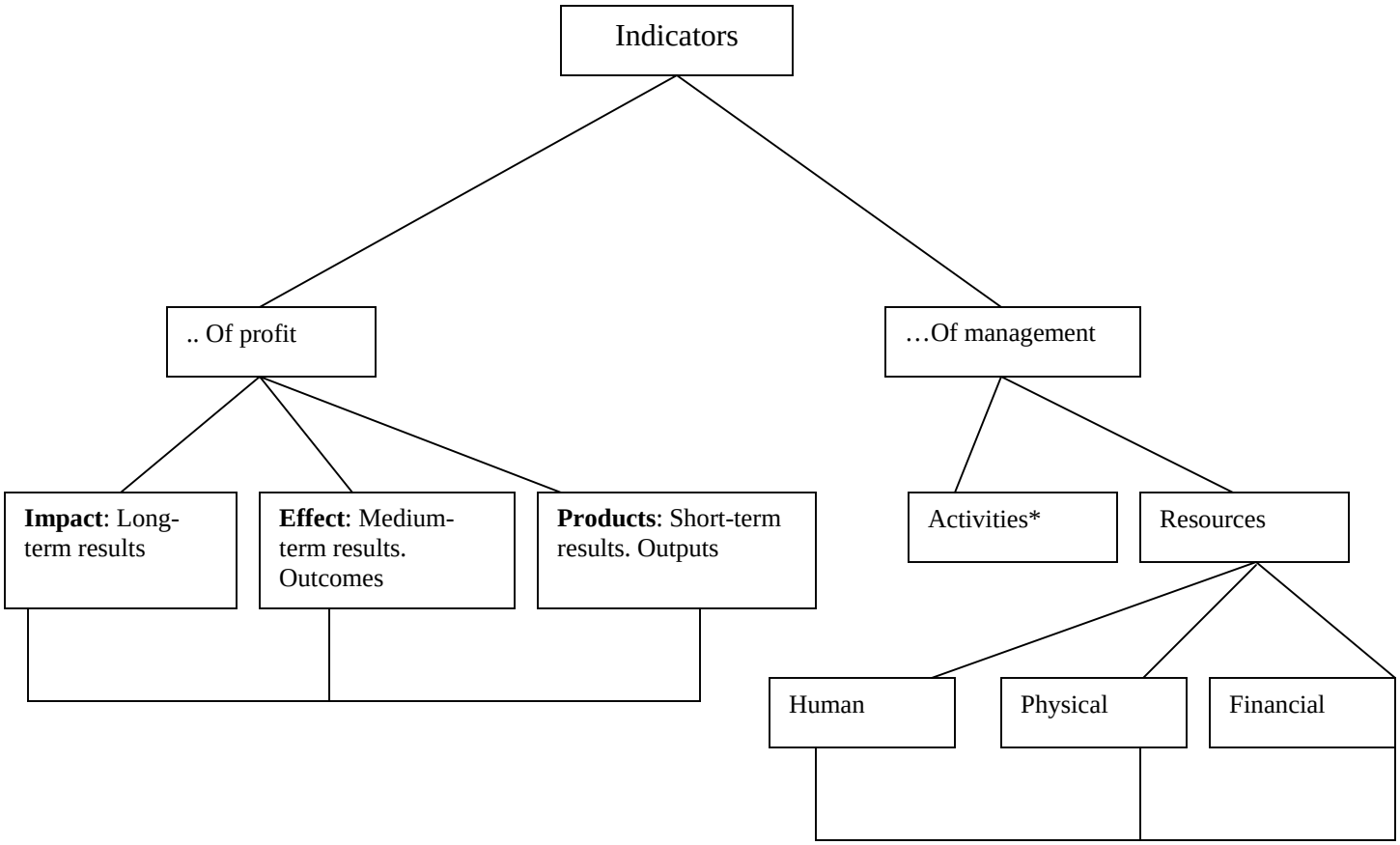

What to do ?
How to do things correctly?

Effectiveness

The best way to do it?

Efficiency

Figure 1. Indicators subsystem within a PM&E System model (Quintero, 2002).

* Process indicators generate activities.

Directions based on case study

The author analyzed the general objectives of the following CIALs with an established PM&E process: San Isidro-Women, Esmeralda 1 and 2, Las Tres Cruces, El Progreso-Women, Fortaleza Carpintereña, El Pinar-Men and El Pinar-Women. The preliminary results permitted testing the following procedure given in Table 1.

Classifying and inferring the information

- *Associating data*. Information from specific objectives can be associated with outputs, outcomes and social impact, applying the "chain results" proposal (Hernández, R. 2003). This permits a better understanding of links and interrelationships among objectives, activities, products, effects and social impacts. For instance, San Isidro's dream is to have an "*organized group."* Collating and tabulating data is an activity that contributes to getting a better organization. A short-term result derived from this activity is that a PM&E commission should be able to record PM&E information. A medium-term result could be that everyone (CIAL members) should be able to record this information. Finally, this CIAL can improve reading and writing capacities, having a social impact in the future (see Table 1).

- *Key questions*. Following the same example described above, the information presented in Table 1 would be the result of questions such as:

  - ✓ What do you want from this meeting? (Exploring expectations). **Possible answer**: We want to improve our activities
  - ✓ What activities ongoing do you want to improve? **Possible answer**: This group needs a better organization (**specific objective**)
  - ✓ How do we know when you are getting a better organization? **Possible answer**: We know if the PM&E commission is able to record and tabulate PM&E information (**output**).
  - ✓ How do we know that you are achieving it? **Possible answer**: If everyone on the commission is fulfilling his/her assigned task (**outcomes**).
  - ✓ What would be the frequency for doing that? **Possible answer**: Monthly meetings of our community. Then we could design a monthly progress report (meeting)

  Whether it is likely to get social, human and economic impacts (Table 1) depends on the objective.

Table 1. Relationships among objectives, activities, outputs, outcomes and social impacts in PM&E systems in Cauca, Colombia, June.

Objective	Activities	Outputs	Outcomes
Organized group… San Isidro-women	Collating and tabulating data	PM&E commission should be able to record information	Everyone (CIAL members) should be able to record information
	Sharing information at CIAL and community level	Ability to follow what is happening in the PM&E process established	Everyone (CIAL group) should be able to use PM&E information for his or her own purposes.
"CIAL group strengthened in order to increase bean production… Esmeralda 1	Meetings to motivate other community members	Most CIAL members know and apply new technologies. Creating the habit for documenting information within CIAL group	Most community members are planting new bean varieties. Getting the entire group involved in the data collection process
"CIAL group strengthened… Las Cruces	Do research on local seeds Training in management of new projects	Most CIAL members know and apply new technologies. Project supported	Most community members are using new technologies. Most community members are producing products such as health products.
"CIAL group strengthened in order to create an agroenterprise of maize… Esmeralda 2	Meetings to motivate (We should increase participation…)	New motivated members (new CIAL, Women- Esmeralda 2)	Increase both people associated and levels of satisfaction

- *What information do you need to collect*? Tool(s) for data collection? How often will the information be collected? Some questions such as those described above can be answered on the basis of the PM&E philosophy. In fact, PM&E belongs to the people involved in it. It is self-help oriented, an effective means of increasing self-reliance while increasing people's control over their own destiny. PM&E involves farmers' groups in: (a) deciding what areas to monitor and evaluate, (b) selecting indicators for PM&E, (c) designing data collection systems, (d) collating and tabulating data, (e) analyzing the results and (f) using PM&E information for their own purposes (Participatory Monitoring, 1988).

Based on the information from the Cauca CIAL communities, members determined the following indicators (Table 2):

Table 2. Developing indicators for PM&E systems in CIAL(s) Cauca, May-June.

Outcomes	Outcome Indicators	Impacts	Information to Be Collected	Feedback to Community and Decision-making
Everyone (CIAL group) should be able to use PM&E information to improve the CIAL. San Isidro-women	CIAL members use PM&E information to adjust plans and activities	Capacity strengthened for analyzing, generating and expounding solutions to problems CIAL can demonstrate its PM&E to outsiders (empowerment) (human capital)	Recording information from indicators by CIAL members	What is happening with the indicator/output? What is going well? Why? What is not going well? Why? What do you need to improve?
Everyone (CIAL members) should be able to record PM&E information. San Isidro-women	Records on PM&E activities made by all members of CIAL commission (See Annual report 2003)	Reading and writing capacities improved (human capital) CIAL can demonstrate its PM&E to outsiders (empowerment)	Face formats	
CIAL experimental results are put to use for production in the community. San Isidro-women	People in the community plant/ grow soybeans using CIAL technology.	Community gets some benefits such as: Changes in the nutritional diet; e.g., soybean milk and bread Human capital	Testimony Survey by CIAL % users of CIAL technology	

Outcomes	Outcome Indicators	Impacts	Information to Be Collected	Feedback to Community and Decision-making
		(health)		
Most community members is planting new bean varieties. Earn money from better bean production Esmeralda 1	Seed stocks include new varieties Improved homes (painted) Personal well-being	Enough food for everyone Food security, independence levels and productive development, strengthened (economic impact) Productive development strengthened (economic impact)	Increasing areas and production through maps and recording information like one pound of beans produce 1 @" (before we did not register anything) Increasing levels of families' satisfaction	
Earn money from alternative diets for chickens El Progreso-Women	Knowledge on management of diets for chickens	CIAL can demonstrate its PM&E to outsiders (empowerment). Can afford: shoes, medicine, TV, school Formation of intellectual capital (Organizational impact)	Testimonies Household surveys	

References

Quintero Victor Manuel Uribe. 2002. Sistemas de Evaluación para Organizaciones de Desarrollo. Una Propuesta en Constructo. Encuentro Sistemas de Seguimiento y Evaluación, políticas, programas y proyectos sociales y ambientales. Bogotá, noviembre 7,8 y 9 de 2002, p. 231.

Hernández Romero L. A 2003. Annual Report. Learning from PME experiences in Latin America: A strategy to capture the results of development changes at the community level. pg 21-23

Quintero, Víctor M (2004) Los Proyectos Sociales II. Guía para su evaluación y análisis de factibilidad. Instituto FES de Liderazgo, Cali.

Strengthening participatory monitoring and evaluation processes in KARI: Key strategies, challenges and preliminary results

Researchers: Jemimah Njuki[48], Susan Kaaria[49], Festus Murithi[50]

Introduction

PM&E is a diverse constellation of approaches, methodologies and techniques. PME systems provide a framework for collaborative learning and involving project clients, participants and partners in the M&E process. PM&E produces important benefits including valid, timely and relevant information for management decision-making and project improvement within R&D institutions. In defining PM&E the World Bank (2002) indicates that it is a radical new way of assessing and learning. It involves the local people, development agencies and policy-makers, leads to improved accountability, examines assumptions on what progress is, and can lead to contradictions and conflict; but it can also be empowering by putting local people in charge, helping develop skills and showing all stakeholders that their views count. PM&E helps researchers and development agents to check whether inputs, activities and outputs are proceeding according to plan and are leading to the desired outcomes.

PM&E is not just a matter of using participatory techniques within a conventional M&E setting. It is about radically rethinking who initiates and undertakes the process, and who learns or benefits from the findings (IDS, 1998). At the heart of PM&E, however, there are four broad principles:

- ✓ Participation means opening up the design of the process to include those most directly affected and agreeing to analyze data together.
- ✓ The inclusiveness of PM&E requires negotiation to reach agreement about what will be monitored or evaluated, how and when data will be collected and analyzed, what the data actually mean, and how findings will be shared and action taken.
- ✓ This leads to learning, which becomes the basis for subsequent improvement and corrective action.
- ✓ As the number, role and skills of stakeholders, the external environment and other factors change over time, flexibility is essential.

The CIAT-KARI PM&E project is applying these PM&E principles to strengthen the M&E systems using five pilot KARI centers (Kitale, Kisii, Kakamega, Embu and Mtwapa).

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The objectives of this work are to:

- Strengthen PM&E systems within KARI projects in order to be able to analyze critically and understand the institutional learning and change process, increase self- and cross-learning and evaluate impacts
- Establish an appropriate PM&E system at the community level that allows local people to analyze and interpret change, learn from their own experiences, adjust strategies accordingly and systematically evaluate progress
- Create a critical mass of KARI scientists, their partners and other stakeholders (extension, NGOs, farmers) with skills and expertise to establish and support PM&E processes

Methodology

There are nine main steps in the PM&E processes:

- ✓ Engaging with stakeholders
- ✓ Building stakeholders' capacity for PM&E
- ✓ Deciding what to monitor and evaluate
- ✓ Developing and formulating indicators
- ✓ Gathering information
- ✓ Managing and analyzing data
- ✓ Sharing and using results of PM&E
- ✓ Learning and change
- ✓ Closing the loop

Various activities and processes (Table 1) have been carried out in order to begin establishing PM&E processes.

- ✓ Assessment of the status of M&E in the five pilot KARI Centers to identify critical issues, opportunities and gaps in existing PM&E systems and document lessons and experiences in PM&E "best practices"
- ✓ Capacity-building activities to equip scientists with skills and develop action plans to strengthen PM&E systems in selected projects
- ✓ PM&E frameworks developed with pilot projects
- ✓ Mentoring activities carried out in pilot centers to establish and implement project- and community-level PM&E systems

Table 1. Activities and processes in establishing PM&E systems.

Activity/Process	Stakeholders Involved	Objectives
Stakeholder consultation	KARI Center directors, scientists, Socioeconomics Division; CIAT; NGOs; Rockefeller Foundation	✓ Review project and make any necessary adjustments ✓ Develop work plans for project implementation
Project launch	KARI Center directors, Assistant Directors, Program leaders, scientists; CIAT; Rockefeller Foundation	✓ Create awareness of project among KARI management and other scientists ✓ Create awareness of importance of PM&E ✓ Place project in context of KARI's other ongoing activities
3-day workshops in 5 pilot sites	All scientists at Centers, Center Directors, CIAT	✓ Make an inventory of current M&E systems ✓ Conduct a SWOT analysis of existing M&E systems ✓ Assess how different stakeholders have been involved in M&E ✓ Identify critical gaps and opportunities in the current M&E systems ✓ Select pilot projects to act as learning projects on PM&E ✓ Select a project coordination team
Capacity-building workshop	3 scientists from each pilot project, one MOA extension officer per Center, Kenyatta University, CIAT, NGO partners	✓ Build scientists' capacity to establish and implement project-level and community-level PM&E systems ✓ Build skills in facilitation, data collection, analysis and reporting ✓ Develop action plans for implementing PM&E systems in pilot sites
Establishment of PM&E in pilot projects	Scientists from selected pilot projects, MOA extension partners, NGO partners, technical staff attached to pilot projects, CIAT	✓ Build the capacity of more scientists, extension agents and NGO partners for developing and implementing PM&E systems ✓ Build the capacity of farmer groups to develop expected results and indicators for measuring progress ✓ Develop PM&E performance frameworks for pilot projects ✓ Set up community-based PM&E systems ✓ Develop tools for data collection ✓ Develop mechanisms for feedback

Results and discussion

Assessment of the status of M&E in KARI

Twenty projects in the five centers presented their M&E systems in workshops attended by over 100 KARI scientists and partners from the Ministry of Agriculture (MOA). Each project identified the objectives of their M&E systems and some critical gaps and opportunities for improving their current system (Table 2).

Table 2. Critical gaps and opportunities in existing M&E systems and areas for intervention

Critical Gaps	
Technical ✓ Lack of systematic process in developing measurable indicators - Quantitative vs. qualitative indicators - Different levels of indicator development- resources, activities, outputs, outcomes, impact, processes and approaches ✓ Skills in integrating equity and gender considerations into the process ✓ Weak linkages among baseline, M&E and impact assessment ✓ Stakeholders not involved in indicator development and M&E ✓ Lack of inbuilt PM&E during project development and well-defined M&E frameworks ✓ Existing M&E systems may not give enough room for feedback and taking corrective measures/actions; sometimes the lag period is too long between data analysis and feedback so there are no opportunities for learning.	**Institutional** ✓ Several projects identified donor inflexibility (e.g., adjusting projects once a budget was established) as a major limiting factor to the implementation of PM&E systems. ✓ High demand on the scientists' time hinders them from continuously monitoring and evaluating specific projects ✓ Irregular flow of funds for projects interrupts work plans and monitoring activities ✓ Opinion, especially among biophysical scientists, that baselines, M&E and impact assessment are the responsibility of social scientists **Other** ✓ Various scientists also found it difficult to involve farmers or local communities and other stakeholders such as extension agents in the PM&E process because of their lack of M&E skills.

Opportunities ✓ Some projects have existing institutional structures for M&E including logical frameworks and steering committees. ✓ There are committees that are involved in activities such as project reviews at center level e.g. CRACs ✓ A number of scientists have capacity in PR tools and gender analysis tools ✓ Wide range of partners (IARCs, CBOs, NGOs, Farmers, Private sector) and stakeholders involvement in project implementation in KARI ✓ Strong willingness by farmers to participate in project activities ✓ Scientists (biophysical and social) willing to get involved in PM&E	**Key intervention areas** ✓ Build capacity of scientists in establishing and supporting PM&E systems, including the following topics: - Identification of different stakeholders and their roles in the PM&E process (including farmers and other community members). - Strategies on developing appropriate qualitative and quantitative indicators - Integration of gender and equity issues into the PM&E process - Facilitation skills for scientist/farmer/other stakeholder interactions - Capacity building for data analysis in PM&E at different levels - Data management, analysis, interpretation and use, including the synthesis of PM&E data to facilitate their use for decision-making at different levels and provide feedback and learning ✓ Facilitating scientists to build the skills of communities and other local stakeholders in PM&E ✓ Building skills for attitude change ✓ Action learning in implementing PM&E systems

Generally, all the projects were doing some form or other of M&E, had different levels of stakeholder involvement, as well as documentation of procedures. In addition to project-level M&E, centers have formal processes for M&E, which include Center Research Advisory Committees (CRACs) and Regional Research and Advisory Committees (RREACs).

M&E has been seen as a policing and supervisory tool and as an activity that is done by outsiders mainly donors and external experts to check on the accountability and the resource management by project implementing teams. Scientists have been able to change their perceptions and see M&E as an internal learning process. Discussions on the role of PM&E in the project cycle highlighted the importance of including PM&E during the planning and project development phase.

During the assessment workshops, ten projects from five centers were selected as pilot implementation projects (Table 3). Box 1 gives the criteria for their selection.

Table 3. Projects selected for pilot PM&E learning for centers.

Center	Project	Donor	Partners
Embu	Conservation Tillage	DFID	Monsanto, MOA FIPs, Kel Chemicals, Athi River Mining
	National Agroforestry Project	SIDA	ICRAF, MOA,
Kisii	Soil Management Project	Rockefeller	MOA
	Participatory Methodologies for crop protection technologies	DFID	MOA
Kitale	Soil management Project	Rockefeller	MOA
	IRMA	CIMMYT, Rockefeller and Others	CIMMYT
Mtwapa	Soil and Water Management project	Rockefeller	MOA
	Biotechnology to benefit small scale banana producers in Kenya	Rockefeller ISAAA, IDRC	ISAAA, JKUAT, MOA, Kwale Rural Support Project
Kakamega	Accelerated multiplication and distribution of healthy planting materials of improved cassava varieties in Western Kenya		MOA, IITA
	Oil palm production project	TCP/FAO	MOA, MUSCO, KIRDI

The critical gaps and opportunities identified by specific projects and also by the groups of scientists provided a good entry point for the PM&E project, which aims at strengthening these systems.

Box 1: Criteria for selecting pilot projects

- ✓ Projects at different stages of implementation
- ✓ Adequate funding to support other project activities
- ✓ Expressed interest of project team in participating
- ✓ Have on-farm activities in order to test both project- and community-level PM&E
- ✓ Projects that will be ongoing for the next 1½-2 years
- ✓ Diverse range of partners and stakeholders
- ✓ Projects dealing with a diversity of activities and approaches

Building scientists' skills to establish and strengthen project-level PM&E systems

The development of project-level PM&E frameworks was done through two main phases, each with various stages. The first phase involved a two-week intensive capacity-building workshop for scientists and stakeholders in the selected projects: social scientists and biophysical scientists

from KARI headquarters and the five Centers, research extension liaison officers from the MOA, NGO representatives, universities and CIAT. The key topics covered during the workshop were:

- ✓ Identification and analysis of stakeholders
- ✓ Monitoring results and processes
- ✓ Developing project-level and community indicators
- ✓ Tools for data collection-issues of sampling and baseline
- ✓ Community facilitation skills
- ✓ Action plan development

These were covered in plenary presentations, group discussions and field activities. Afterwards, the ten pilot projects developed action plans for integrating PM&E activities.

On-site capacity development and mentoring

Project implementing teams from KARI, partners from NGOs and the MOA were trained in establishing PM&E. From March-September this year, 120 people were trained in establishing and implementing project-level and community-based PM&E systems as shown in Figure 1 below. Of these, 71% were KARI researchers and technical officers, while 21% were from extension and 8% from NGOs.

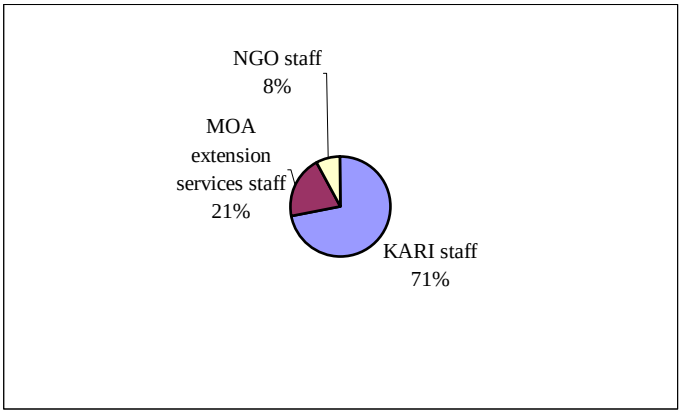

Figure 1. Proportion of staff trained on PM&E systems.

The teams were facilitated to develop PM&E performance frameworks for the pilot projects. They were developed by small groups of scientists, extension officers and NGO partners according to themes and then harmonized to come up with project-level results, activities, processes and their indicators. These frameworks consisted of the following:

- ✓ Key results of the project (impacts, outcomes and outputs)
- ✓ The project activities
- ✓ Processes
- ✓ Indicators for measuring progress of key results, activities and processes
- ✓ Baseline data available on the indicators, targets or benchmarks for the indicators
- ✓ Tools for data collection and analysis
- ✓ Roles for data collection

Participatory monitoring recognizes the role that local people can play. In conventional M&E, local people are reduced to providing data or information required but not in deciding what

should be monitored (Abbot and Gujit, 1998). In PM&E, local people get involved in defining measures of progress and applying these measures to check whether they are making progress and then adjust activities. Community results and indicators were developed with selected groups of farmers. Within communities, there were differences by gender in the results and the indicators. These differences were more pronounced in the indicators. As a result, there was harmonization of indicators at the community level to reflect both male and female perceptions while at the same time avoiding divisions in the groups of whose indicators they were (Box 2).

Box 2: Men's and women's indicators

Outcome: Increased income

Indicators from Men	Indicators from women
✓ Income-generating activities initiated	✓ Children going to secondary school
✓ Increased ceremonies	✓ Good food (breakfast, good-quality tea)
✓ Good clothing	✓ Going to market weekly
✓ Good housing with iron sheet roof	✓ Better clothing (women wearing new *khangas, kodokodo*)
	✓ Join a merry-go-round (group savings scheme)

Key issues, challenges and lessons learned

Seventeen groups of approximately 340 farmers have been trained and are implementing community-based PM&E systems. The farmers have been trained directly by the CIAT team and indirectly by the scientists, extension and NGO staff trained.

Concretizing and harmonizing outputs, outcomes and their indicators

Comparing farmers and the research teams frameworks, it was clear that there were both similarities and differences in the expected results and indicators. Thus there was a need to integrate the two without losing the uniqueness of either group. For purposes of project-level M&E, the project-level frameworks were harmonized with the community frameworks. This was especially useful in the indicator development as indicators from the farmers enriched those of the scientists. The integration of community results and indicators in the project frameworks ensures that project progress is also measured from the communities' perspectives. A prioritization of indicators was done in order to strike a balance between the amounts and quality of the data collected and the resources available to collect them. An example of differences between farmer and research indicators and how these have been harmonized and prioritized is given in Table 4.

Table 4. Researcher and community indicators harmonized.

Outcome	Indicators[1]
Improved soil fertility	**Quantitative** Nutrient levels (carbon, phosphorus, macronutrients) Increase in yields **Qualitative** *Farmers' perception on change in soil quality (color, type & presence of weeds, texture)*
Increased food security	**Quantitative** Amount of food stored, no. of months with food / *Having food throughout the year* Increased production (acreage and yields) **Qualitative** *Farmers' perception of food availability and composition(e.g., no. of meals per day, quantity & composition of meals, maize purchases, amount of relief, farmers looking for casual labor)*

[1] Indicators in italics are adapted from community indicators.

Key issues, challenges and lessons

Integration of PM&E into different approaches and methods

The project has had various experiences with integrating PM&E into existing research activities, especially in the Farmer Field School (FFS) processes. When PM&E is incorporated at the start of the FFS, there is better integration of PM&E as the different components get integrated into the different stages of the FFS implementation process; e.g., the development of results (outcomes and outputs) is integrated into the ground working process. In cases where PM&E is being integrated in the middle of the FFS implementation process, the integration process is more challenging. Change of attitude and perceptions of PM&E from viewing it as a separate activity to viewing it as part and parcel of good project management and project implementation can however play a big role in integrating it into the project implementation process.

Setting targets, baselines and sampling

In most cases, projects develop and carry out baseline surveys without an M&E framework, which provides a guide on the information that should be collected in a baseline survey. This ensures that the baseline is targeted and that the M&E data have a point of reference. Within an M&E context, baselines show whether the project is making progress toward achieving results or not. Baselines can be developed in different ways such as using existing secondary data, using PR tools and techniques and primary survey data among others. When using primary data to collect baselines, there is need to sample and target the baseline data collection so as not to make this a laborious and time-consuming exercise. Periods for data collection should be targeted to ensure a good reflection of changes in the indicator.

Targets are the levels of the indicators in the PM&E performance framework that the project realistically expects to achieve. Targets should be as realistic as possible even when they come from farmers, either through PR methodologies or through survey. These should be negotiated

so that they reflect what is feasible within the project's activities. Setting unrealistic targets can make both farmers and scientists feel frustrated because they are not achieving their objectives.

Integrating gender and equity into the performance framework

With PR, gender and equity concerns are central to the implementation process. More often than not, gender and equity have not been reflected in the PM&E performance frameworks. Gender and equity issues including participation, empowerment and changes in gender relations need to be negotiated by both the project teams and the communities so that they become part of the PM&E process.

Sharing roles for data collection

Data collection needs to be a shared responsibility between researchers, extension officers and farmers; however, teams need to be careful so that none of them become overwhelmed with this task. Farmers should not, for example, have to collect data that is of interest only to scientists. Moreover, information should be shared across all stakeholders. A common assumption with regard to data collection by farmers is that once they know the indicators they should collect data on, they will do it. More often than not, the farmers' capacity to collect and analyze data has to be built, but the researchers should not give farmers long complicated forms or data sheets on which to record the informtion as this may deter them from doing so.

Scaling up PM&E to more communities

How do we reach more communities with PM&E? One of the easiest approaches is to integrate PM&E into methodologies and approaches that projects are using in their implementation of activities, for example integrating PM&E into the FFS or Farmer Research Group (FRG) approach. This means that as project teams implement the FFS curriculum, PM&E is part and parcel of it. This will of course imply refining the process so that it is shorter and easier to apply. A second approach is to apply the indicators from one community in communities with similar characteristics (cultural, socioeconomic, ethnic, etc.) or use results and indicators from other schools with similar technologies and geographic area to introduce new schools to PM&E. This however has its shortcomings as the new schools or communities may not have as much ownership of the "imported" results as if they had developed their own.

Use of data, information from Community-Based PM&E (CB-PM&E)

It is important to have a committee (3-5 people) responsible for collecting information, analyzing and sharing it with the rest of the community (those collecting information and keeping records). Analysis of the information should be done in collaboration with researchers, extension and farmers so that all can reflect on it with respect to the outputs, outcomes processes and compare it to targets. Some useful questions to use in reflection are:

- ✓ What have we achieved this season/this year, etc.?
- ✓ What worked well?
- ✓ What did not work well?

✓ What do we need to change?

The results of the reflection should be used to make decisions and adjust activities if and when necessary so that M&E is a learning process.

Conclusions and recommendations

Establishing and supporting PM&E systems require skills, not only in establishing them but also in such areas as facilitation, analysis of qualitative data, gender analysis, using results of PM&E and project management. The key to successful application of the skills obtained from capacity-building activities is to provide mentoring and practical on-the-ground training as implementation of the process takes place. Attitude change is an important component if these systems are to work. For a long time, biophysical scientists have looked upon social scientists to carry out baseline studies, M&E and impact assessment. Given the current shortage of social scientists, not only within KARI but also in other R&D institutions, biophysical scientists will need to start looking at baselines, M&E and impact assessment as part and parcel of their projects and as activities that need to be funded within their projects.

In terms of institutionalizing PM&E within KARI centers, there was keen interest on the part of many scientists to acquire the skills in implementing PM&E systems. As the first group of Centers and scientists establish these systems, it will be important to put in place action plans for transferring these skills to other scientists, other projects at the Centers and other Centers not in the pilot phase and to KARI's partners. In addition, there will be a need to integrate PM&E into the approaches and methodologies that KARI is currently using for technology development and dissemination.

There are many challenges in setting up and implementing PM&E systems. One of the key ones is to ensure that PM&E does not become a technical process—develop results, indicators, collect data and analyze. The learning aspect of PM&E needs very strong emphasis so that there is a balance between focus on the implementation and on the learning and the use of PM&E data to take corrective measures and make decisions.

The PM&E process has shown that when stakeholders such as farmers and the extension are involved in all stages including the development of the results and activities to be monitored, the indicators that will be monitored, the type of data to be collected and how they will be collected, it leads to a more robust M&E. The involvement of stakeholders in PM&E, however, requires a lot of negotiation, prioritization of issues and strategic collection of data for PM&E. More often the question has been to what extent or at what level different stakeholders should be involved.

References

Abbot, J.; Gujit, I. 1998. Changing views on change: Participatory approaches to monitoring the environment. SARL Discussion paper No. 2.Sustanaible Agricultural and Rural Livelihoods. England.

Institute of Development Studies (IDS). 1998. Participatory monitoring and evaluation: Learning from change. Policy Briefing Issue 12, Nov.

Kibel, B.M. 1999. What is “results mapping tool box?” Pacific Institute for Research and Evaluation. New York.

World Bank. 2002. Participatory monitoring and evaluation: Protecting. The Vulnerable: The Design and Implementation of Effective Safety Nets, Dec. 2-13, Washington, DC http://www.worldbank.org/wbi/socialsafetynets/courses/dc2000/proceedings/pdfppt/participatory.pdf

Coping with obstacles to successful partnerships: Lessons from a multi-institutional partnership that links smallholder farmers to markets in eastern and southern Africa

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Abstract

As participatory principles gradually gain general acceptance in agricultural research organizations, partnership is becoming a key principle for delivering services to the rural poor and achieving sustainable rural livelihoods. What is not so obvious, however, is how to sustain quality partnerships and cope with challenges of linking farmers to markets.

This paper is based on empirical experience and lessons learned with a multi-institutional partnership with a range of international and national agricultural research organizations, development organizations, government extension services, private sector and rural communities to make agricultural research more client-oriented, demand driven and market responsive. A number of factors that contribute to the success of partnerships are highlighted, and strategies used for coping with the obstacles to quality partnerships are discussed. The analysis suggests that critical success factors include the substance of the relationship based on complementarity to achieve a common goal; strong and consistent support from senior leadership; joint resource mobilization; evidence of farm-level impacts; institutional as well as individual benefits; regular communication and joint field visits. Building human and social capital through interpersonal relationships and friendships, regular training events and information sharing are critical in

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sustaining partnerships. Current reforms in agricultural R&D, emphasizing participatory approaches, farmer empowerment and linking farmers to profitable markets provide a conducive environment for quality partnership; however, sustaining quality partnerships is challenging. It requires creative strategies for coping with obstacles such as staff overcommitment and high turnover, changing expectations of individual benefits, sustainable funding mechanisms, imbalances between institutions and personalities. There are still important challenges of institutionalizing partnerships beyond individual personalities; maintaining quality during scaling up within partners institutions and attracting new partners. Overcoming the challenges of building effective public-private partnerships among agricultural research institutions, government services and the private sector, especially business services, will be critical for achieving success in linking smallholders farmers to markets.

Key words: partnership, research for development, market opportunities, partnership, scaling up, innovation

Introduction

In recent years, there have been significant shifts in agricultural research paradigms. A new paradigm termed Integrated Agricultural Research for Development (IAR4D) is gradually emerging to foster synergies among disciplines and institutions to achieve greater agricultural research impact. Championed by the Forum for Agricultural Research in Africa (FARA) and providing the backbone and operational framework of the sub-Saharan Africa Challenge Program, IAR4D is based on the conclusion that sustained improvement of the livelihoods of small-scale poor farmers requires a different type of research, aimed at enhancing the rural people's capacity to adapt to changing conditions, rather than at delivering 'finished' technologies (Sayer & Campbell, 2001; Ashby, 2003). IAR4D advocates and embraces institutional innovations with participatory action-oriented methods that drive research-for-development efforts to solve critical problems (FARA, 2003). As participatory principles gradually gain broader acceptance in agricultural research organizations, partnership is becoming increasingly important, as well as key principles and strategies in agricultural R&D to deliver services to the rural poor and achieve sustainable rural livelihoods. This view is supported by the innovation- system view of the innovation process (Douthwaite et al., 2002), which sees rural innovation as a complex process being produced by a network of actors and stakeholders that co-evolve with the technologies and processes they generate. Successful innovations result from strong interactions and knowledge flows within networks of actors and partners with strong feedback loops.

With the emergence of a broader agenda for agricultural research, coupled with the shrinking resource base for agricultural research organizations **(**Alston et al., 1995; Collinson and Tollens, 1994; Marthur and Pachico, 2003b), the need to engage with new stakeholders and build partnerships has become critical to enhance the impact of agricultural research. Research has shown that investment in building a strong foundation for partnership can yield significant benefits (Gormley, 2001; Huxham, 1996; Spink and Merril-Sands, 1999). Partnership is also one of the eight mutually reinforcing Millennium Development Goals of the United Nations, which commit the international community to an expanded vision of development, one that vigorously promotes human development as the key to sustaining socioeconomic progress in all countries and recognizes the importance of creating a global partnership for development.

Despite the fact that partnerships have now become critical in funding and evaluating agricultural research, building and sustaining effective and quality partnerships can be quite challenging. A recent review of literature on partnerships (Merril-Sands and Sheridan, 1996) concluded that literature on partnership in agricultural R&D is still quite limited. Scientific efforts to improve the understanding of institutional partnerships and to find keys to their successes and failures in contributing to institutional learning and performance are still rare (Michelsen, 2003). Analyses of experiences with partnership are crucial for institutional learning and organizational performance to maximize the potential benefits and avoid pitfalls that many R&D institutions have encountered. As concluded by Gormley (2001), there is still much to learn from engaging in a partnership journey.

This paper is based on empirical experience and lessons learned from a multi-institutional partnership with a range of international and national agricultural research organizations, development organizations, government extension services, private sector and rural communities to make agricultural research more client-oriented, demand driven and market responsive. The Enabling Rural Innovation (ERI) project is pioneering innovative approaches and methodologies for empowering rural communities to identify market opportunities and develop sustainable enterprises that improve rural livelihoods while improving the management of resources from which production depends. ERI expands partnerships to community-based organizations and private sector to make markets work for the poor, in selected pilot learning sites in Uganda, Malawi and Tanzania.

The paper continues with an overview of the key steps and principles of the ERI approach. Section 3 describes the types of partnerships and criteria for selecting partners. Section 4 discusses critical elements of successful partnerships and distills lessons from strategies for coping with obstacles to successful partnerships. Issues of scaling-up potential with existing and new partners are briefly addressed in Section 5, while Section 6 presents frameworks and indicators for monitoring and evaluating partnerships. Lessons learned and their implications for enabling rural innovation in R&D are discussed in the concluding section.

Enabling rural innovation in Africa[68]: Key principles and steps

Rural innovation can be defined as "the process by which various stakeholders generate, adapt or adopt novel ideas, approaches, technologies or ways of organizing, to improve on- and off-farm activities, so that the rural sector becomes more competitive in a sustainable manner" (CIAT, 2003. As observed by Smith (2002), "everybody is capable of innovation, and the first sign that it is happening is when people work together, excited because they want to be there, focused on finding a solution to a challenge they all understand." We therefore define ERI as a multi-institutional partnership for empowering rural communities to make informed decisions and creating the capacity of communities to:

- ✓ Identify and develop sustainable enterprises that generate income and employment
- ✓ Generate and access information, knowledge and technology in support of their productive activities

[68] For details see Sanginga et al. (2004).

