

## **Output 1: Participatory Approaches and Methodologies for Strengthening Farmers' Organizations and Rural Innovation Systems to Accelerate and Institutionalize Demand-Driven Innovation in Production Systems, Researched and Disseminated**

### **Strengthening Rural Innovation Ecologies: Participatory Development of a Methodology for Strengthening Social Networks**

*Boru Douthwaite<sup>1</sup>, Andrea Carvajal T.<sup>2</sup>, Elías Claros<sup>3</sup>, Sophie Alvarez<sup>4</sup>, and Luis Alfredo Hernández<sup>5</sup>*

#### **Accomplishments**

Development of a prototype methodology for mapping and strengthening the networks of small rural groups.

#### **Abstract**

Innovation is a social process of putting new ideas and technologies to work. A rural innovation ecology is a metaphor for the web of social communication and interactions that may foster and curtail rural innovation. This project researched and developed a participatory methodology to help make rural innovation ecologies visible, help identify interventions for strengthening social networks, and then help monitor and evaluate subsequent interventions. The research was carried out with two Committees for Local Agricultural Research (CIALs, their Spanish acronym): 'Fortaleza Carpintera' (Morales, Cauca) and El Progreso (Piendamó, Cauca). CIAL members participated actively in the development of the methodology. We conducted the following steps with each group.

1. Exploring the nature and importance of social networks with participating groups
2. Designing a social network questionnaire
3. Mapping and participatory analysis of the networks
4. Designing and implementation of a strategic plan based on this analysis
5. Participatory monitoring and evaluation based on re-drawing the networks

The two groups are currently implementing their respective strategic plans. This project is a work in progress. This paper only addresses the design and implementation of a prototype of the tool, discussing the insights gained from its application in two communities. It still remains to be seen how this prototype may apply (or not) in groups different from CIALs, groups that do not have such an advanced *previous* interest in

- 
1. PhD. Agriculture - Technology Policy Analyst – CIAT – IPRA project – Colombia. b.douthwaite@cgiar.org
  2. Communication Assistant - CIAT – IPRA project – Colombia. a.carvajal@cgiar.org
  3. Research Assistant - CIAT – IPRA project – Colombia. e.claros@cgiar.org
  4. Research Consultant specialized in Sustainable community development - CIAT – IPRA project – Colombia. b.s.alvarez@cgiar.org
  5. Participatory improvement and research - CIAT – IPRA project – Colombia. L.a.hernandez@cgiar.org

participatory research and monitoring techniques, and if the insights gained by the groups will translate into measurable interventions in the future. For now, the maps are being used as communication and fundraising strategies tools by the groups. Additionally, given the importance of Social Capital and Networks for these small rural communities, any insight into the concept and even a partial approximation of the status of these in the community is bound to be of help. Periodical remapping is the longer term objective of this study, step 5 will take place in six months.

For now, this prototype will be further developed and honed to apply in other cases, and presented to NGOs, so it can hopefully go into a further stage of collaborative research (between NGOs themselves and with communities).

## ***Background***

In the 1990s CIAT began working in the Department of Cauca setting up CIALs, usually with four members, to provide them a research service. At first CIAL research was largely aimed at addressing issues related to food security. Over time, however, many of the CIALs undertook other activities. CIAL Carpintero for example has a membership of 16 women who engage in chicken rearing, coffee production, bread-making, and social work with the elderly in addition to their CIAL research. CIALs are not the only type of small rural group (SRG) in Cauca. Other types of groups include those organized around coffee, sugar-cane and cassava production. Such small rural groups (SRGs) are motivated to better their own lot as well as working to improve their communities. They represent a powerful force for rural development.

In setting up and running activities and projects, SRGs often look for resources from outside, including knowledge and funding. Their success depends on their access to these resources. It also depends on group organization, communication and trust between group members, and communication and trust between group members and their respective communities. Access to knowledge, access to funding, communication and trust can all be represented by network maps.

## ***Objective***

To increase in rural communities their access and exchange of ideas, information and technology, to facilitate innovation process with more sustainable and equitable outcomes.

## ***Methodology***

Our main research hypotheses were that:

- Drawing network maps would help group members visualize networks of relationships that are important to them;
- Group analysis and discussion of these maps will help the group identify measures to strengthen their networks;
- Strengthening networks of relationships will help the group grow and prosper;
- Redrawing the network maps after a period of time will allow the group to monitor and evaluate interventions made to strengthen its networks.

We set out to test these hypotheses by undertaking action research to develop a participatory approach to social network analysis.

Our methodology has five (5) steps, they are:

**1. Exploring the nature and importance of social networks with participating groups:**



We designed a basic workshop in which participants were able to build a social network definition like this one, made by Felisa Suárez, a woman farmer of the Carpintero rural community, located in Morales, Cauca, described social networks: *“It looks like to a parable of the Bible, where the fish is tcaught and the families have their daily food.... the networks are our hands and those of people that care about our needs and our dreams... Networks are a way of sustaining us.”*

It was possible through a simple but clear exercise done in this way: facilitators ask participants to answer two questions:

- From whom did you find out about today’s meeting?
- What was the means through which you received the information?
  - Phone call
  - Someone told you
  - Was at a meeting and someone mentioned it
  - Another. Specify?

The flows of information linked the participants together in a network. We used wool yarn in a group exercise to depict these flows between people, with different colours to indicate the different ways information was received.

Once participants did this exercise, they discovered through a brainstorming session, the usefulness of a network mapping tool for groups of farmers or small producers organized in CIALs. Here are some ideas that came from this:

- We can see invisible threads and who connects them.
- We can visualize whom we need to contact to achieve our objectives.
- We can see the different types of networks that exist within the community (information flow, confidence, markets, etc.).

After that, we took into account previous process that these groups have developed with PM&E IPRA-Team, which allowed us to identify with participant these networks to study:

- Group membership
- Search for resources and strategic contacts
- Advice

- Training
- Marketing of group products

**2. Designing a social network questionnaire:** The surveys were designed taking into account the social networks of interest that were identified by each CIAL. Each question looks for information regarding a network. The questions were as follows:

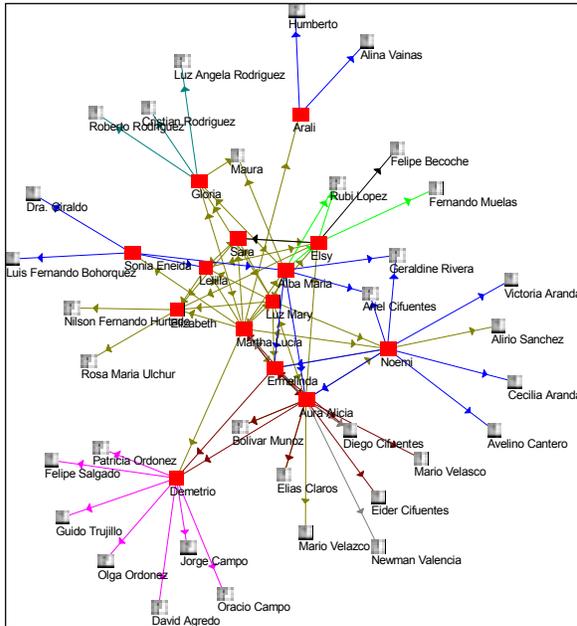


Figure 1. Network map done using Inflow 3.01.

*Group membership:* What groups are you a member of?

*Search for resources:* Name the people whom you have contacted, as well as those who have contacted you, seeking funding and/or resources in the last two years.

*Search for advice:* Name the people whom you have contacted, as well as those who have contacted you, requesting guidance or advice related to agriculture in the last two years.

*Strategic contacts:* Who are the key people you know at the different institutions with which your group works?

*Marketing:* What products do you sell? How important are they for your family income?

Although we designed this as a survey made of clear and common language, we decided to do it person by person to have opportunity to interact and to dialogue with participants more deeply about their networks and environments in where they were developing. Every interview took almost one hour to be done.

Once we did all surveys / interviews, we systematized all information in excel tables, it is previous step to use our software Inflow 3.01 in (Figure 1) which we draw all networks maps for these two CIAL groups.

**3. Mapping and participatory analysis of the networks:** Taking into account two ideas: first, every one of these social network maps is a kind of picture that could show sensitive aspect of internal dynamic in CIAL groups, and second that maps that came from interviews are not necessary the same perception of social network participants can have in their minds.



Because of that, the maps were printed out, poster size, and first checked with the CIAL leaders before presenting to the CIALs as a whole. The objectives of presenting the maps were:

- To share and explain the information contained in the maps.
- For the facilitators to assess how easy the maps are for group members to understand.
- To carry out a reality check on whether group members agreed with the information contained in the maps.
- To motivate participants to think about ways of strengthening the networks depicted

Some of the comments made during the participatory analysis indicate the usefulness of the maps. Comments included:

- You know you're there, but you don't know where. The map shows the location.
- The map serves as a guide.
- We work differently, but a map (of any type) can be used to locate oneself.
- Neither outsiders nor insiders should feel bad; each one to themselves.

There was important reflection about the importance of the roles other CIAL members play, who, despite not being leaders, help motivate and maintain the groups' internal networks.

There was reflection in one CIAL about the urgent need to redistribute leadership responsibilities among CIAL members. This helps ensure the continuity of the group and reduces the risk of the group disappearing if the leader is absent.

The maps helped group members to:

- Better understand how they are linked together within the group, and how they link to the outside to organizations such as CIAT, the municipal seats of government and the capital of the department of Cauca.
- Initiate processes of reflection and change around issues such as the allocation of leadership responsibilities within the CIAL.
- Better visualize the impact of the group on their respective communities
- Recall other links or relationships that they did not remember at the time of the interview and that will further enhance the social network maps, bringing them closer to reality.

An unexpected development was that groups wanted to use the maps to present themselves to outside organizations, to explain the way they worked and their impact.

In this phase, it means, through this process in which participants could analyze network maps, to discuss and to reflect about all those themes that were emerging during sessions, it was possible to identify what network these CIAL groups wanted to prioritize and to study more deeply towards to design interventions strategies.

Both groups chose to prioritize the networks related to: search for resources and links to strategic contacts.