- ✓ Demand effective services to local support institutions and community organizations to provide an enabling environment that permits innovations to proceed

ERI offers a practical framework for integrating farmer participatory research (FPR) and participatory market research (PMR) in a way that empowers farmers to manage their resources (human, social, financial, natural) better and offers them prospects of an upward spiral out of poverty. It emphasizes integrating scientific expertise with farmer knowledge, strengthening social organization and entrepreneurial organizations through effective partnerships among research, development and rural communities. The broad principles and steps of ERI are described in a separate paper (Sanginga et al., 2004).

Types and criteria for selecting partners

The conventional form of partnership in agricultural research has been between international agricultural research organizations (IARCs) and national agricultural research institutes (NARIs). From this original base in NARIs, the institutional linkages needed to activate the concept of a functional national agricultural research and extension system (NARES) are improving rapidly. This includes government extension services, NGOs and civil society organizations. In Uganda, for example, the national agricultural research policy advocates for the need for various players to work in partnership for sustainable agricultural development (Government of Uganda 2003). Consequently, one of the five thematic areas of the National Agricultural Research Organization (NARO) explicitly focuses on enhancing innovation processes and partnership (NARO, 2004). The goal is to enhance the effectiveness, efficiency, relevance and ownership of research results through multi-stakeholder participation and partnership.

ERI is strengthening its partnerships with NARES in eastern and southern Africa while finding new partners in the NGO and private sector who can complement the objectives of linking small-scale farmers to markets (Table 1). From a limited number of partners at the start of ERI in 2001, the number has gradually increased to more than 13 boundary partners. Earl et al. (2001:1) define boundary partners as individuals, groups, organizations with whom the program interacts directly and with whom the program anticipates opportunities for influence. ERI's boundary partners comprise international and national agricultural research institutes, government extension services, NGOs, community-based organizations and the private sector.

Table 1. Types and categories of partners in ERI.

Types of Partners	Boundary Partners	Secondary Partners & Collaborators
NARS	Dept. of Agricultural Research Services (DARS), Malawi National Agricultural Research Organization (NARO), Uganda	Makerere University, Kampala, Uganda
Government extension services	Hai District Council (District Agricultural and Livestock Development Office) Lilongwe Agricultural Development Division (LADD)	
NGOs	• Traditional Irrigation and Environmental Development Program (TIP) • Plan International, Malawi • Africare Uganda Food Security Initiative • Africa 2000 Network • Integrated Soil Productivity Initiative through Research and Education (INSPIRE)	Sanya Agricultural Development Program ActionAid
Farmers' organizations	21 farmer groups and communities (> 1000) Vision for Rural Development Initiatives (VIRUDI) Network of FFSs	
Private sector	Nandos Agro-Management Ltd.	
IARCs and (Sub-Regional Organizations) SROs	CIAT Africa Highlands Initiative (AHI) University of Natural Resources and Applied Life Sciences - BOKU, Vienna	IITA-Food Net ILRI-PRGA CIP-PRAPACE (Regional Potato and Sweet Potato Improvement Network in Eastern and Central Africa) University of Florida

These bring different strengths to the process, while new partners and collaborators are identified and involved in supporting specific objectives and outputs. These partnerships are increasingly expanding to new areas, new countries and bringing in a set of new partners. Partnership with agricultural universities is still limited to graduate students conducting thesis research within ERI. There are prospects for developing curricula on managing innovation process and partnerships.

ERI has attempted to establish partnerships with the private sector, with different levels of success. In Uganda for example, a partnership has been established with NANDOS, a fast food restaurant, for buying potatoes produced by farmers' groups in the southwestern part of the

country. Similarly, collaboration with Agro-Management Ltd., a private pyrethrum-processing plant in Kabale for buying pyrethrum and providing extension services to the farmers. In other countries, market and enterprise visits were made to hotels and agribusiness firms in an attempt to develop partnerships with the private sector; but these public-private partnerships need different skills and procedures. Although still expanding, it is clear that ERI partnerships need to involve a number of important stakeholders in agricultural R&D such as policy institutions and universities.

Building partnerships in ERI has been a "push-pull" process in that initiatives have come from both directions. In many cases, the partnership has been demand-driven in that the partners requested CIAT's technical support in participatory approaches, participatory market research, rural agroenterprise development, and seed systems. In other case, the partnership was driven by CIAT recognizing the need to work with partners to develop and test ERI approaches. In only a few cases did the selection process follow a systematic process of institutional assessment of potential partners. It is not easy to have objective criteria for selecting partners. The selection is often intuitive or based on past relations and influenced by subjective judgments, personalities and past experience. However, one of the most common criteria used in selecting partners was the shared value of incorporating ERI to complement their ongoing research or development work. A key consideration for selecting partners was the potential for mutual learning and prospects for scaling out to more communities, partners and institutions.

Critical factors of successful partnership

Gormley (2001) observed that successful partnerships that create collaborative advantage contain two basic elements: foundation elements and sustaining elements. The foundation elements need to be addressed during the initial stages of partnership formation, while the sustaining elements are process elements that nourish partnership over time and are vital to the ultimate success of the partnership. Vernooy and McDougall (2003:120) provide a list of principles and guideposts or indicators of quality partnerships and collaboration in participatory research (Box 1).

Box 1: The R&D reflects a clear and coherent common agenda
1. The R&D agenda has been set collaboratively and transparently. 2. The research design allows space for the meaningful participation of local stakeholders including marginalized groups, taking into account potentially differentiated perspectives and interests. 3. Partnerships among stakeholders have been created and strengthened through dialogue, joint action and mutual benefits (friendships and fun included). 4. The research initiative respects commitments made with partners, and a follow-through strategy is defined. 5. The research includes a clear strategy for action/change, defined in terms of expected outcomes and increased social capital or, more broadly, empowerment. 6. There is good documentation of the participatory process, include the use of tools. 7. The analysis of results and authorship of published materials are shared between research and other stakeholders.

The factors responsible for the success of the ERI partnership are distilled from the results of a SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis conducted during joint reviews and planning meetings. SWOT is a participatory technique that allows different perceptions from different partners and individuals, helping them think about achievements and weaknesses, constraints and opportunities as part of a joint review and planning process. SWOT allows partners to take mistakes or weaknesses and transform them into constructive learning processes (Guijt, 1998). As a useful technique for self-evaluation, it encourages partners to make complex problems easier to deal with. Based on the results of joint reviews and reflections on partnership experience, the following factors were found critical to building and sustaining effective partnership for ERI.

Shared vision of sustainable rural livelihoods

All partners involved in ERI have a compelling vision and share the common goal of enhancing food security and rural livelihoods for the poor while protecting the environment. They all recognize the importance of empowering rural communities to innovate, increasing their incomes and protecting their resource base. It is important to note that in all three countries, there is a growing interest in linking farmers to markets, empowering rural communities to become able agents of their own change, building their capacity to identify market opportunities, and developing sustainable agroenterprise. Through various interactions and workshops, this shared vision of sustainable rural livelihood was translated into a common problem definition and common approaches internalized by different partners. ERI partners recognized the importance of participatory approaches for achieving their goals and objectives.

Interdependence and complementarity

Partnerships are most effective when organizations choose to work together because of their respective strengths. ERI partners are brought together by the ability to achieve something together that no organization could have produced on its own and the ability of each organization, through collaboration, to achieve its own objectives better than it could alone. Each partner brings different skills, expertise and resources to the partnership that complements those of other members. For example, while NARIs have expertise in developing improved technologies and innovative approaches for R&D, they need a range of development partners that are committed to ensuring that the research results reach farmers (GFAR, 2002). Partnership with NGOs and Community Based Organizations (CBOs) is particularly important when linking farmers to markets (Kindness and Gordon, 2002). However, many NGOs and their staff still have much to learn about how best to do this, and key NARS scientists have an important role in monitoring, learning and promoting these processes. The private sector brings special skills on business services that neither R&D organizations nor farmers have.

Strong endorsement and consistent support from senior leadership

Another critical element in sustaining quality partnership has been strong and consistent support from top leadership of partner organizations. From the start of ERI, leaders and managers of NARS and partner organizations demonstrated their eagerness to enter into partnership, and this has helped to build institutional commitment and a broad sense of ownership by their respective institutions. In the initial partnership-formation stages, senior leaders (directors and heads of

programs) were instrumental in helping staff members understand the different motivations, interests, outcomes of the partnership to individual staff members and to their organizations. In Malawi, ERI was introduced to the senior management of the Ministry of Agriculture (from the Permanent Secretaries to the Director General and heads of departments, to directors of research programs and managers of extension services). Similarly, in Uganda consistent support and commitment of the Director General of NARO and ARDC Center managers provided a good foundation and sustaining elements of partnerships. This was lacking in Tanzania and could partially explain some of the challenges faced in sustaining quality partnerships. Maintaining effective communication channels with senior leadership as well as with those at the operational level has been very effective for sustaining partnership. Frequent visits by senior management (including DGs) and senior staff to partners organizations, and joint field visits of senior leadership have been also important to sustain partnerships and maintain institutional commitments.

Resource sharing and mobilization

The availability of financial resources within partners' organizations has had a major influence on the success of partnerships. According to Gormley (2001), an organization that enters into partnership just for financial resources to aid its own survival will depend too much on other partners and create unrealistic expectations. Initial ERI project funds were from a donor agency to CIAT for working with NGOs. Operation funds were then transferred to and managed by partners' organizations. All partner organizations contributed financially with some internal resources. Increasingly, partners have contributed more resources than CIAT in financial, material and human terms. New project proposals are prepared to secure more resources for partners rather than CIAT. When resources are limited, as is often the case, the strategy has been to raise funds together with partners or helping partners raise their own funds. This has been successful in reducing financial burden and for mobilizing resources that partners can access. One innovation in ERI is the concept of "community research funds," which mature farmers' organizations can access and manage to support their experimentation and enterprise-development funds and scaling-out processes.

Strengthening social and human capital

Michelsen (2003) observed **t**hat individual personalities as well as institutions play a key role in sustaining partnerships. Rosebeth and Kanter (1996, cited in Gormley, 2001) noted that successful partnerships cannot be controlled by formal systems but require a dense web of interpersonal connections and internal infrastructures that enhance learning. Therefore, partnerships can go a long way if there is good personal relationship and friendships. Pretty (2003), Uphoff and Mijayaratna (2000) and many others have shown that social capital lowers the transaction costs of working together and facilitates cooperation, relations of trust, reciprocity and exchange, common rules and connectedness. Several actions have led to the development of bonding social capital among partners. Regular face-to-face communication, joint field visits lasting a few days provide the opportunity for nurturing interpersonal relationships (including friendship and fun) among different individual staff members of different organizations. Modern information and communication technologies, especially access to Internet and email systems (yahoo and hotmail), and mobile telephone networks have made long-distance communication

much easier, even with farmers. The fact that ERI has a critical mass of African scientists has been instrumental to maintaining relationships and minimizing cultural differences.

The various training workshops have been instrumental in building the necessary skills to sustain partnerships. Over the last four years, we have conducted over 15 workshops, reaching more than 400 R&D partners to enhance their skills for implementing an ERI process effectively. In addition to mutual learning, these workshops have the advantage of broadening partners' worldviews through traveling outside their own areas and countries. The presence of dynamic, motivated community-development facilitators, scientists and government staff with good skills in participatory approaches has been critical in achieving success.

Negotiating memorandums of understanding

Memorandums of understanding (MOUs) have the advantage of formalizing and institutionalizing partnerships between organizations. The MOU outlines how the partnership will work, and defines the strategic direction of the partnership, a shared view of the problem and a common definition of approaches and methodologies. However, rather than rushing into signing formal MOUs at the initiation of the project, a successful strategy has been to take time to develop and negotiate MOUs jointly when both partners have developed a common understanding of the modalities of implementing ERI, clarify expectations of different partners, their roles and responsibilities. Even in countries where CIAT had MOUs with NARS and Ministries of Agriculture, it was important to negotiate addenda to these formal MOUs in the form of project agreements. These are very specific and include expected outputs, mode of implementation of the project, budget and annual work plans. The MOUs have proven important in formalizing the partnership beyond individual relationships and are critical for mutual accountability.

Evidence of impact and mutual benefits

A major factor in sustaining motivation in partnerships relates to evidence of farm-level impact and a culture of sharing credit, explicitly recognizing partners' contributions in all public presentations, visits, publications or production of any material, including writings, films and tapes that result from this project. The SWOT results revealed a number of benefits that partners have realized through ERI including evidence of impact at farm level, increased visibility, recognition and self-esteem, increased skills and knowledge, sharing of experience, various opportunities for professional and individual growth, as well as a number of individual benefits. Farmers in pilot communities have improved their analytical and organizational skills, increased their self-confidence, and display evidence of empowerment. They have also accessed improved technologies through their experimentation. In some communities where the process is advanced, there is evidence that farmers have increased their income through better market opportunities. Success with farmers' groups has prompted partners to devote more resources to ERI and enhance institutional commitment to scale out in other areas.

The ERI partnership was awarded the GFAR 2003 merit award for the best poster on successful partnerships in agricultural research for development. Some partners in the three countries are increasingly recognized as having expertise in linking farmers to markets and rural agroenterprise development; and government organizations, other NGOs and the private sector

are actively seeking their services and support. Some partners have initiated the process of institutionalizing the ERI approach and expanding its application to new areas beyond the pilot sites. TIP, one of the development partners in Tanzania, has mainstreamed ERI in its "package," and has developed its own Swahili training manual based on the ERI approach. TIP is also expanding the ERI approach to over 20 new communities in two new districts (Arumeru and Mwanga). The National Agricultural Research Organization (NARO) in Uganda has embraced various components of ERI as a methodology for its IAR4D in its six agricultural R&D Centers (ARDC) and in the ongoing reorganization of research programs.

Regular joint review, M&E of partnership experience

The joint review and planning meetings offer partners with opportunities to reflect on the partnership experience. For partnership to be sustained it is critical to integrate an effective PM&E system, to build in regular learning and reflection loops with communities and partners to ensure that lessons are documented and adjustments are made in a timely manner, providing critical feedback. This is valuable as it provides the opportunity to evaluate what works, how and why, for institutional learning and change, and eventually for scaling out and up.

Enabling environment

The renewed attention to agricultural R&D in sub-Saharan Africa provides an enabling environment and incentives for building partnerships. Agricultural research is increasingly under pressure to accelerate its impact and deliver technologies and innovations that alleviate poverty. In Uganda the Government Plan for Modernization of Agriculture provides a policy framework for transforming subsistence agriculture. The recent restructuring of NARO and the new national agricultural research policy emphasize the need for broad-based partnerships for making agricultural research demand driven, client oriented and market responsive. In Tanzania there are several nationwide government initiatives for promoting Agricultural Marketing Systems for Smallholder Project (AMSDP). Similar initiatives exist in Malawi and many other African countries. Agricultural research is increasingly under pressure to accelerate its impacts and deliver technologies and innovations that alleviate poverty. The growing acceptance of participatory approaches and the recent focus on linking farmers to markets provide a conducive environment for partnerships.

Coping with obstacles to effective partnerships

Available studies on partnerships indicate that a high proportion of partnerships or alliances either fail or have to be restructured (Berquist et al., 1995; Bleeke and Ernst 1991; Gormley 2001). Table 2 summarizes some common problems to partnerships and steps or actions to take in resolving them.

Table 2. Obstacles to effective partnership, based on Gormley (2001).

Obstacles	Steps to Take
Lack of attention to the process of building partnership and trust	✓ Discuss potential barriers to partnership openly and establish norms for working together ✓ Be transparent; put all issues on the table (budget, expectations, etc.), avoid even the appearance of withholding information ✓ Be patient, flexible and willing to do things in different ways ✓ Confront conflicts quickly and directly ✓ Clarify roles and responsibilities ✓ Spend time in building social capital
Communication	✓ Have project start up meetings at which all partners are present and work together for planning ✓ Hold progress meetings at regular intervals ✓ Agree on communication channels and protocols ✓ Find motivating ways to share information and to communicate successes ✓ Budget for communication expenses
Overcommitted partner; uncompleted work or missed deadlines	✓ Make extra efforts to implement realistic resource planning and budgeting ✓ Discuss work plans with key staff to help them determine if they can realistically do the extra work ✓ Avoid unrealistic deadlines; give reasonable time for the work to be done so that staff can fit it into their work schedules ✓ Keep in touch regularly with the people doing the work; stay connected with them ✓ Don't overcommit yourself ✓ Build a sense of teamwork and mutual accountability by having periodic meetings
Not enough support for partnership	✓ Involve senior managers in the formation of the partnership ✓ Keep senior managers informed ✓ Find motivating ways to share information and to communicate successes by holding progress meetings at regular intervals ✓ Be cautious about making commitments to partnerships that senior managers do not support
Lack of partnership competencies	✓ Build your capacities in partnership ✓ Stay open to learning ✓ Ask for feedback ✓ Invite others to help with more partnership experience

A SWOT analysis of ERI showed that despite considerable success and positive outcomes of building effective partnerships, managing quality partnerships has been challenging. One of the critical challenges has been high rate of staff turnover and overcommitted staff, especially social scientists. In addition to their limited numbers, retaining social scientists in NARS has always been challenging. One strategy has been to use project funds to support an existing social scientist or community development facilitators within partner organizations or to recruit where they are lacking. This strategy has had mixed results: While seen as necessary to fill the gaps, in many cases project staff are seen and treated differently compared to core staff. This has led to frustration, delays in activities and even change of jobs. From the initial pool of field staff that were involved in establishing ERI in pilot learning sites, many of them have changed jobs and

employers for higher salaries. Staff turnover has been highest in Uganda, where all the partners' organizations lost at least one key ERI staff member in 2004 alone. This undoubtedly affects continuity. While it can be argued that staff promotion (outside their organization) is an indicator of success of the approach and gives prospects for scaling out; nonetheless it has considerable effects on project implementation. The strategy has been to build capacity of more than two people in any partner organization, not only to create a critical mass but also to ensure continuity. Another strategy has been to encourage and promote a wider partnership in the pilot learning sites among actual and potential R&D partners and other institutions that share ERI 's broad objectives.

There have been cases of failed partnerships, while others have been difficult to manage. In one case, after about a year of collaborative work, one partner decided to move from sustainable development interventions to relief and humanitarian work and was therefore no longer able to partner in ERI. This affected momentum created within the pilot communities. It was urgent to find an alternative partner, in this case, government extension services, to take over the responsibilities and roles of the initial NGO. In another case, high individual expectations and perceptions of personal benefits from the project led to the failure of partnership. The perception of the divide between international and national staff can also be an unspoken obstacle to quality partnerships. It is difficult to ignore completely the divide between international research institutions (IARCs and NGOs) and national organizations, and between research organizations and extension services or NGOs; between NGOs and government services. In some cases, the partnership may be seen as donor-project relationships. As observed by Michelsen (2003), partnerships may fail because of imbalances in the availability of resources. Maintaining quality during the scaling-up process and reducing tensions between research (scientific rigor) and development (action-oriented) can be quite challenging.

Although the success of partnerships has been sustained by individual relationships and friendships, they have also had negative effects on partnerships in the form of uncooperative behaviors, attitudes and internal conflicts. Partners need the ability to understand and work in teams with other organizations, and many more people need effective skills in communication, group facilitation and participatory decision-making tools. The big challenge is how to institutionalize partnership beyond individuals within organizations so that partnerships can be sustained when these individuals eventually leave or their personal relationships are affected.

Monitoring and evaluating partnerships

Despite the growing number of literature and methodologies for evaluating and assessing the impacts of agricultural R&D programs (Alston et al., 1995; Collinson and Tollens 1994; Marthus and Gaiha, 2003; Marthur and Pachico, 2003b; Norton and Davis 1981), there is a paucity of methodologies and studies on evaluating successful partnership. Even the recent analysis of success stories in African agriculture (Gabre-Madhin and Haggblade, 2004; Haggblade, 2004) neglected partnership issues. Methodologies for evaluating the effectiveness of partnerships are still in their infancy. Michelsen (2003) identified a number of issues for characterizing partnerships by answering the following five questions:

- ✓ What is the purpose and the motivating factors of partnership (why collaborate)?
- ✓ Who is collaborating? (profile of partners institutions)
- ✓ What is the collaboration about? (function, scope, ownership, management, governance, formality, themes)
- ✓ How des the relationship develop over time (life cycle)
- ✓ What do institutions and individuals gain from the collaboration?

Cohen and Uphoff (1979) defined a number of indicators for assessing the quality of participation in development projects, which can be adapted for developing indicators and criteria for evaluating partnerships (Table 3).

Table 3. Indicators for evaluating participation and partnership.

Aspects of Participation (Questions)	**Summary description of participation**
1. <u>Impetus to participate</u> At whose initiative do partners and individual members participate?	
2. <u>Motivation for participation</u> What incentives do partners and individual members have for participation? Status/recognition, visibility? Personal benefit? Organization benefit? Other?	
3. <u>Status of people participating</u> Who is participating? What are their characteristics? Leaders/people of influence/ordinary person? Job status, experience Sex (male/female) Age (young/old) Education levels Residence (resident/visitor) Type of organization (local, national, international; research, extension, private sector)	
4. <u>Quality of participation</u> What activities are people participating in? Decision-making Leadership styles Roles and responsibilities Number and range of major and minor activities	
5. <u>Effective power with participation</u> What decisions are people involved in? Who is deciding what and who is controlling what? (See #3 for status of people) No power = no control over decisions & resources Some power = some control over decisions & resources Extensive power = control over decisions & all resources	

In the initial planning meetings and subsequent PM&E workshops, ERI partners identified the following indicators for monitoring and evaluating partnerships (Table 4). One innovative approach for monitoring partnership and institutional development is outcome mapping (Earl et al., 2001). Outcome mapping can be defined as a detailed description of the changes in the behavior relationships, activities and actions of individuals, groups, organizations, with whom a project works directly that can be logically linked, although not necessarily caused by a project, program or development actor. Outcome mapping assumes that as an external organization, development programs facilitate the process only by providing access to new resources, ideas or opportunities for a certain period of time. Outcome mapping seeks to characterize and assess the contribution made by stakeholders and development partners, projects or organizations to the achievement of specific outcomes. It helps answer four major questions: WHY? (vision statement), WHO? (boundary partners), WHAT? (outcome challenges and progress markers), and HOW? (strategy maps, practices). Outcome mapping uses progress markers as tools for monitoring achievements and challenges in the direction of the desired outcomes. A set of progress markers (milestones) are identified, outlining the levels of change leading to the desired outcomes among the stakeholders. The progress markers describe what one would expect to see the stakeholders doing and describes a pattern of behavioral changes taking place over time to reach the desired state.

Table 4. Performance indicators for monitoring and evaluating partnership processes.

Processes	Performance Indicators
Participation, collaboration and partnership	✓ Level of harmony among stakeholders in partnership and collaboration ✓ No. of community cross-visits ✓ No. of joint workshops ✓ No. of participants at various levels of the process ✓ Level of sharing information ✓ Diversity of people making decisions in community based R&D ✓ No. and categories of stakeholders ✓ Level of partners' compliance to commitment ✓ Investment (financial and human) by different stakeholders
Capacity building and entrepreneurship	✓ Extent community/groups plan their activities independently ✓ Ability of community leaders to assume more leadership roles in society ✓ Increased novel/innovative ideas in the community ✓ Increased skills in experimentation, market research and enterprise development ✓ Extent of men consulting women /wives in decisions on major investments and expenditures ✓ Ability of communities to form/establish their own financial institutions ✓ Women's increased ownership of resources (e.g., trees and land) ✓ Involvement of women in formulating and implementing bylaws ✓ Ability of communities and groups to make decisions collectively ✓ Regular flow of market information system
Group organization	✓ Leadership structure (management committee), gender equity ✓ Constitution/rules/bylaws that govern group ✓ Group formalization (registration, name) ✓ Membership register, subscriptions, savings (account) ✓ Regular meetings, records of attendance, minutes book, accounts and visitors book ✓ Activity work plan, roles (by gender), responsibilities and collective actions ✓ Group cohesion, strength, conflict resolution, level of participation
Social capital	✓ No. of groups and membership size ✓ No. of farmer participating collectively in various activities ✓ Extent of cooperation among the various categories of farmers within the group ✓ Extent of use, bylaws and norms ✓ No./frequency of group meetings ✓ Extent to which information/resources are shared with external community ✓ No. of leadership committees in the communities (group) ✓ Extent to which conflicts are resolved within the group and external community

Conclusions and lessons learned

This paper reflects on experience in building partnership in ERI and shows that ERI has followed the principles for good practice in participatory research and for quality partnerships and collaboration in research (Gormley, 2001; Vernooy and McDougall, 2003). Given the diversity of activities involved in ERI, the success of this work is highly dependent upon the development of effective quality partnerships with research and extensions systems, NGOs and farmer communities. The lessons learned suggest that greater attention to partnership formation and selection process is critical to ensuring success and sustainability. Investments in time and resources in the initial stage are critical for building a shared vision and a common agenda to ensure that all partners believe that they are reaping additional benefits from the partnership. Support of senior leadership is key, as is consistent engagement with committed field staff. It is important to build sufficient human and social capital to create institutional commitments and clarity in understanding of the roles, responsibilities and expectations of the different partners. However, retaining social scientists and staff with entrepreneurial skills is challenging. Governments and universities will need to assess how to make agriculture more attractive to the large numbers of social scientists who, in most countries of the region, currently go into urban and health fields or join international NGOs offering better conditions. Building the capacity of nonsocial scientists in participatory approaches is a key thrust in ERI.

There are still a number of unanswered questions, where more systematic and rigorous research is needed to document innovative approaches to partnership building and nurturing systematically and to develop simple, effective tools for monitoring and evaluating partnerships. One important consideration in assessing partnerships is the issue of transaction costs. It is generally considered that partnerships inherently result in high transaction costs. As Huxham (1996) pointed out, partnership is inherently time- and resource-consuming. On the other hand, it is hoped that the benefits may offset the initial high costs, which gradually decrease as partners build trust and continue to work together. However, there is no empirical evidence on the real costs of partnerships compared to the multiple benefits that partners may derive from collaborative activities. It is critical to develop a simple, functional PM&E system early in the project; build in regular reflection activities with partners; ensure that lessons are documented and adjustments made in a timely manner. Innovative tools such as outcome mapping and after review reflection, have the potential to complement the prevalent SWOT analysis. Achieving success in partnership requires that a scaling-up strategy be explicitly mapped out from the initial selection of partners and communities to sharing lessons with other partners and organizations, and to ultimately broaden development impact. The potential for scaling up, which is reaching more people and communities more quickly with quality benefits over a wider geographic area (IIRR, 2002), is an important criterion for selecting partners and pilot communities. There are encouraging signals as some R&D partners have initiated the process of institutionalizing ERI; while interest and demands from new partners who have considerable potential for scaling up are increasing. Opportunities for forging learning alliances with existing and new partners need to be explored further.

In the same vein, considerable efforts are still needed to forge effective partnerships with the private sector, particularly with business services. The biggest challenge lies in maintaining the interest of the private business sector in marginal small-scale farming, which does not normally

provide high and quick returns on investment. Any partnerships that aim at linking small-scale farmers to markets need concentrated efforts on improving market institutions, and making markets work for the poor. Public-private partnership for making markets work for the poor should include efficient market institutional innovations and support services such as microfinance, market information systems, business services, pricing policies, inputs marketing, extension advice and rural infrastructure. As concluded by Gormley (2001), there is still much to learn from engaging in partnership journeys.

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References

Alston, J.M.; Norton, G.W.; Pardey, P.G. 1995. Science under scarcity: Principles and practice for agricultural research evaluation and priority setting. Cornell University Press, Ithaca, NY.

Ashby, J.A. 2003. Uniting science and participation in the process of innovation-research for development. In Pound, B.; Snapp, S.; McDougall, C.; Braun, A. (eds.). 2003. Managing natural resources for sustainable livelihoods. Uniting science and participation. International Development Research Center, Ottawa and Earthscan Publications, London.

Bergquist, W.; Betwee, J.; Meul, D. 1995. Building strategic relationships. Jossey-Bass Publishers, San Francisco, CA.

CIAT, 2003. Briefing Note for Discussion and Development of Proposal. The Rural Innovation Institute. CIAT, Cali, Colombia.

Briefing note for discussion and development of proposal March 2002

Collinson, M.P.; Tollens, E. 1994. The impact of international agricultural research centres: Measurement, quantification, and interpretation. Journal of Experimental Agriculture 30: 395-419.

Douthwaite, B.; Keatinge, J.D.H.; Park, J.R. (2002). Learning selection: A model for planning, implementing and evaluating participatory technology development. Journal of Agricultural Systems 72(2):109-131.

Earl, S.; Carden, F.; Smutylo, T.; Sander, C. (2001) Outcome mapping. International Development Research Center, Ottawa, Canada.

FARA (Forum for Agricultural Research in Africa). 2003. Building sustainable livelihoods through integrated agricultural research for development. Securing the future for Africa's children. Vol. 1. Program proposal. Sub-Saharan Africa Challenge Program submitted to the Interim Science Council of the Consultative Group on International Agricultural Research, Accra, Ghana.

Gabre-Madhin, E.; Haggblade, S. 2004. Successes in African agriculture: Results of an expert survey. Journal of World Development 32(5):745-766.

GFAR. 2002. Strengthening the participation of farmers' organizations and of NGOs in Global Agricultural Research for Development (ARD). Rome, Feb.

Gormley, W. 2001. Selecting partners: Practical considerations for forming partnerships. Tips and Tools Series: Collaborative alliances. The Organizational Change Program for the CGIAR Centers. TRG Inc., Washington DC.

Government of Uganda. 2003. Plan for modernisation of agriculture: Eradicating poverty in Uganda, government strategy and operational framework. First draft, Sept. 1999. Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) and Ministry of Finance, Planning and Economic Development (MFPED). Kampala, Uganda. 125.pp.

Haggblade, S. 2004. Building on success in African agriculture. International Food Policy Research Institute. 2020 Focus 12, Washington DC, USA.

Huxham, C. 1996. Creating collaborative advantage. Sage Publications, London.

Kindness, H.; Gordon, A. 2002. Agricultural marketing in developing countries: The role of NGOs and CBOs. (Policy Series No 13). Social and Economic Development Department, Natural Resources Institute, University of Greenwich, London.

Marthur, S.; Pachico, D. (eds.). 2003b. Agricultural research and poverty reduction. Some issues and evidence. Centro International de Agricultura Tropical, CIAT, Cali, CO.

Michelsen, H. 2003. Learning from partnerships. Experiences from the Cornell International Institute for Food, Agriculture and Development (CIIFAD). International Service for National Agricultural Research (ISNAR), The Hague.

Norton, G.W.; Davis, J.S. 1981, Evaluating returns to agricultural research. American Journal of Agricultural Economics 63: 685-699.

Pretty, J. 2003. Social capital and the collective management of resources. Science 32:1912-1914.

Sayer, J.; Campbell, B.M. 2001. Research to integrate productivity enhancement, environmental protection, and human development. Conservation Ecology 15(2) [online] URL: http://www.consecol.org/vol5/iss2/art1

Smith, T. 2002. Eden. Corgi Books, London.

Spink, L.; Merril-Sands, D. 1999. Successful collaborative partnerships: Key elements and self-assessment inventory. Simmons Institute of Leadership and Change Boston.

Uphoff, N.; Mijayaratna, C.M. 2000. Demonstrated benefits of social capital: The productivity of farmers' organizations in Gal Oya, Srilanka. World Development 28(11):1875-1840.

Uphoff, N.; Cohen M.J.; Goldsmith, A. 1979. Feasibility and application of rural development participation. A state-of-art paper. Rural Development Committee for International Studies. Ithaca, NY, USA, Cornell University.

Vernooy, R.; McDougall, C. 2003. Principles of good practice in participatory research: Reflecting on lessons from the field. In Pound, B.; Snapp, S.; McDougall, C.; Braun, A. (eds.). 2003. Managing natural resources for sustainable livelihoods. Uniting science and participation. pp. 113-141. International Development Research Center, Ottawa and Earthscan Publications, London.

Reorientation of research through participatory methodologies: Participatory research with milk producers in Roldanillo, Cauca Valley, Colombia, 1999-2004

Researcher: José Ignacio Roa Velasco[69].

Background

At the beginning of 1999, the National University implemented the project "**Monitoring and technology transfer in representative production systems for improving the production and sustainability of Creole (Hartón) cattle genetic resources of the Cauca Valley"** with a group of producers from the Municipality of Roldanillo, Cauca Valley, who were working with the University on the program to recover this race of cattle, given that it is tolerant of the high temperatures in the region.

The producers have a center for meeting on the farm known as " La Ondina," loaned by one of the members of the group. One of the University's objectives was to get the producers to keep records of the births and the milk production of their cattle in order to analyze the behavior of the race and improve its production. The formats were developed by the National University-Palmira campus.

After two years, the professors realized that the project was not advancing as expected and that the producers were unwilling to fill out the formats. Therefore the professors from the University, responsible for the Project, visited the Participatory Research Project (IPRA) at CIAT, where they presented their problem. As result of the meeting, it was agreed that IPRA would conduct a participatory diagnosis with the producers from Roldanillo to find out what their real needs were and why they were not systematizing the information requested by the professors.

After conducting the participatory diagnosis at La Ondina, on 22 June 2002, it was found that the producers' interests were very different from what the professors thought.

Methodology

There were about 30 producers at the meeting held to carry out the participatory diagnosis, which consisted in recording the needs or demands of a stakeholder group. A facilitator from the IPRA Project recorded the different problems and training needs mentioned by the producers on a flip chart. Then a blank sheet of paper was given to each one in order to write down the most important problem that they felt needed to be solved first; in other words, the problem that most affected them. Then in a separate column, they recorded the topics that do not need research because they were a matter of training.

The problem mentioned by 90% of the producers was **scarcity of feed for the animals in the dry season.** The animals lose a lot of weight in the summer, the amount of milk produced

[69] Training in participatory methodology – IPRA Project -CIAT.

decreased too much, and later in the rainy season, the animals had to recover the weight lost in the summer in order to get through the next summer (January), given that the seasons in Colombia are bimodal.

At the end of the meeting, a researcher from the Tropical Forages Project at CIAT facilitated the scientific information about the work that they are doing with pastures in Central America, in regions similar to those of Roldanillo.

Results of the participatory diagnosis

The producers' demands

- ✓ Lack of information about systems for improving grasslands
- ✓ Scarcity of feed for the animals in the dry season
- ✓ Lack of rain in the zone
- ✓ Lack of information about superior bulls to improve the potential for milk production
- ✓ Deficient commercialization of milk and beef
- ✓ High cost of inputs such as salt, feed concentrate, veterinary drugs
- ✓ The Hartón cattle produce low levels of milk and beef.

Prioritization

The producers selected the following topics as the most important and urgent to solve in Roldanillo.

1. Selection of forage species adapted to the agroecological conditions of the region
2. Learning about the establishment of grasslands
3. Creation of economic systems of fertilization and organic manure
4. Motivating the producer to generate his own seed

Table 1. Request for training by the producers to develop in 2004.

Topics	Dates (2004)	Responsible	Entity
Pasture management and control of leaf-cutting ants	June 2 and 9	Luis Horacio Franco	Tropical Forages Project, CIAT
Evaluation of animals' preference for the forages established	June 23	Marino Valderrama José Ignacio Roa	Producer, La Ondina IPRA Project, CIAT
Silage and haylage	July 7	Patricia Ávila, Luis Horacio Franco	Tropical Forages Project, CIAT
Prevention of infectious-contagious diseases	July	Edgar Restrepo	ICA Sanitary Division
Results of netting to harvest water from the mist	Aug. 30	José Manuel Molina	National University-Palmira campus.
Genetic improvement (animals)	Sept. 22	Carlos Vicente Durán	National University-Palmira campus.

Explanation of the training topics

- Silage: The practice of cutting the grass and storing it for a time in hermetic packaging
- Haylage: Cutting the grass, letting it dry and supplying it dry
- Control of leaf-cutting ant: Different ways to control this pest
- Prevention of infectious-contagious diseases in cattle such as brucellosis, foot-and-mouth disease, symptomatic blackleg, anthrax and anaplasma
- Information about the results of using nets to harvest rain
- Wind power: Energy generated by the air currents and captured by a windmill is stored in a battery
- Pasture management: Calculate the availability of forage that a pasture has in order to determine how many animals and how many days a lot can be grazed, as well as the minimum fertilization that a pasture requires

Figure 1. Training visit to the producers to see pasture management in La Ondina.

Tours according to the stakeholder group

A total of three visits were made in accordance with the number of interests identified with the producers. (Photo 1)

- ✓ A farm where producers could observe pasture management, fertilization, use of an electric fence to separate animals in the pastures and make more efficient use of the grasslands
- ✓ See the new pastures that were mentioned as options for the region: the Brachiarias Toledo, Mulato and Guinea Mombasa and the legumes *Leucaena leucocephala* and *Cratylia argentea* The producers wanted to observe the growth habits, leaf texture, seed production, color and their development in a soil inferior to that of Roldanillo. Said pastures were planted at the CIAT experiment station in Santander de Quilichao, Cauca Province.

- ✓ Learn about the results that the CIAT Tropical Forages Program has had in the research conducted on various farms in Central America. The visits to the Center's headquarters in Palmira were made from Oct.-Nov. 2002.

Planning

In January of this year, a meeting was held at La Ondina farm with the purpose of implementing participatory planning with the producers. The producers already had previous knowledge about the pastures that they had seen on their visit to Quilichao. Participatory planning is a meeting in which the producers, together with the researchers, agree upon several topics such as the varieties of grasses and legumes to sow, plot size, planting distances, number and time of evaluations to be done, and whether there is a need or not to fertilize.

Mounting of trial. Then 25-m^2 plots were established with each of the following materials on two farms with three replications per farm: *Brachiaria* hybrid cv. Mulato (grass), *Panicum maximum* cv. Mombasa (guinea grass), *Brachiaria dictyoneura* (grass), *Cratylia argentea* (legume) and *Leucaena leucocephala* (legume). The producers and the technicians took part together in the sowing of the trials on the farms. Two trials were established on two farms with three replications per farm in April 2003.

Participatory evaluation of the trial. Two months after the trials were established, the producers agreed to hold a field day on La Ondina farm to carry out a participatory evaluation of the materials planted.

Methodology. A member of the IPRA Project explained to the producers what a participatory evaluation involved and the type of format to be used. In this case it was the format for open evaluations, where the facilitator records the producer's spontaneous comments. Two groups of producers were formed; each one had a facilitator, one of whom was a member of the IPRA Project. Before beginning the evaluation, the producers had the opportunity to visit each plot in order to become familiar with each of the grasses or legumes.

Results of the open evaluation

Methodology in the field. In the field the producers expressed their opinions freely about what they were observing at that moment. The criteria that the producers mentioned with the most frequency were:

- ✓ Palatability
- ✓ Color
- ✓ Supply of forage (tillering)
- ✓ Resistance to low fertility
- ✓ Tolerance to drought
- ✓ Resistance to damage caused by the leaf-cutting ant
- ✓ Production of organic matter
- ✓ Coverage (aggressiveness)
- ✓ Rooting
- ✓ Persistence of the pasture (duration)


Figures 2 and 3. Producers and technicians compacting *Cratylia argentea* for silage.

Figure 4. *Cratylia argentea* covered with plastic to be ensiled for a period of 2-3 months.

Next evaluations

- ✓ Cutting to standardize the plots. Para evaluar cual de los materials crece más rapido.
- ✓ Evaluation of preference by the animals (six weeks after the standardization cut). Los animals entran nuevamente al ensayo y consumen los pastos, se evaluara que pasto lo consumen más y cuales menos.
- ✓ Evaluation of resistance to trampling, waste.
- ✓ Evaluation of capacity for regrowth in the dry season; fertilization trial (when the second cycle of rains begins in September)

Collaborating institutions

Follow organizations are involved in this research:

- ✓ Producers group La Ondina
- ✓ National University - Palmira
- ✓ CIAT
- ✓ Dept. of Agriculture and Fisheries (SAP) of the Cauca Valley
- ✓ Institute of Technical-Professional Education (INTEP), Roldanillo, Cauca Valley

Conclusions and future projections

- Continue with the effort to build strategic alliances with institutions such as INTEP, SAP, the National University-Palmira and the Municipal Unit of Agricultural and Livestock Technological Assistance (UMATA) of Roldanillo
- Exchange of experiences with other producers or organizations of other municipalities that have shown interest in working with similar research as is the case of the cooperatives of milk producers of the municipalities of Versalles, Bolívar, El Dovio and Sevilla, which are situated in different thermal floors than that of Roldanillo.
- Implement the project "Improvement of the productivity and adoption of participatory technologies in producers' systems in the Cauca Valley" in the SAP- Governor's Office in conjunction with the National University of Palmira, CIAT and INTEP.
- Publish the results obtained, useful as a means of feedback to the producers and entities of the agricultural and livestock sector
- Taking into account the comments of the producers on the different field days, Mulato grass stands out for the availability of abundant forage before and after the summer.
- Among the legumes, *Leucaena* stands out for being consumed preferentially by the cattle; *Cratylia* for its resistance to the summer.
- The willingness of the producers to work has been positive.
- The professors and producers highlight the degree of motivation over these two years in a project that had no resources assigned. The principal reason for this is that the work satisfies the concrete needs of the producers and that these were identified by means of the participatory methodology that identified these problems and other training needs of the producers.
- This participatory research transcended beyond what was expected. It reached other municipalities such as Versalles, Bolívar, Sevilla and El Dovio in the Province of the Cauca

Valley, Colombia. The producers of these municipalities began to attend the meetings at La Ondina and are requesting the same type of work in their municipality.

- It is also positive to highlight the approval of a project by SAP of the Cauca Valley Province to implement this research in the municipalities of Versalles, Bolívar, Sevilla and El Dovio.

OUTPUT 3. PROFESSIONALS AND OTHERS TRAINED AS FACILITATORS OF THE PARTICIPATORY RESEARCH APPROACH

Guide for Documenting Experiences with Participatory Monitoring and Evaluation[70]

Researchers: Vicente Zapata[71]; Vivian Polar[72]; Susan Kaaria[73]

Introduction

Documentation is a basic task that is carried out by all those who wish to share their experiences, their accomplishments and conceptualizations with others who have similar interests. Documentation is an essential tool for expanding dialogue and constructing new forms of interpreting and dealing with reality.

In this guide we have outlined the steps to be followed for documenting an experience. There are a number of ways for carrying out this task, available in a variety of documentation manuals. In this guide, we show some components and provide a sequence for their presentation to make the narration interesting for the readers.

This Guide will be used in the Workshop on Documenting Experiences, which has been organized by the FOCAM (Promoting Change) Project in Bolivia. The workshop participants will prepare stories about the application of methods of participatory monitoring and evaluation (PM&E), in which they have participated. We wish to highlight the importance that these stories have for the PM&E processes in the strengthening of the local capacities for orienting development. If we have a series of stories about PM&E with the same structural framework, we can look at the similarities and differences that exist among them, observe successes and failures that are repeated, and derive general principles that that can be used in new experiences.

The documentation of PM&E experiences is part of the methodological proposal for developing institutional and local capacities proposed by the FOCAM Project. Once those who are going to lead the PM&E processes in the communities have been trained, they formulate action plans, in which the different ways that they are going to apply the methodology are described. These applications take place in the phase immediately following the training. That is when it is necessary to document the processes in order to gather lessons from the same, which will then be used as key inputs for the workshops to reflect about the process.

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[70] This document is the result of contributions from Boru Douthwaite about the form of writing stories on innovation. Later, based on the contributions made by Susan Kaaria, it was transformed into a guide for documenting cases of PM&E.

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Objective

The Guide for Documenting Experiences presents the steps of the process of documenting the application of PM&E methodologies so that they can be used for orientation during the workshop to prepare stories about said application.

Components of the Story

The story that we want to develop should include a total of eight essential components. The authors are free to reorder them so that each story has its own stamp, and not all of them will have an identical structure. They can also emphasize some components that they consider help enrich the comprehension of the experience or to highlight important elements. These components are:

1. A brief description of the physiographic, socioeconomic and institutional context in which the application of the PM&E methodology was carried out. In other words, they should describe the site where they were carrying out the application of the method, "paint" it for the readers in narrative form, just as one would introduce a story of a local event.
2. Description of the characteristics (ethnic, social, cultural, etc. of the group that is applying or has applied the PM&E methodology). This characterization includes proper names of the people that are participating and a little about them, what they do and the way in which they live.

3. Overview of the application of the methodology. In order to give an overview, the narration can be based on answers to the following questions:

    - When and how was the process of introducing the methodology begun?
    - What was the motivating element for introducing this methodology?
    - What problems or opportunities are related to the application of the methodology?
    - In what area or activity was the methodology introduced?
    - How was the planning of the process for introducing the methodology done?
    - Who participated in the planning?
    - What support tools were used during the phase of planning and introducing the methodology?

4. Specific aspects for establishing the methodological process. To cover these aspects, the authors can also refer in narrative form to the following questions:

    - Who and how many people participated in the initial meetings or workshops?
    - What strategies or steps were implemented to build capacities in the target group and establish the PM&E process?
    - What tools or materials did the facilitator use to establish the methodology?
    - How many events were necessary to establish the PM&E methodology?
    - What results or outcomes were generated during the process? (data gathered, results, processes, indicators, objectives, etc.)

- What challenges have they had to overcome in working with the target group to establish the PM&E processes?
- What unexpected events or results arose as a result of this phase of establishing the methodology?
- What strategies or activities gave the best results? Which ones did not work well?

5. Consolidation of the PM&E system. This part of the narrative focuses on what the target group accomplished as a result of establishing the PM&E methodology. Perhaps these accomplishments are not yet evident in some cases, in which case it will be necessary to clarify that the process is still in the establishment phase. The following questions can help write this part:

- How is the PM&E process being managed in the target group?
- Has there been a leader within the target group throughout this process? What has this leader done?
- Of what use has the PM&E process been to the target group?
- In what type of information is the target group interested, and how is it being used? We refer to the information that resulted from the instruments prepared within the process of establishing the system.
- Who uses this information at the level of the community?
- What aspects need to be improved in the day-to-day application of the methodology?
- What challenges arise for the facilitator and the target group as a result of applying the methodology?
- If this process were to be established with another target group, what aspects would need to be changed?

6. Other aspects of importance. In this part emphasis is on aspects that were not considered in other components but that in the experience of the person who narrates the story are of great importance. Some of the following questions can help get answers about important aspects of the process:

- How were the group and site where the PM&E methodology was going to be applied selected (that is to say, what selection criteria were used?)
- Who participated in the selection of the site and the group?
- What previous experience did the facilitator or the target group have with this type of methodology?
- What degree of organization did the group have with whom the methodology was established?
- Were modifications made to the methodology during its introduction or establishment?
- Are there particular skills that a group or a facilitator should have in order to be able to establish the PM&E methodology successfully?

7. About the diffusion of the methodology. This section of the story is dedicated to those who feel motivated about establishing a PM&E system.

- If anyone wishes to establish a PM&E system, what are the conditions without which this process cannot be established successfully? (Reference is made to the institution, the target group and the facilitator.)
- What difficulties have been most evident and distressing? What errors do you thing were made? In what way could they be overcome?
- If we were to change key aspects of the PM&E process (steps, components, strategies for working, strategies for gathering information, etc.), which do you think would be necessary and why?
- What lessons have you learned from the overall process?
- What were the most satisfying aspects of establishing and implementing the PM&E methodology?
- In what aspects should the approach of those who induced you to promote PM&E processes in the first place change?

8. Ending the narration. In this part a summary is made of everything that was said, and a series of phrases about the immediate future are drawn up.

Third Phase

- Are the users to whom the methodology was presented applying it?
- If it is not being applied, what are the reasons?
- How was the area of application selected?
- Who selected it?
- Who were the first interest groups that gained experience from the initial presentation of the methodology?
- How were these interest groups selected?
- What experiences did they have with the use of the methodology?
- What modifications were made to the methodology, why and with what results?
- What events took place to begin the application and consolidate it?

Fourth Phase

- Was the methodology adopted? If not, why? If so, for how long?
- Who is applying this methodology optimally?
- What adaptations did this person make?
- Were there outstanding results?

Fifth Phase

- Has any event been held to disseminate the methodology?
- Where were these events held?
- How is this methodology being replicated?
- What requirements exist for being able to replicate it?
- What transformations could this methodology undergo in the future?

General questions

- What was your principal motivation for doing this work?
- What have you gained from doing this work?
- If you were going to apply the methodology again, what would you change?
- What were the most difficult aspects of the application?
- What were the most satisfying aspects of the application?
- What was the greatest frustration that you had?

Summary report on the status of monitoring and evaluation systems in selected KARI Centers and some intervention strategies

Researchers: Jemimah Njuki[74], Peterson Mwangi[75], Virginia Kamonji[76]

Introduction

The Strengthening Participatory Monitoring and Evaluation (PM&E) processes project conducted reconnaissance field visits at five Kenya Agricultural Research Institute (KARI) Centers from January to March 2004. The objectives of the field visits were to analyze existing PM&E systems within five KARI Centers to conduct an internal SWOT analysis as a strategy for identifying the key entry point in the development and strengthening of the PM&E system.

Specific objectives of the Center visits

- ✓ Create awareness of the project among the KARI scientists and their partners
- ✓ Conduct an inventory and review the current M&E approaches applied by the Centers and their partners.
- ✓ Assess how various stakeholders (communities, farmers, donors, management and government) have been involved in the development of the M&E
- ✓ Identify the critical gaps and opportunities in the existing M&E systems and identify entry points for PM&E
- ✓ Determine training needs and the resources required for the various projects necessary to establish sustainable PM&E system
- ✓ Select pilot projects for implementing PM&E systems at the five Centers and identify a coordinating team in each of the five Centers who will act as the focal points for PM&E within these Centers and within KARI

Inventory and review of current M&E systems

Twenty KARI projects or programs were reviewed, with an average of four projects per Center. The review was conducted in a workshop process, where each project presented its current M&E systems. Guidelines were developed to guide the assessment[77].

Summary of results from the review workshops

- Generally, all the projects were doing some form or other of M&E and had different levels of stakeholder involvement as well as documentation procedures. In addition to project level

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M&E, Centers have formal processes for M&E, which include Center Research Advisory Committees (CRACs) and Regional Research and Advisory Committees (RREACs).

- Scientists felt that the project was long overdue since most of them were keen to implement M&E in their projects and programs but did not have the necessary skills and technical support to do so.
- After the discussions there was a change of perception of M&E as an internal learning process versus a policing and supervisory tool or as an activity that is done by outsiders (i.e., mainly donors and external experts) to check on the accountability and resource management by project implementing teams.
- Discussions on the role of PM&E in the project cycle highlighted the importance of including PM&E during the planning and project development phase. The majority of the projects reviewed did not include PM&E at the project development stage; rather it came in as afterthought. It was agreed that new projects should include an inbuilt M&E system and that there should be a budgetary allocation for this.
- During the visits it was clear that most Center directors were keen to include M&E as a key requirement for approving new projects.

Critical issues in implementing and supporting PM&E systems in KARI

The twenty projects identified the objectives of their M&E systems and some critical gaps and opportunities for improving their current system. The key results are summarized below.

The role of M&E in KARI projects

- ✓ Evaluate and assess impact of technologies
- ✓ Assess performance of projects against benchmarks
- ✓ Enhance participation of farmers and other stakeholders in technology development and transfer
- ✓ Assess project implementation vis-à-vis work plans and determine necessary changes in implementation strategy
- ✓ Enhance stakeholder involvement in project implementation
- ✓ Assess appropriateness and effectiveness of methodology/approach
- ✓ Accountability; i.e. ensure resources are utilized according to plan

Critical gaps and opportunities in existing M&E systems

A SWOT analysis was done for some of the project/program M&E systems, and the summary below outlines these as well as the challenges and gaps presented during individual presentations.

Opportunities in the existing M&E

- ✓ Some projects have existing institutional structures that facilitate M&E including logical frameworks and steering committees.
- ✓ There are committees that are involved in activities such as project reviews at Center level; e.g., CRACs.
- ✓ A number of scientists have capacity in PR tools and gender analysis tools

- ✓ Wide range of partners (IARCs, CBOs, NGOs, farmers, private sector), and stakeholders involvement in project implementation in KARI
- ✓ Strong willingness by farmers to participate in project activities
- ✓ Scientists (biophysical and social) willing to get involved in PM&E

Critical methodological gaps. The majority of the projects considered that they did not have the necessary skills and technical expertise to establish and support PM&E systems. Specifically, the scientists identified weaknesses in the following areas:

- ✓ No clear systematic process in the development of measurable indicators
  - Quantitative vs. qualitative indicators
  - Limited involvement of stakeholders in indicator development
  - Different levels of indicator development-resources, activities, outputs, outcomes, impact, processes and approaches
  - Skills in integrating equity and gender considerations into the process
- ✓ No clear linkage between baseline, M&E and impact assessment
- ✓ Lack of inbuilt PM&E during project development and well-defined frameworks for M&E
- ✓ Lack of skills in data collection, analysis, interpretation and use
- ✓ Existing M&E systems do not always give enough room for feedback and taking corrective measures/actions; sometimes the lag period is too long between data analysis and feedback so that they do not offer opportunities for learning.

Institutional issues affecting PM&E processes

- ✓ Several projects identified donor inflexibility (e.g., donor inflexibility in adjusting projects once a budget is established) as a major limiting factor to the development of PM&E systems.
- ✓ High demand on the scientists' time, which keeps them from monitoring and evaluating a given project continuously.
- ✓ Irregular flow of project funds, which interrupts work plans and monitoring activities
- ✓ Opinion, especially among biophysical scientists, that baselines, M&E and impact assessment are the responsibility of the social scientists

Farmer-related issues. Various scientists felt that it was difficult to involve farmers or local communities in the PM&E process because they lack the necessary skills.

Critical areas for intervention

Several areas for intervention were identified during the review workshops:

- ✓ Build capacity of scientists in establishing and supporting PM&E systems. Capacity building should include the following topics:
  - Identification of different stakeholders (including farmers and other community members) and their roles in the PM&E process
  - Strategies on developing appropriate qualitative and quantitative indicators
  - Integration of gender and equity issues into the PM&E process
  - Facilitation skills for scientist/farmer/other stakeholder interactions

- Capacity building for data analysis in PM&E at different levels
- Data management, analysis, interpretation and use, this would include synthesizing PM&E data to facilitate its use for decision-making at different levels and to provide feedback and learning

✓ Facilitating scientists to build the skills of communities and other local stakeholders in PM&E
✓ Building skills for attitude change amongst scientists and other stakeholders
✓ Action learning in implementing PM&E systems

Strategy for project implementation

Selection of pilot projects

In each Center, two projects were selected for the pilot phase of this project. These projects will provide an action-learning opportunity for the scientists within the Center and in the scaling-up strategy. Selection criteria for the projects were varied, but the emphasis was on:

✓ Different M&E methodologies to allow for different dimensions of learning
✓ Projects at different levels of implementation process
✓ Adequate funding to support project activities
✓ Willingness of the project team to participate in the pilot phase of PM&E
✓ Projects with on-farm activities in order to take advantage of both project- and community level PM&E
✓ Projects that will be ongoing for the next 1 1/2 to 2 years
✓ Wide range of partners and donors
✓ Projects dealing with a diversity of activities and approaches

The selected projects are funded by a variety of donors including: Swedish International Development Agency (SIDA), Department for International Development (DfID), International Development Research Center (IDRC) and the Rockefeller Foundation. These projects are the Soil Management Project; Crop Protection Project (CPP) that is evaluating participatory methodologies; Cassava Dissemination Project; two biotechnology projects; and a Soil and Water Management project.

Selection of a project coordination team

Each Center selected a 3-5 member team to coordinate internal PM&E activities. The team members were selected on the basis of their willingness to train other scientists and partners in PM&E and their belief in its importance and its role in improving project performance and empowering project beneficiaries. The team will have a dual role of coordinating the pilot activities in the Center and building the capacity of other scientists and KARI partners.

Supporting action plans for pilot implementation

- It was agreed that CIAT would take on the roles of capacity building, technical backstopping and supplementary funding to support the integration of a PM&E component in existing projects.
- Providing supplementary funds is important because all the projects selected are at different stages of implementation; and the majority lacks an inbuilt mechanism for PM&E and therefore no budgetary allocation. Several strategies will be explored to provide these teams with additional funds, including approaching the donors of these projects such as the Rockefeller Foundation, DfID, IDRC and SIDA for supporting the PM&E component of the project.

Conclusions

The Center visits provide an insight into the existing systems in KARI, on which the PM&E project will be building. The visits have also encouraged scientists to open up and look at monitoring as a self-improvement tool as opposed to monitoring as a policing or fault-finding tool and to look at M&E as an activity that should be incorporated in projects during the planning and project development phase. The critical gaps and opportunities identified by specific projects and also by the groups of scientists provide a good entry point for the PM&E project, which aims at strengthening these systems.

Scientists' skills in developing and supporting these PM&E systems need to be strengthened for these systems to work. These include skills not only in establishing PM&E systems but also in such areas as facilitation, analysis of qualitative data, gender analysis and use of results from gender analysis and project management.

Attitude change is also an important component if these systems are to work. For a long time, biophysical scientists have looked upon social scientists to carry out baseline studies, M&E and impact assessment. Given the current shortage of social scientists, not only within KARI but also in other institutions, biophysical scientists will need to start looking at baselines, M&E and impact assessment as part and parcel of their projects and as activities that need to be funded within their projects.

In terms of institutionalizing PM&E within KARI Centers, there was keen interest by all scientists to acquire the skill in implementing PM&E systems as soon as possible. As the first group of scientists from each Center gets trained, it will be important to put in place action plans for transferring these skills to the other scientists and to the partners that KARI is collaborating with in their projects to go hand in hand with the implementation of PM&E systems in the pilot projects. KARI scientists have gone through various training courses; however, the key to successful application of the skills obtained is to provide mentoring and practical on-the-ground training as implementation takes place, which will require significant resource investment.

Strengthening Participatory Monitoring And Evaluation Systems In Research And Development Institutions

Workshop held at the Izaak Walton Inn, Embu, Kenya (29th march to 3rd April 2004)

Facilitators: Colletah Chitsike, Susan Kaaria, Jemimah Njuki, and Pascal Sanginga

Background

An initial study was conducted to inventory PM&E methods being applied by different organizations and within the Regional Research centers of the Kenya Agricultural Institute (KARI). The centers surveyed Kisii, Mtwapa, Kakamega, Embu and Kitale. A total of twenty projects / programs were reviewed between January and March 2004, with an average of four projects per center. The objectives of the study were to assess the critical issues, opportunities, and gaps in existing PM&E systems, and to document lessons and experiences, as a strategy for developing an appropriate strategy for intervention.

The review found that a majority of the scientists felt that they did not have the necessary skills and technical establish and support PM&E systems. Specifically, the scientists identified weaknesses in the following areas: Development of different levels of indicators: activities, outputs, outcomes, impact, processes and approaches; Skills in integrating equity and gender considerations into the process; skills in how to involve different stakeholders in PM&E process; and Lack of skills in data collection, analysis, data interpretation and use.

In this regard, a training workshop was held in March 2003 in Embu, Kenya.

The objectives of the workshop were to

i) Develop a common understanding of the concepts and principles of PM&E
ii) Strengthen the skills of participants in developing a PM&E performance frameworks for projects
iii) Develop skills in engaging different stakeholders and communities in developing the PM&E systems
iv) Skills in developing local concepts for M&E and Use of graphics
v) Strengthen skills for supporting PM&E systems, such as facilitation and communication skills
vi) Develop Action Plans for implementation of PM&E in selected projects

Overview of the course

A total 27 scientists from five centers (representing 3 per center) attended the workshop. The participants were representatives from five Kenya Agricultural Research Institute (KARI) centers Kisii, Mtwapa, Kakamega, Embu and Kitale; Kenyatta University; Farm Africa; Ministry of Agriculture Extension staff; CIAT-Arusha; and CIAT-Uganda.

The capacity building included the following topics: (i) The key steps in establishing and supporting PM&E systems (see Box 2). (ii) Identification of different stakeholders and their roles in the PM&E process (including farmers, other community members, etc). (iii) Strategies on developing appropriate qualitative and quantitative indicators. (iv) Integration of gender and equity issues into the PM&E process. (v) Facilitation skills for scientist/ farmer/other stakeholder interactions. (vi) Capacity building for data analysis in PM&E at different levels. (vii) Data management, analysis, interpretation and use, this would include synthesizing PM&E data to facilitate its use for decision-making at different levels and to provide feedback and learning.

Box 2
Key steps in establishing PM&E systems

1. Identifying and engaging stakeholders
2. Building stakeholders capacity for PM&E
3. Defining and agreeing on what to monitor and evaluate: objectives
4. Developing and formulating Indicators
5. Gathering Information
6. Managing and analyzing data
7. Reflection, Sharing and using results of PM&E
8. Learning and Change; Closing the loop

A Field Activity was organized for the participants with the aim of equipping them with practical skills to establish PM&E systems and to facilitate farmers to identify changes they expect from R&D projects, stimulate the community to start thinking about M&E in their projects, identify indicators to track these changes, disaggregated by gender and develop locally appropriate tools for collecting, analyzing, reflecting and utilizing the information. Other skills incorporated in the field activity were planning and reporting PM&E field activities and reflecting on what had worked, what had not worked and making corrective adjustments.

Results

a) Development of Action Plans

During the training workshop, each center team started on the development of action plans to incorporate PM&E in the selected pilot projects at the center. Some of the activities integrated in the action plans include, stakeholder analysis and stakeholder engagement, developing objectives and results at different levels (outputs, outcomes, impacts and processes, engaging communities in PM&E, systematic collection of baseline data, data collection and analysis, PM&E review meetings among others. The action plans were further developed after the training workshop to include budgets.

b) Implementation of the PM&E action plans

- **Mentoring and practical training at the center level to strengthen skills and knowledge**

The mentoring and practical training activities have been implemented in three of the centers (Kisii, Mtwapa, and Kitale). These activities have been implemented in a step-by-step process that has involved both classroom and practical training activities for the project teams, made up of research scientists, NGOs, Ministry of Agriculture extension staff and other partners. To ensure appropriate scaling out to other projects at the centers, training activities have involved all the scientists at the center.

- **Development of PM&E frameworks**

Each of the project implementation teams of the pilot projects developed a PM&E framework that included expected results at different levels (outputs, outcomes, impacts), processes, activities, and their indicators; targets for their indicators, frequency of measuring the indicators and baselines for the indicators where this was available. Some of the indicators had baseline collected earlier during previous surveys, from literature and from key informant interviews while others did not. In cases where baselines do not exist, activities are now underway to develop tools to collect this data.

Participation in training events related to PR.

Date	City & Country	Event	Participating Institutions	No. of Participants
Oct. 6-10/03	Colombia, CIAT-Cauca.	Participatory methodologies for interacting with community organizations (Kellogg Networks)	- Kellogg Foundation - World Vision- Haiti - Cbenteotz A.C. - Presidency, Municipality of Tepuxtepec, Mexico - SINERGIA A.C. - U. of Chapingo, Mexico - Commonwealth of Yeguare, Honduras - EAP-Zamorano, Honduras - Botacoes Foundation, Colombia - U. of Caldas, Colombia	22
Oct. 8-9/03	Cochabamba, Bolivia	Workshop on methodologies for identifying and prioritizing demands for technological innovation in Bolivia	- Ministry of Agriculture - PROINPA - PRODII - Office of the Mayor of Llallagua - APPLA - PADEM - CIOEC - IDS - FODUR - INNOVA - CEDES - FAO - PROTAL - PNS - IIAV - PROSUKO - CCIMCAT - AMDECO - CPP - ATICA - FDTA-Valles - ASAR - CARENAS - IRD	44
Nov. 10-15/03	Cochabamba, Bolivia	Methodologies for PR	- FODUR - Diogracio Vides Intercommunity Rural Organization - FOCAM - PROINPA Foundation - ASAR	30

Date	City & Country	Event	Participating Institutions	No. of Participants
			- FDF - Agrocentral, Chuquisaca - AFRUTAR - MAPA Project - FDTA-Valles - CIAT-Bolivia - MEDA - CEDES - ANAPO - AGRISEC	
Jan. 5-10/04	Kinshasa, Democratic Republic of Congo	Baseline study design for the Congo Livelihood Improvement and Food Security Project	- CIFOR - ICRAF - CIAT - Innovative Resources Management - U. of Kinshasa - INERA - Ministry of Agriculture - INADES - Avocats Verts	25
Feb. 1-5/04	Hai, Tanzania	Community training in leadership, team building and gender	Hai District Agriculture & Livestock Development Office	18 men and 16 women.
Feb. 23-27/04	Bulindi, Uganda	Integrated agroenterprise project design	- NARO - AFRICARE - National Agricultural Advisory & Development Services (NAADS) - HODIFA (Hoima District Farmers' Association), Africa 2000 Network - CIAT - Local Government	18
Mar. 3-5/04	Cochabamba, Bolivia	Reflection and analysis of participatory methodologies	- PROMMSEL - PROINPA - PROSUKO - RC-CAD - PRODII - CIAT - JAINA - SEDAG TARIJA - ASAR - Diogracio Vides Intercommunity Rural Organization - FDF	31

Date	City & Country	Event	Participating Institutions	No. of Participants
Mar. 23-26/04	Hai, Tanzania	Market chain analysis	- Hai District Agricultural Development Office - World Vision-Sanya - Agricultural Development Programme - TIP - Ministry of Agriculture - Faida Mali - CIAT	15
Mar. 29-Apr. 4/04	Embu, Kenya	National training workshop on establishing and supporting PM&E systems	- KARI - Ministry of Agriculture - FARM-Africa - Kenyatta U. - ECABREN	25
Apr. 12-16/04	Monteagudo, Bolivia	Workshop on training in PM&E of the Commonwealth of El Chaco Chuquisaqueño	- URPSFXCH - PROINPA - PRODEISMACH - MATEC - HAMM - San Roque Cooperative - PROSAT - MMCH - DEPROA - CETEP - HAMH - ASOGAM - ASOFRAM - APROFRU - APAJIMPA - AMPROM - AFRUMO	43
May, June, & Sept./04	Kitale, Mtwapa, and Kisii, Kenya	Regional workshops on establishing and supporting PM&E systems	- KARI-Kenya - Ministry of Agriculture - VI Agroforestry Project - Kwale Rural Support Project Kenya - CIAT-Uganda - CIAT-Malawi - CIAT-Tanzania - NARO-Uganda	112
May 6-7/04	Arusha, Tanzania	Design of PM&E systems for ECABREN	- Selian Agricultural Research Institute - Hai District Agricultural Development Office - ADRA - Farm Africa - ECABREN - CIAT	15

Date	City & Country	Event	Participating Institutions	No. of Participants
May 11-12/04	Quito, Ecuador	Workshop on learning alliances in rural innovation	- TUCAYTA - DIPEIB-C - World Neighbors - CEMOPLAF - Humanistic Movement - MACRENA - FUNAN - MAG - IIRR	19
June 23/04	Colombia, Valle	Training in participatory evaluation of forages for producers from Roldanillo,Valle	- INTEP of Roldanillo. - National U. of Palmira - UMATA of Roldanillo - Producers from the region	18
June 25-July 1/04	Lilongwe and Kasungu	Community training in leadership, team building and gender	- Plan Malawi - Lilongwe Agricultural Development Division	52 men and 35 women
July 5-10/04	Moshi and Lushoto Tanzania	Community training in leadership, team building and gender	- Traditional Irrigation & Environmental Program	24 men and 8 women.
July 12-16/04	Cochabamba, Bolivia	Workshop to systematize experiences in participatory methodologies	- PRODII - JAINA - AGROCINTI - INNOVA - PROINPA - FDF - UMSS graduate program - PROSUKO - TRADES - CAD	27
Sept. 20-29/04	Jinja, Uganda	Training in facilitation skills	- TIP & Hai Tanzania - Plan Malawi - LADD Malawi - AFRICARE Uganda - A2N Uganda Bulindi NARO Uganda	22
Oct. 25-29/04	Nairobi, Kenya	Managing and analyzing data from PR	- KARI-Kenya	18
TOTAL		**19**	**152**	**637**

OUTPUT 4. MATERIALS AND INFORMATION ON PARTICIPATORY RESEARCH APPROACHES, ANALYTICAL TOOLS, INDIGENOUS KNOWLEDGE AND ORGANIZATIONAL PRINCIPLES, DEVELOPED

Project: Exchange and comparative study on managing the resources in hillside communities between the Andean countries and the Yunnan Province in China; The Japan Program through the Inter-American Development Bank, Ecuador, May 17-20, 2004

Second joint workshop on comparative studies on managing community resources, Riobamba, Ecuador

Researcher: Carlos Arturo Quirós T.[78]

Background

The Japan Program was created to increase the exchange of knowledge between Latin American countries and Asia. In this way the people of the Andes will have the opportunity to share and learn the best practices of their Chinese colleagues for managing the hillsides. Thus the hillside communities of the Andes will have the challenge of deciding whether to transform their traditional practices and possibly receive great benefits from the experiments and experiences accumulated by the researchers and farmers from the Yunnan Province, China, on managing hillside resources. Through these Workshops, a study tour in hillside areas in Yunnan, and fieldwork in the Andes, basic collaboration among institutions, researchers and farmers from China and the Andean countries will be in a position to construct new ideas and will have the opportunity to learn from others.

From 23-28 of February the first meeting was held in Yunnan (see respective report); and as planned, the second workshop was held in the city of Riobamba, Ecuador from 17-20 May. This workshop was organized to continue with the motivation for a greater exchange of information, taking into consideration the experiences obtained in the different study tours in the aforementioned countries. In all the events there were six technicians and farmers from China as well as six technicians and farmers from the Andean countries of Bolivia, Ecuador and Colombia besides other local agricultural and livestock authorities.

Objectives

The project in general seeks the following objectives:

- Establish a collaborative association for institutions and individuals in hillside agriculture among researchers and farmers of the Andes (Bolivia, Ecuador and Colombia) and Yunnan, China

[78] Project Leader - IPRA Project – CIAT - Colombia.

- Exchange and better understand experiences and lessons learned about leader communities in NRM in hillsides of Yunnan, China and in the Andean countries
- Improve NRM in hillside communities in the Andean countries by means of extension techniques and policy recommendations through studies on NRM in hillside communities
- Implement a pilot project in Ecuador and another in Bolivia based on the experiences and the exchange of knowledge with the people of Yunnan.

Participants:

Country	Participant	Institution
Ecuador	Jorge W. Rios	Dept. of Agriculture and Livestock
	Angel Vaca	Dept. of Agriculture and Livestock
	Nelzon Mazón	INIAP Legumes
	Carmita Gadvay	INIAP, UVTT-Chimborazo
	Jesus Zambrano	Center of Social Assistance, Julian Quito
	Pedro Oyarzun	Centro for Research and Facilitation of Development
	Maria E. Samaniego	Polytechnic School of El Chimborazo
	Nelson Montufar	Ministry of Agriculture and Livestock (MAG)
	Remigio Garzón	MAG-Sierra, Planning, Monitoring and Evaluation
	Bolivar Garrido,	MAG
	Cornelio Tello,	MAG
	Fernando Pazmiño	MAG
	Margarita Naranjo	UOCE, Union of Ecuadorian Small Farmer Organizations
	Alfonso Villareal	CIAL 11 de Noviembre, farmer
	Hilaria	CIAL Flor Naciente, woman farmer
	Fausto Magin	CIAL Flor Naciente, farmer
	Marcia Montenegro	CIAL Flor Naciente, farmer
	Maria Gutierrez[1]	CIAL 11 de Noviembre, woman farmer
	Fausto Merino[2]	Deputy Secretary, MAG
Bolivia	Magali Salazar	PROINPA
	Juan Ruiz	CIAL Piusilla, Farmer
Colombia	Vitelio Menza[3]	Farmer from Colombia
	Carlos A. Quiros[2]	IPRA/CIAT Project
China	Zhang Xuemei	College of Humanities and Development (COHD), China Agricultural University
	Zhou Shenkun	Center for Integrated Agricultural Development (CIAD)
	Dong Hairong	China Agricultural University
	Lu Min	China Agricultural University
	Dong Tiantan	Director, Farmer Association in Luquan County
	Maria Verónica Yépez	Consultant, IBD-Washington DC, USA
	Carlos V. Martínez	Coordinator, BID-Ecuador
	Kaia Ambrose	Andean Mountain Chain Project, Carchi
	Steve Sherwood	World Neighbors

[1] Farmers (men & women) who participated in the first workshop in Yunnan.
[2] Technician participating in the first workshop in Yunnan.
[3] Farmer participating in the study tour in Colombia.
[2] Project Leader - IPRA Project – CIAT - Colombia.

Development

After the presentation of the participants and the welcome addresses by the local authorities and MAG officials, several different presentations were made related to the policies of the governmental agricultural and livestock institutions that operate in Ecuador. Afterwards some results were presented of community projects implemented in hillside zones and with participatory methodologies. The presentations were as follows:

Talk	Speaker	Position
General information on agriculture in Ecuador	Jorge Ríos Lucero	Official, Regional Office of the Sierra, MAG
Agriculture and livestock policies and strategies of MAG	Remigio Garzón	Official, Regional Office of the Sierra, MAG
Experiences in participatory research	Carmita Gadvay	National Autonomous Institute of Agriculture and Livestock Research, INIAP
Agricultural and livestock development with a participatory focus in Ecuador	Fausto Merino	Regional Office of the Sierra, MAG
Summary of the lessons learned by the Andean countries delegation in China	Carlos A. Quirós T.	IPRA/CIAT Project
Summary of the experiences of the Chinese delegation in Ecuador	Zhang Xuemei	COHD, Agricultural University
Summary of the experiences of the Chinese delegation in Bolivia	Zhou Shenkun	CIAD
Catalyze the endogenous potential: Agricultural innovation in the era of modernization	Steve Sherwood	World Neighbors
Learning alliances for rural innovation	Kaia Ambrose	Consultant, IPRA/CIAT Project

Lessons learned and central topics

By the delegation of the Andean countries in China

- The pressure due to population growth and the need for food have forced the State to increase agricultural production via the equitable distribution of lands, strong government support and projects for agricultural and livestock innovation.
- Leaders elected by their communities and with specific functions in agricultural production make it easier for organizations to establish linkages with the communities and carry out projects with high impact
- Projects with strong market links and viable technologies can implement drastic changes in the production of the rural communities.

- The great majority has television, but it was not clear whether they are using this mass medium to promote technological changes.
- Despite the fact that the regime is quite rigid in its policies, the collective management of forests that they have implemented merits further study in order to obtain greater knowledge that could be replicated in the Andean zone.
- It would be easy to initiate participatory processes where the small farmers can contribute much more of what they are doing today, given the Government's openness in this respect.
- The system of working with local trained intermediaries has given successful results.
- The intensive use of resources is an example for Latin American farmers.