**4. Designing and implementation of a strategic plan based on this analysis:** Two dynamics were employed to identify actions to strengthen the prioritized networks:

- Network maps were presented together with tables that showed the number of links that group members had to outside organizations. This helped the groups see how they might better share the work of building and maintaining these networks. It also showed how interactions might be better coordinated, and which links might need more, or less, effort.
- To help make the maps real the network maps were re-constructed using the individuals present. Bamboo poles were used to represent external actors. Coloured wool was used to represent links.



Using this dynamic, the CIALs of each network answered the following question: Does the network operate sufficiently well as to respond to the group's initiatives and projects? They were also asked if some actors were missing who should be present. Concrete actions were identified to strengthen the respective networks, which were prioritized using a secret ballot.

Both groups gave first priority to the idea of holding a workshop. To prepare these workshops, facilitators developed two previous meetings as follow:

#### *First meeting*

- To identify key institutions and people to invite: it was necessary take into account social networks maps, and also to design some criteria such as make decision power, affinity with CIAL groups project to undertake, influence zone and previous positive experiences between invited and CIAL groups.
- To build an agenda. In this case facilitators made this question to guide discussion, it was: What message do you want to delivery to invited? To answer this question implied a deep reflection about importance and relevance of every single activity inside of agenda, as well as logistics aspects and group preparation.

#### *Second meeting*

CIAL groups did a previous workshop in which all participants could developed their performance, It means, to do their own part inside of this workshop with opportunity to receive feedback from their partners and facilitators before to held real workshop.

Finally, the workshops took place in the 'Fortaleza Carpintera' CIAL on 17 November 2005 and in the 'El Progreso' CIAL on 18 November 2005.

These events became opportunities for dialogue and each CIAL had the opportunity to present its projects and initiatives to participants and in turn they received comments and commitments for future support in terms of knowledge and resources.

**5. Participatory monitoring and evaluation based on re-drawing the networks:**

In six months we will re-interview and re-draw the network maps to monitor changes.

**Results**

- Prototype methodology to apply in social network analysis, tested in two CIALs. The methodology proved to be useful in the strengthening of social networks considered key for the sustainability and continuity of target groups (search for resources and strategic contacts).
- The next step is to co-develop the prototype with interested NGOs. Interest has been expressed by the University of Cauca, CREPIC and CORFOCIAL.
- This pilot project aroused the interest of other CIAT projects, such as Institutional Strengthening of Centers for Learning and Knowledge Sharing (CAIS, its Spanish acronym) and Rural Planning, which decided to include it within their work agendas.

**Conclusions**

- Social network analysis helped the two groups we worked with better understand their networks and based on this understanding identify steps to strengthen them.
- The discussion of the meaning and the importance of network maps helped individuals in the groups better appreciate each others roles. Management issues, such as the over reliance on a group on certain individuals, were discussed.

**Bibliography**

Rob Cross, Andrew Parker, and Robert L. Cross. 2004. *The Hidden Power of Social Networks: Understanding How Work Really Gets Done in Organizations*. Harvard Business School Publishing Corporation. 212 p.

John P. Scott. 2004. *Social Network Analysis: A Handbook*. SAGE Publications. Fourth edition. 208 p.

Camilo Madariaga Orozco, Raymundo Abello Llanos, and Omar Sierra García. 2003. *Redes sociales: infancia, familia y comunidad*. Universidad del Norte. 184 p.

Valdis Krebs. Inflow Software. ORGNET.COM. 2005.

## **Learning about Partnership through Constructing Innovation Histories<sup>6</sup>**

*Boru Douthwaite<sup>7</sup>, Alok Sikka<sup>8</sup>, Rasheed Sulaiman<sup>9</sup>, John Best<sup>10</sup>, and John Gaunt<sup>11</sup>*

### **Accomplishments**

Adaptation of the innovation history method for identifying and communicating policy lessons

### **Abstract**

This article describes an experience of adapting and using the innovation history method in India to draw lessons learned from experiences of working in projects that involved partnerships. The innovations studied were novel partnering arrangements and how they had formed. The article aims to show how a workshop provided space for people representing member organizations of each partnership to track and analyze the institutional changes that were required to make the partnerships effective, and then to communicate their findings to a policy audience.

### **Introduction**

Constructing an ‘innovation history’ is a method for recording and reflecting on an innovation process. People who have been involved in the innovation jointly construct a detailed written account based on their recollections and on available documents. The process of preparing this history stimulates discussion, reflection and learning among stakeholders. Others can also learn, either by studying an individual case or by comparing experiences across several cases. Subsequent planning can build on the lessons learned, formulate a shared vision and act as a catalyst for change. Based on the initial detailed account of the innovation process, more concise information products can be prepared that summarize the innovation process for wider promotion or sharing of findings. These may include public awareness materials, policy briefs or articles in professional journals.

Innovation histories provide causal explanations for two outputs:

- An innovation timeline that sequentially lists the key events
- Actor-network matrices and maps that show the links among stakeholders at different points on the timeline, usually at the beginning and end of the history.

---

6. This document is an output from a project funded by the UK Department for International Development (DfID) for the benefit of developing countries. The views expressed are not necessarily those of DfID.

7. Senior Scientist, International Center for Tropical Agriculture (CIAT), Cali, Colombia.

8. Director, ICAR Research Complex for the Eastern Region, India.

9. Senior Scientist, ICAR National Centre for Agricultural Economics & Policy Research, India.

10. Senior Research Fellow, International and Rural Development Department (IRDD), The University of Reading, UK.

11. Director, GY Associates, UK.

Constructing innovation histories usually begins with a start-up workshop in which participants work together to develop the first drafts of the timeline, network matrices and maps. The participants decide on which themes they wish to investigate; e.g., partnerships and their effect on the innovation process. The participants then identify whom they need to interview and what literature they need to collect. They elect a core group to manage the process, including sharing drafts of the innovation history as it is written and fostering discussion. This discussion culminates in a second workshop in which the lessons learned from the innovation history are identified and discussed; then the next steps are agreed upon and implemented after the workshop. The participants also agree on a strategy for publishing and disseminating findings at this workshop. A more detailed description of the method can be found at <http://www.cgiar-ilac.org/downloads/Brief5Proof2.pdf>

### ***Partnerships as innovations***

Working in partnership, when it allows for two or more organizations to leverage each other's comparative advantages, is now recognized as a successful strategy for improving livelihoods of the rural poor. However, to form functioning partnerships effectively can present a challenge. Partnership requires mutual recognition of each partner's strengths and, possibly, changes in organizational culture that reflect that such strengths are valued.

Both the Indian Council for Agricultural Research (ICAR) Natural Resource Management (NRM) directorate and the Department for International Development (DfID) Natural Resource Systems Programme (NRSP) have supported research projects that have directly challenged scientists to explore new ways of working, with some good results. This workshop was part of a project funded by DfID-NRSP (PD140), which sought to validate the lessons learned by such projects and explore ways to promulgate good partnering practices.

### ***Workshop design***

The workshop organizers saw an opportunity to scale up good partnering practices through the new World Bank-funded National Agricultural Innovation Project (NAIP) that will begin in 2006 with a budget of US\$250 million. NAIP will set up 'consortia' of different types of organizations, including research, extension, public- and private-sector organizations, to work in partnership to foster rural development. The NAIP coordinator was interested in using the workshop findings to help NAIP understand what working in partnership means in an Indian NRM context and to take advantage of the lessons learned.

The workshop was held from 7-10 November 2005 in New Delhi. The objectives were to identify:

- the benefits of working in partnership
- enabling and constraining factors
- policy and research management strategies to foster partnerships

The workshop proposed to achieve these objectives through joint analysis of four NRM case study projects by resource people knowledgeable about their respective organization's role. The projects were selected on the basis of being innovative in their partnering arrangements (Box 1).

### **Box 1: The Case Study Projects**

#### **Case study A**

- Title:* Integrated management of land and water resources for enhancing productivity and Improved livelihoods through improved crop and soil management (two NRSP projects that merged)
- Partners:* ICAR Research Complex for Eastern Region; IACR, Rothamsted, UK; and, Catalyst Management Services (CMS), Bangalore
- Interventions:* (a) Delivery of rural services  
(b) Development of local institutional arrangements that enable rural men and women, specifically including the poor, to improve their livelihoods through land and water management.
- Location:* Patna, Bihar and Eastern Uttar Pradesh.
- Novelty:* The experience of ICAR researchers and international scientists in working in a full partnership with a private sector company specializing in community development. The project gave the community development specialists the space to develop and adapt their own methods to meet general goals, rather than being treated as subcontractors to work in ways prescribed by ICAR or international partners.

#### **Case study B**

- Title:* Improved Livelihoods in Watersheds through Consortia Approach
- Partners:* International Centre for Research in the Semi-Arid Tropics (ICRISAT), Hyderabad; District Water Management Agency; Central Research Institute for Dryland Agriculture (CRIDA), Hyderabad; M Venkatarngiya Foundation (MVF), Secunderabad, National Remote Sensing Agency (NRSA), Hyderabad; and farmers in Kothapally through the watershed association, watershed committees, user groups and self-help groups.
- Interventions:* Increased agricultural productivity, improved water availability, employment generation and reduced soil run-off
- Location:* Andhra Pradesh
- Novelty:* The novel consortia approach to research required development of new arrangements within ICRISAT to allow decentralization of the project administrative functions required to support multi-stakeholder projects in different, widely spread locations.

#### **Case study C**

- Title:* Rice-Wheat Consortia
- Partners:* CGIAR Centers including the International Maize and Wheat Improvement Center (CIMMYT), ICRISAT and the International Rice Research Institute (IRRI); ICAR; private sector input and service providers, agricultural machinery manufacturers and NGOs.
- Interventions:* Research on rice-wheat systems, participatory needs assessment, participatory validation and refinement of technologies, and technology dissemination
- Location:* Andhra Pradesh
- Novelty:* A strategic assessment of opportunities on the Indo-Gangetic Plains was used to target a consortia research and technology development strategy that included the private sector. Partnering arrangements have evolved: The consortia now work more with community-level institutions rather than lead farmers.