Possible applications in the Andean zone

- Management and technology for organic production
- Learn more about and adapt the system of local intermediaries for the market
- Adaptation of the technology for intensifying horticulture
- Study, adopt and apply the collective management of natural resources
- Application of the management systems and use with terraces for intensive agriculture

By the Chinese delegation in Ecuador

- The formal research institutions have been extensively involved in participatory research for a long time.
- The CIALs combine their methodology with participatory plant breeding.
- Rural agroenterprises have been developed.
- More women participate in the projects.
- The women could express themselves very clearly without any shyness when interacting with the visitors.
- The farmers have their own criteria for evaluating their products: plant height, color, cooking time, taste and market demand.
- They were efficient in the presentation of their projects to the visitors, using mock-ups (small models of their fieldwork) and with the field practice.

Recommendations

- Combine the CIAL methodology with that of the farmers field schools
- The MAG should try to influence other institutions so that they implement participatory methods in their rural development work
- Introduce new varieties of short-cycle forages and feed with local materials such as potatoes, maize and plantain
- Expand the topics for action; e.g., vegetables and medicines
- Support microcredit, important for those farmers that have new ideas and motivations
- Identify sources for financing microcredit; e.g., the communities themselves and national and international organizations

Aspects that require collective action

- The control of pests and diseases merits collective action among the neighbors in the community.
- The communities are trying to introduce new varieties of vegetables that will enable them to replace the potato crop or to rotate with potatoes.

For discussion

- Who should change? Should INIAP's work focus on food security for resource-poor farmers with no access to formal research?
- What are effective and efficient mechanisms, methodologies and principles for meeting said needs?

By the Chinese delegation in Bolivia

Problems in NRM

- Highlands: less than 10% covered by forests, 350-400 mm (average annual rainfall)
  - ✓ Drought/water storage
  - ✓ Salinity of soils
  - ✓ Erosion of soils by wind and water
- Valleys: coverage of forests = 35%, 500-700 mm (average annual rainfall)
  - ✓ Erosion of soils
  - ✓ Plant diseases

Possible solutions

- Improvement of agriculture in:
  - ✓ Irrigation
  - ✓ Adoption and development of technology
  - ✓ Systems of forages and legumes for livestock
  - ✓ Rotation of crops to maintain fertility
- In NRM
  - ✓ Reforestation and planting of forages
  - ✓ Control of soil erosion
  - ✓ Construction of terraces
  - ✓ Collective actions
  - ✓ Capacity building

Topics for discussion

- Community use; public protector
- Role of the government in NRM: projects, policies and monitoring
- Groups of researchers farmers, CIAL/community

- Mechanisms for public and private funds
- NGOs and donors
- Integration of indigenous and scientific knowledge
- Technology: sustainable management of the land (improve fertility in the long term: organic and chemical fertilizers)
- Exchange of learning
- Links with the market (supply of information on markets for the farmers)
- Capacity building in the communities
- Financial services: credit programs
- Integrated support: agriculture, education, health, culture, etc.

Discussion and contributions to the pilot projects in Ecuador and Bolivia

Pilot Project in Ecuador. This would be for implementing in the CIAL community "11 de Noviembre." It is based on the planting of community forest nurseries with native and introduced species. The main objective of this project would be to make available sufficient material for supplying the community for reforestation, planting as windbreaker barriers and recovery of gullies.

- Construction of windbreaker barriers with native species in all the farmers' plots in the community
- Utilization of exotic species at the foot of the gullies
- Sale of plants to the municipalities as part of the mechanism for obtaining resources for the group
- Begin with a nursery of 30,000 plants
- 10,000 for sale to other communities
- 20,000 for sale in the community itself

Actions required for completing the proposals

- Identification of the native and exotic species to be used
- Learn more about China's experiences to make the necessary adaptations
- Sound out the communities and municipalities on species that they would be interested in acquiring
- Once the species are identified, we need to know their management and use
- Secondary information based on local experiences in this regard: community nurseries and management of the species
- Verify the production costs
- Send the project proposal to Veronica Yépez with a copy to Carlos Quirós.

Pilot Project in Bolivia. In this case it is necessary to focus it a little more; nevertheless, taking advantage of the presence of the farmer Juan Rios from the farmers' group in Piusilla, progress was made in this regard. Officials of the Chinese delegation also participated actively. The central topics of the project will be:

- Construction of terraces with *Phalaris* grass in zones where there is irrigation and on the properties of the 13 members of the group
- Use of the grass to feed cattle and to be sold to the rest of the community as mechanism of self-sufficiency

Actions to be taken. According to information from the Bolivian technicians, there are still various ideas on the topic for the pilot project that need to be worked out with the group of farmers:

- Prioritize "the topic" for the project; should be relevant for the Japan–IDB project, as well as for the community
- Implement a more detailed action plan
- Prepare chronogram of activities
- Prepare final budget
- Send proposal to Verónica Yépez with copy to Carlos Quirós
  - ✓ Chinese Commission

Ideas for a possible Phase 2 of the project

Brainstorming

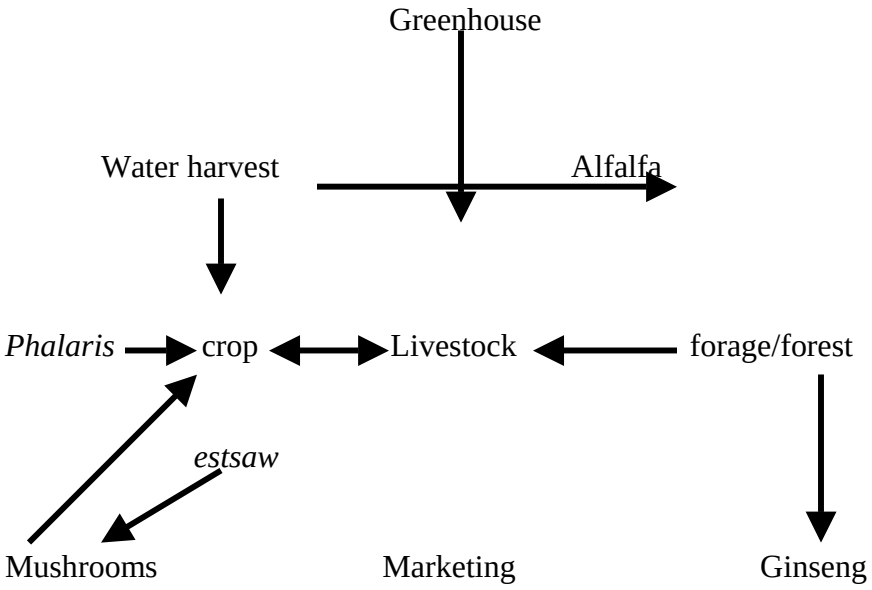
- Support conservation of natural resources
- Community management of forests
- Take advantage of the community organization to implement agroforestry
- Utilize nontimber resources
- Establish a network in order to share strengths and address weaknesses in NRM
- Classify soils by use based on technicians' and local criteria
- Diversify crops based on vegetables for consumption and sale
- Promote and revaluate Andean products for improving nutrition
- Analyze the possibility of acquiring knowledge on water management and harvesting (collecting)
- Train the communities in market transactions to connect them better with the market centers and transform their products to give them added value
- Implement participatory municipal planning–development for a real connection between the rural communities and their municipalities
- Disseminate information such as the system of credit for production

Suggestions for a possible second phase of the project

- Identification and prioritization of topics for the future project
- A commission should travel to China to get more in-depth information on the topics of relevance for the Andean countries on technology and methodology to be used (videos, manuals, documents, study tours, etc.)
- Visit of Chinese experts, technicians or farmers to the Andean zone to train the project executors

- There should be a component of very fluid communication during project execution by the project coordinators via Internet, telephone or fax

Scheme suggested by the Chinese delegation



Articles submitted

Introducing integrated *Striga hermonthica* control into northern Nigeria. 1. An evaluation of a participatory research and extension approach[79]

By Boru Douthwaite[80], Steffen Schulz[81] and Adetunji S. Olanrewaju[82]

Abstract

The evaluation presented in this paper found that a participatory research and extension (PR&E) approach improved farmers' knowledge of integrated *Striga* control (ISC) options, changed their perceptions, and led to adoption and adaptation of approaches to control *Striga*. On average, farmers adopted 3.25 different ISC options from a basket of six. Adoption jumped from 44 farmers in four research villages to more than 270 farmers in 16 villages and hamlets in three seasons. Large differences existed in the adoption rates and modifications made, reflecting correspondingly large differences in the socioeconomic and agroecological conditions among the four research villages into which the ISC options were first introduced. These differences show the value of an extension system that allows farmers to discover what works best for them. Modified farmer field school (FSS) training was essential in explaining the reasons for new management practices. Improved germplasm, in particular a new soybean variety, gave the quick benefits necessary to maintain farmers' interest and participation. Given that farmers are likely to overestimate adoption in questionnaire-based surveys, the construction of land-use maps is a more reliable measure. Adoption rates were highest when the FFS helped farmers learn more about innovations of which they already had knowledge. In this case the project was catalytic in bring about adoption but could not attribute all the impact of that adoption to its investments.

[79] Submitted to Agricultural Systems.

[80] PhD. Agriculture - Technology adoption and impact specialist - CIAT Project IPRA – Colombia-

[81] Participatory Research Specialist & Agronomist – International Institute of Tropical Agriculture – IITA Intercooperation (SSMP), GPO Box 688, Katmandu, Nepal

[82] International Institute of Tropical Agriculture, Oyo Road, PMB-5320 Ibadan, Nigeria

Introducing integrated *Striga hermonthica* control (ISC) into northern Nigeria. 2. Impact on farmers' livelihoods[83]

By B.Douthwaite[84], A.S. Olanrewaju[85,] J. Ellis-Jones[86] and S. Schulz[87]

Abstract

This study finds that integrated *Striga* control (ISC) technologies and practices have expanded beyond the experimental plots in participating farmers' fields in four research villages in Northern Nigeria. Adopting farmers have enjoyed significant improvements to their livelihoods, largely through selling surplus ISC soybeans in the market. The project's introduction of ISC soybeans contributed to an increase in area planted to this legume. Benefits included new tin roofing, capacity to buy more fertilizer, lessening the burden of sending children to school, reduction in *Striga* and the labor needed for weeding it, better family nutrition, new clothes for the Muslim festival of Ramadan and other luxuries. Women in most adopting households were selling food products based on soybeans, and the additional production helped their microenterprises. Other ISC components such as ISC maize and cereal-legume rotation contributed to impact, but were less important. Resource-poor and intermediate farmers were more likely to adopt than resource-rich ones. The main constraint to adoption of ISC is the increased labor requirement for planting soybeans and maizes at two or three times the traditional plant densities. Overall, farmers' and researchers' estimates of amount of labor required varied a great deal. More dialogue between farmers and researchers about labor requirements would allow the co-development of new technologies that are much better adapted to real labor constraints.

[83] Submitted to Agricultural Systems.

[84] PhD. Agriculture - Technology adoption and impact specialist - CIAT Project IPRA – Colombia-
[85] International Institute of Tropical Agriculture, Oyo Road, PMB-5320 Ibadan, Nigeria
[86] Silsoe Research Institute, Silsoe, Bedford, England
[87] Participatory Research Specialist & Agronomist – International Institute of Tropical Agriculture – IITA Intercooperation (SSMP), GPO Box 688, Katmandu, Nepal

IPRA launches Enl@ceCIAL—Everything about the CIALs in just one click

Researcher: Jorge Luis Cabrera[88]

Background

Figure 1. Enl@ceCIAL Home.

The experiences of the CIALs in Colombia, Ecuador, Bolivia, Honduras and Nicaragua have been recorded and documented since their beginning in 1990 through a database containing the results of the research developed by the farmers and supplied by many technicians from institutions in Latin America.

Although the authors and principal beneficiaries of this information are the farmers, they are precisely the ones who have the least access to it due to factors such as their limited access to Internet in the rural areas and the plane, not very didactic design, characteristic of the programs for administering databases, and the lack of training in handling this type of application.

In mid-2004 the IPRA Project decided to take all the information stored in its database and convert it into a tool for online consultation that will soon be housed in the CIAT web site. Enl@ceCIAL was born with the purpose of making all the information that small farmers have generated in other Spanish-speaking countries available to their counterparts. This online tool is also a recognition of the rural communities that have believed in the CIAL methodology and through it have developed scientific research of importance for their localities.

On the other hand, Enl@ceCIAL is a tool that can help many research and rural development institutions learn about the farmers' criteria for selecting technologies. It can also be a source of information with respect to the generation and adaptation of technologies by the farmers[89] themselves that could be taken advantage of and disseminated by the development programs.

What will you find in Enl@ceCIAL?

This new tool offers a design that combines animation, photographs, testimonies and graphics about the projects and the farmers' research results so that navigating it becomes a clear, simple and inviting experience.

The user will find three types of information: institutional, consultations and input.

[88] Documentation center – IPRA Project
[89] It is understood throughout the text that there are both men and women farmers.

Figure 2. NotiCIAL, where user can find updated news about CIALs.

Institutional

The menu addresses questions of interest such as: What is a CIAL? and How do the CIALs conduct research? There are also other links such as:

- ✓ A light of hope. The user is invited to support these farmer-researchers economically so that they can continue with their work and continue benefiting their communities.
- ✓ Testimonies. Visitors have the possibility of learning through the live voices of these small farmers about the results reached through their CIALs, and the importance and meaning that it has for them and their communities to have a committee in their locality.
- ✓ Training and consultancies. Offers the visitors training in the form of workshops and theoretical-practical courses, by means of which the CIAL methodology and participatory diagnosis and evaluation are disseminated.
- ✓ Contacts. Provides the visitor to the site with the names of people with whom they can interact in each country, as well as their professions, emails, telephone numbers and physical locations, with the idea of facilitating the process for the user of deciding whom to contact.

This information provides a context for a visitor who may not be familiar with the CIAL methodology and the impact of the research done by the committees in their villages.

Consultation

This is where the greater part of the information that was previously stored in the old database is available. It is here where the user has the didactic support of a demo that indicates the different paths for consulting so that they can access the information of their interest. These are:

Figure 3. This tool offer four ways to look for information about CIALs research.

Figure 4. How to look for information through country.

- ✓ By country. This option permits the users to select the country of their interest from among Colombia, Ecuador, Bolivia, Honduras and Nicaragua; and within these, the province, state or specific locality that they wish to access. Then the tool gives a list of committees that operate in the zone selected by the visitor and also provides detailed information on each CIAL. (Figure 4)

Figure 5. How to look for information through different altitud.

✓ By altitude. Here the user can develop his/her search based on the criterion of altitude, which offers the options warm, temperate, cold and paramo. Depending on their selection, the tool again generates a list with the names and principal characteristics of the CIALs existing in these regions. (Figure 5)

Figure 6. How to look for information through different kind of crop researched by CIALs.

By crop. This alternative provides the visitor with the names of the crops being researched by the farmers through their CIALs, organized in alphabetical order. The visitor selects the letter corresponding to the first letter of the name of the crop of their interest so that the tool generates as a result all the crops whose name begins with the letter selected as well as the CIALs that have done research on them. (Figure 6)

Figure 7. How to look for information through topics like organic manures, adaptation, diseases or small animals.

- ✓ By topic. This path offers the user the opportunity of selecting among the different topics that have been researched by the CIALs with the greatest frequency, such as organic manures, adaptation, diseases or small animals. Once the user makes his/her selection, the list of committees with experience in the selected topic is shown. (Figure 7)

Figure 8. How to select different options using advanced search.

- ✓ Advanced search: This option offers the visitor the possibility of using criteria such as country, altitude, crop and topic simultaneously. When the user has selected options in each criterion, the tool generates a list of the CIALs that meet with all the criteria. (Figure 8)

Input

Just as the old database was continually being updated by the IPRA Project, once this tool is available on line, the continual updating of it will be the responsibility of the officials of the national research institutions in each of the five countries where there are CIALs.

To comply with this responsibility, the researchers designated by the national research institution in each country (technicians, paraprofessionals and professionals working with the CIAL Committees) will receive training from the IPRA Project in how to manage the online tool. Each one will have a user name and password in order to be able to access the folders that contain the information on their country and update it opportunely.

Figure 9. Banner of the Web site with login to CIALs database update format.

Once the designated researcher inputs his/her user name and gives the password, he/she can input new information and modify the existing data in the tool in order to update it.

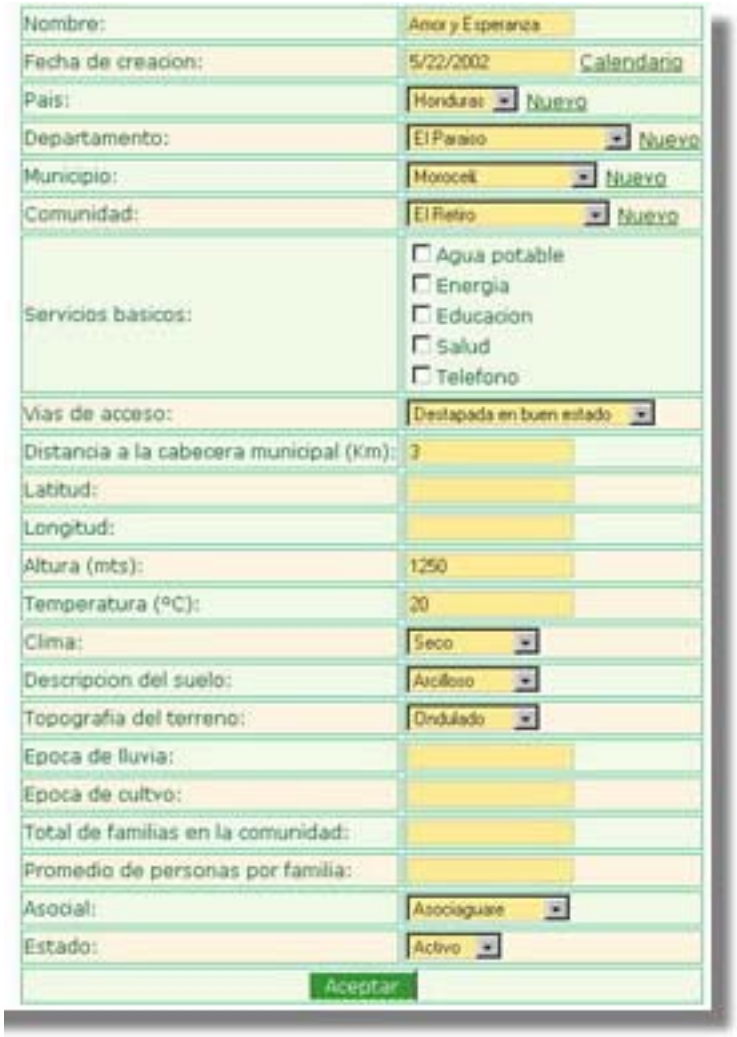


Figure 10. Format to update CIALs database.

This tool offers the possibility of:

- Editing the characteristics of a CIAL
- Inputting the names of the entities that support the committees
- Recording the names and the positions that the farmers hold in each CIAL
- Adding the diagnosis, trials, evaluation and results of each experiment that the farmers conduct for each CIAL

Where is Enl@ceCIAL headed?

Initially, this online tool appears to be a product limited by design concepts such as its style of informative, unidirectional communication, where the farmers' participation is limited to consulting it. However, Enl@ceCIAL is an invitation to exchange information, share knowledge, and participate in the generation of the content that feeds into this tool. Proof of this is that this product has a newsroom, called NOTICIAL, where the actors are the farmers and their communities through the opportune online publication of the activities, events, accomplishments and all those new and novel facts that could prove interesting for farmers and institutions in other countries.

To publish this information, the farmers can get support from the technicians, paraprofessionals and professionals that work with the communities and who also have the responsibility of inputting the content of their respective country in this online tool.

At the moment, this tool has the capacity to consult data referring to the crops that are being studied by the CIALs. In the near future, it will be in a position to offer the users a directory of entities and professionals whom the farmers can consult via email to help them resolve their particular and specific concerns.

Presentations given by IPRA members in workshops and/or seminars at the local or international levels

Date	Place	Topic	Presentations	Person
Nov./03	Cochabamba, Bolivia	Participatory diagnosis	Workshop on identifying and prioritizing demands	Carlos Quirós
Nov./03	Cochabamba, Bolivia	Evaluation of technologies with producers	Workshop on identifying and prioritizing demands	Carlos Quirós
Feb./04	Yunnan, China	PR in the Andes	Exchange and comparative studies on hillside resource management between Andean region and western China	Carlos Quirós
Feb. 19-20/04	Kampala, Uganda	Integrated agricultural research For development: Enabling rural innovation in Africa	Parliamentarians meeting, CGIAR-Uganda	Pascal Sanginga &Roger Kirkby
Mar. 7-13/04	Ouagadougou, Burkina Faso	PR approaches and scaling up	Increasing nutrient and water-use efficiency to improve rural livelihoods in the Volta Basin	Pascal Sanginga
May 17-22/04	Yaounde, Cameroon	Adding value to integrated soil fertility management with PR approaches and market-opportunity identification	International Symposium of the African Soil Fertility Network of the Tropical Soil Biology and Fertility Institute	Pascal Sanginga
June/04	Riobamba, Ecuador	Study tour on managing resources in mountainous zones in the Yunnan Province, China	Exchange and comparative studies on hillside resource management between Andean region and western China	Carlos Quirós
Aug. 9-13/04	Oaxaca, Mexico	Strengthening social capital for improving decision-making and managing conflicts in NRM	The Commons in the Age of Global Transition, 10th Congress of the International Association of Study of Common Property	Pascal Sanginga
Aug. 14-16/04	Oaxaca, Mexico	Minimizing conflicts in NRM: The role of social capital	IDRC Workshop on Common Property: "From Theory to Practice and Back Again"	Pascal Sanginga
Sept. 1-4/04	Entebbe, Uganda.	Enhancing innovation processes and partnerships.	Conference on Integrated Agricultural Research for Development: Achievements, Lessons Learned and Best Practices (NARO)	Kaaria, S., R. Kirkby, R. Delve, J. Njuki, E. Twinamasiko, P. Sanginga.
Sept. 1-4/04	Entebbe, Uganda	Linking farmers to markets: The case of the Nyabyumba potato farmers	Conference on Integrated Agricultural Research for Development: Achievements, Lessons Learned and Best Practices (NARO)	Charles Musoke, Josephat Byaruhanga, Philip Mwesigwa, Charles Byarugaba, Elly Kaganzi, and Rupert Best
Sept. 20-23/04	Uganda	Applying PM&E systems to strengthen learning, assess progress, impacts and build in corrective loops into innovation processes	Rockefeller Foundation Grantees Workshop: Enhancing Soil Productivity in East and Southern Africa	Susan Kaaria

Date	Place	Topic	Presentations	Person
Sept. 20-24/04	Nairobi, Kenya	Legume management: From process to market-led research	Rockefeller Foundation Grantees Workshop: Enhancing Soil Productivity in East and Southern Africa	Delve, R.J
Sept. 24-27/04	Nairobi, Kenya	Empowering communities to develop natural resources-based agroenterprises for improved livelihoods	Development workshop for the ASARECA Competitive Grant System (ASARECA-CGS)	ERI Team
Oct. 12-15/04	Nairobi, Kenya	Various aspects of enabling rural innovations	Integrated NRM in Practice: Enabling Communities to Improve Livelihoods and Landscapes	Pascal Sanginga, Susan Kaaria, Rob Delve, Roger Kirkby
Oct. 16-18/04	Nairobi, Kenya	Enhancing collective action processes in NRM: Tools and methodologies	Design workshop for CAPRi project	Pascal Sanginga
Oct. 20-22/04	Lilongwe, Malawi	Enabling rural innovation in Africa: Achievements and prospects	National stakeholder meetings in Malawi	Pascal Sanginga

List of publications written by members of the IPRA Project during the period Sept. 2003-Oct. 2004

Articles published:

Douthwaite, B.; Delve, R.; Ekboir, J.; Twomlow, S. 2003. Contending with complexity: The role of evaluation in implementing sustainable natural resource management. Int. J. Agric. Sustain. 1(1):51-66.

Ellis-Jones, J.; Schulz, S.: Douthwaite, B.; Hussaini, M.A.; Oyewole, B.D.; Olanrewaju. A.S. 2004. An assessment of integrated *Striga hermonthica* and early adoption by farmers in northern Nigeria. Exptl. Agric. 40:353-368.

Emechebe, A.M.; Ellis-Jones, J.; Schulz, S.; Chikoye, D.; Douthwaite, B.; Kureh, I.; Tarawali, G.; Hussani, M.A.; Kormawa, P.; Sanni, A. 2004. Farmers' perception of the *Striga* problem and its control in northern Nigeria. Exptl. Agric. 40:215-232.

Nyende, P.; Delve, R.J. 2004. Farmer participatory evaluation of legume cover crop and biomass transfer technologies for soil fertility improvement using farmer criteria, preference ranking and logit regression analysis. Exptl. Agric. 40:77-88.

Sanginga, P.; Chitsike, C.; Best, R.; Delve, R.J.; Kaaria, S.; Kirkby, R. 2004. Linking smallholder farmers to markets: An approach for empowering mountain communities to identify market opportunities and develop rural agroenterprises. Mt. Res. Dev. 24(4):288-291.

Papers presented at events

Delve, R.J. 2004. Legume management: From process to market-led research. Paper presented at the Rockefeller Soils Grantees Workshop (20-24 Sept., Safari Park Hotel, Nairobi, KE).

Delve, R.J.; Roothaert, R.L. 2004. How can smallholder farmer-market linkages enhance improved technology options and natural resource? Paper presented at NARO (National Agriculture Research Organization) Conf. on Integrated Agricultural Research for Development: Achievements, Lessons Learnt and Best Practice (1-4 Sept. Entebbe, UG).

Delve, R.J.; Roothaert, R.L. 2004. Linking farmers to markets, one approach for increasing investment in natural resource management. Paper presented at the AHI (African Highlands Initiative) Regional Conf. (12-15 Oct., World Agroforestry Center, Nairobi, KE.).

Kaaria, S.; Njuki, J. 2004. Strengthening institutional learning and change: Applying participatory monitoring & evaluation (PM&E) systems to strengthen learning, assess progress, impacts and build in corrective loops into innovation processes. Paper presented at the Rockefeller Soils Grantees Workshop (20-24 Sept., Safari Park Hotel, Nairobi, KE).

Kaaria, S.; Chitsike, C.; Njuki, J.; Sanginga, P.; Sangole, N.; Kaluwa, M.; Soko, L.; Pali, P. 2004. Strengthening community learning and change: The role of community-driven participatory monitoring and evaluation systems. Paper presented at the AHI (African Highlands Initiative) Regional Conf. (12-15 Oct. World Agroforestry Center, Nairobi, KE).

Kaaria, S.; Kirkby, R.; Delve, R.J.; Njuki, J.; Twinamasiko, E.; Sanginga, P. 2004. Enhancing innovation processes and partnerships. Paper presented at NARO (National Agriculture Research Organization) Conf. on Integrated Agricultural Research for Development: Achievements, Lessons Learnt and Best Practice (1-4 Sept. Entebbe, UG).

Kamugisha, R; Sanginga, P. 2003. Strengthening community bylaws for improving natural resource management and minimizing conflicts in the highlands of southwestern Uganda. Paper presented al the East African Soil Science Society Conf. Eldoret, KE. (25 slides)

Muzira, R; farmers'groups; Sanginga, P.; Delve, R.J. 2003. Enhancing farmers'participation in integrated soil fertility management research: Challenges with farmers'research groups in Kabale, Uganda. Paper presented at the East African Soil Science Society Conf. Eldoret, KE. 20 p.

Njuki, J.; Kaaria, S.; Murithi, F. 2004. Strengthening Participatory Monitoring and Evaluation processes in Kenya Agricultural Research Institute (KARI): Key strategies, challenges and preliminary results. Paper presented at the 9th KARI Biennial Conf. (8-15 Nov. Nairobi, KE)

Sanginga, P., Delve, R.J.; Kaaria, S., Chitsike, C.; Best, R. 2004. Adding value to integrated soil fertility management with participatory research approaches and market opportunity identification. Paper presented at the Intern. Symposium African Soil Fertility Network (15-22 July). Tropical Soil Biology and Fertility Institute, Yaoundé, CM.

Sanginga P.; Kamugisha, R.; Martin, A. 2004. Strengthening social capital for improving decision-making and managing conflicts in natural resources management. Paper presented at 10th Cong. Intern. Association of Study of Common Property (9-12 Aug., Oaxaca, MX).

Sanginga, C.P,; Kirby R. 2004. Integrated agricultural research for development: Enabling rural innovation in Africa. Paper presented at CGIAR-Uganda Parliamentarian Meeting (9-10 Feb.) IFPRI, Kampala, UG. (35 slides)

Articles submitted

Sanginga, P.; Chitsike, C.; Best, R.; Delve, R.J.; Kaaria, S.; Kirkby, R. Enabling rural innovation in Africa: An approach for integrating farmer participatory research and participatory market research to build the agricultural assets of rural poor. Submitted to Agric. Syst.

Sanginga, P.; Kamugisha, R; Martin, A. Strengthening social capital for minimizing conflicts in multiple common pool resource regimes. Lessons from the highlands of Uganda. Submitted to Mt. Res. Dev.

Sanginga, P.; Kamugisha, R.; Martin, A.; Kakuru, A.; Stroud, A. Facilitating participatory processes for policy change in natural resource management: Lessons from the Highlands of southwestern Uganda. Submitted to Agric. Agroecosyst. Environ.

Chapters in books

Almanza, J.; Salazar, M.; Gandarillas, E. 2003. Aplicación de metodologías participativas en microcentros de biodiversidad. In: Cadima, X.; Garcia, W. (eds.). Manejo sostenible de la agrobiodiversidad de tubérculos andinos: Síntesis de investigaciones y experiencias en Bolivia.

Fundación PROINPA, Alcaldía Coloma, Centro Internacional de la Papa, COSUDE (Agencia Suiza para el Desarrollo y la Cooperación), Cochabamba, BO.

Douthwaite, B.; de Hann, N.; Manyong, V.M.; Keatinge, J.D.H. 2003. Blending "hard" and "soft" science: The follow the technology approach to catalyzing and evaluating technology change. In: Campbell, B.M.; Sayer, J.A. (eds.). Integrated natural resource Management: Linking Productivity, the Environment and Development. CABI Publishing, Wallingford, UK. 15 – 36 p.

Opondo, C.; Sanginga, P.; Stroud, A. 2003. Monitoring the outcomes of participatory research in natural resource management: experiences of the African Highlands Initiative. In: Wettasinha, C.; van Veldhuizen, L.; Waters-Bayer, A. (eds.) Advancing participatory technology development: Case studies on integration into agricultural research, extension and education. IIRR /ETC Ecoculture/CTA Silang, Cavite, PH.

Quirós, C.; Douthwaite, B.; Roa, J.; Ashby, J. 2004. Colombia, Latin America and the spread of Local Agricultural Research Committees (CIALS): Extension through farmer research. World Bank Series :Vol. 3 No. 10-16.

Thiele, G.; Braun, A.; Gandarillas, E. 2004. Farmer field Schools and CIALs as complementary platforms: New challenges and opportunities. In: Campilan, D. (ed.). New challenges in farmer participatory research and extension approaches. UPWARD, Los Baños, PH. (In Press)

Gray literature

Almanza, J. 2004. S&EP, una herramienta para el fortalecimiento productivo de las organizaciones de agricultures.
Agronomist, Researcher for the pilot area of Colomi, FOCAM Project. jalmanza@proinpa.org

Building and sustaining quality partnerships for enabling rural innovation: Achievements and lessons from ERI. Economist/Participatory Research. Kawanda Agricultural Research Institute P.O. Box 6247 Kampala, Uganda. E-mail: s.kaaria@cgiar.org

Fernandez, J.; Fuentes, W. 2004. S&EP en la asociación de productores de aji y mani de Padilla. FOCAM Project - CIAT, Valles region, E-mail: j.fernandez@cgiar.org

Gandarillas, E. 2004. Innovaciones institucionales: El caso del S&EP en el marco del SIBTA. Agronomist, MSc, Development, Training and Education in Agriculture; National Coordinator of the FOCAM Project. e.gandarillas@cgiar.org

Polar, V. 2004. Problemas en el establecimiento de S&EP en el marco de los PITAs.
Agronomist, Researcher for the pilot area of the high Andean plateaus, FOCAM Project.
v.polar@cgiar.org

Sanginga, P.; Chitsike, C.; Kaaria, S. 2004. Enhancing gender inclusion, equity & social awareness: approaches, lessons and implications for watershed management. Rural Sociologist.
Kawanda Agricultural Research Institute P.O. Box 6247 Kampala, Uganda E-mail:
p.sanginga@cgiar.org

Sanginga P.; Kamugisha, R.; Martin, A. 2004. Minimizing conflicts in natural resources management: The role of social capital and local policies in Uganda. Final technical report to the East and

Central Africa Programme on Agricultural Policy Analysis, Kampala, UG. Rural Sociologist. Kawanda Agricultural Research Institute P.O. Box 6247 Kampala, Uganda E-mail: p.sanginga@cgiar.org

Sanginga P.; Kamugisha, R.; Martin, A. 2004. Strengthening social capital for improving policies and decision-making in natural resources management. Final technical report to the Natural Resources Systems Program. Rural Sociologist. Kawanda Agricultural Research Institute P.O. Box 6247 Kampala, Uganda E-mail: p.sanginga@cgiar.org

Training materials

Douthwaite, B. 2004. Guide to constructing innovation histories. CIAT, Cali, CO.

Fernandez, J.; Gandarillas, E.; Almanza, J.; Polar, V.; Fuentes, W. 2004. Guía para la implementación de un sistema de seguimiento y evaluación participativa a nivel de organizaciones locales de agricultores. (Being field tested)

Hernández, L.; Zapata, V.; Claros, E. Manual para facilitadores – El seguimiento y la evaluación participativa. CIAT/FOCAM, Palmira, CO. 82 p. (First Draft)

Kaaria, S.; Chitsike, C.; Njuki, J.; Sanginga, P.; Sangole, N.; Kaluwa, M.; Soko, L.; Pali, P. 2004. Community facilitators guide for establishing community-based participatory monitoring and evaluation systems.

Sanginga, P.; Chitsike, C. 2004. The power of visioning: participatory diagnostics and community planning: Building on assets and opportunities. CIAT, Kampala, UG. (CIAT-Africa Occasional Series, ERI Working Document 59)

Sanginga, P.; Chitsike, C.; Kaaria, S. 2004. Managing social processes and group dynamics in participatory research. CIAT, Kampala, UG. (CIAT-Africa Occasional Series, ERI Working Document 48)

Posters

Los Comités de Investigación Agrícola Local, CIAL, Un camino de experiencias para crecer. 25 Aug. 2004.

Musoke, C.; Byaruhanga, J.; Mwesigwa, P.: Byarugaba, C.; Kaganzi, E.; Best, R. 2004. Linking farmers to markets: The case of the Nyabyumba potato farmers in Uganda. Poster presented at NARO (National Agriculture Research Organization) Conf. on Integrated Agricultural Research for Development: Achievements, Lessons Learnt and Best Practice (1-4 Sept. Entebbe, UG).

Sanginga, P.; Opondo, C.; Kaaria, S.; Stroud, A. 2003. Grounding participatory monitoring and evaluation in agricultural research and development organizations in Eastern Africa. Poster presented at the AHI (African Highlands) Regional Conf. on Integrated Natural Resources Management:

CDs

Proc. 3rd national meeting of CIALs and PM&E

Proc. 1st workshop on establishing priorities

Proc. workshop-training course on participatory methodologies to suppliers of FDTA-Valles

Proc. 1st workshop on reflection and analyses with the participants of the first formal course on participatory methodologies

Proc. 2nd formal course in participatory methodologies

OUTPUT 5. IMPACT OF SN – 3 PROJECT ACTIVITIES DOCUMENTED

Developing pyrethrum as a cash crop in Kabale District: The challenges

Researchers: Pamela Pali[90] and Pascal Sanginga[91]

Introduction

Beyond Agricultural Productivity to Poverty Alleviation (BAPPA) was a pilot project that began its activities in 2001 in eastern and southern Africa. The activities of BAPPA were taken over by the Enabling Rural Innovation (ERI) project, where the implementing partner in Kabale is CIAT. The key processes of the ERI project include the beneficiary-based diagnosis of opportunities and constraints, and market opportunity analysis through which food security and agroenterprise options are identified. In addition, the ERI project working principles bring together sustainable natural resource management (NRM), equity and gender. The project builds on the farmers' existing knowledge through farmer participatory research tools to empower them in their decision-making processes. Community appraisals and market opportunity identification (MOI) were conducted in two communities of the Kabale district (Rubaya subcounty), the Karambo Tukore and the Muguli B Turwanise Obworo groups. Along with a food-security option, pyrethrum or Dalmatian chrysanthemum was selected as an enterprise option based on market information generated from the MOI and decision-support tools (an ex ante cost-benefit analysis) by both groups.