#### **Case study D**

- Title:* Community Development in Gujarath by the Aga Khan Rural Support Project (India)
- Partners:* Aga Khan Rural Support Project; Community Group (GVM); Bank; Farmers Federation; Milk Union; state departments dealing with agriculture, soil and water conservation, irrigation and forestry.
- Interventions:* Joint forest management, soil and water conservation, and agroforestry; establishment of self-help groups; biogas; irrigation schemes; input supply and output marketing; dairy and micro enterprise
- Novelty:* Long-term partnership with a community that went from being poorly organized and dependent on the AKRSP to being well organized and independent

We carried out the analysis of the case studies using adaptations of the innovation history approach. Due to time and budget constraints, an adaptation was made, dropping one workshop and asking participants to prepare timelines and network maps from their own organization's perspective ahead of time. Another input to this workshop was a report written by one of the authors based on a series of interviews of policymakers and senior research managers to document their questions and insights with respect to partnership in the context of NRM research and development. The workshop participants then analyzed the case studies and the policy study to identify lessons and principles.

The second adaptation was to design the workshop to “prepare for a policy panel.” Participants carried out the analysis on days 1 and 2 and then became the resource people on Day 3 when peers joined to discuss the findings from the individual case studies and help identify policy implications and develop the presentation to the policy panel. The presentations to the policy panel were made on Day 4. The process and relationships between the various elements of the workshop are shown in Figure 1. Eight senior and mid-level policymakers were invited to form the policy panel to react to the workshop's findings, and their inherent policy implications. This was a strategy to begin dissemination of the workshop findings immediately. The other strategy was to pay for a professional writer to attend the workshop to produce a policy brief and partner resource from the workshop findings.

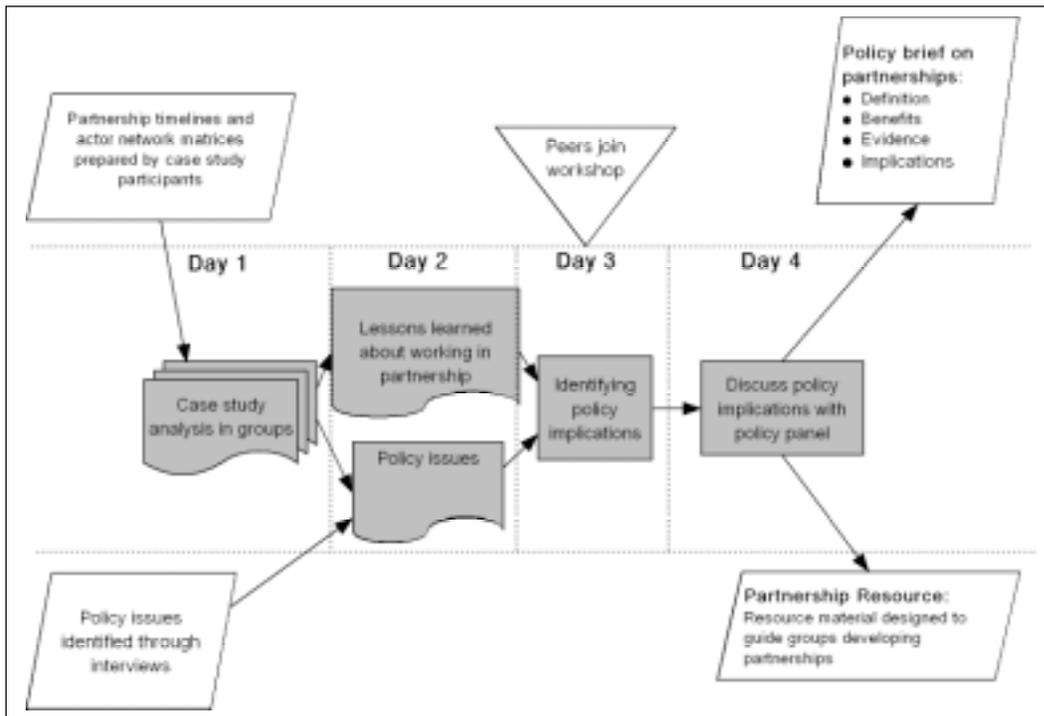


Figure 1. Organization of the Workshop.

## ***The workshop***

The first phase of the workshop brought together 25 representatives from each of the organizations involved in the case study partnerships. On Day 1 participants worked in case-study groups to analyze their individual case studies in detail, drawing on draft innovation histories and actor-network matrices, which they had prepared in advance and brought to the workshop. The initial plan had been for them to develop a single composite timeline for each case study on the morning of Day 1 and a similar composite actor network matrix in the afternoon. However, the group construction of the timelines generated more discussion than was anticipated as the stakeholders in each case-study group negotiated their differing views of what had happened. In case study A, for example, the participants gained insights during a discussion of the importance of leadership in managing differences between partners, which later proved highly beneficial for the project. In case study B, the participants identified the importance of budgetary flexibility in setting up and managing new partnerships among organizations; and they realized that there was a role for externally funded projects in allowing such flexibility. Such was the length and richness of the plenary discussion that the facilitators were able to extract enough partnership lessons to provide a basis for group work on Day 2 (Box 2). There was insufficient time for the network matrix exercise.

### **Box 2: Some of the Partnership Lessons Identified**

#### ***Time***

Significant time is required to build relationships (from 3-6 years).  
Policymakers, donors, etc. don't take into account the time required.  
It takes time to build trust among colleagues.

#### ***Flexibility***

Working in new partnerships creates new potential for research and flexibility to respond to demands.  
Mid-term corrections (e.g. all case study projects needed them) need to be considered.  
Project management must be flexible.  
Flexibility must be built into project documents.  
Government institutions are constrained by guidelines and thus cannot be flexible.

#### ***Leadership***

Champions (strong leadership) are Important for pushing for flexibility.

#### ***Conflict***

Conflicts are inevitable and there need to be mechanisms to maintain communication to sort them out.



Figure 2. Case-study resource persons developing their partnership timeline.

On Day 2, participants (in two groups that mixed the original four case-study groups) worked to prepare the lessons learned in order to identify benefits of partnerships and how they could be measured. Presentations to be made on Day 3 were then prepared by participants, describing each case study and summarizing the findings of their analyses on days 1 & 2.

On Day 3 the workshop was joined by representatives of the target audience for the resource materials being generated from the workshop—NRM researchers and development professionals. Participants in the initial two days thus became resource people

within the larger group (some 40 participants in all). Day 3 began with presentations of each of the four case studies, the lessons learned, and the main points from the policy discussion on the afternoon of Day 2. Before participants broke for lunch, we asked them to write the policy question they would most like to put to a senior policymaker on a card. During lunch the facilitators grouped the questions into categories. After some initial reallocation and consolidation, people were asked to sign up for different topics. There was then a final consolidation that resulted in two groups.

On Day 4, a panel comprising four senior and mid-level policymakers<sup>12</sup> who had contributed to the policy paper joined the workshop to respond to the findings of participants and discuss the policy implications. The policy panel was asked to address what needed to change in existing systems:

- Facilitate the formation of partnerships better
- Nurture existing partnerships
- Enable scaling-up of partnerships

Outputs from the workshop were:

- An initial preliminary feedback note for NIAP, prepared within 2 days after the workshop, which highlights the lessons of the case studies identified in the workshop as being of key importance (Box 3).



Figure 3. Presentation of case-study findings to peers on Day 3.

12. These were the National Director of NAIP; a member of the Agricultural Scientist Recruitment Board; the Assistant Director General (Integrated Water Management) of the Indian Council of Research; and a senior manager from the Andhra Pradesh Rural Livelihoods Program.

### **Box 3: Some of the Findings from the Case Studies**

#### ***Time required for establishing and building partnerships***

Significantly more time is needed than normally anticipated for establishing research partnerships in order to achieve buy-in to shared goals and to build trust and understanding among participants. Donors need to understand the reality that 1-2 years will be needed for most partnerships to begin to achieve impact.

#### ***Flexibility***

Successful partnerships frequently revisit their overall goals and objectives, as well as the means by which those are meant to be achieved. Success is highly correlated with responsiveness to changing needs.

#### ***Dynamic leadership***

Successful partnerships are characterized by vibrant leadership. Also, they usually embrace the principle of decentralized decision-making.

#### ***Complementarity and comparative advantage***

The strongest partnerships are those that explicitly recognize and build upon the partners' strengths.

#### ***Building relationships with farmers***

Successful partnerships depend on integrating communities in the planning and implementation of partnership activities

#### ***Public-private partnerships***

Building formal and informal relationships among key public and private stakeholders can help agricultural research organizations achieve their goals and objectives.

#### ***Transparency***

Successful partnerships are characterized by transparency in planning, decision-making and financial management.

- A policy brief published by NIAP called “Effective partnerships: Principles and practice,” the audience for which is senior research managers and policymakers<sup>13</sup>
- A partnership resource document, designed to assist research practitioners as they form new partnerships to pursue NRM research and development objectives.<sup>14</sup>

13. ICAR-RCER, GYA and ICAR-NCAP. 2006. Effective partnerships: principles and practice. NCAP, New Delhi. [www.ncap.res.in](http://www.ncap.res.in)

14. ICAR-RCER, GYA and ICAR-NCAP. 2006 Partnering for impact: Learning from agricultural R&D in India. ICAR, New Delhi.

## ***Feedback during and after the workshop***

We sought feedback and reflected on how the workshop was progressing through a 'barometer' group meeting after Day 1 (facilitators and three resource-person volunteers), an after-action review carried out by the facilitators on Day 3, and an end-of-workshop evaluation at the end of Day 4.

***What worked well?*** The workshop was successful in that it generated materials of sufficient quality to produce the workshop outputs. Employing a professional writer to attend the workshop and produce these materials contributed to this success. One of the policy panel members requested for an immediate briefing note after the workshop. NAIP has requested that the partnership resource be made available for use by their help desk.<sup>15</sup> This is an indication that the project outputs are relevant to the intended audience.

Participants liked the workshop's focus on working in partnerships and the fact that much of the work was done in smaller groups. They said they liked the workshop structure and the flexibility of the same, which they felt was conducive to real participation and a free and frank exchange of ideas. This was partly a result of ongoing discussion among the facilitators and key resource people about how the workshop was progressing, and long discussions among the facilitators late into the night to plan for the next day.

The policy study carried out before the workshop was useful input and created an awareness of the workshop and its outputs among the policymakers and senior research managers. The timeline exercise worked well. It stimulated dialogue among case study resource people, particularly those from different organizations, as to which were the significant events and why. Asking case-study participants to name the actors identified with each significant change encouraged people to think about partnerships without having to construct the actor network maps.

Having peers joining the workshop on Day 3 helped focus the work on days 1 and 2 in preparation for their arrival. Similarly, the workshop to prepare for a policy panel worked well by focusing participants' minds on a concrete output. Presenting the findings first to peers on Day 3 and then the refinement of the message for the presentation to the policy panel helped build ownership of the findings among the participants. The interaction with the policy panel itself immediately began the process of communicating the workshop findings to a policy audience.

***What to change for next time?*** The main dissatisfaction voiced by participants was with the facilitation and attendance at the policy panel session. People felt that the discussion did not address the issues identified in the first three days of the workshop adequately. Some participants were disappointed that some of the more senior members of the policy panel were absent. Others were expecting a panel of the real "top brass."

Reflection among the facilitation team suggests that perhaps we need to explore participants' expectations better and clarify the purpose of the policy panel discussion. Our expectation (and the design of the workshop) was that the panel discussion would help workshop participants gain insights into policymaking and how it can be influenced in order

---

15. The NAIP help desk is being set up to provide support to teams proposing to establish consortia partnerships.

to refine the planned products. In this respect the workshop was successful. However, having strongly focused on policy messages and distilling key issues during the workshop, there was an expectation from some participants that the workshop would lead directly to policy change, and that the pathways to that change would be explored in the panel discussion.

A number of participants thought that the workshop could have been done in three days, instead of four. If the peers had not joined on Day 3, half a day of presentations could have been saved. This time could have been used to allow fuller discussion of the timelines and actor network matrices or the workshop could have been half a day shorter. On the other hand, the engagement of a wider range of practitioners would be lost.

Quite a lot of time and effort were spent on preparing individual timelines and actor network matrices before the workshop. The idea was that doing so would give people who could not attend the workshop a voice. Actual preparation of these inputs was patchy, plus they created a false expectation that individuals would have an opportunity to present their projects. More time and resources should be allowed for mentoring and following up the preparation of these inputs prior to such a workshop.

The facilities used for the workshop were excellent. However, the rooms we worked in had fixed tables laid out in a boardroom style, which Robert Chambers (2002)<sup>16</sup> describes as “among the worst patterns for participatory work.” Breakout groups had to fit themselves either end of the big table in spaces that were not conducive to group work.

The panel members engaged with project before the workshop by giving their valuable time in preparation of the policy study. Panel members were invited personally to attend the workshop, both verbally and in writing. Despite the fact that they expressed their willingness and availability to participate, four out of the eight members did not attend. Several had competing commitments. This reflects one of the challenges that such a workshop faces. Strategies for better attendance in the future include more personal follow-up and engaging the organizations that the policy panel members represent to co-host the workshop.

## **Conclusions**

The adaptation of the innovation history method to a single workshop was judged by workshop participants and facilitators as something that worked and was well worth repeating. It has the important advantage of being much cheaper and quicker than the full innovation history method, while still being able to surface and socialize lessons from innovative experiences. The innovation of having a workshop to prepare for a policy panel focused participants’ minds and immediately began the process of communicating the workshop findings to a policy audience. In the same way, having participants join the workshop on Day 3 focused the work on days 1 and 2, and engaged a wider audience of practitioners with the workshop findings. The preparation of two sets of presentations for differing audiences (peers on Day 3 and the policy panel on Day 4) helped to refine the findings. This helped the workshop produce materials of sufficiently high quality to produce a policy brief and partnership resource materials. The joint construction of a timeline of significant partnership events prompted interaction and analyses, both within and between case studies.

---

16. Chambers, R. 2002. *Participatory Workshops*. Earthscan Publications, London.

## **Impact Assessment of Research in the Challenge Program on Water and Food (CPWF)**

*Boru Douthwaite<sup>17</sup>, Sophie Alvarez<sup>18</sup>, Jorge Rubiano<sup>19</sup> (Land Use Project), and Claudia Ringler (IFPRI)*

### **Accomplishments**

- Development of the first draft of a methodology for assessing ex-ante impact of CPWF projects
- Project funded to further develop and implement the methodology in three CPWF basins in Phase I and the remaining six basins in Phase II.

### **Summary**

The Challenge Program on Water and Food (CPWF) was approved by the CGIAR Executive Committee in October 2002. It is the largest international agricultural R&D program that addresses the water, food and environment nexus (CPWF Secretariat, 2005). The CPWF responds to a worldwide need for improving water-use efficiency, especially aiming at meeting the most pressing current and near future global challenge: increasing food production using less water.

On 1 October 2005, Phase 1 of the CPWF Impact Assessment Project (IA Project) began. It is a part of the Basin Focal Project (BFP) initiative and will work in the Volta, Mekong and Karkheh basins. Phase 2 will work in the remaining CPWF basins which are São Francisco, Yellow River, Ganges, Indo-Gangetic Basin, Andean System of Basins and Limpopo.

The IA project focuses on carrying out ex-ante impact assessment on work carried out by the CPWF projects in the basins. The basin-specific focal projects (Volta, Mekong, Karkheh and São Francisco) focus on more fundamental questions about the extent to which water can influence livelihoods and poverty, and as such are carrying out a different sort of ex-ante impact assessment.

The rationale of the IA Project is summarized in Figure 1. The CPWF needs a better appreciation of the existing and potential impact of research on water use in agriculture to justify current and future funding. At the same time CPWF projects would benefit from a better understanding of how and what impact they hope to attain, and a monitoring and evaluation approach that both fosters and tracks progress towards achieving impact. The IA project aims to contribute to both of these requirements.

The international public goods that this project expects to generate are methods for carrying out ex-ante impact assessment in complex programs, such as the CPWF.

---

17. Senior Scientist, International Center for Tropical Agriculture (CIAT), Cali, Colombia.

18. Research Consultant specialized in Sustainable community development - CIAT – IPRA project – Colombia. [b.s.alvarez@cgiar.org](mailto:b.s.alvarez@cgiar.org)

19. Consultant Land Use Project [j.rubiano@cgiar.org](mailto:j.rubiano@cgiar.org)

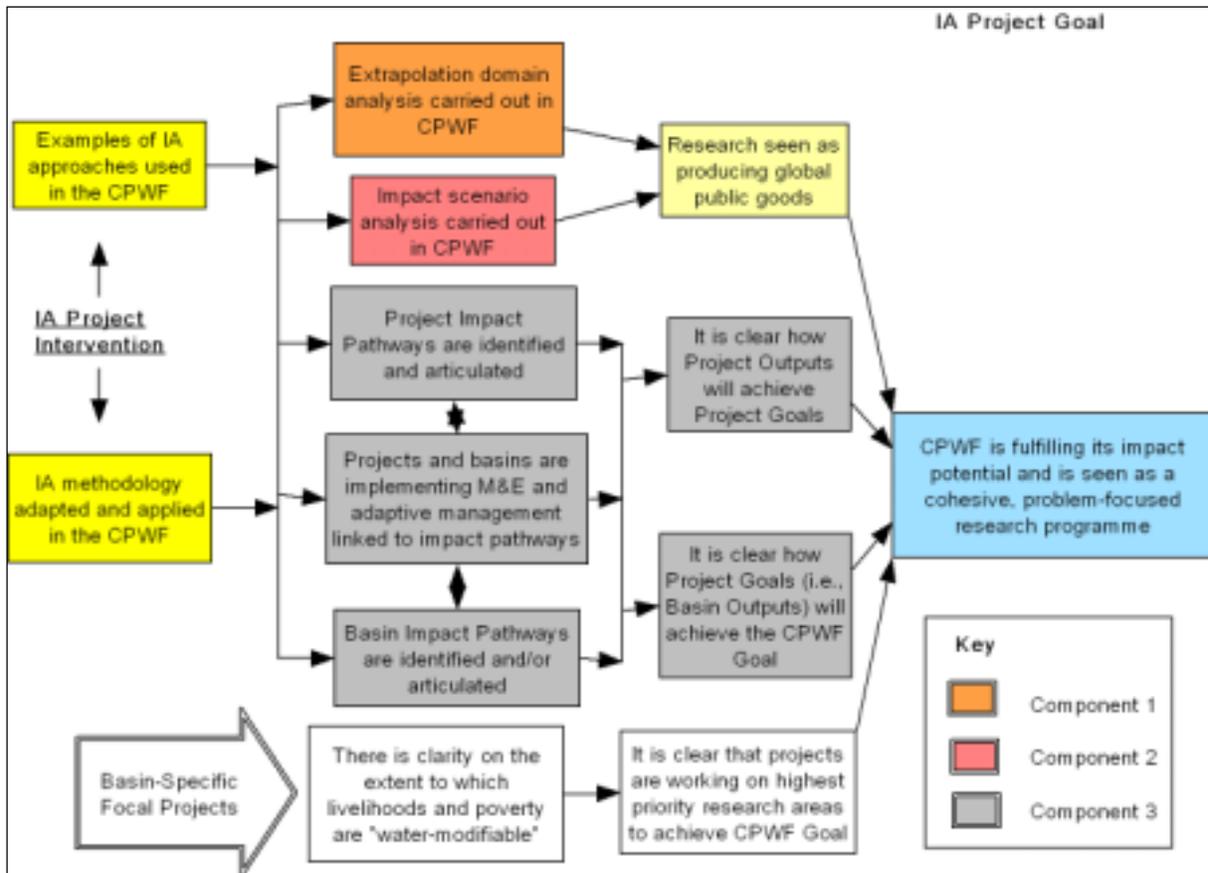


Figure 1. Objective tree for the CPWF-BPF Impact Assessment Project.

The IA project has three components:

- Analysis of the potential extrapolation domain (potential for scaling out and up) of selected project outputs. The CIAT-Land Use Project is responsible for this component.
- Scenario analysis that extrapolates the impact of selected high-potential research outputs to the global level. IPGRI is responsible for this component.
- Construction of impact pathways and narratives of CPWF projects and basins, and piloting of the Most-Significant-Change (MSC) approach to monitoring project progress along its impact pathway. CIAT-IPRA is responsible for this component.