Agro-Management Group Inc. is a California-based company, which made its first investment in pyrethrum production, marketing and processing through Agro-Management (U) Ltd., its subsidiary company based in Kabale, Uganda in 1991. Agro-Management (U) Ltd. has supported pyrethrum flower production in Kabale and more recently in western Uganda through its outgrower scheme and is the monopolistic market for pyrethrum produced in Uganda. The pyrethrum processing plant in Kabale has been in operation since 2000.

Pyrethrum has been grown in Kabale since 1945. It is a daisy-like chrysanthemum from which pyrethrum powder is produced. About 25 kg of flowers can be processed into 1 kg of crude extract, which contain pyrethrins. Pyrethrins are six insecticide components (esters) occurring in the crushed flower. It is used as an insecticide and acaricide, and the residue is used for animal feeds. It acts as a nerve agent on insect pests, killing them instantly. No real insect resistance occurs. Pyrethrins easily break down under ultraviolet light, leaving no residue in the environment. It is nontoxic to humans and cannot enter the food chains.

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The farmer research groups

Farmers from the two communities went to Bufundi Subcounty on an exploratory visit, after which adaptive research began with the Farmer Research Group (FRG) on behalf of the community, using various soil-management techniques. Input facilitation and technical guidance were provided by Agro-Management. The farmers' principle contribution was group labor. The experimental farmers had an interest in the resource and input requirements; the activities and the timing of these activities involved pyrethrum management. Research questions centered on the soil quality required for pyrethrum production and how to utilize locally available amendments to enhance soil fertility. Both locally available and purchased inputs (inorganic fertilizers) were used in the experiment. Figure 1 shows a scientist and the experimental farmers in a pyrethrum field.

Figure 1. CIAT scientist with pyrethrum farmers in their field.

Agro-Management has recently discontinued payment of its outgrowers hence; there may be a need for further enterprise selection. Prior to the foregoing activity, an ex post economic evaluation of the enterprise is required to determine the actual worth of pyrethrum production. Thus this study gives an economic evaluation of the pyrethrum, determining:

- ✓ Annual production trend analysis by group considering weather patterns and labor demands
- ✓ Farmer perceptions of pyrethrum production
- ✓ Economic evaluation of pyrethrum production by the FPR groups, groups facilitated by Agro-Management, and individuals growing pyrethrum.

Methodology

This study was conducted in the southwestern region of Kabale (Ndorwa and Rubanda counties), which were characterized into high- and low-concentration pyrethrum-growing areas by Agro-Management, based on the production levels of the crop. One group was selected per parish and one individual per village. The Muguli B and Karambo groups were located in the low-concentration area and were selected for comparison purposes. Table 1 shows the sample selection procedure.

Table 1. Sample selection procedure for pyrethrum growers in Kabale.

Concentration Area	Counties	Subcounty	Village	N
Low	Ndorwa	Rubaya	Katabura	3 groups * 10 people = 30
			Kagyera	3 individuals belonging to group
			Muguli A	3 individual pyrethrum growers
			Muguli B	
			Kalambo	**36 farmers**
High	Rubanda	Bufundi	Buhanjura	4 groups * 10 people
			Kisenyi	2 individuals belonging to groups
			Kashaasha	4 individual farmers
			Kacherere	
		Muko	Nyarurangi	
			Kibungo	**46 farmers**
Total sample size				82 farmers

Quantitative and qualitative data were collected for the study. Focus group discussions (FGDs) were held with the seven farmer groups. The economic analysis was conducted for the experimenting group, Agro-Management-supported groups and individual growers. For the economic analysis of study, the recall method of data collection was used. Then an ex post cost-benefit analysis was conducted to determine the costs incurred and returns on pyrethrum production for each group. The individual farmers were interviewed. Production data and other supporting information were collected from Agro-Management to complement the results of this study. The data were analyzed to produce frequencies and other descriptive statistics. Production trends, pyrethrum area under production in comparison with other crops, and farmers' perception of pyrethrum were also determined by concentration area. The costs-benefits were analyzed using a partial budget for the Agro-Management-supported groups and the FRG.

Results

Annual production trend analysis, 2000-2003

According to 73.7% of the farmers, the area under pyrethrum had not changed since they began its production. Of the farmers who had reported a change in land areas under pyrethrum, 15% reported that this area had increased in size, while 10.5% reported a decline. The reasons given for the increase in the area were that pyrethrum is associated with high returns (15.8%), a market is available (10.5%), and it is more profitable than other crops (5.3%); whereas the reason for the decline in pyrethrum production is that there was no market (10.5%). Other major hindrances to smallholder production are the lack of planting material, the belief that pyrethrum is a nutrient depleter, and that the plants are poisonous. Despite the ready market for the product, the Kabale farmers cannot meet the demand required for the processing plant to operate at full capacity. Agro-Management extension personnel reported that pyrethrum is basically grown as a leisure

crop; and when farmers are not busy with other on-farm activities, they devote their extra time and family labor to pyrethrum production.

Figure 2 shows the area under pyrethrum production from 2000-2003. It can be seen that growers have decreased the area under production over this period. Most farmers had from 0.1-1.5 acres under pyrethrum production; a few had more than two acres. In 2000-2001, more of the farmers had smaller areas under production than in any other year. After 2001 the area under production began to decline, with a drastic fall in 2003 when some 8 farmers had abandoned pyrethrum production.

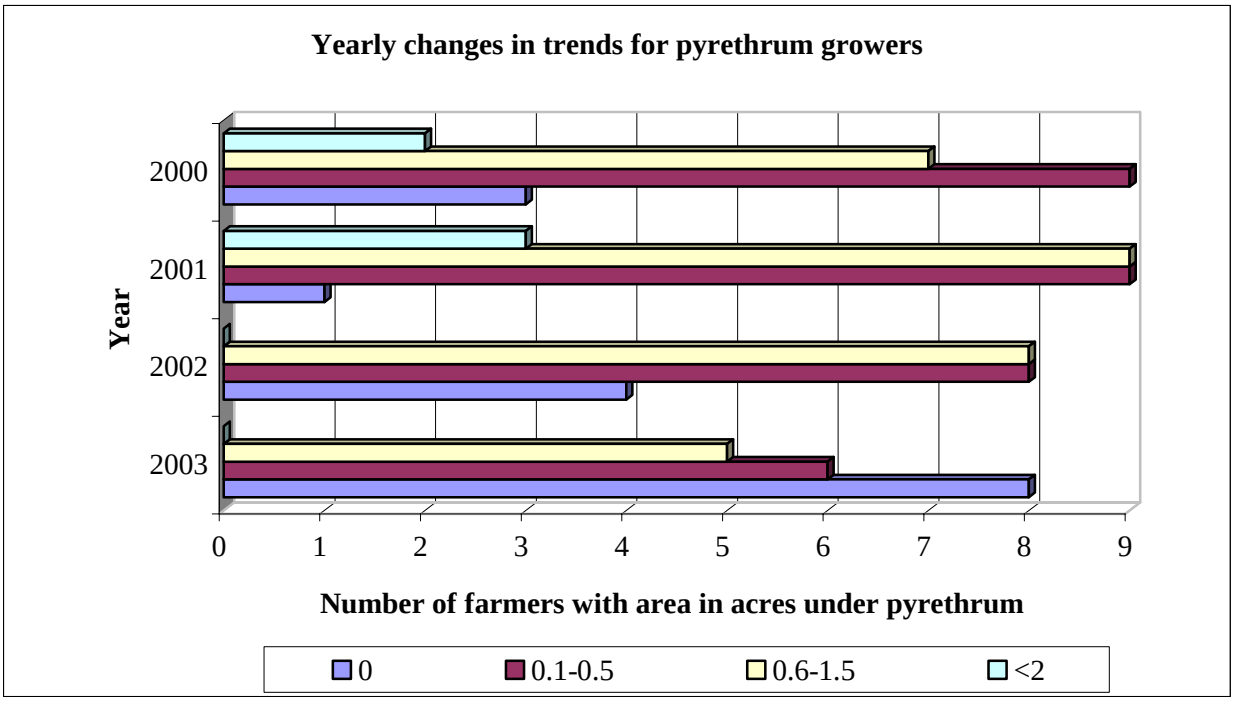

Figure 2. Annual changes in trends of area under pyrethrum production.

The peak production months are from March-July, while the low production months are from October-December. Labor for harvesting the crop competes with labor for planting and weeding common beans and Irish potatoes. Pyrethrum is harvested during the drier months and does not coincide with the long rains, which occur from December-January. Production is lower during the wet months. In the months of January-April, activities of other crops interfere with those of pyrethrum.

The labor activities (based on farmers' reports) involved in pyrethrum production in comparison to the major crops are shown in Figure 3. There is strong competition for pyrethrum labor from January-March. The African Highlands Initiative (AHI, 1998) reported that farmers in Rubaya experience peak labor between January-April and August-September. The opportunity cost of the farmer's time is high as there is no time in the year when the competition for pyrethrum labor with that of other crops is less intense. Food security is most intense in April-June and rises in

December. This is at the time when pyrethrum production is at its peak harvesting period, thereby providing a cash base for farmers to relieve this food-insecurity period. In November-December, however, income from pyrethrum cannot be used for food insecurity because production is low.

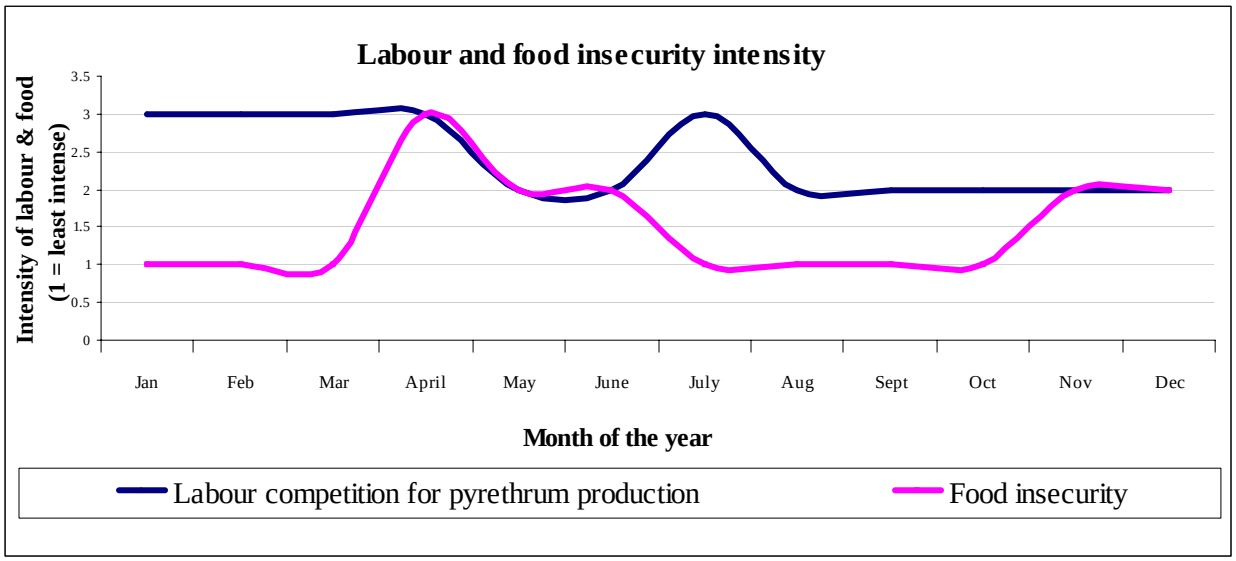

Figure 3. Labor requirements for pyrethrum production and food insecurity

Farmer perceptions of pyrethrum production

Sources of income used for pyrethrum production. The sale of farm produce is the primary source of income used to fund production. Other sources for the individual farmers were savings from hiring out labor (14.3%). The individuals who belonged to groups were benefiting from pyrethrum production through the group shares obtained from this activity (40%). The groups had diverse sources of funding that included the membership fees and Agro-Management (14.3%).

Uses of income from pyrethrum production. The income from pyrethrum was useful in solving the medium-term cash requirements such as buying land or paying school fees.

Constraints. Half (52.6%) the respondents reported that the main difficulty associated with the production of pyrethrum was its labor-intensive nature. One-fourth (27.2%) reported that there was a lack of market. When farmers were asked where else pyrethrum could be sold apart from Agro-Management, most of them did not know. According to one farmer, at one time Rwandan pyrethrum growers were selling their production to Ugandan farmers so that they could in turn sell this produce to Agro-Management. One farmer reported that income was low in comparison to the production requirements. When asked what price they would like pyrethrum to be sold at, 63.2% (n=19) mentioned a price ranging from 3,000 kg^{-1} - 4,000 kg^{-1} Ug Shs. About 21.1% reported that they would like it to be sold at 5,000 kg^{-1}, whilst 15.8% said that it could remain at the current price of 2,700 kg^{-1}.

Suggestions for improvements. The suggestions provided for increasing production included the timely payment of farmers and the provision of alternative markets. Farmers still had an interest in pyrethrum production (47% and 36.8% respectively). One-third (36.8%) of the farmers reported that Agro-Management should provide inputs and had become dependant on Agro-Management for them.

Economic evaluation of pyrethrum production

Experimental farmers. The Karambo Tukore group did not weigh the produce from each experimental plot resulting in the failure to compute the returns to their production. Although farmers were to incur the costs of land leasing, labor and the equipment for pest and disease management, they said that the land that was allocated to pyrethrum production was abandoned so there were no leasing costs. These farmers also used the group's labor to conduct all the experimental activities; hence they would not cost their labor. The opportunity cost of labor was therefore used in this study. All the experimental treatments produced financial losses owing to very low yields per plot (Table 2.).

Table 2. Partial budget analysis for Muguli B Turwanise Obworo experimental group.

	Costs (Uganda Shillings/acre)					Returns (Uganda Shillings/acre)	
Treatment	Labor	Non-labor	Partners	Farmers Facilitated	Total Costs	Returns	Net Returns
1.7 kg TSP + 20 b[92] of marc	1,016,000	857,200	856,200	1,017,000	1,873,200	216,000	-801,000
100 kg lime	1,016,000	1,669,200	1,668,200	1,017,000	2,685,200	907,200	-109,800
1.7 kg TSP +20 b of FYM	1,016,000	1,617,200	816,200	1,017,000	1,833,200	842,400	-174,600
3 kg TSP	1,016,000	869,200	868,200	1,017,000	1,885,200	399,600	-617,400
Control 1	1,016,000	749,200	748,200	1,017,000	1,765,200	248,400	-768,600
20 b of ash +1.7 kg TSP	1,016,000	1,217,200	816,200	1,017,000	1,833,200	151,200	-865,800
1.7 kg +100 kg lime	1,016,000	1,737,200	1,736,200	1,017,000	1,753,200	302,400	-714,600
0.6 kg NPK	1,016,000	770,800	748,200	1,017,000	1,765,200	972,000	-45,000
40 b marc	1,016,000	829,200	828,200	1,017,000	1,845,200	432,000	-585,000
20 b FYM	1,016,000	1,549,200	1,548,200	1,017,000	2,565,200	421,200	-595,800
20 b ash	1,016,000	1,149,200	1,148,200	1,017,000	1,165,200	388,800	-628,200
Control 2	1,016,000	749,200	748,200	1,017,000	1,765,200	831,600	-185,400

The first year of pyrethrum production for experimenters was characterized by low plant vigor, weed infestation (e.g., coach grass) and lack of knowledge on how to implement conservation practices. In addition to poor weather conditions, late planting in the dry season exacerbated poor yields, leading to premature drying of the flowers. Pruning as a recommended practice was not being conducted. The stalk is removed when the flower was harvested, done concurrently with

[92] b=Basins and each basin is equivalent to 5 kilograms of material.

weeding. Pruning is also done on the whole crop after three years. This is a cheaper alternative to replanting the field.

The highest yield was about 360 kg acre^{-1} in the 0.6 kg NPK treatment, which was far less than the expected yields. On average, about 80 kg month^{-1} of dry pyrethrum would be expected from an acre (2 kg/100m^2 mo^{-1}). In most cases the ratio of the nonlabor to the labor costs was less than one. The nonlabor costs were higher in cases where FYM, ash and marc were applied because large amounts were required for a unit increase in nutrient replenishment.

The ratio of the nonlabor to the labor costs was less than one, being higher in cases where FYM, ash and marc were applied because large amounts were required for a unit increase in nutrient replenishment. These treatments had high costs as a consequence of the labor input required to acquire and transport this fertilizer from the source to the field. The results of the 0.6 kg NPK treatment were better than all others (Ug Shs –45,000) attributed to the associated high returns (Ug Shs 972,000), which offset the production costs, coupled with low input costs of this treatment. The other treatments with manageable losses included the farmers' practice (control 2), 100 kg lime, and 1.7 kg TSP + 20 basins of FYM. These all had returns of between 831,600 and 907,200 Ug Shs.

The Agro-Management-supported farmers

Group growers

Three farmers (Respondents 9, 13 and 16) with an acre or less of land had profits of 794,400; 961,000 and 2,671,000 Ug Shs, respectively, owing to their higher and more consistent yields (Table 3). Respondent 16 had high returns due to high yields over a three-year period compared to 9 and 13, who initially produced low and then bumper harvests over a two-year period.

Table 3. Partial budget analysis for the group growers of pyrethrum.

Respondent	Acre	Costs (Uganda Shillings)			Returns (Uganda Shillings)	
		Labor	Agro-Management	Farmers	Returns	Net Returns
9	0.25	24,000	339,600	48,000	842,400	794,400
10	3	405,000	4,064,700	582,000	1,134,000	552,000
11	1	96,000	1,336,400	120,000	97,200	-22,800
12	0.25	24,000	332,100	48,000	54,000	6,000
13	0.6	57,000	804,440	86,600	1,047,600	961,000
14	0.5	48,000	670,200	72,000	27,000	-45,000
16	1	96,000	1,884,000	137,000	2,808,000	2,671,000

The farmer with three acres had a slightly lower profit of 552,000 Ug Shs due to higher costs incurred from the land size. Respondents 11 and 14 had negative returns because the net returns were not high enough to offset production costs. Individual growers produced lower yields than the group growers. However, 71.4% individual farmers made profits, provided Agro-Management continues to provide nonlabour inputs, and no opportunity costs were attached to family labor.

Individual growers

Most individual farmers had less than an acre of land, except for two farmers who had about 1 acre land thus confirming that the farmers were conducting growing the crop on a trial basis (Table 4).

Table 4. Partial budget analysis for the individual pyrethrum growers.

Respondent	Acre	Costs (Uganda Shillings)			Returns (Uganda Shillings)	
		Labor	Agro-Management	Farmers	Returns	Net Returns
3	0.5	75,000	475,400	113,000	135,000	22,000
4	0.75	113,000	1,144,200	161,000	1,155,600	994,600
5	0.33	42,500	312,384	69,200	0	-69,200
15	0.5	75,300	491,400	114,300	97,200	-17,100
17	0.4	66,500	376,920	95,500	162,000	66,500
18	1	96,500	908,600	130,500	162,000	31,500
19	1.3	138,500	1,239,240	201,500	294,840	93,340

Most (71.4%) of the individual respondents owned the land by freehold or customary ownership compared to the group growers, of whom the same number owned the land by leasehold, future access to land uncertain. The highest profit was received by respondent 4 (Ug Shs 994,600), who produced progressively increasing quantities of pyrethrum for the first 3 years from the year 2000. During the fourth year, however, the yield declined, probably due to production at the diminishing returns level. The crop either needs to be replanted or pruned to generate new growth. In general the low profits resulted from inconsistent production, where farmers got yields for only one year. The main reason given for this inconsistent production was that most of the crop had dried out and/or was abandoned. As a result, the reported yields were 0 for other years.

Only five farmers in the survey sample belonged to Agro-Management groups and had decided to plant their own pyrethrum crop (Table 5). It was hypothesized that they had learned the production practices in the group; but as the returns to the individuals belonging to the group was much lower, they decided to produce pyrethrum on their own.

Individuals who belong to groups

Table 5. Partial budget analysis for the individual growers of pyrethrum who belong to groups.

Respondent	Acre	Costs (Uganda Shillings)			Returns (Uganda Shillings)	
		Labor	Agro-Management	Farmers	Returns	Net Returns
1	1	108,000	1,148,800	370,000	86,400	-283,600
2	1	108,000	1,148,800	370,000	81,000	-289,000
6	1	108,000	1,148,800	370,000	1,350	-368,650
7	0.25	27,000	250,200	46,500	388,800	342,300
8	0.5	42,000	461,400	54,000	810,000	756,000

All farmers in this survey reported that Agro-Management had visited their fields, which were an acre or less in size. As they owned land under freehold or customary ownership, they did not incur costs of land lease. These farmers incurred losses, resulting from yields as low as low as 0.5kg. The highest profits were got from Farmer no. 8, who had yields as high as 300 kg.

The profit of the individual farmers belonging to groups was higher than the individual growers. This had implications, however, because they had too many on-farm activities including food production, pyrethrum group and individual plot activities.

Agro-Management is the sole market for pyrethrum in Uganda. The over dependence on a monopoly market has provided farmers with invaluable experience in this process of market-oriented production. Agro-Management owes farmers large sums of money. This has demoralized farmers who have either abandoned or uprooted the crop. There is a need for these experimental farmers to select another enterprise crop due to the lack of market for their production. In Rubaya, instead of uprooting the crop, farmers intercropped pyrethrum with other crops such as peas. However, in the low-concentration area, pyrethrum land was abandoned or the crop uprooted.

Conclusions and recommendations

Pyrethrum production is on the decline. According to smallholder farmers, however, it is a high-paying crop, which provides a regular income that enables farmers to invest in short-term household needs. Nevertheless, pyrethrum production has high tradeoffs. It requires high labor and nonlabor input investment. Agro-Management has incurred the cost of nonlabor inputs, which has enabled farmers to accrue the higher profits at the cost of Agro-Management plus the fact that the processing plant is not operating to full capacity. Furthermore, the production of pyrethrum is complex; hence farmers cannot keep up with the management requirements.

General recommendations

- Pyrethrum production is profitable given that farmers adopt the culture of hiring labor for the majority of these production activities. This increases the efficiency with which each activity is done.
- To restrict production to smaller, more manageable areas, farmers should invest in the nonlabor costs.
- To reap economies of scale in terms of costs, groups should be encouraged to produce pyrethrum despite the lower returns to individual group members.

Recommendations for experimental growers

- Given permanent cessation of payment to the farmers, the experimental farmers should choose an alterative enterprise.
- If farmers continue the production, they should follow the recommended management practices. These farmers are forming the learning process of pyrethrum crop management and have gained a considerable amount of experience thus far.
- The use of locally available soil amendments is labor intensive because it requires substantial labor resources for transportation if applications are to be done at recommended levels.

Therefore, the integrated use of these amendments with inorganic sources of nutrients should be encouraged.

Recommendations for Agro-Management-supported groups and individuals

- The prices of pyrethrum are not competitive in light of the quality of Dalmatian chrysanthemums produced in the tropical belt.
- The pyrethrum market should be diversified. Agro-Management could work hand in hand with storekeepers or agricultural input supply shops to buy the product from them to reduce the incidence of nonpayment to the ordinary farmer.
- Agro-Management has ceased payment to farmers due to the reasons beyond their control. This being the case, farmers should cease the production of pyrethrum in favor of other crops.

ILAC Brief No. 5
Writing up Innovation Histories: A Useful Learning Tool.

Researches: Boru Douthwaite[93], Jacqueline Ashby[94]

Summary

We can only meaningfully understand the innovation processes that we are part of by contemplating the larger innovation system in which they take place. Constructing innovation histories is a way of making visible how our actions are interrelated to other people's actions in patterns of behaviour that are not isolated events. Recognizing and understanding these patterns can improve our performance in enabling rural innovation. In this Brief we describe how to construct and learn from innovation histories.

Rationale

Many research and development agencies want to enable rural innovation. But to enable innovation we need to understand how it happens, and these stories are rarely, if ever, written down. Innovation histories allow the people involved in the innovation process to reflect on what they did, and learn how to improve their performance in the future. If several innovation histories are recorded using a common framework then we can look for similarities and differences and discover general principles. This helps avoid repeating mistakes and helps us identify and use what works. This brief describes a methodology being developed at the International Center of Tropical Agriculture (CIAT) for recording and learning from innovation histories.

Who is the innovation history for?

The innovation history is first and foremost so the people involved in an innovation process can reflect on what they did, how their activities are interrelated to others actions and what they might do better in the future. The secondary purpose is for others to learn either from an individual case or by comparing and contrasting experiences across several innovation histories. This type of comparison is made easier if a common framework is used to construct the innovation histories.

Innovation is driven and thwarted by people and hence honest innovation histories can reveal conflicts, mistakes and problems that are very sensitive in nature. It is therefore very important that the people who are constructing the innovation history know that nothing they say will be made public outside of their group without their consent.

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Who constructs them?

In most cases the innovation history is constructed by an analyst who is both a kind of investigative journalist and facilitator of a discovery learning process. The key people involved in the innovation process participate in constructing the innovation history through the interviews they give and the feedback on the drafts produced.

What is the framework that guides data gathering and analysis?

We use two sets of concepts to guide data gathering and analysis. The first set derives from the Learning Selection model (Douthwaite, 2002, Douthwaite et al. 2001) which includes a normative view of the stages in an innovation process. The second set derives from social network analysis. We use InFlow software (www.orgnet.com) to draw and analyse the networks.

How to construct and innovation history and learn from it

This step-by-step guide is work in progress, based on our experience to date.

1. Clarify objectives for constructing the innovation history and the expectations of the main stakeholders involved

In our experience there are three main reasons for constructing an innovation history: 1) to produce publicity materials; 2) to learn from experience and draw lessons in order to improve programs; and 3) to carry out research on innovation processes, and publish. Expectations should be clarified at the beginning so that the analyst/facilitator does not produce something at the end that will not be used. Expectations can change through the process. For example, a project nominates their most successful innovation process because they want to raise its profile, but in the process find out that things are not going as well as they thought. Hence, their priority changes to wanting to use the findings to improve the program.

People's expectations about authorship should also be clarified at the beginning.

2. Decide what is the innovation

We began working on an innovation history of cassava mills in Colombia to find that the innovation was actually a whole package of ideas and technologies that would supply the cassava mills with sufficient raw material, process the cassava, and then market the output.

3. Construct an innovation timeline and actor network map

Innovation histories are narratives built on providing causal explanations for two outputs:

- An ***innovation timeline*** that lists the key events in the innovation history in the order they happened;
- ***Actor network maps*** that show the linkages between the stakeholders at two or more important stages in the process, so as to capture the dynamics of changing partnerships.

The timeline and network maps will develop and change during the process of explaining causality and the nature of the linkages.

Start with the most knowledgeable person, if possible the product champion and "snowball" from there by talking to key informants identified in previous interviews and from the literature. Start constructing an innovation timeline from the beginning. At the same time construct actor network maps.

For each event identified in the innovation timeline ask Who? Why? How? and with what results? Why? is the most important question because it gives insights into what motivates people to act the way they do.

4. Share the timeline and network map with key informants

Continue interviewing using the timeline and network maps as talking points. Make sure you talk to people from all the important stakeholders identified in the network maps.

If one of your objectives is learning and improving the program commissioning the case study, then our experience is to share these findings early and informally. For example, summaries of interviews can help the R&D team learn how the key stakeholders perceive the technology and the performance of the R&D team. Presentation of results in this way is less threatening than in a final, polished report. It also helps include the key informants in analysing and learning from the innovation history. It makes it more likely that the group commissioning the innovation will allow wider circulation of a frank discussion of what worked and what did not.

5. Write the innovation history narrative

Begin writing the innovation history narrative early because the process of explaining in writing what happened is a form of analysis and will help surface new questions. Share the narrative with key informants to check your explanation of causality, and the facts. Incorporate comments.

6. Write up the innovation history report

Ideally the key informants will be co-authors by this stage and so writing it will be an iterative process in which they participate. The box shows a recommended format for the report.

1. Introduction – describe motivation for the constructing the innovation history or histories and why innovation histories are useful.
2. Methodology – describe framework used and data gathering methods.
3. Case study or case studies (if more than one then each case study will be a separate chapter).
4. Discussion and Conclusions – discuss how the innovation history complied and differed from the normative view of the innovation process described in the learning selection model. Discuss the evolution of the network of actors associated with the innovation, and discuss ways in which the network could be strengthened.
5. Synthesis – if there is more that one innovation history then compare and contrast the main findings from each case study.

7. Hold workshop and promulgate findings

Depending on the findings and the budget it may be desirable to present the findings in such a way as to affect policy, at whatever scale. A workshop, journal paper and briefing notes are some of the possible outputs. The innovation history may become one in a portfolio of innovation histories that are analysed together.

Further reading

Biggs, Stephen and Harriet Matsaert. 2004. Strengthening poverty reduction programmes using an actor-oriented approach: examples from natural resources innovation systems. ODI Agricultural Research and Extension Network. Network Paper No. 134. January

Cross, Robert and Andrew Parker. 2004. The Hidden Power of Social Networks. Harvard Business School Press. Boston, Massachusetts

Douthwaite, Boru. 2002. Enabling Innovation: A Practical Guide to Understanding and Fostering Technological Innovation. Zed Books. London

Douthwaite, Boru. (In preparation). A Guide to Constructing and Learning from Innovation Histories. Rural Innovation Institute, CIAT, Cali, Colombia.

Krebs, Valdis., and June. Holley, 2004. Building sustainable communities through social network development. The Nonprofit Quarterly. Spring.

Lessons learned from CIAL Innovation Histories in Colombia and Honduras

Researchers: Boru Douthwaite[95], Andrea Carvajal[96], José Ignacio Roa[97], Carlos Quiros[98], Jacqueline Ashby[99]

Collaborators: José Ignacio Roa, Jacqueline Ashby, Carlos Quirós, Sally Humphries[100], William Cifuentes[101], Rodrigo Vivas[102], Adiela Rosas[103], Marta Guetio[104], Bolívar Muñoz[105], Alfonso Truque[106]

Introduction

We are in the process of constructing innovation histories of CIALs in Colombia and Honduras, the two countries with the most CIALs, and the longest established second order organizations. The following are our interim findings, following the evaluation questions in the Kellogg-funded project under which much of the work on strengthening second order organizations of CIALs (ASOCIALs) has taken place.

Methodology

The methodology we are using is describe in Douthwaite et al. 2004[107]

What are the principles and practices that contribute to institutionally sustainable CIALs?

In summary:

- Institutionally sustainable CIALs are supported by an inter-linked network of organizations who enjoy mutually-beneficial relationships.
- The actions taken as part of this project to register the ASOCIALs in Honduras as legal entities and build their capacity to attract and manage projects on their own is helping to build the links that the ASOCIALs need for their long-term sustainability.
- However, as of 2003, those links were not yet sufficient and their remains a role for the host organizations to continue to seek funding.
- Long-term sustainability of the ASOCIALs requires them to be able to operate as small NGOs, being able to win projects and pay staff salaries.

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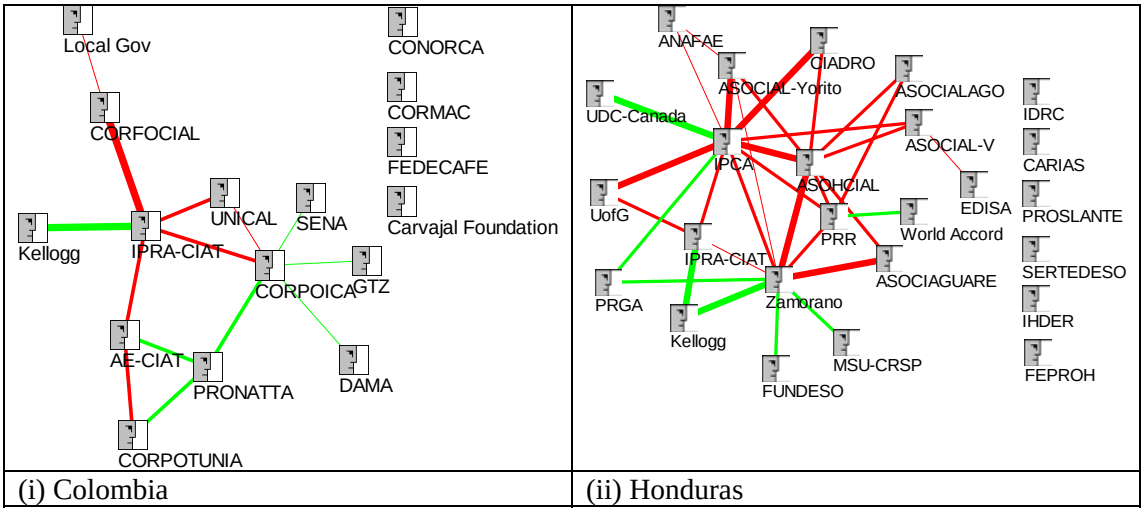
[99] Director for Rural Innovation and Development Research - Rural Innovation Institute
[100] Leader and coordinator – Fundación para la investigación Participativa con Agricultores de Honduras - FIPAH.
[101] Manager Corporación para el desarrollo de Tunía - CORPOTUNIA
[102] Director Consorcio Interinstitucional para una Agricultura Sostenible en Ladera - CIPASLA
[103] Leader – Asociación de Productores de Anturios de Ventanas - ANTUVENT
[104] Leader path Crucero del Rosario, Cauca, Colombia
[105] Guía CIAL – Corporación para el Fomento de los CIALs - CORFOCIAL
[106] Director – Corporación para el Fomento de los CIALs - CORFOCIAL
[107] Douthwaite, B.; Ashby, J. 2004. Constructing and Learning from Innovation Histories. In: CIAT (Centro Internacional de Agricultura Tropical). Annual Report, Participatory Research Project. Cali. 4p.

One of the approaches we used in the innovation history study was to carry out social network analysis to gain a better understanding of the sustainability of the networks working with CIALs in Colombia and Honduras. Figure 2 shows the networks maps for both countries in 2003. The program we used to draw and analyze the maps is called InFlow[TM108] which uses an algorithm to construct ego-centric networks, that is networks where the better connected and more powerful nodes are closer to the centre. Network power comes from being as few links as possible away from other nodes (high *closeness*), while at the same time being in a position where others need to pass through you to connect to other parts of the network (high *betweenness*)



(i) Colombia (ii) Honduras

Figure 2: Network map of organizations currently collaborating (red (dark) links) and funding (green (grey) links) work on CIALs in Honduras and Colombia in 2003

An important concept in network analysis is that efficient networks, whether they be the Internet, nervous systems of animals or innovation networks, share common properties. These properties are:

1. *Clustering* and *diversity* - though clusters form around common attributes and goals, vibrant networks maintain connections to diverse nodes and clusters. A diversity of connections is required to maximize innovation in the network.
2. Robust networks have several paths between any two nodes. If several nodes or links are damaged or removed, other pathways exist for uninterrupted information flow between the remaining nodes.
3. The *average path length*[109] in the network tends to be short without forcing direct connections between every node.

The Honduran network scores well with a clustering co-efficient of 0.51, and an average path length of 2.32. According to Valdis Krebs, who wrote the Inflow software and has analysed many networks, an efficient network has a clustering coefficient of 0.5 to 0.6 and an average

[108] www.orgnet.com

[109] The average path length in a network is a convenient measure of the network's efficiency. The longer the average path length, the longer it takes for messages to travel between any two nodes, and the more distorted they are when they arrive.

path length of 3 or less, hence the Honduran network scores on both counts. The Colombian network in 2003 had a clustering co-efficient of just 0.24, indicating a lack of clustering, and a path-length of 2.33, which is long for such a small network. Visual comparison of the two networks shows that the Honduran network does have multiple links between partners, much more so than the Colombian network. The practical benefit of having a number of links was demonstrated when FEPROH stopped working with the ASOCIAL-Vallecillos and its CIALs in 2000. ASOCIAL-Vallecillos also had a link to IPCA and that subsequently strengthened, keeping ASOCIAL-Vallecillos in the network, and keeping support going to its CIALs.

The idea that the Colombian CIAL network is weaker than the Honduran one is supported by the fact that the number of CIALs in Colombia has been falling since 1999 while it has been rising in Honduras since 2000 (see Figure 3). An interesting question is why this is so, given that IPRA-CIAT is based in Colombia. One reason is that CORFOCIAL did not sustain the same level of support from this project as did the ASOCIALs in Honduras. A second factor that CORFOCIAL has much fewer links to other organizations than the ASOCIALs in Honduras. Finally, the institutionalisation of the CIAL approach in CORPOICA did not survive the loss of project funding, for reasons that we discuss later.