A **project impact pathway** is (i) the causal chain of events and outcomes that link outputs to the goal; and (ii) a network map that show the relationships between project implementing organizations, boundary partners and beneficiaries that are necessary to achieve the goal. A **project impact narrative** describes the project's rationale. It describes the outputs, outcomes, assumptions, links and relationships shown in the project impact pathway. It weaves together the chain of outcomes with the evolution of the partner relationships (shown in the network map). It is quantified and substantiated by literature and expert opinion as far as possible. **Most-Significant- Change (MSC)** involves the periodic collection of significant change stories resulting from a project's implementation (following its impact pathway) and the subsequent selection of the most significant changes. The regular discussion and selection of change stories fosters an ongoing reevaluation of

what really contributes to impact in a project. The changes identified as significant beyond a local context are circulated within the project or program, thereby stimulating cross-fertilization of ideas and innovation ([www.mande.co.uk/docs/MSCGuide.htm](http://www.mande.co.uk/docs/MSCGuide.htm)).

The way the project outputs relate to each other, the intermediate outcomes that we hypothesize will result from their production and how these will contribute to the final project goal are shown in Figure 2.

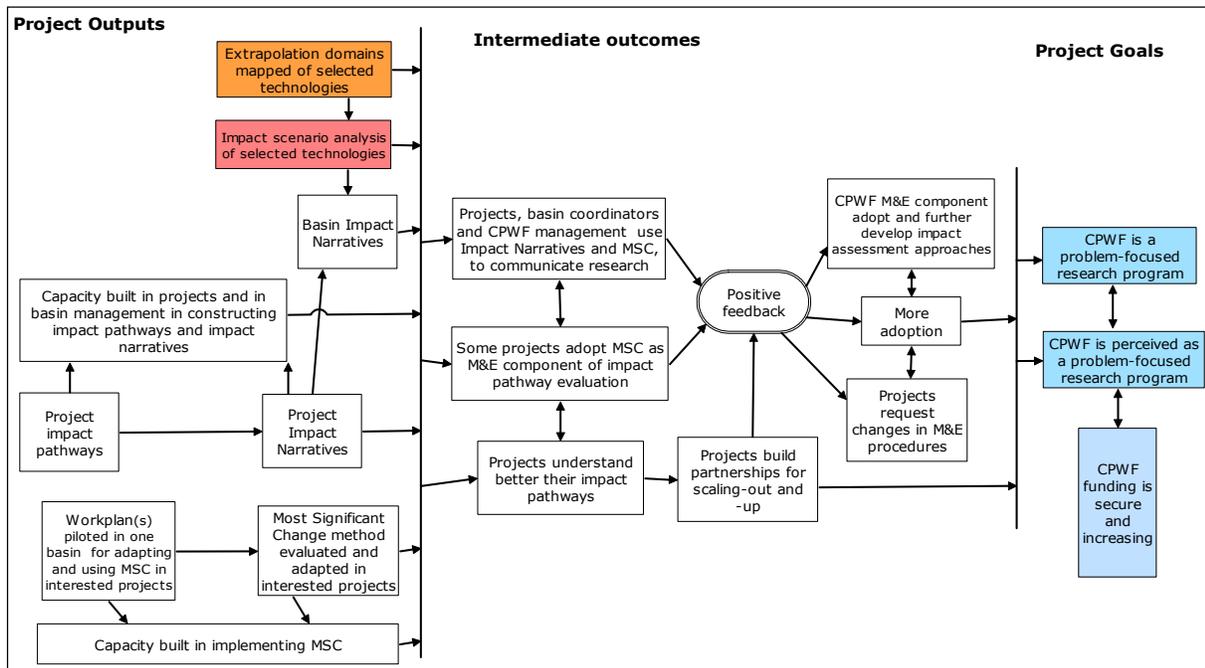


Figure 2. Part of the IA project impact pathway.

## Bibliography

CPWF (Challenge Program on Water and Food) Secretariat. 2005. Medium Term Plan 2005-2007. Internal CPWF document. IMWI, Colombo, Sri Lanka.

# Farmers' Participation in Land Degradation Assessment: The Case Study of Farmers in the Highlands of Southwestern Uganda

R.N. Muzira<sup>20</sup>, P. Mbabazi<sup>21</sup>, R. Bagyenda<sup>22</sup>, P.C. Sanginga<sup>23</sup>, and R. Delve<sup>24</sup>

## Abstract

To reverse soil degradation in Uganda, active participation of the farmers is important in research process. Participatory land degradation assessment done in Kabale district found that approximately 65% of the land was under cultivation. Farmers' perception on soil fertility was that valleys were more fertile with deep soils (>80 cm) compared to the abandoned land that was considered infertile with shallow soils (0-30 cm) due to erosion. The soil loss was generally observed to be highest in Muguli B with 7.2 and 24.6 t h<sup>-1</sup> and lowest in Habugarama with 0.1 and 0.3 t ha<sup>-1</sup> on gentle and steep slopes respectively. In Muguli B it was the poor losing more soil (22.1 t ha<sup>-1</sup>) compared to the rich (17.9 t ha<sup>-1</sup>). Contrary it was the rich that were losing more soil in Karambo and Habugarama (19.3 and 0.2 t ha<sup>-1</sup>) compared to the poor (11.0 and 0.1 t ha<sup>-1</sup>) respectively.

Keywords: Degradation, participation, research, perception, fertility and soils

## Introduction

The wide and high rate of soil degradation in form of soil exhaustion and erosion in the highlands of Uganda (Muzira *et al.*, 2004) have led to decline of crop yields in the recent past (Muzira *et al.*, 2003). Soil erosion is predominant due to steep and long slopes that favor high soil erodibility and erosivity (Mbabazi *et al.*, 2003). The high population pressure on the land has resulted into intensive cultivation in turn leading to deforestation exposing soil to agents of erosion (Bamwerinde and Place, 2000). Most of the marginalized areas have been cultivated and conservation measures such as grass bunds destroyed by farmers in search of fertile soils. Most of the hilltops are abandoned due to soil infertility associated with erosion and shallow soil depth (Raussen *et al.*, 2002).

In this paper, findings of farmers' perception regarding causes of soil degradation, extent of the problem and possible solutions are presented as part of the land degradation assessment project initiated by African Highlands Initiative in Rubaya sub-county, Kabale district.

## Materials and methods

**Study site:** Kabale district is located about 410 km from Kampala, capital of Uganda in the southwest. It covers an area of 1,827 km<sup>2</sup> and according to the 2002 population census results it is one of the most densely populated (350 persons km<sup>-2</sup>) districts in Uganda. The relief ranges between 1,800 to 4,000 m.a.s.l and rainfall is bimodal with short rains in February-May and long heavy rains in September-December with annual mean of

---

20. CIAT Africa, PO Box 6247, Kampala-Uganda.

21. Mbarara University, PO Box 1410, Mbarara-Uganda.

22. Wetland Inspection Division, PO Box 9629, Kampala-Uganda.

23. Rural Sociologist, [Enabling Rural Innovation](#).

24. Soil Scientist, TSBF-CIAT - Faculty of Agriculture, University of Zimbabwe.

800-1000 mm. The participatory study was conducted in 3 parishes of Buramba-Mugandu and Kitooma watersheds in Rubaya sub-county.

**Farmer participatory assessment process:** Researchers guided community members to assess land degradation levels in the 3 watersheds. Focus Group Discussions in each community was used to get information pertaining land use, land degradation and soil fertility management. Members conversant with the community drew resource map showing location of the natural resources, areas with land degradation and need interventions. Transect walks were used to re-affirm what was in the community map drawn. More data was generated through field interview, discussion, observations and measurements in selected plots of the wealth and poor farmers as ranked by the communities. Soil loss determinations were based on methods described by Stocking and Murnaghan (2001).

### **Results and discussion**

Farmers' perception of land use and management: The hills are extensively and intensively cultivated to the extent of encroaching marginalized areas leaving less land under fallow, woodlots and grazing (Figure 1). Woodlots are normally planted in already exhausted plots with shallow soils, which are mostly located on hilltops. Approximately 23% of the total arable land is under natural fallow for one or two season as a means of replenishing soil fertility. Most farmers prefer natural fallows due to its positive attributes compared to other technologies (Table 1). Where perennial crop such as fruits and trees are dominant, fallow is not used at all.

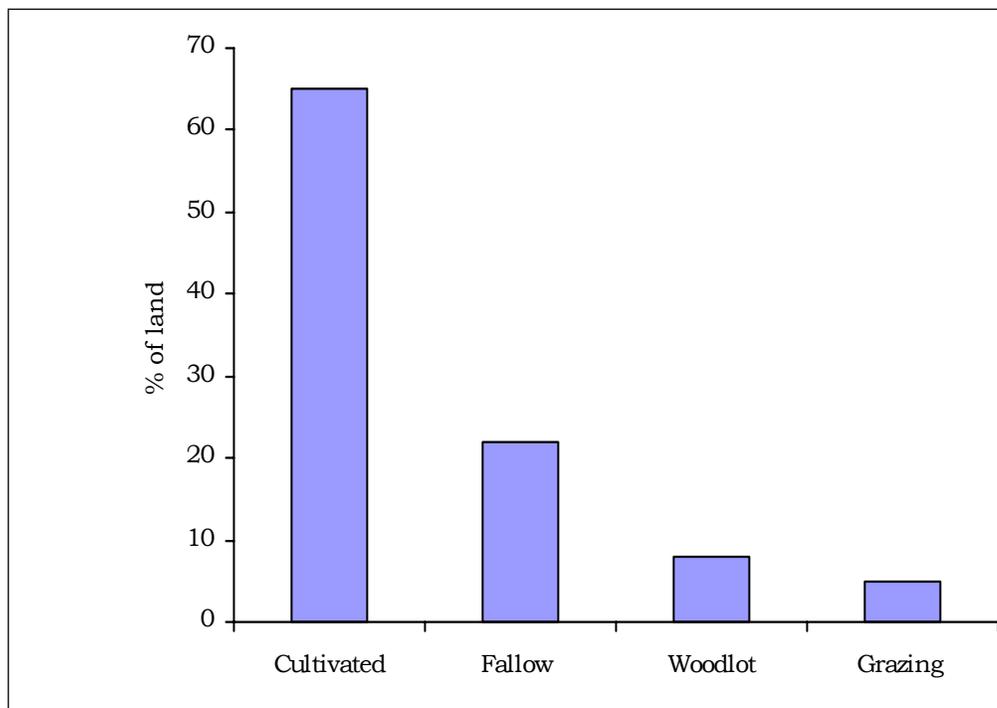


Figure 1. Farmers' perception of agricultural land use.