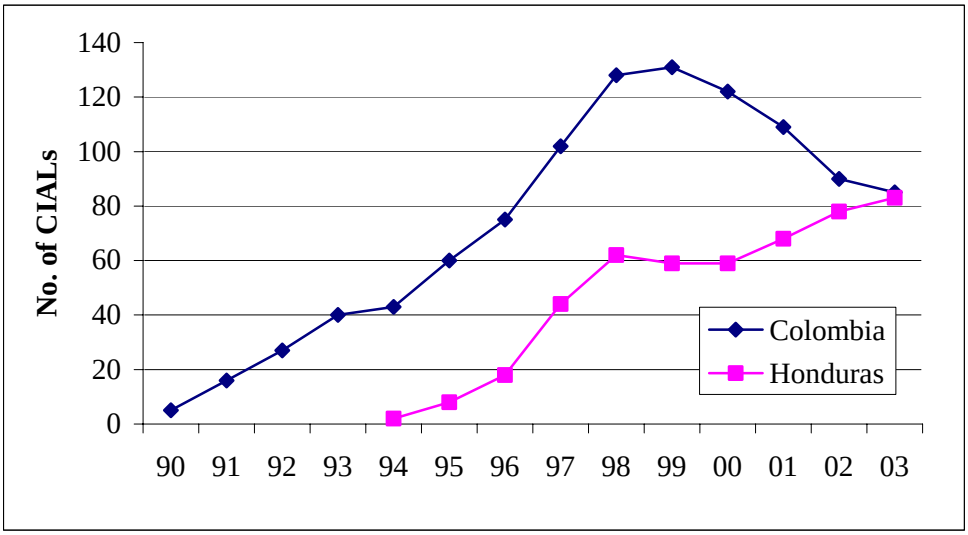


Figure 3. The number of CIALs in Colombia and Honduras

Although the Honduran network is currently strong, it would be seriously weakened if IPCA or Zamorano withdrew, as is probable sometime in the future, either to pursue other research and development objectives or because of a failure to find funding for the work. The latter becomes increasingly likely as donors like eventually to fund new initiatives. Network theory says that to help prevent such major disruption the ASOCIALs and ASOHCIAL need to be making their own links to other organizations and donors, independent of IPCA and Zamorano. This is exactly what tecniCIAL and IPRA-CIAT have been training the ASOCIALs and ASOHCIAL to do, and also reflects the priorities of the ASOCIALs themselves to gain the legal status required to manage funds, for training in writing project proposals as well as having their own office and transport. The innovation history in Honduras shows that the training provided to the ASOCIALs, largely by the host organizations, has been most impressive. The ASOCIAGUARE

members, for example, attended eight workshops between 2001 and 2003, in addition to an exchange visit with ASOCIAL Yorito. Nevertheless, the very low recognition by CIALs of ASOCIAGUARE and ASOCIAL-Yorito in comparison to Zamorano and IPCA in an organizational mapping exercise (see Table 5) suggests that as of 2003, IPCA and Zamorano remain the *de facto* second order organizations.

The ASOCIALs recognise that their sustainability will require them to move from being essentially voluntary organizations, as they are now, to become small NGOs that can win sufficient funding to pay salaries, or organizations that provide business and other services. Unless this happens, ASOCIAL members will likely take their new skills and go and work for NGOs and other types of organization who *can* pay them salaries.

How have CIAL associations influenced local decision-makers and local development agendas?
In summary:

- CIAL and ASOCIAL members are linked on average to seven organizations within their respective communities, and six organizations outside. Through these linkages CIAL members are undoubtedly influencing local decision-makers and local development agendas.

What the network maps in Figure 2 do not show are the links that CIAL and ASOCIAL members have with other organizations not directly working with CIALs. This information was collected in Honduras in 2003 during organization mapping exercises carried out by TecniCIAL and the ASOCIALs. We analyzed these results for ASOCIAGUARE and ASOCIAL-Vallecillos (Table 5). The twelve CIALs surveyed in the ASOCIAGUARE area were working with a total of 61 organizations while seven CIALs in the ASOCIAL-Vallecillos area were working with 37 organizations. The external organizations include local municipalities. According to IPCA research "a key characteristic of CIAL members is that they are 'joiners'"[110], meaning that CIAL members are also likely to be active members of other organizations. Their influence in these organizations means that the experiences coming from the CIALs will inevitably be influencing local decision-makers and local development agendas.

Table 4: The average and total number of organizations, both internal and external to the community, that CIALs represented by ASOCIAGUARE and ASOCIAL-Vallecillos have links to.

		ASOCIAGUARE	ASOCIAL-Vallecillos
Internal organizations	Average per CIAL	7.1	6.9
	Total for all CIALs	27	21
External organizations	Average per CIAL	6.2	6.7
	Total for all CIALs	34	17
No. of CIALs surveyed		12	7

[110] Humphries et al. (2000)

Table 5. The organizations most commonly linked to CIALs in the areas covered by ASOCIOGUARE and ASOCIAL-Vallecillos

(i) Organizations internal to the community

ASOCIOGUARE	
Organization	f
Patronato	12
Iglesia Católica	10
Junta de Agua	9
Iglesia Evangélica	8
Sociedad de padres de familia	8
Equipo de Fútbol	7
Caja Rural	4

ASOCIAL-Vallecillos	
Organization	f
Patronato	7
Junta de Agua	7
Sociedad de padres de familia	7
Iglesia Católica	6
Equipo de Fútbol	3
Comité de Salud	3
Iglesia Evangélica	2

(ii) Organizations external to the community

ASOCIOGUARE	
Organization	f
Zamorano	12
Municipalidad	8
PRODERCO	6
Plan Internacional	4
SANAA	3
COHDEFOR	3
Ministerio de educación	3
FHIS	3

ASOCIAL-Vallecillos	
Organization	f
Municipalidad	7
EDISA	7
IPCA	6
IHCAFE	4
PRAF	3
CEPROD	3
AHPROCAFE	3
PRONADEL	3

How effective are CIAL associations in establishing mutual beneficial relationships with formal R&D organizations?

In summary:

- ASOCIALS have been most successful in establishing relationships with R&D organizations when those organizations have a mandate to carry out local adaptive research and implement development projects.
- The sustainability of these relationships depends on the ability of the R&D organization to help support the CIALs and ASOCIALs through project funding.
- Sustainability of the relationship is also helped if both the research and development / extension parts of the R&D organization champion working with CIALs.

The best example of communication between CIALs, an ASOCIAL and a research organization that emerged in our innovation history study is between ASOCIAGUARE, its CIALs, and the Panamerican Agricultural School in Zamorano. ASOCIAGUARE has helped, or is helping Zamorano implement a FUNDESO-funded project on irrigation for dry-season farming, two participatory plant breeding projects on beans and maize funded by PRGA and the Norwegian Government respectively, and a project with the Michigan State University funded by the USAID-funded Collaborative Research Support Program (CRSP). In turn ASOCIAGUARE and its members have received help in running the first regional CIAL meeting outside of Zamorano, drip irrigation has been set up in at least one CIAL and have participated in numerous trainings.

More importantly, the knowledge made available by, and generated within, these projects helps improve agriculture in the CIAL communities. This is truly a mutually beneficial, and stable, relationship. Indeed, such is the value that Zamorano places on ASOCIALGUARE that the Rector of Zamorano visited the association in 2003.

A second example of a beneficial relationship is between ASOCIAL-Yorito, FIPAH and the Department of Sociology and Anthropology at the University of Guelph. The FIPAH Co-ordinator, Dr. Sally Humphries is an associate professor in the department, and several of her students have carried out their field work, hosted by FIPAH and the ASOCIAL-Yorito. This relationship helped FIPAH secure funding from a charitable foundation called USC/Canada. FIPAH employs three Honduran staff who have played *the* major role in supporting and training the ASOCIALs and CIALs. These staff retain important links with CURLA, the north-coast campus of the national university in Honduras.[111]

A third example has been CORPOICA[112], the Colombian National Research Corporation, who announced in 2000 that they were institutionalizing the CIAL method within the organization. CORPOICA established a total of 75 CIALs of which 48 were still active in 2002. CORPOICA also set up a second-order organization called UNICAL representing 8 CIALs in the Cundiboyacense Plateau in Colombia. Unfortunately, however, CORPOICA has largely stopped providing support to its CIALs in mid 2003 when project funding finished.[113], showing that despite good results, CIALs are not institutionalized in CORPOICA. One explanation is that the CIALs were championed by the extension wing of CORPOICA which was never able to sell the idea to the research wing.

CORFOCIAL, the main second order organization in Colombia, has close links to CIAT, and helps both IPRA and the CIAT Bean Project carry out research. However, the CIAT - CORFOCIAL relationship is not as close as that between Zamorano and ASOCIOGUARE. Part of the reason is that the true value of CIALs comes from delivering both research and development outcomes and this matches well with Zamorano who has a mandate to carry out research as well as local development work. CIAT, on the other hand, is an international organization with a mandate to carry out research leading to international public goods. Developing the CIAL method fits well with CIAT's mandate but carrying out location specific research with lots of CIALs fits less well.

Which self-financing mechanisms are most effective in contributing to sustainability of CIALs and CIAL associations?
In summary:

- By far the most important self-financing mechanism is income from projects that support the ASOCIALs to deliver research and development outcomes.
- Other types of self-financing mechanism contribute less than 5% of the estimated full cost of running an ASOCIAL.

[111] Centro Universitario Regional del Litoral Atlántico
[112] Corporacion Colombiana de Investigación Agropecuaria
[113] Personal communication with Luis Humberto Fierro, 2004

- The long-term sustainability of ASOCIALs and CIALs will depend on ASOCIALs being able to write and win funding for project proposals. In effect, ASOCIALs need to become successful small NGOs.

ASOCIOGUARE estimate that running an ASOCIAL with 15 members costs about $20,000 per year[114] Most of this cost represents the time and travel expenses of the facilitators, as Table 6 shows. In Honduras most of this has been borne by the host organizations. TecniCIAL, the group of facilitators working for the host organizations in Honduras (at present, FIPAH, Zamorano and PRR), have been training local CIAL 'promoters' to take over much of the facilitation work. This will reduce cost somewhat but salary bills will remain high if the ASOCIAL members themselves are to receive a salary. ASOCIALs and CIALs have been engaging in a number of income generating activities that were listed and described in the January 2004 end of year report. In summary these approaches are:

- Selling the harvest from production plots, often as seed. For example, in one of the more ambitious schemes ASOCIOGUARE received a gross income of about $700 in one year[115]
- Charging regular or one-off membership fees. For example, ASOCIOGUARE charge about $10 per CIAL per year.
- Interest from savings. FIPAH has invested $25,000 of unspent project money since 2000, the interest from which is channelled through the ASOCIALs to help pay for the CIAL experimental fund (caja chica). This amounted to about $220 for ASOCIOGUARE in 2002.
- Profit from running a credit schemes. The ASOCIALs in Honduras received $1250 each in 2000 from the same unspent project funds. Income from this is less than $100 per year.
- Setting up a small agro-enterprise. In this case the profits often stay with the CIAL who may or may not continue to do research on behalf of their communities.

These self-financing mechanisms provide less than 5% of the estimated annual running cost of ASOCIOGUARE. For ASOCIALs to survive independently of their host organizations, they will need to be able to sell their services to help implement research and development projects.

[114] Based on a project proposal submitted by ASOCIOGUARE to IPRA in 2003.
[115] ASOHCIAL, 2003

Table 6. Number of CIALs per ASOCIAL in 2003 in Colombia and Honduras and the annual cost for facilitating them

ASOCIAL	Number of CIALS	Annual cost of facilitation ($)[116]
Colombia		
CORFOCIAL	35	17,500
Honduras		
ASOCIAL - Yorito	28	22,400
ASOCIAGUARE	15	12,000
ASOCIALAGO	15	12,000
ASOCIAL - Vallecillos	12	9,600
CIADRO	10	8,000

References

ASOHCIAL, 2003. Taller de seguimiento evaluacion del desempeño regional. Unpublished document.

Humphries, S. J. Gonzales, J. Jimenez and F. Sierra. 2000. Searching for sustainable land use practices in Honduras: Lessons for a programme of participatory research with hillside farmers. AgREN Network Paper No. 104

[116] Based on costs from Humphries et al. (2000) that a CIAL costs $500 per year to facilitate in Colombia and $800 in Honduras.

Impact Assessment of Local Agricultural Research Committees (CIALs) in Colombia

Researchers: Susan Kaaria,[117] Nina Lilja,[118] Fernando Hincapié,[119] James García,[120] Viviana Sandoval[121]

Collaborators: F. Sánchez

Milestones

- Methodology for conducting impact assessment of PR methods on livelihoods
- Impact of CIAL methodology on rural livelihoods in at least 4 communities with CIALs in Cauca Province

Abstract

For the last 13 years, the IPRA Project at CIAT has promoted the formation of community-based research services called Local Agricultural Research Committees (CIALs). With this study the IPRA Project seeks to evaluate the changes in the livelihoods of the farmers and their communities, attributable to the CIAL methodology. The CIAL methodology was developed at CIAT with the goal of increasing the efficiency of the agricultural research and technology development system by integrating farmers better into the process. The study will assess the effectiveness of the CIAL methodology, the extent to which the problems addressed by the CIAL are relevant to the community, the costs and benefits of the CIAL to its members as well as to the community in terms of the development of appropriate technologies and who benefits from the innovations. The extent to which CIALs affect the rate and level of adoption of agricultural technologies among socially differentiated user groups and the costs associated with forming and supporting a CIAL will also be studied. It will also examine how farmer participation in the agricultural research process affects the process itself, as well as the specific communities and individuals involved. Particular attention will be paid to how CIALs as institutional innovations affect the human, social and other capital assets available to individuals and communities, and what implications these impacts have for livelihood outcomes. This study involved 13 CIALs: focus group discussions were held in all of them, and in 6, formal interviews were conducted. In addition, four rural communities without CIALs (comparative communities) were also surveyed.

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Introduction

Over the past decades, agricultural research has contributed to significant increases in world food production. Maintaining these productivity increases, as well as making progress on additional goals of alleviating poverty and protecting the environment, presents a major challenge to the agricultural research system. In order to maintain and extend the benefits of agricultural research, new ways of doing research may be necessary. One such method, participatory research (PR), seeks to involve the intended beneficiaries of research in the research process itself, based on the idea that user participation will lead to more efficient and effective design and targeting of technologies, thereby reducing diffusion time and helping ensure that the intended beneficiaries are reached with technologies suited to their needs.

In principle, the concept of PR has been widely accepted. Few scientists would consider doing adaptive research on agricultural or natural resource management technology development without at least some input from users. There are many types and degrees of participation, however, with very different implications for the costs-benefits of research. For example, asking farmers' opinions or inviting them to visit field trials is a type of participation; however it is very different from letting farmers make decisions about what kinds of technologies will be developed or training them to carry out research themselves. Because PR methods incorporate user perspectives in the research process, it is often claimed that they orient research more towards the needs of the poor and thus result in a greater impact on poverty alleviation than conventional research. It cannot be said a priori that participatory methods make research more pro-poor because this would depend on the extent to which the needs and priorities of the poor differ from those of the nonpoor, and whether or not the poor are specifically targeted in the research process.

Whether PR makes research more pro-poor is essentially an empirical question. Therefore, in order to understand the relationship between PR and poverty alleviation better, empirical evidence is needed on what impacts participatory methods have had on poverty in the context of specific projects and participatory methodologies. This project seeks to begin to fill this gap. The study builds on results from an earlier study (Hincapié, 2003) and a survey done by the IPRA Project in 1998 (Ashby and García, 2000).

Methodology

This study examines the impact of one particular method of incorporating farmer participation, which is based on the establishment of local agricultural research committees (CIALs) in rural communities. This method was developed at CIAT in the 1990s and is currently used in approximately 250 communities of several Latin American countries. The CIAL methodology is based on the establishment of a research committee with elected members. Each CIAL is supported by an agronomist or extension agent who trains the committee members in the research design (controls, replicates, systematic evaluation of results) and who visits their trials regularly to provide technical support. Support for the agronomist comes from the institution supporting the CIAL, usually an NGO, the national research or extension service, or some other institution involved in technology development and transfer. Costs of experimentation are covered by outside funds; however farmers are not paid for their participation or time. Research

problems and priorities are set at the level of the community (by vote), but the experimentation is done by the CIAL on behalf of the community. Community members are able to visit the trials all along, and results of experiments are disseminated at the level of the community. If a series of experiments identifies a promising technology or practice, the CIAL will recommend it officially. In Cauca Province, 39 CIALs have been formed over the last 13 years by men and women farmers. They are supported by a second-order association—Corporation for the Development of the CIALs (CORFOCIAL)—while the IPRA Project at CIAT provides technical backstopping.

The sample design

The study was made taking in count both levels: community with and without CIALs, and CIALs.

CIAL level: The sample was selected from all existing CIALs in Cauca that are more than 5 years old and where it is considered safe to travel. To ensure a representative sample, CIALs were also stratified by age and gender of membership. Thirteen CIALs in 12 communities in Cauca were selected. At the CIAL level, individual household interviews were conducted, and FGDs (focus group discussions) were conducted at the CIAL group level.

CIAL communities: In order to understand the impact of CIALs on individual members as well as on other community members, individual household interviews were conducted in six CIAL communities and four communities without CIALs. In each of these communities both CIAL and non-CIAL members were interviewed. In addition, both the male and female heads of household were interviewed.

To define the sample for individual household interviews, a 10% margin of error and a 95% level of confidence were used in a randomly stratified design, in which the rural communities constituted the subpopulations that form the strata. The distribution of the selected sample is presented. The size of the sample for the rural communities without CIALs was determined as was done for the rural communities with CIALs.

Four of them (El Jardín, San Bosco, Tres Cruces and Cinco Días) were selected because they formed part of the study documenting the impact of the CIAL methodology (Hincapié, 2003), while the other two (Crucero de Pescador and Carpintero) had been in the impact study conducted in 1998. The information from these earlier studies formed the basis for the design of the surveys for this study.

Non-CIAL communities: In order to control for changes in the communities attributable to the presence of CIALs, 4 counterfactual communities were also selected on the basis of not being neighbors and similarity in various characteristics.

Study objectives

- ✓ Assess the effectiveness of the CIAL methodology
- ✓ Assess the costs and benefits of the CIAL to its members as well as the members of the community
- ✓ Use the results of this impact study actively for institutional learning and change.

Research questions

- ✓ How effective is the CIAL methodology?
- ✓ What are the benefits of being a CIAL member?
- ✓ How have the CIALs benefited their communities?
- ✓ What are the costs associated with CIALs?
- ✓ How can the results of this impact study be used for institutional learning and change?

Partial results of the study

Characterization of the CIAL members

The objective of this characterization is to learn the differences between the members and nonmembers of the Committees within the CIAL communities through the analyses of some socioeconomic indicators. The following are the research questions:

- ✓ Who are the CIAL members?
- ✓ Are the CIAL members representative of the community?

The answers to these questions will be obtained through the possible relationships between the members and non-CIAL members and the following socioeconomic indicators: Amount of own land, if they work off the farm or not, schooling, generation of employment (work days hired during the year), yearly availability of food and participation with community organizations.

Table 1 gives the relation between land tenure and the members and non-CIAL members. It can be observed that 41.6% of the farmers have property whose area is less than 1 ha, whereas 32.4% have areas that range from 1-3 ha.

Table 1. Comparison between members and non-CIAL members in relation to land tenure.

CIAL Members	Amount of Land (ha)				Total
	< 1	1 - 3	3 - 5	> 5	
No	60 43.8%	44 32.1%	15 10.9%	18 13.1%	**137**
Yes	12 33.3%	12 33.3%	6 16.7%	6 16.7%	**36**
Total	**72** **41.6%**	**56** **32.4%**	**21** **12.1%**	**24** **13.9%**	**173**

The foregoing implies that a small percentage of the farmers (26%) have land over 3 ha, which in accordance with the nature of their exploitations (coffee, common beans and maize) makes them small farmers.

Table 1 also shows that among the CIAL members, the percentages of land tenure are similar for the smaller sized properties: about 33.3% have less than 1 ha or from 1-3 ha. For the larger properties, 16.7% have 3-5 ha or more than 5 ha, which means that all types of farmers have free access to the CIAL, independent of the size of land that they have. Whereas in the non-CIAL members the proportion is greater in those that have less than 1 ha (43.8%). The foregoing means that there is a slight tendency for the farmers with less land to be less interested in belonging to a CIAL.

Table 2. Percent comparison between members and non-CIAL members in relation to land tenure and day labor.

CIAL Members	Work Off the Farm	Amount of Land (ha)				Total
		< 1	1 - 3	3 - 5	> 5	
No	No	26.3	23.4	7.3	11.7	**68.6**
	Yes	17.5	8.8	3.6	1.5	**31.4**
	Total	**43.8**	**32.1**	**10.9**	**13.1**	**100**
Yes	No	22.2	22.2	11.1	16.7	**72.2**
	Yes	11.1	11.1	5.6	0.0	**27.8**
	Total	**33.3**	**33.3**	**16.7**	**16.7**	**100**

In accordance with Table 2 on the relation between day labor and amount of land, we can see that the majority of the farmers do not recur to working on other farms, which implies that they are able to derive their livelihoods from their exploitations. The group of farmers that recur to day labor are those whose lands are under 3 ha.

If we compare members and non-CIAL members, we can see that there is no major difference in relation to the amount of land and day labor. The majority of both the members and the non-CIAL members (66.6 and 75.9%, respectively) had areas of land under 3 ha. Similarly, with regard to working off the farm, 72.2 and 68.6% of the members and non-CIAL members, respectively, do not do so. In accordance with the foregoing, there is not a significant level of dependency of the members and non-CIAL members with respect to the area available and the criterion of seeking day work.

Table 3. Comparison between members and non-CIAL members in relation to the generation of employment (work days/year)

CIAL Members	Generation of Employment (Work Days/Year)			Total
	Does not hire	1 - 6	6 – 12	
No	72 52.6%	59 43.1%	6 4.4%	**137**
Yes	9 25.0%	19 52.8%	8 22.2%	**36**
Total	**81** **46.8%**	**78** **45.1%**	**14** **8.1%**	**173**

Table 3 compares the total months contracted in the year 2003, observing that 75% of the CIAL members recur to labor during some time of the year, which contrasts significantly with the nonmembers, 47.5% of whom generated employment during the same period of time. This could be because there is a larger group of farmers not belonging to the CIAL that have less than 1 ha, who use all their labor on their land while the CIAL members, who are generating new technologies and greater intensification in land use, need to hire labor as they cannot manage all that work.

Table 4. Comparison between members and non-CIAL members in relation to scarcity of food in the year.

CIAL Members	Scarcity of Food (mo/yr)				Total
	Not scarce	< 3	3 – 6	> 6	
No	20 14.6%	80 58.4%	32 23.4%	5 3.6%	**137**
Yes	11 30.6%	12 33.3%	11 30.6%	2 5.6%	**36**
Total	**31** **17.9%**	**92** **53.2%**	**43** **24.9%**	**7** **4.0%**	**173**

Table 4 contrasts the total months in which there was scarcity of food in 2003 between the members and non-CIAL members. In general terms and independent of whether they were members or not of the CIAL, it was observed that at a certain time of the year, there was a scarcity of food and the greatest percent was in the range of less than three months when food availability was low.

Comparing the two groups, 30.6% of the CIAL members vs 14.6% of the nonmembers stated that there was no scarcity of food, which could indicate the benefit of the CIAL methodology, which focuses primarily on crops that are important staples in the region such as common beans and maize. The rest (85.4% of the nonmembers vs 69.4% of the members) stated that during some time of the year, there was insufficient food, which affected the quality of life of the community, those belonging to the CIAL being less affected.

Table 5 compares the levels of schooling between the members and non-CIAL members, observing that at least 76.3% of the farmers in general had a primary education; only 8.8% had reached the level of secondary education. Comparing the levels of education within the CIAL and non-CIAL groups, it can be seen that the former had the lower level of illiteracy (2.8 vs 12.4%) and the higher level of schooling (30.6 vs 8.8%).

Table 5. Comparison between members and non-CIAL members in relation to schooling.

CIAL Members	Schooling			Total
	No Education	Primary	Secondary	
No	17 12.4%	108 78.8%	12 8.8%	**137**
Yes	1 2.8%	24 66.7%	11 30.6%	**36**
Total	**18** **10.4%**	**132** **76.3%**	**23** **13.3%**	**173**

Given the foregoing, it could be inferred that the farmers that are CIAL members have the higher levels of schooling. This does not constitute an indispensable requisite for being part of this group, but it does give them some qualities that enable them to hold posts within the Committee or in the different community organizations. Figure 1 supports this, where we see a greater commitment with respect to participation in number of organizations, among those farmers that have had a higher level of schooling.

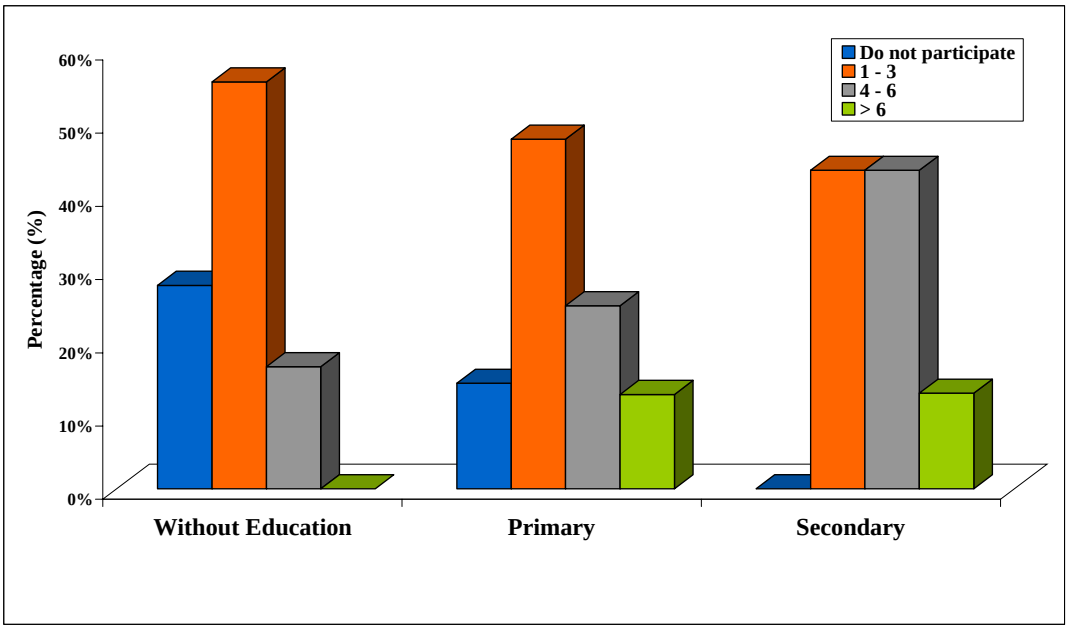

Figure 1. Comparison between schooling and the number of organizations participating.

Table 6. Comparison between members and non-CIAL members in relation to the number of community organizations in which they participate.

CIAL Members	No. of Organizations				Total
	Does Not Participate	1 – 3	4 - 6	> 6	
No	23 16.8%	71 51.8%	33 24.1%	10 7.3%	**137**
Yes	1 2.8%	12 33.3%	13 36.1%	10 27.8%	**36**
Total	**24** **13.9%**	**83** **48.0%**	**46** **26.6%**	**20** **11.6%**	**173**

Table 6 compares the members and non-CIAL members in relation to their participation in community organizations. In general the people from the communities participate in at least one organization (86.1%). Of the nonmembers, 51.8% do not participate in more than three organizations; whereas 63.9% of the CIAL members participate in at least four organizations, which could imply a greater level of commitment with the community.

Discussion

In the analysis of frequencies there was a greater difference between the members and non-CIAL members with respect to the level of schooling, which was confirmed by the multiple correspondence analysis, where this variable is taken as supplementary or explanatory. According to the multiple correspondence analysis, there were statistical differences between the members and non-CIAL members, where the former are characterized primarily by land tenure of areas greater than 3 ha; generation of employment during periods greater than 6 months; nonscarcity of food; and high levels of community participation (more than 6 organizations). All these factors were explained by the level of secondary education.

Benefits of being a CIAL member

The idea was to learn the benefits that the CIAL farmers obtain with respect to human and social capital by answering the research questions: What are the benefits of being a CIAL member? What are the impacts resulting from participating in the Committee?

Human capital

The theory of human capital, developed by Gary Becker in 1964, is defined as the set of productive skills that an individual acquires by accumulating general or specific knowledge[122]. Some indicators of this capital could be taken in function of leadership and the capacity for acquiring new knowledge that facilitates problem solving in a community.

Table 7. Relation between the trials conducted outside the CIAL and new crops tested within the CIAL.

Experiments Outside the CIAL	New Crops Tested			Total
	Never	A Few	Many	
No	12 52.2%	10 43.5%	1 4.3%	**23**
Yes	1 7.7%	4 30.8%	8 61.5%	**13**
Total	**13** **36.1%**	**14** **38.9%**	**9** **25.0%**	**36**

[122]http://multitudes.samizdat.net/article.php3?id_article=312

Table 7 shows the relation between the trials done outside of those that they normally implement in the CIAL, in which the farmers test new crops or technologies. There were 23 members who did not conduct trials outside of those done by the CIAL. Of the group of those that did conduct other experiments besides those of the CIAL, 92.3% tried a new crop; within this percentage 61.5% had done so many times. The foregoing contrasts with those who have never conducted trials, where 52.2% have never experimented with new crops.

Table 8. Relation between new skills learned and the testing of new crops among the CIAL members

New Skills	Trial of New Crop Varieties			Total
	Never	A Few	Many	
None	1 50.0%	1 50.0%	0 0.0%	**2**
A few	6 54.5%	5 45.5%	0 0.0%	**11**
Many	6 26.1%	8 34.8%	9 39.1%	**23**
Total	**13** **36.1%**	**14** **38.9%**	**9** **25.0%**	**36**

According to Table 8, 94.4% of the members of the Committee have acquired new skills; and of these, those who learned only a few skills, 54.5% have not experimented with new crops. The foregoing contrasts significantly with those members that have acquired many skills, where 73.9% have tested new crops. The CIAL members that have learned new skills state that they have been trained in:

- ✓ New technologies for crop management
- ✓ Doing research in agriculture
- ✓ Organizing and administering agriculture and livestock production
- ✓ Marketing
- ✓ Speaking in public
- ✓ Organizing meetings with the community

From the foregoing, it can be stated that a greater increase in knowledge stimulates greater motivation to experiment, which enables the farmers to develop the capacity to solve problems, generate alternatives and implement technologies, which will, in the future, benefit both the community and themselves.

Social capital

For the World Bank,[123] social capital refers to the institutions, relationships and norms that form the quality and level of social interactions in a community. It not only represents the set of institutions within the community, but also the substance that keeps them together, such as shared needs, thoughts and the capacity to convene. In accordance with the same organism, "numerous studies show that social cohesion is a critical factor if societies are to prosper economically and for development to be sustainable… Both the institutions and the substance that joins them, seek to build the community so that society can conquer their feelings of dependence and acquire trust in themselves, so that they can design and execute projects based on the assets of the community itself."

Table 9. Relation between changes in the level of commitment of the CIAL members with the community and the organizations in which they participate.

Change in Level of Commitment	No. of Organizations in Which They Participate				Total
	Does Not Participate	1 - 3	4 – 6	> 6	
No	1 4.5%	10 45.5%	7 31.8%	4 18.2%	**22**
Yes	0 0.0%	2 14.3%	6 42.9%	6 42.9%	**14**
Total	**1** **2.8**	**12** **33.3%**	**13** **36.1%**	**10** **27.8%**	**36**

Table 9 compares the change in the level of commitment with the community and the number of organizations in which the committee members participate. It can be seen that 61.1% of the members have not changed their level of responsibility with the community, although their level of community participation, defined on the basis of the number of organizations in which they participate, is high (95.5%). On the other hand, 85.8% of the group that state that their level of commitment has changed participate in at least four organizations, which contrasts significantly with 50% participation in more than four organizations of those who state that they have not undergone changes in their level of community responsibility. It is possible that the members who have increased or improved their commitment to the community have acquired responsibilities with more organizations.

As the communities studied have an agricultural vocation, it is normal that there are problems related to production, to which the farmers seek solutions, which can be found within or outside their community.

[123] http://www.changecultural.com.ar/investigacion/construccion.htm

Figure 2 shows the percentages regarding the trust the communities have in some people from their own community for solving agricultural problems. It can be seen that 58.4% do not trust in anyone for solving their problems (blue bar), whereas 41.6% trust in at least one person (green bars). Despite the high percentage that do not trust in at least one person from the community to solve their agricultural problems, the social capital formed can be recognized with respect to some people's capacity for solving the community's problems. Of those people considered by the community to be trustworthy for solving agricultural problems, 50% are CIAL members (red bar). The foregoing, added to the better level of schooling of the CIAL members, the new skills learned and curiosity for experimenting with new crops, increases the social capital of the communities.

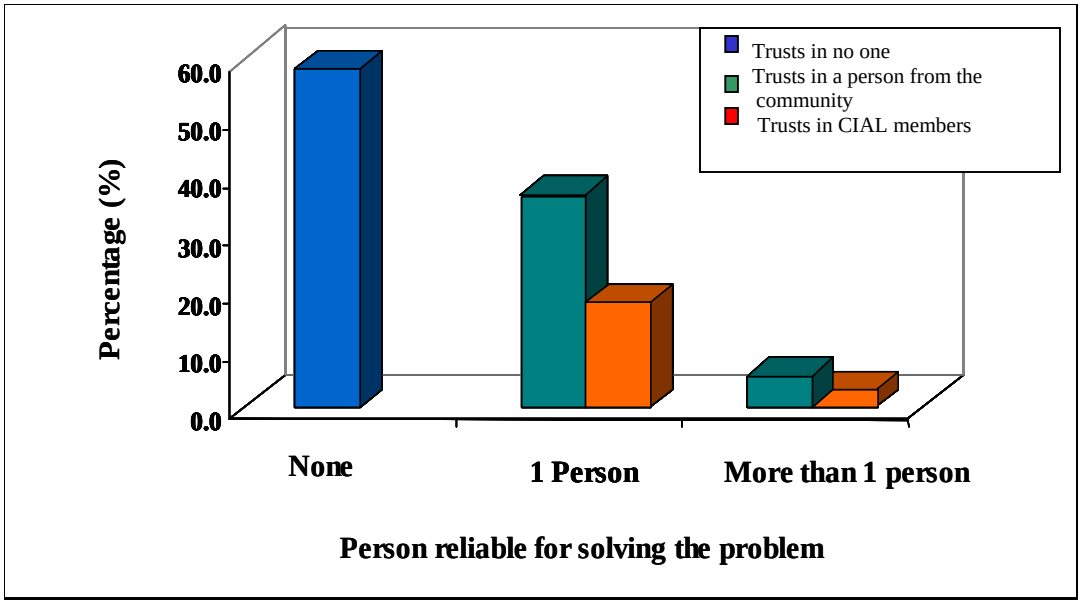

Figure 2. Relationship between the members of the community trusted to solve an agricultural problem and the CIAL members recognized for coming up with a solution.

Discussion

In the analysis of frequencies, we can see the existence of a group characterized by members that have conducted trials beyond those done by the CIAL, have experimented with new crops, learning other skills, changing their level of commitment with the communities, thereby leading to a higher level of community participation. The foregoing is corroborated by the multiple correspondence analysis, which distinguishes two groups. The first is characterized by their low community participation, which could be associated with their not changing their level of commitment to the community, their low interest in acquiring new skills or in testing new crops. In the second group are people with a high sense of belonging to the community, which is manifested by their high participation in organizations and their change in commitment with the community. They have also acquired new skills, which could be related to their interest in testing crops other than those that they generally plant. Using schooling as the explanatory variable, we can say that the higher level of studies is associated with the second group.

Therefore we can assume that the benefits of being a CIAL member are, to a great extent, reflected in the members with a higher level of education.

References

Ashby, A.; García, J. 2000. Estudio de impacto de los CIAL1998. CIAT (Centro Internacional de Agricultura Tropical), Cali, CO. (Unpublished)

Gleizes, J. 2004. El capital humano. Revista electrónica : Multitudes Web. Available at http://multitudes.samizdat.net/article.php3?id_article=312.

Hincapié, F. 2003. To document the impact of CIAL methodology in five communities in the Cauca Department: Output 5. In: CIAT (Centro Internacional de Agricultura Tropical) Annual Report, Project SN-3, Cali, CO.

Jorge, J.; Censi, F.; Bertucci, J. 2004. Capital social y pobreza: casos y métodos en la "construcción comunitaria". Revista electrónica Cambio Cultural. Available at http://www.cambiocultural.com.ar/investigacion/construccion.htm.

Impact assessment of Local Agricultural Research Committees (CIALs) in Yoro Department, Honduras

Researchers: Lauren Classen, Sally Humphries, John FitzSimons, Susan Kaaria, José Jimenez, Omar Gallardo, Fredy Sierra

Introduction

This study examines the direct and indirect impact of the CIAL (local agricultural research committee) project in the Yorito region of North-Central Honduras. It is based on both qualitative and quantitative impact assessment research, funded jointly by CIAT (International Center for Tropical Agriculture Research) and the University of Guelph. The fieldwork was completed in April 2004.

The purpose of this research was to use different impact assessment (IA) methods to measure CIAL project outcomes and benefits in specific terms—economic, social, human, physical and environmental in nature—that impact on poor households, particularly in the area of food security. These outcomes are examined from a livelihoods perspective with the understanding that poor, subsistence farmers have diverse livelihood systems and that there are environmental, political and sociocultural, barriers to the adoption of new technologies.

The CIAL project in Honduras aims to improve social, human and economic capital assets among farmers who typically have little or no access to national research systems, by assisting them in the development and testing of different technologies that meet their priorities and that are adapted to their micro-landscapes. This is done by bringing together interested farmers in geographically defined communities into a CIAL. A CIAL can be defined as a "farmer-run research service that is answerable to the local community, with the objective of experimenting with locally unknown and unproven farming methods, to identify appropriate locally solutions" (Ashby et al., 2000). A basic premise of the CIAL approach is to serve as a platform for communicating the needs of poor farmers to the formal R&D systems and to create a 'demand-pull' on the supply of agricultural innovations (Ashby et al., 2000).

Methodology

Issues of reliability and objectivity

The focus of these results is on the more quantitative findings; the qualitative results from an earlier Master's thesis at the University of Guelph were used to develop the survey and are used to inform discussion in this report. The analysis was done at the individual (respondent level), household and community levels (Table 1). In all cases tests were run to see if there were differences related to community elevation, accessibility to market, as well as gender differences in CIAL membership household characteristics. In the cases where gender differences in household membership influenced impact, these data are displayed in tables and discussed.

Table 1: Sampling Frame for the Study

	CIALs Level	Community Level	
		With CIALs	**Without CIALs (Counterfactual)**
Individual Household Surveys	Four CIAL members from each of 10 CIALs	Household level interviews conducted in tree communities	Household level interviews conducted in two communities

It is important to mention here that the counterfactual communities selected were problematic for this research as CIALs are often formed in the Yorito region in response to an invitation by the community. Therefore the very fact that these two counterfactual communities had not asked for a CIAL makes them different from those communities that have CIALs. This being the case and without baseline data for comparison, it is very difficult to conduct the comparisons between communities with and without CIALs.

Study objectives

- ✓ Assess the effectiveness of the CIAL methodology
- ✓ Assess the costs and benefits of the CIAL to its members as well as the members of the community
- ✓ Use the results of this impact study actively for institutional learning and change

Research questions

- How effective is the CIAL methodology and how relevant is it to local problems and needs?
- What are the benefits of being a CIAL member, and what are the long-term impacts that result from having participated in the CIAL?
- How has the CIAL benefited its community?
- What are the costs associated with CIALs? Are CIAL activities as cost effective as possible to achieve desired impact?
- What has allowed for these impacts to occur in the Honduras context? Are these impacts sustainable? Why or why not?
- What is the role of the second-order associations in increasing robustness and sustainability of the CIAL process?
- How have the second-order associations supported the development of CIAL activities?

Criteria for selecting CIAL community

- CIAL communities in Yorito and Sulaco
- Stratification of CIALs done by age and gender of membership
- CIALs in existence for four years or less excluded
- CIALs with different membership composition: Mixed, women only, different levels of well-being, experience with participatory plant breeding

Formal survey questionnaires

Ten CIALs were selected from Yorito and Sulaco. To understand the impact of the CIALs on individual as well as other community members, individual farmer surveys were conducted in ten CIAL communities. In order to control for changes attributable to CIALs in communities and the members, two counterfactual communities were be surveyed. In each of the 10 CIAL communities, both CIAL and non-CIAL members were interviewed. The sample was stratified normally. In each household both the male and female heads of household were interviewed. Table 2 gives the names and characteristics of the CIALs included in the study.

Table 2: CIALs included in the study

Name of Community	Date Created	Number of members		Number of Households in Community	Sample Size for Survey
		Men	Women		
Río Arriba	1996	6	5		
Luquigue	1996	10			
San Antonio	1996		10		
Guaco	1997	6	2		
El Plantel	1998	7	2		
Los Cafetales	1998	11	4	28	14
Mina Honda	1998	9	8		
Santa Cruz	1998	5	2	46	23
La Patastera	1999	4	3		
Pueblo Viejo	1999		12	42	21

Results and discussions

Geographic and socioeconomic context

Honduras is 112, 090 sq. km of rugged mountainous territory, upon which over half of the estimated 6.5 million residents (World Bank, 2000) eke out a living. With a per capita GNP of US$730 (1998), Honduras ranks among the lowest-income countries in the Western Hemisphere, characterized by rural poverty with the majority of rural households living in conditions of extreme indigence (World Bank, 1999, 2001). In 1999, 75% of the rural population of Honduras lived below the poverty line (World Bank, 2001). The rural poor represent 59% of all Honduran households under the poverty line, and rural indigence afflicts 65% of all households in this category (World Bank, 2001). There is severe food insecurity, with 35% of the population unable to supply themselves with maize, the basic staple; and 65%, with beans (Barreto et al., 1998). The damage from Hurricane Mitch in 1998 was concentrated in rural areas and continues to exasperate these conditions today as Honduras slowly works to restore homes, bridges and roadways.

Agriculture for export and internal consumption is the largest employer of labor in the Honduran economy. Given the limited fertile valleys suited to farming and the severe inequality in land distribution, many farmers are forced to work on resource-poor, steeply sloped land unsuited for agriculture. According to the World Bank (2001), 72% of the producers in Honduras own 11.6% of the cultivated area; whereas 1.7% of the large landowners (those with 100-ha units or larger) own 30% of the cultivated land area. Furthermore, it found that 35.8% of the rural families did not own any land of their own.[124]

While agriculture employs an estimated 60% of the population, it produces only one-quarter of the nation's GDP (Humphrey, 1997). The National Program of Sustainable Development (PRONADERS) (of the Honduran Government) found that a very small percentage of the producers control the majority of the arable land in Honduras. Over half of the country's arable land is owned by the Honduran Government and the two largest banana companies (Chiquita and Castle & Cooke, formerly Standard Fruit) (Humphrey, 1997).

The development of civil society has been impeded by extreme social inequality and repressive military regimes, which have acted to maintain the status quo for almost two decades of violent conflict throughout Latin America. Anti-Communist fervor promoted by successive Honduran governments actively discouraged, and indeed penalized, collective activities at the community level, leading to a climate of fear and distrust. Evangelical religions, which have expanded rapidly throughout the region in recent decades, have reinforced this fear of group activities through the belief that the anti-Christ will appear amidst collective undertakings (Humphries, 1996; Probst, 2002). Such conditions have had a negative effect upon the development of social capital in Honduras. Community institutions are generally weak, and leadership is poor in many areas of the country.

These conditions make institutional development a prerequisite for the promotion of civil society. Honduras clearly needs access to new information, education and technology that fills the void created and sustained by the Government. Development must include support for collective activities in order to strengthen communities and rebuild local confidence in their own capacities for innovation, as well as individual-level and institutional linkages associated with strong social capital (Classen et al., 2003).

History of the CIALs in the country

The CIAL methodology came to Honduras with Dr. Sally Humphries in 1992 while she was working with the CIAT Participatory Research in Agriculture Project (IPRA). Together with a local agronomist, José Jiménez, who was at the time employed by the SRN, she began helping interested farmers in northern Honduras form CIALs and look for solutions to problems with soil fertility related to rapid deforestation, associated with shifting agricultural practices. They worked with six CIALs in the area.

Here they learned two very significant things about the CIAL methodology that brought them to Yorito and helped shape the CIAL methodology used throughout rural Honduras today:

[124] Barreto et al. (1998) found similar figures for a land distribution in a national study.

- As the CIAL methodology requires significant inputs of time and energy on the part of the farmers, the process appeals to farmers that have a high level of necessity and few options in terms of access to information and new technologies appropriate to their needs. Thus the CIAL process, which focuses on capacitating and empowering the farmers, must be accompanied by relatively short-term socioeconomic benefits in order to keep poor farmers interested and hopeful during the process of developing appropriate local solutions to their needs (Humphries et al., 2000).
- Owing to the traditional top-down development in Latin America, which decreased peoples' confidence in their own abilities to develop solutions to their problems, they felt dependant on hand-outs of new technologies, which are often inappropriate or applicable only in the short term. This context significantly slows the process of human capital development and empowerment and augments the need for rapid, visible project benefits in order to maintain interest and help recover low self-esteem among poor Honduran farmers (Classen et al., 2003).

In February 1996, following a workshop on the CIAL methodology, agronomists José Jiménez, Nelson Gamero and Juan Gonzáles began working with CIALs in the Departments of Yoro, Yeguare and Santa Barbara, respectively. There are fewer accessible natural resources in these regions, which are characterized by very steep slopes and poor soil quality. In Yoro, supported by a local NGO, Foundation of Participatory Research with Farmers from Honduras (FIPAH), the CIALs Luquigue, Rio Arriba and Vallacillos began working on selecting quality beans for planting, better hillside planting techniques, and soil conservation techniques in response to community-recognized needs in these areas. Today Luquigue and Rio Arriba are the oldest CIALs in Yoro and are 2 of the 85 CIALs active in Honduras today.

The CIAL members

In total FIPAH supports 60 CIALs, 25 of which are in Yoro. On average, each CIAL has nine members, with the membership ranging from 6-23. Of the 25 in Yoro, 3 have only women, 2 are male-only, and 20 are mixed, with more CIALs converting to mixed membership each year. Initially CIAL membership represented the leaders in the communities, who were outgoing men with a medium- to medium-poor socioeconomic status relative to their communities. It is extremely important to recognize that everyone in these communities is living below the national poverty line so this categorization is ***relative to the economic status of fellow community members***. However, realizing this as a limitation, FIPAH has taken measures to encourage more inclusive membership, which in return has affected the shapes and activities of the CIALs.

This is section presents results from the first preliminary analysis and focuses on the following research questions:

- ✓ Are CIAL members representative of their communities?
- ✓ What are the human and social capital impacts of being a CIAL member, and how do these benefit the communities?
- ✓ How do communities benefit (economic, physical and natural impacts) from having a CIAL?

- Are CIAL members representative of their communities? Who are they? This is an important aspect because it is important for CIAL members' households to be representative of the communities from which they come from because this implies that even the poor and disadvantaged can also participate and benefit from the CIAL process.

  This study found that CIALs in the Yorito region are representative of their communities in most measures of socioeconomic status. The results show that there no significant differences in total land size or cultivated land size between member households and nonmembers' households in CIAL communities (Tables 3-4). The overall average size of total land owned is 3.1 manzanas (mz) or 2.17 ha, and the cultivated land size is 2 mz or 1.4 ha (Tables 5-6). In both groups the average amount of land cultivated in partnership with others (Table 7) was from 1-1.7 mz, and the average amount of land rented to others was 0.05 mz for nonmembers' households and 0.7 mz for members' households, with no significant differences (Table 8). There were no significant differences between members' and nonmembers' households in primary crops, which in both cases were maize and beans; nor were there differences in the average percentage of land dedicated to coffee: 23.6% (Table 9). Finally, the same percentage of families in both groups hires farm laborers each year, and the average no. of weeks of off-farm work per family last year was not significantly different (overall avg. of 21 wk). In all measures of land size and farming system, CIAL members are representative of their communities.

Table 3. Mean area of cultivated land: comparing households with at least one CIAL member and households with no CIAL members in CIAL communities.

	CIAL member & non-CIAL member families	**N**	**Mean**	**SD**
Total area cultivated	At least one CIAL member in family	44	1.8580	1.45813
	No CIAL members in family	32	2.0703	1.22842

Not significantly different @ 95% level, T-test .
Note: Non-CIAL communities and former members excluded from analysis; SPSS Output = Sept. 17 A.

Table 4. Mean area of total land owned: Comparing households with at least one CIAL member and households with no members in CIAL communities.

	CIAL member & non-CIAL member families	**N**	**Mean**	**SD**
Total land size	At least one CIAL member in family	47	3.3032	4.47060
	No CIAL members in family	33	3.1174	2.93549

Not significantly different @ 95% level.
Note: Non-CIAL communities and former members excluded from analysis; SPSS Output = Sept 17 A.

Table 5. Total land size broken down, comparing households with at least one CIAL member and households with no CIAL members in CIAL communities.

			No Land	0.1-0.5 mz	0.5-1.1 mz	1.1-2 mz	2.1-5 mz	> 5 mz
CIAL & non-CIAL member families	At least one CIAL member in family	Count	1	5	6	13	18	4
		%	2.1%	10.6%	12.8%	27.7%	38.3%	8.5%
	No CIAL members in family	Count	1	2	4	13	6	7
		%	3.0%	6.1%	12.1%	39.4%	18.2%	21.2%

N = 80; not significantly different @ 95% level, Chi square and Mann Whitney U (prob. small #'s).

Table 6. Cultivated land size broken down, comparing households with at least one CIAL member and households with no CIAL members in CIAL communities.

			No land	0.1-1 mz	1.1-2 mz	2.1-3 mz	> 3.1 mz
CIAL member & non-CIAL member families	At least one CIAL member in family	Count	2	15	18	4	5
		%	4.5%	34.1%	40.9%	9.1%	11.4%
	No CIAL members in family	Count	1	7	12	8	4
		%	3.1%	21.9%	37.5%	25.0%	12.5%

N = 76, not significantly different @ 95% level, Chi square and Mann Whitney U (small no.).

Table 7. Mean area of land cultivated in partnership with family: Comparing households with at least one CIAL member and households with no CIAL members in CIAL communities.

	CIAL member & non-CIAL member families	N	Mean	SD
Total land cultivated in partnership with others	At least one CIAL member in family	18	1.6667	3.51468
	No CIAL members in family	18	.9722	1.78616

Not significantly different @ 95% level, T-test.

Note: Non-CIAL communities and former members excluded from analysis; SPSS Output = Sept 17 A.

Table 8. Mean area of land rented to others: Comparing households with at least one CIAL member and households with no CIAL members in CIAL communities.

	CIAL member and non-CIAL member families	N	Mean	SD
Total land rented	At least one CIAL member in family	15	.7333	1.37408
	No CIAL members in family	21	.0476	.21822

Not significantly different @ 95% level, T-test (equal var. not assumed).
Note: Non-CIAL communities and former members excluded from analysis; SPSS Output = Sept 17 A.

Table 9. Mean percentage of land area dedicated to coffee: Comparing households with at least one CIAL member and households with no CIAL members in CIAL communities.

	CIAL member & non-CIAL member families	N	Mean	S. D.
% Total cultivated land in coffee	At least one CIAL member in family	48	25.0682	39.92274
	No CIAL members in family	38	22.1840	32.07042

Not significantly different @ 95% level, T-test.
Note: Non-CIAL communities and former members excluded from analysis; SPSS Output = Sept 17 A.

Likewise, there were no significant differences between member and nonmember households with respect to housing materials or household structure (Table 10). Housing materials are a local indicator of socioeconomic status and were used in this survey by allocating a number value to each material, together with the local participants. The higher the number, the better the material, relative to the best and worst housing materials in these communities. The average overall rating for nonmember families was 6.13/14 and for member families were 6.62/14, both with a low SD, indicating little variation from the mean. Similarly, household composition in terms of average no. of dependents (6.3), no. of productive adults (3.4) and productive men (1.4), no. of children under 10 (1.5), no. of women between ages 11 and 18 (0.5) were not significantly different.

Table 10. Housing materials: Comparing households with at least one CIAL member and households with no CIAL members in CIAL communities.

	CIAL member & non-CIAL member families	N	Mean	SD
Housing materials (calculated from ceiling, floor, walls); higher no. = better materials	At least one CIAL member in family	50	6.62	1.783
	No CIAL members in family	30	6.13	2.047

N = 80, not significantly different, T-test.

There were significant differences in animal ownership among CIAL member and nonmembers' families and rented land size. The largest difference in the average no. of animals owned was in the poultry category, with 14.3 for CIAL families and 8.8 for non-CIAL families. However, in participatory activities, many women explained how their cooperation with the CIAL has enhanced their capacity for social mobilization. The women involved with the CIAL have solicited aid from the municipality and from other organizations for things such as community infrastructure and poultry care. It is likely therefore that many of these CIAL families will be better equipped to care for their poultry, making them more resistant to diseases that often kill off entire flocks.

There is also a small, but significant difference between the no. of pack animals and pigs owned by member and nonmember families. CIAL families own an average of 1.5 pack animals whereas nonmembers' families own an average of 1.1. This difference, however small, may indicate an increased acquisition of pack animals by CIAL members, who now require transportation to bring produce to local markets or to attend CIAL meetings in central areas. CIAL member households also own 0.7 more pigs on average than nonmembers households. This seems to signal a slightly higher level of economic well-being as pigs are a common method of keeping 'savings.' Table 11 indicates that 55.1% of CIAL-member households have savings compared to 10.8% for nonmember households. These savings may be reflected in the no. of pigs owned by the household. Furthermore, in the case of small animals such as rabbits, only non-CIAL families owned them (avg. 1.05). No significant differences were found in animals that indicate more traditional economic stability such as cattle (avg. number owned, 0.6) and ruminants (avg. number owned, 0.2). This further reiterates the theory that the small differences in poultry, pig and pack animals for CIAL members are likely a result of recent acquisitions of these animals rather than an indicator of an initial higher level of socioeconomic well-being.

Table 11.Whether or not farmers have savings: comparing households with at least one CIAL member and households with no CIAL members in CIAL communities.

			Save money	
			No	**Yes**
CIAL member & non-CIAL member families	At least one CIAL member in family	Count	22	27
		% within CIAL & non-CIAL member families	44.9%	55.1%
	No CIAL members in family	Count	33	4
		% within CIAL & non-CIAL member families	89.2%	10.8%

N = 86, significantly different @ 95% level, Chi Square, p = 0.000.
Note: Non-CIAL communities excluded. Survey question only asked of head of family (usually male).

Although CIAL member families seem to be representative of the households in their communities in terms of socioeconomic status, the CIAL appeals to *individuals in these households* with higher levels of education. In the case of CIAL members, 47% have 4-6 years of elementary education; whereas in the case of nonmembers, 71.6% have 3 or fewer years of elementary education (Table 12).

Table 12. Level of education (ordinal) –excluding non-CIAL communities.

			Education level of respondent reduced			
			No education	**1-3 yr elementary**	**4-6 yr elementary**	**Some secondary schooling or more**
Membership or nonmembers CIAL	Not a CIAL member	Count	32	36	24	3
		% within membership or CIAL nonmembers	33.7%	37.9%	25.3%	3.2%
	CIAL member	Count	10	21	29	2
		% within membership or CIAL nonmembers	16.1%	33.9%	46.8%	3.2%

N = 157, statistically significant at the 95% level, Mann Whitney U.; p = 0.003.
Note: Non-CIAL communities and former members excluded from analysis; SPSS Output = Sept 17 A

Similarly, 80% of the CIAL members are literate compared to 64.3 % of nonmembers. Although this reflects the difference in education levels, many CIAL members have begun to take literacy courses over the radio since their involvement with the CIAL. National radio education programs also came out at the same time as the CIAL in many communities, and the CIAL played a role in encouraging participation in community activities such as education programs. The CIALs do not exclude illiterate people (20% of CIAL members are illiterate) and the differences in literacy among members and nonmembers may reflect encouragement on part of the CIAL for its members to take literacy courses.

In summary, there are no significant differences between CIAL members' and nonmembers' households in terms of total and cultivated land area, main crops grown, amount of land dedicated to coffee, or the weeks of off-farm work. Households have the same level of locally defined socioeconomic status (determined by housing materials), and there are no significant differences in household composition. The only significant differences at the household level are in the average no. of chickens and pigs, ruminants and pack animals, the last three being a difference of less than two animals on average.

At the individual level, however, it seems that direct participation in the CIAL appeals to those with more than an elementary education, and CIALs are composed primarily of literate individuals. As many of the participants have said, the CIAL is "a little school for learning," and as such it makes sense that it would appeal to the same people who had chosen/had the option of staying longer in school. However, CIAL activities have resulted not only in improved agricultural techniques, adoption of new varieties and improvements in food security, but also in a number of social and human capital outcomes and benefits to member households that were not anticipated in the Project objectives. CIAL members have learned a variety of skills through their participation in the CIAL, including social and communication skills, food preparation, marketing and financial budgeting skills, as well as sewing (Table 13). The most widely chosen motivating factor for CIAL members to join the CIAL for both men and women was learning different agricultural techniques and how to investigate new varieties and select plants and seeds for 83 % of the male participants and 79% of the female participants. This was followed by other factors such as learning to prepare new foods, better production results with the CIAL and improved social skills. This being the case, it is also possible that literacy and education levels have been acquired since becoming involved with the CIAL in response to participant recognition of the value of such endeavors, combined with ready access to national radio education programs.

Table 13. Skills taught by the CIAL that are not directly related to agriculture.

		Learned something besides agriculture from the CIAL			
		Prepare different recipes	**Sewing**	**Social skills**	**Savings & marketing skills**
Gender	**Male**	50.0%		30.0%	20.0%
	Female	79.3%	10.3%	3.4%	6.9%

N = 39

- What are the human and social capital impacts of being a CIAL member and how do these benefit the communities? CIAL members have changed their farming and experimentation methods profoundly over the past five or so years, and today they are recognized as

agricultural leaders in their communities. Almost half (46%) of them have changed their method of determining whether or not a new variety is appropriate in their own fields compared to a 7.1% change among nonmembers. Of those who have changed, 76% attributed these changes to the CIAL in their communities. The majority of the CIAL members explained that before they planted many varieties together and did not know how to test one against another.

Overall, the CIAL is well known in most communities (86%), and most nonmembers have learned from the CIAL in their community. Of those respondents, 63.5 % said that they had learned new farming techniques from the CIAL, and 53% said that at least one person in their household had visited a CIAL experiment. Many (41%) feel that the CIAL in general does "useful" research, and 36.6% have participated directly in CIAL activities. In fact, when asked what they would like the CIAL to investigate in their communities, the top three responses were: "continue investigating new bean and maize varieties" (33.8%), "test vegetable gardening techniques/varieties" (16.9%), and "produce more maize and beans to sell to the community" (11.3 %)—three things that all the CIALs are already accomplishing. These responses indicate an overall confirmation of the appropriateness of CIAL research for the local community and a local interest in the outcomes of CIAL activities.

As a result of their capacity for experimentation and enhanced agricultural skills, individual CIAL members are recognized as agricultural leaders in their communities. In CIAL communities, 76.2 % of the CIAL members and 60.2% of the nonmembers recognized someone as the "agricultural experimenter" in their communities, who was identified (either during the interview or later on) as a CIAL member. Similarly, 81% of all those recognized as the "most knowledgeable about agriculture" by CIAL members and 61.7 % of those recognized by nonmembers were also CIAL members. When farmers were asked where they seek agricultural advice in their communities, 78.1 % of the CIAL members said that they can rely on the CIAL to find solutions to these problems, and 31.0% of the nonmembers said the same. Another 33% of the nonmembers said that they go to a local organization, without being more specific—some of which would be the CIAL or CIAL members, but they call the CIAL by another name.

- How do communities benefit (economic, physical and natural impacts) from having a CIAL? There is notable diversity among CIAL members and nonmembers in the nature and extent of CIAL project impact. Generally, despite the positive reaction of nonmembers towards the CIAL in their communities, economic impact is limited to direct participants in the CIAL and insignificant among nonparticipants (again, this is difficult to say with certainty due to the lack of baseline information and unreliable counterfactual communities). CIAL members have experienced significant differences in increased maize and bean yields, a decrease in the severity of the "hungry period" and an increase in savings compared to non-CIAL members. However, for both groups, there is a general sense of self-confidence and hope that has grown over the past 5 years. This, combined with the overall knowledge and positive reaction to the CIAL by nonmembers, may indicate a propensity for more extended adoption and impact among non-CIAL members as they become more familiar with CIAL varieties.

CIAL members have experienced significant improvements in both maize and bean yields. Of the CIAL households, 61% have experienced better maize yields in the past 5 years compared to 29% of nonmember households (Table 14).

Table 14. Changes in maize yields: Comparing households with at least one CIAL member and households with no CIAL members in CIAL communities.

			Maize yields have changed		
			Better	**Same**	**Worse**
CIAL member & non-CIAL member families	At least one CIAL member in family	Count	30	8	11
		% within CIAL member & non-CIAL member families	61.2%	16.3%	22.4%
	No CIAL members in family	Count	10	10	14
		% within CIAL member & non-CIAL member families	29.4%	29.4%	41.2%

N = 83, significantly different @ 95% level, Chi square p = 0.017, Mann Whitney U, p = 0.008.

Similarly with beans, 56% of the member households have experienced an increase in bean yields in the past five years compared to 32% of nonmember households (Table 15).

Table 15. Changes in bean yields: comparing households with at least one CIAL member and households with no CIAL members in CIAL communities

			Bean yields have changed		
			Better	**Same**	**Worse**
CIAL member & non-CIAL member families	At least one CIAL member in family	Count	27	12	9
		% within CIAL member & non-CIAL member families	56.3%	25.0%	18.8%
	No CIAL members in family	Count	11	10	13
		% within CIAL member & non-CIAL member families	32.4%	29.4%	38.2%

N = 83, significantly different @ 95% level, Mann Whitney U, p = 0.021.

If we separate household membership by gender (Table 16), it is men's participation in maize production that contributes most importantly to increased yields, with 71% of the male CIAL members reporting an increase in maize yields, compared to 77% when both husband and wife participate in the CIAL. While 77% of husband and wife teams also report a bean yield increase (Table 17), only 58% of the men who participate on their own in the CIAL, report a yield improvement. This suggests that women's participation in bean innovation alongside their husbands is important in obtaining a yield increase, whereas in maize women's contribution to joint research is less evident. This is perhaps understandable in view of the traditional division of labor in which women play a role in the field in beans production (usually pulling them up at harvest time) but a negligible field role in maize.

Table 16. Changes in maize yields: comparing households with different CIAL membership characteristics in CIAL communities.

			Maize yield has changed		
			Better	**Same**	**Worse**
Gender-segregated membership with the CIAL	CIAL community, both members	Count	10	2	1
		% within gender-segregated membership with the CIAL	76.9%	15.4%	7.7%
	CIAL community, only husband is member	Count	15	2	4
		% within gender-segregated membership with the CIAL	71.4%	9.5%	19.0%
	CIAL community, only wife is member	Count	5	4	6
		% within gender-segregated membership with the CIAL	33.3%	26.7%	40.0%
	CIAL community, neither is member	Count	10	10	14
		% within gender-segregated membership with the CIAL	29.4%	29.4%	41.2%

N = 83, significantly different @ 95% level, Chi square, p = 0.017 (problem with small nos.); Kruskal-Wallis: significantly different @ 95% level, p = 0.004.

Table 17. Changes in bean yields: comparing households with different CIAL membership characteristics in CIAL communities.

			Bean yields have changed		
			Better	**Same**	**Worse**
Gender-segregated membership with the CIAL	CIAL community, both members	Count	10	1	2
		% within gender-segregated membership with the CIAL	76.9%	7.7%	15.4%
	CIAL community, only husband is member	Count	11	5	3
		% within gender-segregated membership with the CIAL	57.9%	26.3%	15.8%
	CIAL community, only wife is member	Count	6	6	4
		% within gender-segregated membership with the CIAL	37.5%	37.5%	25.0%
	CIAL community, neither is member	Count	11	10	13
		% within gender-segregated membership with the CIAL	32.4%	29.4%	38.2%

N = 82, not significantly different @ 95% level, Chi square (problem with small nos.).
Kruskal-Wallis: Significantly different @ 95% level, p = 0.014.

The main reasons for improvements in maize and bean yields also differ. In the case of maize, 51% of those with improved yields attribute it to the application of better farming techniques. In the case of beans however, better yields were attributed to new and better varieties in 43% of the cases (Tables 18-19).

Table 18. Reasons for improvements in maize yields.

		Frequency	% Valid
Valid	Applies better agricultural techniques (soil conservation)	19	51.4
	Applies more fertilizer	10	27.0
	New, better varieties	8	21.6

Note: Non-CIAL communities excluded. Respondents from all CIAL communities, who found that yields had improved were included.

Table 19. Reasons for improvements in bean yields.

		Frequency	%& Valid
Valid	Applies better agricultural techniques (soil conservation)	9	25.7
	Applies more fertilizer	11	31.4
	New, better varieties	15	42.9

Although the counterfactual communities were problematic because it was difficult to tell whether they are communities with the same needs as CIAL communities as they had not asked for a CIAL, the differences in their perceived "quality of life" is interesting (Table 20). In CIAL communities, 66.7% of the population felt that their lives have improved over the past 5 years vs only 32% of those in non-CIAL communities. In non-CIAL communities, 36% felt that their quality of life had become worse, compared to only 11.1% in CIAL communities.

Table 20. Changes in quality of life: Comparing CIAL communities and non-CIAL communities.

			Changes in quality of life over past 5 years		
			Improved	**Stayed the same**	**Became worse**
CIAL	Non-CIAL community	Count	8	8	9
		% within CIAL	32.0%	32.0%	36.0%
	CIAL community	Count	36	12	6
		% within CIAL	66.7%	22.2%	11.1%

N = 79, significantly different @ 95% level, Chi Square, p = 0.007.

Conclusions

We found significant impact for CIAL member households and limited impact at the community level. CIAL member households are representative of their communities in farm size and crops planted although there are small differences in animal ownership. CIAL member households tend to have more chickens and slightly more pigs and pack animals than nonmember

households, which may indicate improved livelihoods and reflect more savings among CIAL member households than nonmembers, which may be an indirect result of the CIAL. The CIAL appeals to people with slightly higher levels of education and although it is not limited by literacy, 80% of members are literate today. Again, this may reflect recognition of the importance of education and literacy by CIAL members and recent acquisitions of literacy skills through national radio education programs for adults. Overall, CIAL households have experienced increases in maize and bean yields over the past 5 years, while this is less true for non-CIAL households. Although it seems that the husband's participation with the CIAL is primarily responsible for the impact in maize yields, significantly more households with both husband and wife participating experienced increases in bean yields over the past five years than households with only one of either the spouses participating. Although it is difficult to measure impact at the community level, certainly nonmembers in CIAL communities are aware of the CIAL in their community and over 60% of the nonmembers, when asked what they would like the CIAL to investigate, were satisfied with the CIAL's current activities, indicating that they would like the CIAL to continue investigating things that the CIAL is already doing in their communities. Similarly, over 60% said that they had learned something from the CIAL in their community, and in general CIAL community members feel that their quality of life has improved since the time the CIAL was formed.

The results at the household level were found to be the most important as the impact was almost always most significant at this level; in other words, the benefits accrued by CIAL members often have direct benefits for their families. On the other hand, our results indicate that little benefit is "trickling" down to nonmembers in CIAL communities. For this reason, most of the analyses compare "nonmember households" or households with no CIAL members and "member households", or those with at least one CIAL member (where only one or both spouses are members).

References

Ashby, Jacqueline A., Ann R. Braun, Teresa Graci, Maria del Pilar Guerrero, Luis Alfredo Hernandez, Carlos Arturo Quiros, and Jose Ignacio Roa. 2000. Investing in Farmers as Researchers: Experience with Local Agricultural Research Committees in Latin America. CIAT Publication No. 318. Colombia.

Barreto, H, P. Jimenez, and F. Lamy. 1998. Atlas de Yorito y Sulaco, Yoro (Honduras). Guia 6. En: Instrumentos Metodologicos para la toma de Decisiones en el Manejo de los Recursos Naturales.

Classen, Lauren, Fredy Sierra, Jose Jimenez, Omar Gallardo. 2003. "Assessing Sustainable Rural Development: A participatory impact assessment of the IPCA project in Honduras." Unpublished Master's Thesis.

Humphries, Sally. 1996. Migrants, Dairy Farmers, and Agricultural Land-Use in the Humid Tropical Hillsides of Northern Honduras. Internal Report. Tegucigalpa Honduras: CIAT-Hillsides project.

Humphries, Sally, Juan Gonzales, Jose Jimenez, and Fredy Sierra. 2000. Searching for Sustainable Land Use Practices in Honduras: Lessons From a Programme of Participatory Research With Hillside Farmers. AgREN Network Paper No. 104.

Humphrey, Chris. 1997. Honduras Handbook: Including the Bay Islands and Copan. Moon Publications Inc.

Probst, K. 2002. Participatory Monitoring and Evaluation? PhD Thesis. Hohenheim University, Germany.

World Bank. 1999. Honduras: Country Brief. a.d. 02/19/2002. http://wbln0018.worldbank.org/External/lac/lca.nsf/c2e12c369e771d17852567d6006b402…

World Bank. 2000. World Development Indicators. a.d. 03/22/03. http://1nweb18.worldbank.org/external/lac/lac.nsf/Countries/Honduras

World Bank. 2001. Poverty Reduction Strategy Paper, Honduras. a.d. 23/03/03. http://wbln0018.worldbank.org/lac/lacinfocleint.nsf/

OUTPUT 6. INTERNAL PROJECTS AND OTHER INSTITUTIONS SUPPORTED AND STRENGTHENED IN CONDUCTING PR

Constructing Innovation Histories to Improve Innovative Performance

Researchers: Boru Douthwaite[125], James Cock[126], Bernardo Ospina[127], Robin Buruchara[128], Anne Moorhead[129]

Highlights

- Construction of innovation histories of CIALs in Honduras and Colombia and innovation timelines in Bolivia, Ecuador and Nicaragua
- SWOT analysis of IPRA based on reflections on the CIAL innovation timelines and transcripts of stakeholder interviews
- Construction of the innovation history of small-scale cassava processing plants in Colombia
- Completion of an ILAC Brief that was circulated at AGM 2004 (see draft of "A Guide to Constructing Innovation Histories"
- Funding received from PABRA (Pan-Africa Bean Research Alliance) to construct histories of the adoption of four bean varieties in Kenya, Rwanda and Uganda

Introduction

An innovation history is a narrative that identifies, describes and explains the key events in an innovation process, whereby people attempt to use an idea or technology. Many R&D agencies want to enable rural innovation; but to do so, we need to understand how it happens, and these stories are rarely, if ever, written down. Innovation histories allow the people involved in the innovation process to reflect on what they did, and learn. If several innovation histories are recorded using a common framework, then we can look for similarities and differences and discover general principles. This helps avoid repeating mistakes and makes it possible to identify and use what works.

Methodology

In our method innovation histories are narratives built on providing causal explanations for two outputs:

- An ***innovation timeline*** that lists the key events in the innovation history in the order they happened
- ***Actor network maps*** that show the linkages between the stakeholders at the beginning, middle and end of that process

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[127] Executive Director – CLAYUCA - CIAT
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[129] UK - based consultant.

The timeline and network maps develop and change during the process of explaining causality and the nature of the linkages. The stakeholders involved in the innovation process reflect and hopefully learn from the innovation timelines and actor network maps.

The methodology we use is described in the ILAC Guide no. 5, the text of which is reproduced above in Output 5.

Innovation histories in construction

IPRA and the Rural Innovation Institute, through CIAT's Learning-to-Innovate Group, is building up a portfolio of innovation histories on which we can do a meta-analysis. In a workshop in December 2003, we developed a set of criteria for selecting innovation histories for the purpose of meta-analysis. The criteria are as follows:

- Interest in doing it. There must be real interest to carry out the Life Histories, manifested in a person volunteering to shepherd the construction of each one.

- Significance of innovation. Impact on rural livelihoods, including food security, environment and income

- Diversity of innovations

  - ✓ CIAT and non CIAT
  - ✓ Successful and less successful
  - ✓ Type of innovation (e.g., social; biophysical; knowledge intensive; simple)
  - ✓ Type of environment into which it was introduced (e.g., cultural, socioeconomic, agroecological)
  - ✓ Scale (e.g., local, national, regional)
  - ✓ Degree of novelty of invention that initiated the innovation process

- Rich in lessons

  - ✓ The innovation history is of strategic interest to CIAT
  - ✓ Lessons to be learned are relevant to CIAT's target groups

- Stage in innovation process

  - ✓ The innovation should have been adopted, or an attempt made to introduce it
  - ✓ The innovation must not be too old that the actors are no longer around

Principal staff were then asked to nominate innovation histories based on these criteria. The following were nominated, and we are approaching completion on the first two:

- ✓ CIALs
- ✓ Small-scale cassava processing plants in Colombia

- ✓ Adoption of bean varieties in Kenya, Rwanda and Uganda
- ✓ Forage-based technology options for smallholders to raise production in Central America
- ✓ Supermarket of Options for Hillsides (SOL)
- ✓ The Quesungual slash and mulch agroforestry system

We applied for and received $3,500 from the Colombian Ministry of Agriculture and Rural Development (MADR) to fund the small-scale cassava processing plants innovation history. We also received $20,000 to carry out the studies on bean adoption. In a separate initiative we collaborated with the Tropical Fruits Project and submitted a proposal to DfID for $270,000 to construct innovation histories of underutilized crops.

Next steps

Continue to write up the innovation histories and then conduct a meta-analysis. A summary of the findings from a comparison of the innovation histories of CIALs in Colombia and Honduras is given in Output 5 of this report.

Leadership of the Learning-to-Innovate Development Challenge

Researcher: Boru Douthwaite[130]

Milestones

- The Learning-to-Innovate community of practice formed and facilitated through web-based D-Group; LTI group has 47 members from CIAT.
- The goal, purpose and outputs of the LTI development challenge defined.

Background

CIAT management decided to focus research and fund-raising efforts around three development challenges at a retreat in May 2003. One of these is called Learning to Innovate (LTI) and is led from IPRA.

Activities and outputs

- November 2003: LTI model developed, describing the functions necessary for a healthy innovation system. The LTI model is described below.
- December 2003: One-day retreat to agree on a common vision and identify next steps. The group decided to support work on constructing innovation histories and adopt the LTI model as a common framework.
- January 2004: LTI-Group formed and housed at www.dgroups.org/groups/CIAT/LTI-Group
- April 2004: LTI strategy document written
- May 2004: Survey carried out by the LTI group identified 34 innovation projects in process or waiting for funding approval. Those already funded have a total budget of $4.3 million, while those pending approval have a budget of $10.9 million. Research with an innovation theme is clearly important to CIAT.
- May 2004: Meeting of Cali-based LTI-Group members to agree on the goal, purpose and outputs of the LTI development challenge, described below.
- June 2004: Process of identifying ongoing activities that fit under the LTI development challenge outputs begun.