Table 1. Farmers' perceptions on soil fertility management technologies in the communities.

| Soil fertility technology | Positive attributes   | Negative attributes  |
|---------------------------|---|--|
| Natural fallow            | <ul style="list-style-type: none"> <li>• Does not require seeds</li> <li>• Provide medicinal herbs</li> <li>• Does not require land preparation</li> <li>• Cheap to replenish soil fertility</li> </ul>   | <ul style="list-style-type: none"> <li>• May lead to of noxious weeds</li> <li>• Requires much labour during land clearing</li> <li>• Short benefit of soil fertility</li> <li>• Slow establishment may lead to erosion</li> </ul>   |
| Fertilisers               | <ul style="list-style-type: none"> <li>• Easy to apply</li> <li>• Quick plant response</li> <li>• Good for high value crops</li> </ul>  | <ul style="list-style-type: none"> <li>• Not found within the communities</li> <li>• Easily lost from soil</li> <li>• Due to its high costs high value crops are given priority</li> </ul>   |
| Improved fallow           | <ul style="list-style-type: none"> <li>• Provide wood fuel</li> <li>• Fodder for animals</li> <li>• Provide stakes</li> <li>• Control of diseases and pests</li> <li>• Improves soil fertility</li> </ul> | <ul style="list-style-type: none"> <li>• Seeds are expensive to buy</li> <li>• Requires labor during clearing and incorporation of green manure</li> <li>• Seeds unavailable in community</li> <li>• Some are slow to establish</li> <li>• Requires labor for establishment</li> </ul> |
| FYM                       | <ul style="list-style-type: none"> <li>• Considered cheap</li> <li>• Used in fish pod</li> <li>• Good for low value crops</li> </ul>  | <ul style="list-style-type: none"> <li>• It is bulky</li> <li>• Big variation in quality</li> <li>• May carry diseases pathogens for crops</li> </ul>  |

However, households who depend more on non-farm activities in their livelihood are more apt to use of fallows. Fewer farmers engaged on commercial production of potato apply fertilizer less than 1 kg of a nutrient ha<sup>-1</sup> on average. This has resulted into negative nutrient balance, as more nutrients are lost from the soils.

**Farmers' perception on the extent of land degradation:** Most hilltops have been abandoned due to lower returns to land and labour. Lower terraces are associated with fertile and deep friable soils as observed during cultivation. Due to declining soil fertility some farmers opt for bund destruction in search of fertile soils (Table 2). Bund destruction was also associated with heavy rains and livestock grazing exerting pressure on the bunds while others are destroyed due to increased heights attained resulting from soil accumulation. New ones are normally formed with help of trash lines.

Table 2. Estimates of plots with destroyed bunds.

| Village    | No. of households (A) | Total number of plots | No. of plots with destroyed bunds (B) | B/A (%) |
|------------|-----------------------|-----------------------|---------------------------------------|---------|
| Karambo    | 50                    | 500                   | 30                                    | 60      |
| Kagyera    | 68                    | 816                   | 30                                    | 44      |
| Habugarama | 61                    | 610                   | 18                                    | 30      |
| Muguli B   | 72                    | 576                   | 06                                    | 8       |

Nonetheless, Muguli B village in Mugandu parish had lowest bund destruction in relation to households compared to other communities. This could be attributed to the variation in effectiveness of community leaders in implementing the bye-laws. Due to excess soil erosion, surface runoff and continuous cultivation most of the farmers' plots have declined soil fertility (Table 3) associated with shallow septh.

Table 3. Farmers' perception on soil fertility variation on hill slopes.

| Slope position | Farmers' rating of soil fertility | Farmers' description of soil depth | Estimated soil depth |
|----------------|-----------------------------------|------------------------------------|----------------------|
| Hilltops       | Extremely low                     | Shallow                            | 10-30 cm             |
| Shoulders      | Extremely low                     | Very shallow                       | 0-10 cm              |
| Back Slopes    | Very low                          | Shallow                            | 15 – 20 cm           |
| Foot Slopes    | Low                               | Fairly deep                        | 50 - 80 cm           |
| Valleys        | Medium / Good                     | Deep                               | > 100 cm             |

**Soil loss in individual farmers' plots:** Soil loss was greatest in Karambo and Muguli B villages due to long and steep slopes resulting into high soil erodibility (Figure 2). This implied that very steep areas are not suitable for cultivation. Soil loss was mainly through rills developing in farmers' plots. In Habugarama in Kitooma parish with reduced slope angle and length experienced low soil erodibility and erosivity. This is contrary to the effectiveness of byelaws of the community. Byelaws should not only look at soil conservation measures in individual plots but keeping off steep slopes from being cultivated and planted with trees and grasses. Soil loss was mainly highest at the beginning of the rain season as there is normally low soil cover provided by crops. Soil loss was also closely associated with the crop failure. For instance bean crop destroyed by root rots do not provide sufficient soil cover leading to soil and nutrient losses within rain seasons.

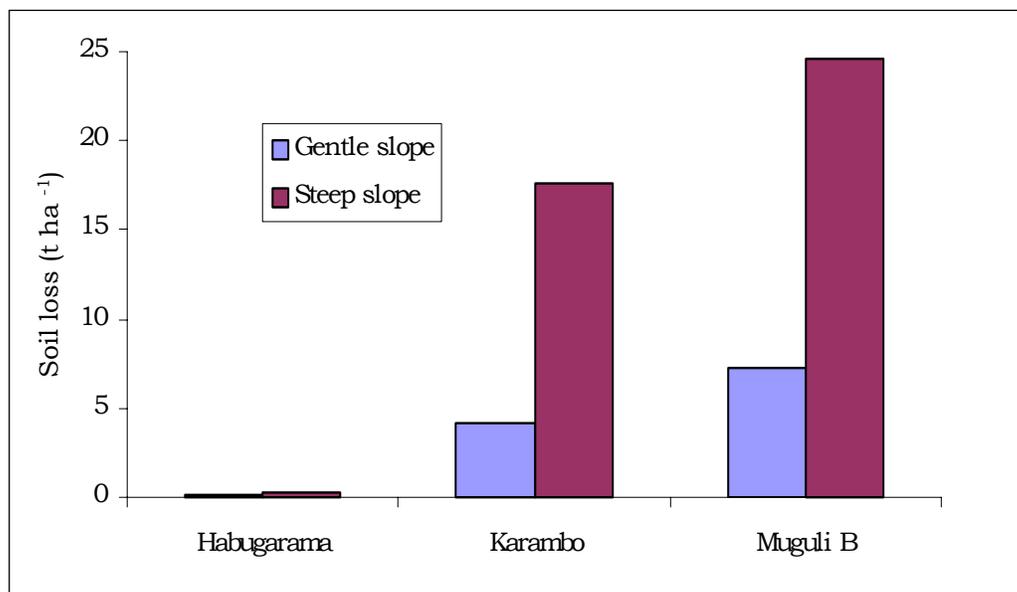


Figure 2. Variation of soil loss through rills with village communities.

It was also observed that the rich farmers lost more soils in Karambo and Habugarama though average soil loss was lowest in the latter community (Figure 4). This shows that less investment is done on soil conservation as the environment is exploited to improve household income. Muguli B the poor experienced higher soil loss than the rich though on average soils loss was highest in this community. The poor were mainly composed of the widows and female-headed household whose plots were mainly situated on steep slopes and could not afford the costs of soil conservation measure. Trenches are normally used to control soil erosion and surface runoff and yet they are labor demanding. This becomes almost impossible for the poor and weak to afford. Also farmers who manage to use trenches go further to de-silt every time they get filled up with the eroded soil implying that they are costly and time consuming.

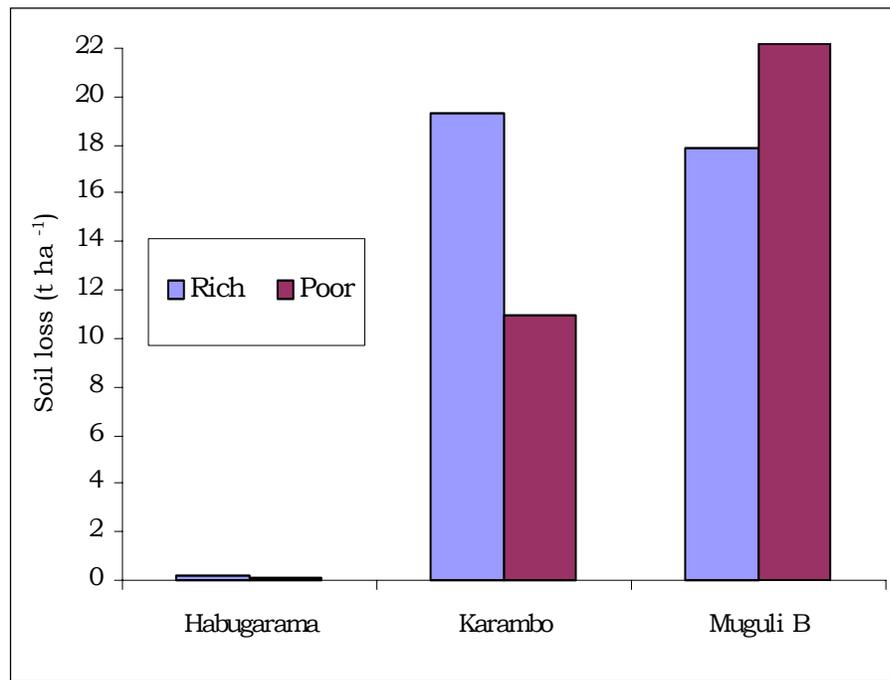


Figure 3. Variation of rill soil loss with wealth category of farmers.

## Conclusions

Farmers have considerable knowledge about their ecological niches and therefore soils. Farmers' perception of specific land quality exists but land degradation is rather explained by crop responses. Farmers are generally aware of the causes of low soil fertility. In some cases, the possible solutions are known but various types of constraints limit application. Thus priority has to be given to solutions with low capital requirements. Addressing the problem of land degradation entails improving farmers education and development of high value crops that fetch high household incomes. This could reduce extensive cultivation of the land and therefore saving marginalized land from encroachments. Increased non-farm activities would reduce labor capital on land, which has led to intensive cultivation. Population pressure on land could be reduced through controlled population growth and encouragement of emigration from the highlands, thus reducing man's activities on the land. Private investment in soil and water conservation structures such trenches (ditches) and tree planting and promoting livestock production especially small ruminants such as goats and

sheep and poultry could be enhanced. Forages grown for livestock provides protective cover to the soil against rain splash and more rainwater could infiltrate through the soil hence reducing surface runoff and erosion.