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The LTI Model

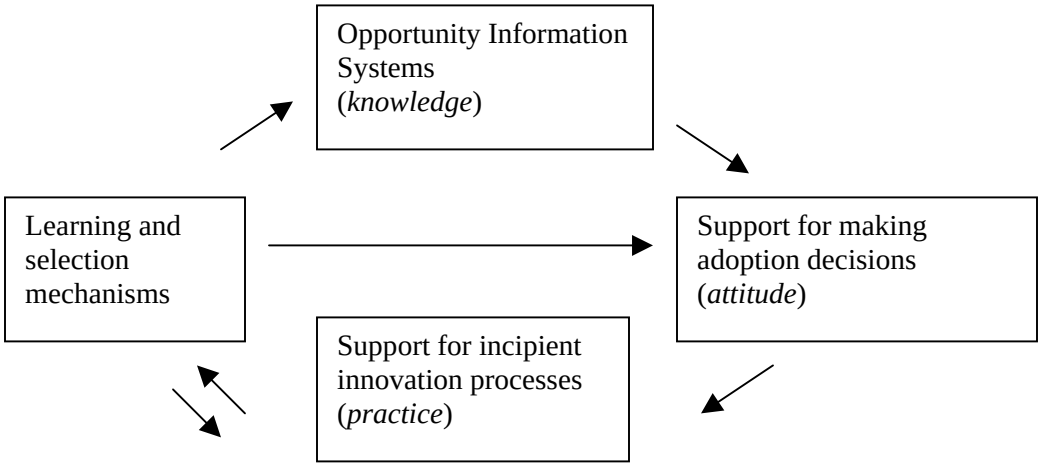


Figure 1. The LIT Model: Four interdependent functions that enable rural innovation.

Opportunity Information Systems (OIS)

Opportunity information systems (OIS) are the ways in which the key stakeholders find out about new opportunities for innovation. Innovation is the process that transforms inventions—that is, new ideas or concepts—into improvements in livelihood for the key stakeholders, usually through making money (e.g., making them more competitive). The key stakeholders are the direct beneficiaries of an innovation process, usually those who use, replicate and promulgate it. For example, the key stakeholders for lulo are farmers and nursery owners and the key stakeholders for a new rice harvester are farmers and machinery manufacturers. Scientists in CIAT are stakeholders in rural innovation but generally not key stakeholders.

Inventions address two scales: *macro-inventions* are ideas and concepts that open up new innovation territory, while *micro-inventions* are improvements to existing technologies or processes. For example, the idea of growing lulo in an area where it has not been grown before is a macro-invention, while improvements to existing lulo growing and processing procedures would be micro-inventions. Obviously some macro-inventions are bigger challenges to the status quo than others; e.g., introducing bicycles and the idea of balancing on two wheels is a bigger challenge and will take longer than introducing the idea of growing a new type of fruit tree. If a macro-invention is already the basis of successful innovation processes elsewhere, then introducing it is much easier (assuming you learn from existing experience).

Innovation occurs within an innovation system, the set of distinct institutions that contribute to the development and diffusion of new technologies in an area. It is a set of interconnected institutions that form a system whose performance is determined both by the individual performance of each institution and how they interact with each other as elements of a collective system.

Types of OIS include databases of all sorts and the network of contacts of key stakeholders. They also include knowledge brokers and other facilitating mechanisms that help the key stakeholders gain access to information. Promulgation—that is, the idea of proactively promoting good ideas to areas where they are likely to fit—is another important component of an OIS.

Support for making adoption decisions (SAD)

Knowing that an opportunity exists is not generally sufficient for people to decide to adopt. By adoption we mean to embark on the experiential learning process involved in innovation. People need convincing that an invention is a "plausible winner." Ways of supporting adoption decisions include farmer field trials, market survey tools, participatory group approaches and the approaches to supplying site-specific information being developed by the Land Use Project.

Support for incipient innovation processes (SIP)

Once an individual, group or organization has decided to embark on an incipient innovation process, there can be many outcomes of the experiential and social learning cycles in which they engage. Things can go wrong and they need to find solutions; otherwise the innovation process can die. There are various SIP methods including on-line frequently asked questions, personal contact with other innovators, product champions and contact with researchers who have better technical knowledge.

Meta-learning and selection mechanisms (LSM)

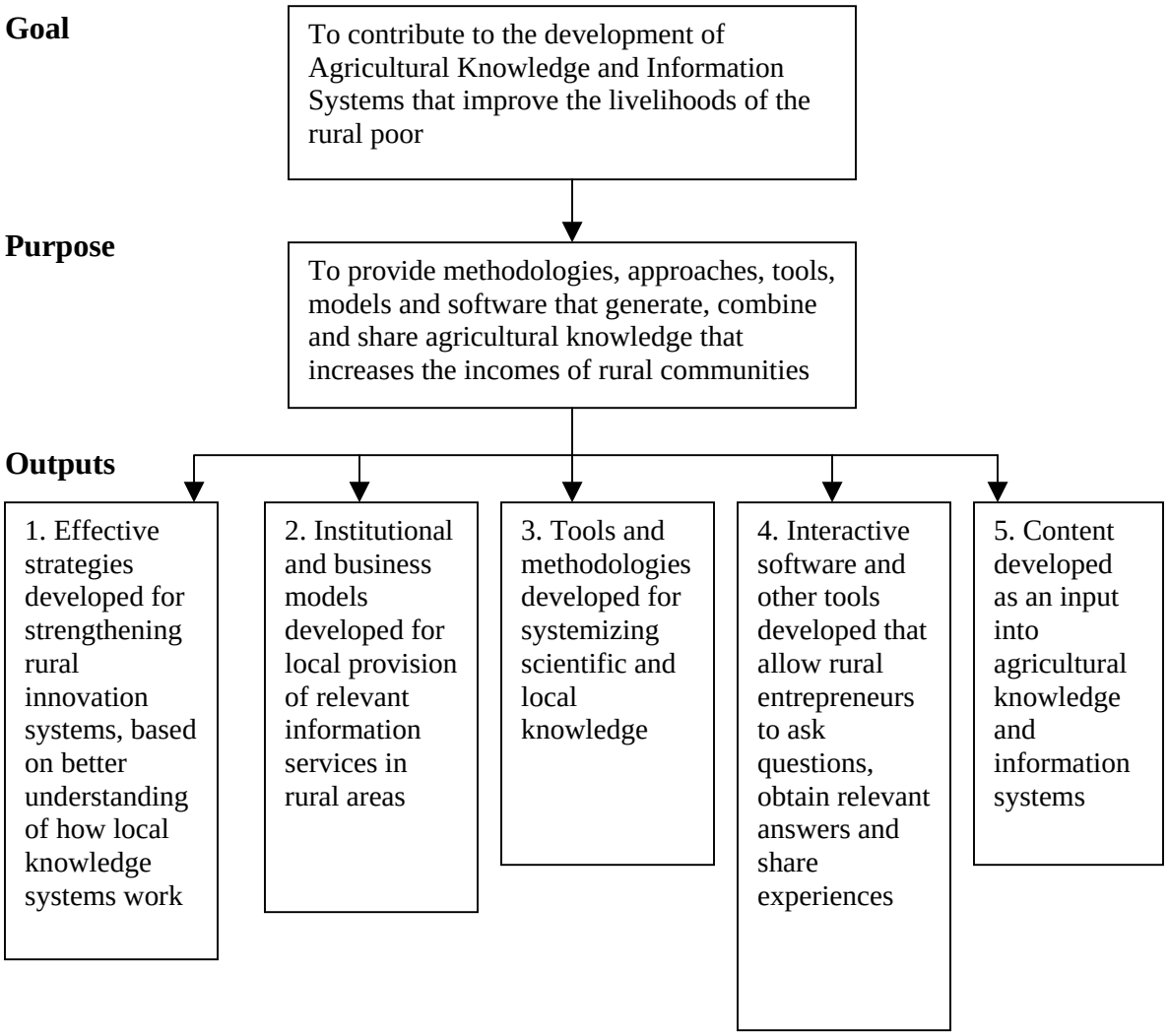
Much can be learned from successful and unsuccessful innovation processes. Successful innovation usually involves many micro-inventions that improve the "fitness" of a technology or an idea and make it easier for others to innovate along similar lines. Unsuccessful adaptations to macro-inventions, and unsuccessful innovation processes can save others from making the same mistakes and wasting time and effort. Having mechanisms that spot and promulgate beneficial modifications and weed out detrimental ones can greatly speed up an innovation process, and help ensure a positive outcome.

Helping provide efficient and effective selection mechanisms is an important part of SIP. Synthesizing the learning from a number of completed innovation processes (meta-learning) helps build the OIS and SAD. Figure 1 shows these linkages and shows that LSM helps the other three functions evolve. However, of the four, LSM functions have received the least attention and where tool and methodology development could have most impact.

Discussion

These four functions are multiplicative rather than additive. In other words, if any one of the functions is nonexistent, then innovation in that particular innovation system is severely compromised.

Work breakdown structure for the LTI development challenge



Next steps

- Complete the identification of ongoing and planned activities that fit under the LTI Development Challenge Outputs
- Carry out a gap analysis to identify what is missing

Strengthening the network of organizations working on farmer participatory research approaches in Ecuador by sharing "good practice"[131]

Researchers: Boru Douthwaite,[132] José Ignacio Roa,[133] Kaia Ambrose,[134] Rusty Biñas,[135] Steve Sherwood,[136] Manuel Pumisacho,[137]

Collaborators: Julio Beingolea,[138] Fausto Merino,[139] Max Ochoa,[140] Guiomar Bastidas,[141] Raúl Román,[142] José Sopa,[143] Nicolás Pichizaca[144]

Abstract

The dismantling and privatization of public service agencies in many countries, particularly Latin America, means that the responsibility of managing natural resources and sustainable agriculture is being handed over to industry and civil society. This means new responsibilities for local governments, communities as well as non-governmental development organizations. Unfortunately, due to many social factors and the historical roots of development models, many communities are still treated as they were thirty and forty years ago when a top-down technology transfer dominated that did not allow for much local learning or adaptation. This has led to an unbalanced relationship between development practitioners and researchers with local stakeholders.

This challenge calls for an analysis and re-organization of exogenous development agendas in order to effectively facilitate endogenous development, through the promotion of participatory farmer research and experimentation. This means generating, adapting and using ideas and technologies to meet local needs, appropriately supported by other internal and external actors. The role, which researchers and development practitioners play, must enable socially and ecologically embedded development for endogenous development to occur.

This study therefore explored the way in which different research and development organizations manage and promote rural innovation through the implementation of different farmer experimentation and participatory research methodologies, specifically: Farmer Field Schools,

[131] Summary of the document written in Sept 2004; readers may request a copy from Boru Douthwaite (b.douthwaite@cgiar.org)
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[134] Consultant, IPRA-CIAT
[135] Regional Director for Latin America, International Institute for Rural Reconstruction
[136] Regional Director for Latin America, World Neighbors
[137] INIAP
[138] World Neighbors
[139] MAG
[140] MACRENA
[141] Humanist Movement
[142] CEMOPLAF
[143] DIPEIB-C
[144] TUCAYTA (Corporation of Small Farmer Organizations)

Local Agriculture Research Committees (most commonly known by their Spanish acronym, "CIAL"), Experimental Plots (or Pruebas Experimentales in Spanish) and Farmer-to-Farmer Movement (or Campasino a Campasino in Spanish). The characterization of each of these methodologies was based on pre-established factors that contribute to rural innovation: self-financing and self-management, local leadership, adoption and adaptation, monitoring, and changes in attitudes.

Two concepts / methodologies were used in the characterization: learning cycles, in order to determine and analyze the above-mentioned factors, and learning alliances, to bring lessons learned to a common space to be discussed and to bring forth proposals for improving farmer experimentation and participatory research methodologies in a collaborative and constructive manner.

This exploration was not an exhaustive study; rather its aim was to conclude common strategic factors (positive and negative) as a base for developing a learning alliance for improving farmer experimentation and participatory research methodologies. These factors were discussed in a final workshop among possible participants of a learning alliance.

Learning alliances can help promote an increase in endogenous development in natural resource management and sustainable agriculture by bringing together a group of actors with an interest in a common issue. In the case of this study, the common issue participatory farmer research and experimentation to foment rural innovation. The goal of the learning alliance is to stimulate the group of actors to communicate, negotiate and act in a joint manner that takes them to new forms of social organization, learning and activity.

The current learning alliance has a long way to go before achieving this goal. Conflict and consensus need to be managed, definitions of rural development, innovation and methodologies need to be clarified and agreed upon, and learning spaces need to be created in order to continue promoting collaborative relationships. This demands a clear understanding of deeper issues such as the much-needed changes within development professionals, development agendas, and new means of designing, administering and implementing rural development interventions. It also begs for a comprehensible perception of the true meaning of learning alliances and their potential within the development context.

Project Justification

Many development and research organizations in Ecuador are looking to improve rural development and innovation through different participatory methodologies involving farmer experimentation and research. Each methodology has its factors of success and barriers, which may depend on how the organization manages the methodology. However, these organizations are often carrying out their work in an isolated manner. When collaboration does exist, it is often not recognized and taken advantage of in order to promote broader and stronger collaboration.

In order to improve the methodologies and the way they are used (in other words, the way in which the organizations "do" development), the organizations involved in the characterization

proposed an internal analysis (learning cycles) as well as a joint analysis in order to foster institutional innovation (learning alliance) in organizations working with farmer participatory research and experimentation methodologies.

Project Description

The study pilot tested an approach to fostering institutional innovation with NGOs and the NARS (World Neighbors, International Institute of Rural Reconstruction and INIAP) working with farmer participatory research and experimentation approaches in Ecuador.

After discussions with the three organizations involved, the need to answer certain questions was established which were:

- Where are we with farmer participatory research and experimentation approaches in Ecuador?
- Where are we going with rural innovation and the methodologies that promote rural innovation?
- How can we continue to learn from each other in the advancement towards rural innovation and development based on endogenous processes?

The first step began with the development of facilitated learning cycles within each organization. Successful case studies were identified and analyzed based on factors established by the three organizations. The objective of this characterization was to explore the impact and adoption of the selected methodologies, barriers and successes in their application, as well as opportunities and changes need for improvement and further use of the methodologies. The characterization was aided by innovation histories[145] of each methodology within the organizations involved in order to better understand where and why different methodologies function with better results, limitations, strategies for improving the relevance to local research and for greater effectiveness in fostering rural development and innovation.

The next step was to share, discuss and analyze the characterizations with the respective organizations in a workshop and by this process further foster a learning alliance based on farmer participatory research and experimentation approaches. The objective of this learning alliance is to improve understanding and communication around rural innovation and participatory methodologies, as well as continue planning actions that will improve the development of these methodologies in a collaborative way.

The principal outputs were:

- A characterization of the farmer participatory research and experimentation approaches used by three research and development organizations in Ecuador, using learning cycles and innovation histories to carry out the characterization.
- A workshop to establish direction of a future learning alliance.

[145] For a description of the innovation history methodology please see Douthwaite, B. and J. Ashby, 2004. Writing Up Innovation Histories: A Useful Learning Tool. ILAC Brief No. 5

Activities Completed

i) Methodology developed for characterization with IIRR, INIAP and World Neighbors. Purpose of learning alliance negotiated.
ii) Guided self-evaluations of the implementation of good examples of Local Farmer Research Committees (known by their Spanish acronym CIALs), Farmer Field Schools (FFS), Experimental Trials and the Farmer-to-Farmer approach by three organizations (World Neighbors; IIRR and INIAP). This work included a workshop that IIRR carried out as part of an evaluation of CIALs and Experimental Trials.
iii) Workshop held to present results of the self-evaluations amongst partner organizations, followed by discussion and identification the general principles of good practice FPR. In the final part of the workshop, participants proposed next steps for learning alliance.
iv) Presentation of characterization and learning alliance to delegation of Chinese academics analysing different participatory methodologies (unplanned activity).
v) D-Group established as a forum for the incipient learning alliance (unplanned activity).

Achievements and Constraints

Achievements

Characterization and comparison of methodologies. Although each of the methodologies are becoming wide-spread in Ecuador, and some documentation exists, the study provided an opportunity for a first-time characterization of the methodologies based on common factors, as well as a comparison of the methodologies. The comparison resulted in new knowledge for different actor groups (mainly technical support personnel and project or program leaders). In presenting the results, these actors recognized the importance of gaining more knowledge on each methodology in order to identify complementarities for their innovation.

Institutional Learning and Change. In carrying out the characterizations, each organization recognized the need for learning cycles in order to effectively promote institutional learning and change within their organizations. In this study, IIRR was a pioneer in implementing learning cycles as a mechanism for institutional learning and change. The other organizations involved admitted that they had not previously engaged in learning cycles in a systematic way but saw them as a necessary procedure for self-analysis and to change their development approaches and philosophies.

Dialogue among learning alliance participants. At the level of each organization, learning cycles can bring about institutional learning and change. In addition the lessons extracted from these learning cycles produced dialogue among different actors. Dialogue is a necessary component for alliances. In this sense, an important component of the learning alliance was established.

D-Group. The suggestion to establish a D-Group for the learning alliance was an unexpected side effect of the study. This is an on-going activity that is being developed in accordance to actor needs.

Existing alliances. Within the learning alliance it was suggested that already existing alliances or platforms be recognized and incorporated, instead of repeating already established processes. It was agreed that regional platforms be identified and strengthened (the one example identified was the Network for Community-Based Natural Resource Management, MACRENA, in the northern Andes or Ecuador). Each regional network / alliance / platform would then have to analyze how they could incorporate themselves into a broader network.

Contact with other learning alliances. Although the concept of alliances is not new, the development of learning alliances in a CIAT framework is an important initiative taking place in many parts of Latin America. The Learning Alliance for Rural Innovation (established in this study) has attended several meetings of the Learning Alliance for Productive Chains, a learning alliance exploring ways to improve commercialization as it is related to small farmers. Lessons learned have been extracted, yet keeping in mind the immense differences in character of the two alliances. The later is made up of large national and international agencies with a specific focus on commercialization and who have a wide reach at the national and regional level. Our alliance involves more locally based partners who are concerned with development processes and paradigms as a necessary analysis to looking at rural innovation. However, certain spaces were identified where the two alliances could come together in future activities to support each other for two-way learning.

Constraints

Development of learning alliance. The Learning Alliance for Rural Innovation has yet to clearly determine its priorities and purpose, as well as logistical concerns (how to function as an alliance). The discussion that took place in the workshop to formally establish the alliance was conflictive and consensus was hard to reach. This was partly due to little understanding of what a learning alliance is, jealousy over methodologies, internal conflict within organizations, and a great dependence on external funding ("nothing works without money, so why bother discussing something unless funding is secured").

Another constraint, related to the issue of funding, is how to continue to develop a learning alliance with no paid person to do it. Few lessons were extracted from the Humanistic Movement on this topic.

Many differences were identified, but not resolved, which was a constraint for the construction of the alliance:

- The alliance should not be forced; natural already existing processes should be allowed to develop (let meetings develop as necessary) **VS.** intentionality in the organization of the alliance (arrange for key meetings in order to rapidly develop objectives, legalization, etc.).
- Alliance among development organizations and practitioners **VS.** an alliance among farmers and promoters.
- Individual will to create alliance **VS.** institutionalize alliance within each organization.

- Need to understand theoretical bases of new development paradigms related to methodologies **VS.** need to have a better understanding of technical aspects of the methodology and create concrete products.

Internal conflict. In some cases during the study, consensus and learning within organizations was hard to reach because of strong internal conflicts not yet resolved. This provides an important lesson for the need for honest and systematic institutional learning and change.

Conclusions

Clearing understanding what it means to be in an alliance. In order for an alliance to function, its participants or partners must have a clear understanding of what it means to be in an alliance. Concepts such as social learning, coherence and correspondence can help an alliance understand what it is that brought them together and the path that they are trying to create in order to arrive at a common destination. Put into action, these concepts can help create a functional learning alliance.

Learning alliances are not arrangements that can be automatically put together based solely on common interests. Many factors must be taken into consideration in order to recognize common needs as well as possible conflicts. Many organizations in the development context still jealously guard their ideas, resources, plans and proposals. Competition is a reality among development organizations. Healthy competition must be combined with a spirit of collaboration. This is also true for the different visions of development that different organizations hold. Development philosophies must be articulated and debated to reach a common understanding of development that truly promotes rural innovation.

Dependency on funding. Learning alliances take time and dedication. Unfortunately, the question asked is "who will fund this time and dedication". There is a resistance to move forward without external funding. Development professionals are weary of endless workshops and meetings, especially when there is little funding for these. Meetings outside of set agendas, which have no funding, cannot hope for broad assistance or participation. Unless learning alliances become institutionalized, there is the danger of learning alliances losing their true meaning as platforms for social learning and collaborative actions and analysis. Institutionalization can also help address the problem of fast turnovers of development professionals so that the learning alliance becomes part of the organization and not just of one particular individual.

Take advantage of what already exists. The Network for Community-Based Natural Resource Management (MACRENA in Spanish) is a platform for social learning. It brings together diverse organizations with different experiences and visions of development and rural innovation in relation to natural resource management, and works with these visions in order to establish commonalities and collaboration for natural resource management in Carchi and Imbabura provinces.

Next steps. The alliance is an opportunity to empower participatory rural development by transforming developing professionals / agents of change, create access to different experiences,

transform politics, foster endogenous development, institutionalization and communalization. Some basic next steps to help move the learning alliance forward (although it still needs to be established who will do this) are:

- Establish and develop D-Group in order to get to know each other better, establish a ways of interacting and communicating, share information (field days, meetings, presentations), clarify and deepen methodologies. Maintain diversity of methodologies but work towards profound knowledge and identify complementarities.
- Develop another meeting to build the objective of the alliance, action plan, establish roles and expectations and clarify and deepen methodologies. Identify leaders of learning alliance; facilitation is necessary. Use elements of Outcome Mapping and social learning analysis in order to achieve this.
- Develop specific action proposals and seek funding.
- Complete inventory of other institutions working with common themes and assess their participation in the methodology. The alliance should share experiences among a broad community of practice; it should be open enough that individuals or organizations can promote different actions according to their need, capacity and interest. The alliance cannot be forced.
- Continue to promote learning cycles and ILAC in order to change and reinforce values, conducts and actions at the personal level and institutional level.

Publications, Papers and Reports

- Final report of characterization (Spanish).
- Memories of workshop (Spanish).
- D-Group established.
- Paper forthcoming.

OUTPUT 7. CAPACITY OF THE SN-3 TEAM, STRENGTHENED

Milestones

* Team capacity and skills, enhanced

Information of courses in wich SN-3 team members participated

Date	Name of Course or Event	Duration (h)	Place	Team Member Trained
Sept./03	Training in participatory methods for new team of the FOCAM project	24	Bolivia	Juan Fernández, Vivian Polar, Magali Salazar, Juan Almanza
6 Oct-19 Dec./03	Rural development	480	Wye, UK	Edson Gandarillas
10-15 Nov./03	Participatory methodologies and PM&E	60	Toralapa, Bolivia	Juan Fernandez, Vivian Polar José Ignacio Roa
13 Mar.-27 April/04	Immersion course in English	450	Florida, US	Luisa Fernanda Lozano
Aug./04	Document administration	16	Palmira, Colombia	Luisa Fernanda Lozano
February /04	Systems course for processing travel requests	28	Palmira, Colombia	Luisa Fernanda Lozano
12-16 Apr./04	Participatory methodologies and PM&E	60	Monteagudo, Bolivia	Walter Fuentes
12 Apr.-8 May/04	Course on rural agroindustry and processes of scoring products	8 h/day	CNARC, Montpellier, France	Viviana Sandoval
15-25 June/04	HTML course	15	SRI Virtual campus	Jorge L. Cabrera
12-26 July/04	Course on GIS ArcView	30	SRI Virtual campus	Jorge L. Cabrera
12-19 July/04	Basics of statistics and experimental design in controlled environments, taught by Gerardo Ramirez	4 h/day	CIAT	Viviana Sandoval
2-4 Sept./04	Training in the use of InFlow social network-mapping software	20	Athens, Ohio	Boru Douthwaite
13-14 Sept./04	Legume meals for animal feed	16	CIAT	José Ignacio Roa
31 Oct./03-31 July/04	Evaluation of development projects	120	St. Bona-venture U., Cali, Colombia	Luis Alfredo Hernández, Elías Claros

STAFF		
Researchers and support staff: position and time fraction		
Carlos Arturo Quirós	Acting Project Manager, Research Associate I,	100%
Boru Douthwaute	Senior Staff	100%
Susan Kaaria	Senior Research Fellow	100%
Vicente Zapata	Senior Research Fellow	50%
Luis Alfredo Hernández	Research Associate I	100%
José Ignacio Roa	Professional Specialist	100%
Pascal Sanginga	Senior Research Fellow	100%
Jemimah Njuki	Social Scientists	100%
Edson Gandarillas	Coordinator FOCAM – Bolivia	100%
Vivian Polar	Research Assistant - FOCAM – Bolivia	100%
Juan Fernández	Research Assistant - FOCAM – Bolivia	100%
Juan Almanza	Research Assistant - FOCAM – Bolivia	100%
Elias Claros	Research Assistant III	100%
Viviana Sandoval	Research Assistant III	100%
Robert Muzira	Research Assistant	100%
Pamela Pali	Research Assistant	50%
Walter Fuentes	Technician	100%
Jorge Luis Cabrera	Technician I	100%
Luisa F Lozano	Secretary V	100%
Fredy Escobar	Technician II	70%
Colletha Chitsike	Consultant	
Sylvia Cardona	Consultant	
Fanory Cobo	Student	50%

DONORS SN3

- WK Kellogg Foundation, Michigan
- DFID Department for International Development
- FIT Fomentando la Innovación tecnológica en Bolivia
- Government of Belgium
- Rockefeller Foundation

Proposals Presented

Title	Donor	Amount
Model for strengthening local capacities for economic and rural enterprise development: Participatory management in the region of Ancoraimes, Bolivia	Kellogg Foundation	US$250,000
Strengthening of institutional capacities for PM&E in development projects in the context of Honduras	PRONADERS	US$295,000
Forging learning alliances for rural enterprise development: An integrated strategy for strengthening food security and income generation in Bolivian valleys	Magnaith Foundation	US$200,000
Instrument for supporting the decision-making of producers “The community organizes to do research” on natural resources management with emphasis on the integrated management of watersheds	Min. Environment &Natural Resources, Socioenviron-mental & Forestry Dev. Program	US$180,000
Empowering farming communities to increase income, nutrition and food security through enabling rural innovation in Rwanda	Belgian Cooperation	€$3,000,000
Empowering communities to develop natural resources-based agroenterprises for improved livelihoods. Support for Enabling Rural Innovation NARS partners in Kenya, DRC, Rwanda and Ethiopia	ASARECA-CGS	US$529,434
Enhancing gendered local knowledge-sharing systems in natural resources management in the African Great Lakes Region	GFAR DURAS	US$237,615
Strengthening the ecologies of rural innovation	BMZ	US$1,000,000
Mapping social networks CIAT and CORPOTUNIA	Project on Knowledge Management	US$26,800

Proposals approved

Title	Donor	Amount
Knowledge-sharing methodologies for agricultural innovation: Scaling out PITA's results to marginal farming communities	FIT, UK	£99,600
Identification and harmonizing with partners for strengthening participatory methodologies for Integrated Project Sets, Bolivia	Kellogg Foundation	US$28,500
Workshop and study tours with technicians and farmers from the Centers for Learning & Exchanging Know-How (CASI) in Latin America	Kellogg Foundation	US$96,500
Learning to Innovate	CIAT – Budget CORE	US$16,000
Learning and Institutional Change	CIAT – Budget CORE	US$15,000
Developing capacity in CIAT to carry out social network analysis	USAID Linkage Funds	US$11,000
Innovation histories of the adoption of four bean varieties in East Africa	PABRA	US$20,000
FIT – Lessons learning and sharing towards pro-poor impact of agricultural innovation	DFID	US$170,000
Total		**US$507,396**

Students carrying out their thesis studies at the undergraduate, master's and doctoral levels in IPRA research projects.

Name	Degree	Area of Research	Country
Peterson Mwangi	PhD	Assessing the role of PM&E in enhancing project performance, accountability of formal R&D projects, participation of stakeholders, success and delivery of outputs	Kenya
Alsen Oduwo	MSc	Developing appropriate strategies and mechanisms to increase benefits derived by communities from their participation in community-based PM&E	Kenya
Jackson Tumwine	PhD	Impact of HIV/AIDS on agriculture and rural livelihoods	Uganda
Pamela Pali	PhD	Impact of organic agriculture in Uganda: Improving livelihoods through sustainable NRM and market linkages	Uganda
Lule Ali	MSc	Role of social capital in the adoption of integrated soil fertility management innovations in eastern Uganda	Uganda
Kibiby Mtenga	PhD	Gender dynamics in ERI, Malawi	Tanzania
Elisabeth Gotschi	PhD	Role of social organizations in marketing organic products	Austria
Janeth Lizarazu	Undergrad.	Effects of technological innovation on the livelihoods of the farmers from Cienega and Sillani, partners of APAJIMPA	Bolivia
Irene Vicente	Undergrad.	Evaluation of the effects of PM&E on the beneficiaries of PITA in the associations of APPLA and APROLEC	Bolivia
Silvia Cortez	Undergrad.	Evaluation of the effect of PITA's technology in the poorest asociations of APPLA and APROLEC	Bolivia
Fabio Terceros	Undergrad.	Institutional innovations in the operating regulations of the competitive innovation fund of SIBTA	Bolivia
José Cartagena	Undergrad.	Evaluation of the effect of PM&E on the poorest comunities with CIALs	Bolivia
Edson Gandarillas	PhD	PM&E in technological innovation projects	Bolivia
Fanory Cobo	Undergrad.	CIALs with agroenterprises: From research to development. Case study.	Colombia

Seminars and/or internal workshops carried out by the PR Project SN3 team, 2003-2004

Date	Place	Topic	Presentation	Person
11/03/2004	CIAT – Palmira	PM&E	Strategy of chain results for implementing PM&E	Luis Alfredo Hernández, Elías Claros
23/04/2004	Monteagudo, Bolivia	PM&E	Report of results on PM&E workshop	Luis Alfredo Hernández, Elías Claros
06/04/04	Yunnan Province, China	NRM	Study tour on NRM in mountainous zones in Yunnan Province, China	Carlos A. Quirós

APENDIX

Acronyms and Abbreviations

ACIAR	Australian Center for International Agricultural Research
AFRICAREA	Leading Nonprofit Organization, Specializa\ing in aid to Africa
AFRUMO	Asociación de Fruticultores de Moro Moro
AFRUTAR	Asociación de Productores de Fruta del Departamento de Tarija
AMDECO	Asociación de Municipios de Cochabamba
AMPROM	Asociación de Mujeres Promotores de Muyu Pampa
ANAPO	Asociación de Productores de Oleaginosas y Trigo
APROFRU	Asociación de Productores de Fruta
ASAR	Asociación de Servicios Artesanales y Rurales
ASARECA	Association for Strengthening Agricultural Research in Eastern and Central Africa – Competitive Grants Systems
ASOFRAM	Asociación de Fruticultores y Apicultores Monteagudo
ASOGAM	Asociación de Ganaderos de Monteagudo
ATICA	Agua Tierra Campesina
CAD	Centro de Apoyo al Desarrollo
CARENAS	Comunicación y Capacitación en el manejo de los Recursos
CBOs	Community Based Organizations
CB-PM&E	Community-Based PM&E
CCIMCAT	Centro de Capacitación e Investigación de la Mujer Campesina de Tarija
CEDES	Consejo Empresarial para el Desarrollo Sostenible
CEMOPLAF	Centro Médico de Orientación y Planificación Familiar
CETEP	Centro para la Gestión Tecnológica Popular CFOCIC
COFOCIC	Consolidation of the Commission of Funds for CIAL research
CPP	Crop Protection Program
DEPROA	Fundación para el Desarrollo Pro ambiente.
DfID-RLD	Departamenteo para el Desarrollo Internacional Departamento de medios de vida sostenibles
Diogracio Vides	Organización Campesina Intercomunal Diogracio Vides
DIPEIB-C	Dirección Provincial de Educación Intercultural Bilingüe
ECABREN	Eastern and Central Africa Bean Research Network
FAO	Food and Agricultural Organization of the United Nation
FARM – Africa	Food and Agricultural Research Management
FDF	Fundación para el Desarrollo Frutícola
FDTA	Fundación para el Desarrollo Tecnológico Agropecuario de los Valles
FODUR	Fomento al Desarrollo Urbano y Rural
FUNAN	Fundación Antisana Ecuador
GFAR DURAS	Promoting Sustainable Development in Agricultural Research Systems Global Forum on Agricultural Research
HAMM	Honorable Alcaldia Municipal de Monteagudo
IIAV	Instituo de Investigación Agrícola Vallecito
IIRR	International Institute of Rural Reconstruction
INIAP	Instituto Nacional de Investigaciones Agropecuarias

INSPIRE	Integrated Soil Productivity Initiative through Research and Education
IRD	Instituto de Investigación para el Desarrollo (French acronym)
ISAAA	International Service for the Acquisition of Agri-biotech Applications
JAINA	Comunidad de estudios Jaina
JKUAT	Jomo Kenyatta University of Agriculture and Technology
KARI	Kenya Agricultural Research Institute
MACRENA	Manejo Comunitario de Recursos Naturales
MAG	Ministerio de Agricultura y Ganadería del Ecuador
MEDA	Mennonite Economic Development Associates
MMCH	Mymensingh Medical College Hospital
NANDOS	Cadena inglesa de restaurantes de comida rápida
ODESAR	Organismo para el Desarrollo Municipal
PADEM	Programa de Apoyo a la Democracia Municipal
PCAC	Programa Campesino a Campesino
PNS	Programa Nacional de Semilas
PRAPACE	Regional Potato and Sweetpotato Improvement Network in Eastern and Central Africa (French acronym)
PRODEISMACH	Programa de Desarrollo Integral Sostenible y Medio Ambiente para el Chaco
PRODII	Programa de Desarrollo Integral Interdisciplinario
PROINPA	Promoción e Investigación de Productos Andinos
PROMMASEL	Proyecto de Manejo de Malezas Sostenible en Laderas
PROSAT	Proyecto de Servicios de Asistencia Técnica para Pequeños Productores
PROSUKO	Programa Interinstitucional de Suka Kollus
PROTAL	Productores de Totolima y Altamachi
Proyecto INNOVA	Consorcio entre la Fundación PROINPA, Universidad Mayor de San Simon y el Centro de Investigación Agriícola Tropical
Proyecto MAPA	Marketing and Poverty Alleviation
SEDAG TARIJA	Servicio Departamental de Agricultura y Ganadería – Tarija
SIBTA	Sistema Boliviano de Tecnología Agropecuaria
SIDA	Swedish International Development Agency
TRADES	Trabajando por el Desarrollo Sostenible
TUCAYTA	Tucuy Cañar Ayllucunapac Tantanacuy
UMSS Postgrado	Universidad Mayor de San Simón Bolivia
UNDO - PNUD	Programa de las Naciones Unidas para el Desarrollo
URPSFXCH	Universidad Real y Pontificia San Francisco Xabier de Chuquisaca

Abbreviations

AES	Agroecosystem
AKIS/RD	Agricultural knowledge and information systems for rural development
AMSDP	Agricultural marketing systems development program
ARDC	Agricultural research and development centers
avg.	Average
BAPPA	Beyond agricultural productivity to poverty alleviation
CBO	Community-based organizations

CEO	Chief executive officer
CPP	Crop protection project
CRAC	Center research advisory committee
ERI	Enabling rural innovation
FFS	Farmer field schools
FGD	Focus group discussions
FPR	Farmer participatory research
FRG	Farmer research group
FSD	Farming systems development
FYM	Farmyard manure
IA	Impact assessment
IAEMC	Integrated agroecosystem management and conservation
IARC	International agricultural research centers
IAR4D	Integrated agricultural research for development
ICT	Information and communication technologies
IE	Innovation ecology
IFS	Innovation field school
ILAC	Institutional learning and change
ISC	Integrated Striga control
LA	Latin America
LAC	Latin America and the Caribbean
LSM	Meta-learning and selection mechanisms
LTI	Learning to innovate
M&E	Monitoring and evaluation
MOI	Market opportunity identification
NGO	Nongovernmental organization
OIS	Opportunity information systems
PD	Participatory diagnosis
PMA	Plan for modernization of agriculture (Uganda)
PMCA	Participatory market chain analysis
PM&E	Participatory monitoring and evaluation
PMR	Participatory market research
PR	Participatory research
PRA	Participatory rural appraisal
PR&E	Participatory research and extension
PTD	Participatory technology development
R&D	Research and development
RAAKS	Rapid appraisal of agricultural knowledge systems
RD&TT	Research development and technology transfer
RREAC	Regional research and advisory committees
SAD	Support for making adoption decisions
SC	Steering committee
SD	Standard deviation
SEAGA	Socioeconomic and gender analysis
SIP	Support for incipient innovation processes
SNA	Social network analysis

SWOT	Strengths-weaknesses-opportunities-threats
TT	Technology transfer
Ug Shs	Uganda shillings