### ***Bibliography***

Bamwerinde, W. and Place F., 2000. Factors Explaining Land Use and Abandonment in Kabale District, International Centre for Research in Agroforestry (mimeo).

Mbabazi P., Bagyenda R. and Muzira R, 2003. Participatory land degradation assessment in the highlands of Kabale district, southwestern Uganda p. 82

Muzira R., Kabale farmers' groups, Sanginga P and Delve R., (in press). Farmers' participation in soil fertility management research process: Opportunities for rehabilitating degraded hilltops in Kabale, Uganda.

Muzira R., Kabale farmers' groups, Sanginga P and Delve R., 2003. Farmers' participation in the identification and evaluation of potential soil amendments in Kabale, Uganda

Raussen T., Place Bamwerinde F., 2002. A survey to identify suitable agricultural and resource-based technologies for intensification in southwest Uganda.

Stocking M. and Niamh M., 2001. A handbook for field assessment of land degradation. Earthscan Publications Ltd, London.

## **Participatory Research and Extension in Agriculture – Organization of Learning Approaches**

*Wouter Ton*<sup>25</sup>

### ***Introduction***

Different approaches have been developed to facilitate the farmers' participation in the development of technologies to reduce poverty. These approaches facilitate interactive learning processes, where the farmers' knowledge is incorporated in the research and extension process and the farmers' agricultural knowledge and skills are enhanced, which in turn could be reflected in increased production. Learning is an intentional process that requires a designed learning event and a situation where learning can take place. Learning events come in many different shapes. Before the results for the organization and the farmers become visible, the farmers have to apply what they have learned. This research indicates that the characteristics of the organization determine the type of participatory research and extension (PR&E) used by organizations to increase farmers' participation.

### ***Aims of this research***

The purpose of this research is to determine the factors that influence the outcomes of different PR&E approaches on farmers and scientists. This will be done by answering the following research questions:

1. What are the characteristics of the organizations implementing PR&E?
2. What are the characteristics of the various types of PR&E?
3. What are the outcomes of PR&E on farmers and scientists?

### ***Research methodology***

This research will be conducted in three stages:

- Develop a framework for PR&E based on research of relevant literature.
- Survey the field staff and managers in research, development and extension organizations to investigate their perspectives regarding the different approaches in PR&E. A questionnaire was developed based on the model presented in Figure 1. The questionnaire includes 59 questions to investigate the different aspects that might have an influence on the outcomes of PR&E for farmers and scientists. The respondents indicate on a five-point Likert-scale whether they agree with statements indicating a positive attitude towards PR&E. When strongly disagreeing, a value of 1 is assigned, while 5 indicates that the respondent strongly agrees with the statement. To determine the influence of the characteristics of the organization on the PR&E approach, independent sample T-tests are conducted to compare the means of the characteristics of the PR&E approach and the outcomes of the groups formed by the characteristics of the organization. The questionnaire is distributed via e-mail and handed out during interviews of government organizations (GOs) and nongovernmental organizations (NGOs), dealing with input- or knowledge-based technologies.

---

25. University of Twente, Enschede, The Netherlands.

- Carry out case studies in Uganda to collect information from organizations and farmers. The case studies consist of two parts: First 12 research, extension and development organizations were selected based on their size, objectives and funding. Then interviews were held with the management of these organizations to get a general view on PR&E in Uganda. Secondly, four organizations working directly with farmers were selected for an in-depth study, which focuses on farmers because they are the main intended beneficiaries of the PR&E approaches.

## **Results**

**Building a theoretical framework:** The theoretical framework has three components: the characteristics of the organization and of the PR&E method, and the expected outcomes of the PR&E approach.

**Characteristics of the organization:** There are three main characteristics to describe an organization with:

1. **Technology the organization is promoting:** Technologies can be classified as input-or knowledge-based (Rogers 1995). Input-based technologies usually have direct outcomes on yield and depend mostly on the availability of a physical input. Knowledge-based technologies depend on farmers' learning biophysical principles involved in pest control and then applying the acquired knowledge to make better decisions. This type of technology is more complicated and requires a change in attitude.
2. **Objectives:** The organization's objectives can be research, extension or development. The orientation of the organization will have an influence on the type of PR&E.
3. **Funding:** The Government can fund an organization, making it subject to all its prevalent regulations. NGOs are organizations that supplement government tasks. They may work within government programs but are financed by outside donors. The donors exert substantial influence on the NGOs, which have to apply to the donors for funding their projects but get money when the project fits within the donor's policy.

**Characteristics of PR&E methods:** To describe the differences between the various PR&E approaches Probst et al. (2003) used four characteristics:

1. **Types of participation:** Johnson et al. (2003) have developed a system to classify the level of participation. They distinguished five levels:
  - Conventional: Scientists make the decisions alone.
  - Consultative: Scientists make the decisions but after communicating with farmers.
  - Collaborative: Decision-making authority is shared between farmers and scientists.
  - Collegial: Farmers make the decisions collectively after communicating with scientists.
  - Farmer experimentation: Farmers make the decisions in a group.

2. **Stakeholder involvement:** The selection of participants is important. When they all have the same background, the range of possible solutions is restricted because all participants have more or less the same knowledge. By exposing the members to new ideas from other group members, new solutions can be found. The selection of the group members can be done on different grounds: self-selection, based on efficiency, the community can select the participants, or the scientist may appoint them.
3. **Roles of the facilitator:** The facilitator's role is very important in the execution of the program because this person is the link between the organization and the participants. The facilitator is the one that has to implement the program and transfer the learning strategies. In a learning situation the facilitator will have more of a teaching function whereby the facilitator is seen as the expert providing knowledge to the participants. In a development-orientated PR&E method, the facilitator will have a more coaching role, thereby stimulating the participants' learning process.
4. **Learning strategies:** The organizational structure of the research and extension organization will greatly determine the design of the learning event. If the organization is centralized, it will have a top-down approach to learning. A decentralized organization will be more likely to seek involvement with the stakeholders. All PR&E methods take groups as learning units and actively involve farmers' groups in the learning process.

### ***Expected outcomes***

There are two main groups that will benefit from the PR&E. These are:

1. **Farmers:** The learning strategies are aimed at the participants' learning and therefore determine the success of the intervention. The technology is disseminated in a program to the participants who are supposed to learn. This learning is shown as a change in attitudes and increased skills. Applying these changes will result in a changed behavior, which should lead to better results.
2. **Scientists:** The expected results of PR&E for the scientists are a direct link between the farmers and the scientists, resulting in more valid research data. Through the farmers-scientists link, the latter will get feedback on their work in order to develop technologies that have a close fit with the farmers' needs. More appropriate technologies will enhance the farmers' adoption of the same. By involving farmers in the research process, the technologies can be tested under a wider range of conditions because more test sites are used so the validity of the research results will increase. The theoretical framework is summarized in Figure 1.

### ***Results of survey of views of managers and field staff on PR&E***

In total 37 people representing 23 organizations responded to the questionnaire. Table 1 gives the division of the 23 organizations, distributed by types.

Table 2 gives the average scores for the various aspects of the theoretical framework.

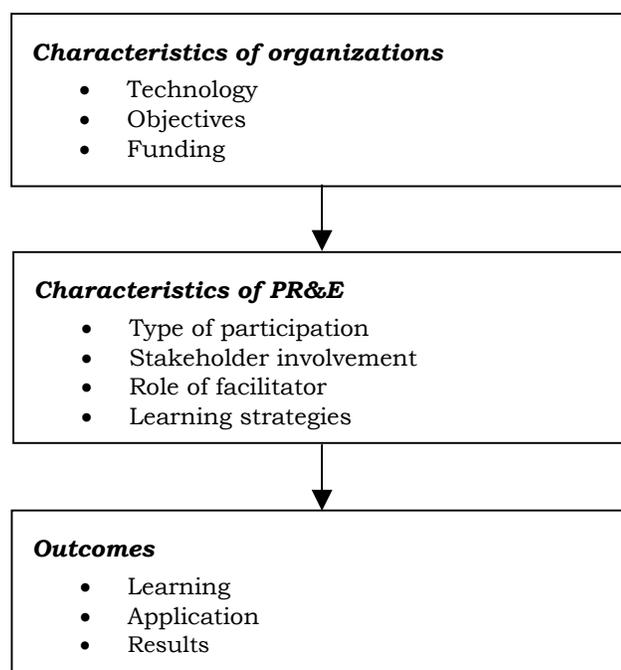


Figure 1. Characteristics of the organization, PR&E and outcomes.

Table 1. Number of responses for each type of organization.

| <b>Characteristics of organization</b> | <b>No. of Respondents</b> |                   |
|--|---------------------------|-------------------|
|  | <b>GO funded</b>          | <b>NGO funded</b> |
| Input-based technology                 | 2                         | 3                 |
| Knowledge-based technology             | 7                         | 11                |
| Development                            | 0                         | 6                 |
| Extension                              | 4                         | 2                 |
| Research                               | 5                         | 5                 |

Table 2. Average scores for PR&E characteristics and outcomes.

|                                    | <b>M</b> | <b>SD</b> |
|------------------------------------|----------|-----------|
| Type of participation <sup>1</sup> | 60%      | 20%       |
| Roles of facilitator               | 3.64     | 0.70      |
| Learning strategies                | 3.40     | 0.71      |
| Learning                           | 3.38     | 0.73      |
| Application                        | 3.66     | 0.56      |
| Results                            | 4.13     | 0.50      |

1. The level of participation is the percentage of all decisions taken by farmers; the other scores are on a five-point Likert scale.

Table 3 gives the influence of the three organizational characteristics on the level of participation.

Table 3. PR&E characteristics for different types of organizations.

|                       | Technology       |                  | Objectives       |                  |                  | Funding           |                   |
|-----------------------|------------------|------------------|------------------|------------------|------------------|-------------------|-------------------|
|                       | Input            | Knowledge        | Research         | Extension        | Development      | NGO               | GO                |
|                       | <i>M</i>         | <i>M</i>         | <i>M</i>         | <i>M</i>         | <i>M</i>         | <i>M</i>          | <i>M</i>          |
| Type of participation | 77% <sup>1</sup> | 55% <sup>1</sup> | 66% <sup>2</sup> | 45% <sup>2</sup> | 60% <sup>2</sup> | 56%               | 53%               |
| Roles of facilitator  | 3.72             | 3.62             | 3.86             | 3.45             | 3.51             | 3.58              | 3.69              |
| Learning strategies   | 3.24             | 3.45             | 3.62             | 2.92             | 3.58             | 3.08 <sup>3</sup> | 3.61 <sup>3</sup> |

1, 2, 3. Significant differences.

If the organization is disseminating an input-based technology, farmers' participation appears to be less when compared to organizations disseminating a knowledge-based technology. The objective of the organization has a great influence on the level of participation. For funding it was found that government-financed organizations invest more in the learning strategies; thus they have a better result for learning and the application of the new knowledge.

### **Results of interviews on PR&E approaches with 12 organizations**

Table 4 gives an overview of the results of the interviews with the twelve organizations. The objectives, funding and the type of technology being promoted are indicated for each organization. An inventory was made of ten activities carried out by the organization during the research and extension process. Five of these activities can be labeled as participatory: participatory rural appraisal, community-based facilitators, farmers' involvement in evaluation, technology development by farmers, and organizations working with farmers directly. Nonparticipatory activities are a central demonstration plot and training. The remaining three activities— exchange visits, technology testing and on-farm demonstrations— are undetermined. To indicate the level of farmer participation in the PR&E approach, the total of the participatory activities is presented in the column "Level of participation"; e.g., BARNESA is working directly with farmers and evaluates with farmers so the level of participation is 2.

### **Results of in-depth study of four selected organizations**

The four selected organization were A2N in Tororo district, ActionAid |ccc in Kapchorwa district, NARO (bananas) and VEDCO in Luwero district. In total 17 interviews with 135 farmers were conducted, representing 17 farmer groups (total membership 665) assisted by the four organizations. The groups for the interviews were selected by the organization.

**Stakeholder involvement and type of participation:** The farmers' level of participation in the design is determined by the organization's objective. In a research-oriented organization like NARO, scientists will do the design without farmers; therefore scientists and farmers will have a consultative relation (Johnson et al. 2003). In development-oriented organizations like A2N, ActionAid or VEDCO, the farmers will be more involved in the design and therefore their relation can be characterized as collaborative. The implementation is characterized by the range of activities that together form the PR&E approach. Depending on the type of activity, the farmers will be more or less involved. All organizations involved farmers in the evaluation.

Table 4. Activities carried out by the twelve organizations.

| Organization  |            |            |         | Activities                    |                             |                               |                    |                        |                 |                    |                        |          |                            | Level of participation |  |   |
|---|------------|------------|---------|-------------------------------|-----------------------------|-------------------------------|--------------------|------------------------|-----------------|--------------------|------------------------|----------|----------------------------|------------------------|--|---|
|   | Technology | Objectives | Funding | Participatory                 |                             |                               |                    |                        | Undetermined    |                    |                        | Non      |                            |                        |  |   |
|   |            |            |         | Participatory Rural Appraisal | Community Based Facilitator | Working directly with farmers | Farmers evaluation | Technology development | Exchange Visits | Technology testing | On-farm demonstrations | Training | Central demonstration plot |                        |  |   |
| Africa Highlands Initiative (AHI)                               | K          | R          | N       |                               |                             | 4                             | X                  |                        |                 |                    |                        |          |                            |                        |  | 1 |
| Banana Research Network for East and Southern Africa (BARNESA)  | I          | R          | N       |                               |                             | X                             | X                  |                        |                 | X                  | X                      | X        | X                          | X                      |  | 2 |
| ActionAid   | K          | D          | N       | X                             | X                           | X                             | X                  |                        |                 | X                  |                        | X        | X                          |                        |  | 4 |
| Appropriate Technology Uganda                                   | I          | D          | N       | X                             | X <sup>1</sup>              | X                             | X                  |                        |                 | X                  | X                      | X        | X                          |                        |  | 4 |
| Africa 2000 Network (A2N)                                       | I          | D          | N       | X                             | X <sup>2</sup>              | X                             | X                  | X                      |                 | X                  | X                      |          |                            |                        |  | 5 |
| Environmental Alert   | K          | D          | N       | X                             | X <sup>2</sup>              | X                             | X                  | X                      |                 | X                  | X                      |          |                            |                        |  | 5 |
| Prolinnova  | K          | D          | N       |                               |                             | X                             | X                  | X                      |                 | X                  |                        |          |                            |                        |  | 3 |
| Volunteer Efforts for Development Concerns (VEDCO)              | I          | D          | N       | X                             | X <sup>1</sup>              | X                             | X                  |                        |                 | X                  |                        | X        | X                          | X                      |  | 4 |
| National Agricultural Research Organization NARO (horticulture) | I          | R          | G       |                               |                             | X                             | X                  |                        |                 | X                  | X                      | X        | X                          | X                      |  | 2 |
| NARO (bananas)  | I          | R          | G       |                               |                             | X                             | X                  |                        |                 | X                  | X                      | X        | X                          | X                      |  | 2 |
| NARO (postharvest technology)                                   | I          | R          | G       |                               |                             | X                             | X                  |                        |                 |                    |                        | X        | X                          | X                      |  | 2 |
| ULAMP (NAADS)   | K          | E          | G       | X                             |                             | 3                             | X                  |                        |                 | X                  |                        | X        | X                          |                        |  | 2 |

I=input based, K=knowledge based, R= research, D=development, E=extension, N=NGO, G=Government.

1. Organization staff member facilitates groups and community-based facilitators;
2. Organization staff member facilitates first generation Farmer Fields School (FFS);
3. Second-generation FFS facilitated by community-based facilitators;
4. Implemented through existing government extension programs;
5. Implemented through GOs and NGOs.

**Roles of facilitator:** The facilitators often act as teachers. They organize the learning activities and provide inputs like seeds and fertilizers, and knowledge. There are three types of facilitators:

- *Facilitators from organization headquarters:* They are well-educated facilitators who train other facilitators and provide training to different farmer groups, but are not attached to a specific group.
- *Group-based facilitators:* They are attached to one or two farmers' groups and are paid by the organization. Their level of education is lower than the first group of facilitators. They often originate from the government extension service but start working for NGOs because of the better payment.
- *Community-based facilitators:* They are often members of the farmer group who has received training for some weeks to become a facilitator. They are not paid, but get incentives like a bicycle. The way they have been trained is determining the way they are interacting with the farmers.

**Learning strategies:** Each organization has its own PR&E approach consisting of a selection of learning activities like study tours to create awareness, training that includes practical components, trials and demonstrations, and printed support material. The farmers are not involved in selecting these learning activities. The PR&E approach is developed by the organization as part of its policy, based on beliefs within the organization as to the best way to engage farmers in the development process, the available resources and previous experiences. This approach is applied uniformly, regardless of the level of complexity of the technology being promoted. A2N is using a constructivist approach to learning. Observation and analysis form the starting point of the learning process. Possible causes and solutions are discussed. Farmers learn from each other's experiences; and where applicable, the facilitator's expertise is brought in. The other three organizations use a more technocratic way of teaching. Learning methods like explanation, questioning, exercises, presentations and practical work are employed. Demonstrations are used to create interest in the technology. Model farmers in the community show the possibilities of the technologies in the local context. Demonstrations and practical work are not really encouraging the farmers to apply what they have learned because these events usually consist of showing and telling. Working in a group assumes a uniform type of farmer with the same ability, needs and learning style.

**Outcomes for farmers and scientists:** The two main outcomes for farmers are empowerment and an increased income. All organizations are working on the empowerment of groups, but the groups are not yet equal partners in the development process. In the newly introduced demand-driven extension system in Uganda, farmer groups have to request assistance. To prepare groups for their new role, organizations invest a lot of time and effort in group development, aimed at increasing group cohesion. All PR&E approaches are leading to an increased income from sales of the surplus of food or cash crops.

The main outcomes for scientists are an improved technology-development process. Farmers from A2N and NARO are involved in technology development by carrying out experiments for the scientists.

## **Discussion**

There are two main reasons that the reported results have a positive bias:

- The selection of respondents was not at random because the farmers and groups to be interviewed were chosen by the organization. The presence of a representative of the

organization during the interviews with the farmers will also have contributed to the positive results.

- The reported results cannot be attributed to PR&E alone. The personal characteristics of the learner and the learning environment are also important for achieving results (Baldwin & Ford 1988).

When the farmers and scientists develop technologies jointly, extension becomes superfluous because the farmers have learned the technologies during the development process, but only a small portion of the farmers are participating in the research process. This is excluding the farmers who have not taken part in the development process for learning the new technology.

### ***Conclusions and recommendations***

The survey and the case studies show that NGO-funded organizations with a development objective, promoting an input-based technology, have a higher level of farmers' participation, which leads to more learning and better results.

In this research it was found that participation increases the farmers' level of learning. For organizations to become more effective, they have to increase the level of farmers' participation. Their participation should not be restricted to the problem identification and evaluation stages. It should be incorporated in all processes like the development of technology, the design of the learning environment, and the implementation of the program. This requires a change in attitude on the part of both the farmers and scientists. The farmers must take up the role of partner in the development process. The farmers are no longer only providers of information and receivers of solutions; they are actively involved in developing the solutions. The scientists need to function more in the role of coach rather than that of teacher. Thus the organizations must develop programs to prepare the farmers and scientists for their new roles.

### ***Bibliography***

- Baldwin, T.T.; Ford, J.K. 1988. Transfer of training: A review and directions for future research. *Personnel Psychol* 41:63-105.
- Johnson, N.L.; Lilja, N.K.; Ashby, J.A. 2003. Measuring the impact of user participation in agricultural and natural resource management research. *Agric Syst* 78:287-306.
- Probst, K.; Hagmann, J.; Fernandez, M.; Ashby, J.A. 2003. Understanding participatory research in the context of natural resource management - Paradigms, approaches and typologies. *Agren Network Paper No. 130*. Retrieved 8 Oct. 2004 from [www.odi.org.uk/agren/papers/agrenpaper\\_130 .pdf](http://www.odi.org.uk/agren/papers/agrenpaper_130.pdf)
- Rogers, E.M. 1995. *Diffusion of innovation*. New York: Free Press.