

Assessing Impacts of Farmer Participatory Research Approaches: A Case Study of Local Agricultural Research Committees in Colombia (CIALs)

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Abstract

Because they incorporate user perspectives in the research process, it is often claimed that farmer participatory research (FPR) approaches make research more oriented towards the needs of the poor, therefore leading to a greater impact on poverty alleviation. The premise is that user participation will lead to more efficient, effective design, and targeting of technologies. This may reduce diffusion time, increase adoption, and help to ensure that the intended beneficiaries are reached with technologies that are appropriate to their particular circumstances, needs, and priorities. However within the area of participatory research there are many types and degrees of participation with very different implications for the benefits and costs of research. Whether FPR makes research more pro-poor is essentially an empirical question. Therefore, to understand the relationship between FPR 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 paper presents preliminary results from this study, which aimed at beginning to fill this gap by examining the impact of one particular method of incorporating farmer participation: Local Agricultural Research Committees (CIALs).

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). This study 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 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. 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

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in all of them, and in 6, formal interviews were conducted. In addition, four rural communities without CIALs (comparative communities) were also surveyed.

Preliminary results show that there are significant social and human capital benefits for CIAL members. CIAL members indicated that they had gained more knowledge about agriculture and were experimenting with new technology and were seen as agricultural experts and advisors in the community. They had also improved their communication and leadership skills, had increased relationships with neighbors and with other outside institutions. CIAL members experimented more with new crops, had learned other new skills, and had higher levels of commitment to their communities, thereby leading to a higher level of community participation. In communities where the CIAL had identified new technology and converted into commercial seed producers, the communities benefited by having easy access to new technology (e.g. new varieties, such as early maturing Maize variety and new Bean varieties). The communities also consulted CIAL members when they had agricultural problems.

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 non-poor, 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).

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1.1 Study objectives

The specific objectives of this study were:

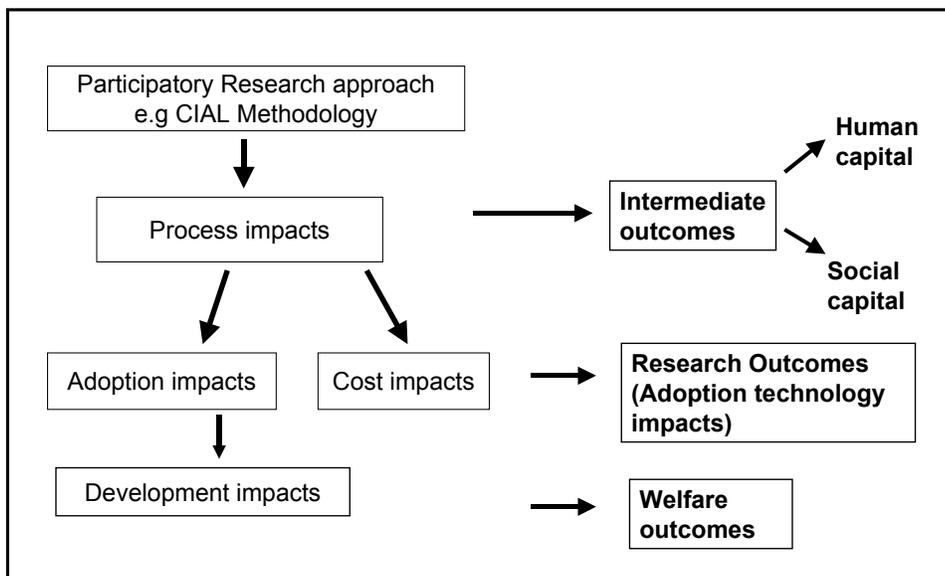
- 1 To identify characteristics necessary for a community member to participate in the CIAL (including well-being and educational level, gender, innovators, unusual, etc)
- 2 To assess impacts of the CIAL to its members as well as the members of the community

Research questions:

- (a) What are the characteristics necessary to become a CIAL member?
- (b) How is participation in CIAL membership distributed across the different gender and wealth groups?

- (c) Do CIALs improve the flow of information on technology demand between farmers/communities, to other communities and research and development organizations?
- (d) What are the benefits of being a CIAL member (human capital and social capital)?
- (e) What is the impact of the increased human and social capital among the members and communities?
- (f) How have CIAL research outputs benefited members of their communities (from adoption to income, well-being etc)?
- (g) Who has access to these benefits? Are women, children and the poorest households able to access these benefits?

Figure 1: Conceptual Framework for Analysis



Methodology

This study examined the impact of CIAL methodology, which incorporates farmer participation in the agricultural research process, through 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 community establishes 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.

The sample design

The study was made taking in count both levels: community with and without CIALs, and CIALs. Appendix I shows the sampling frame for the study.

CIAL level: The sample was selected from all existing CIALs in Cauca department that have more than 5 years. To ensure a representative sample, CIALs were also stratified by age and gender of membership. Thirteen CIALs in 12 communities in were selected. At the CIAL level, individual household interviews were conducted, and focus group discussions (FGDs) were conducted at the CIAL group level. All the CIALs included in the study and their description is included in table 1.

Community level: 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.

Four of communities selected: 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.

Table 1: CIALs included in the study

Name of CIAL	Locality	Age of CIAL	Households <u>in community</u>	Number of Members		Sample Size
				Men	Women	
Andalucia	Caloso	8		4		
Betania 1	Totoró	12	33	6	8	
Betania 2	Piendamó	7	15	6	2	
Buenavista	Caloso	10	47	13	1	
Carpintero	Morales	8	181	20	10	46
El Jardin	Caloso	10	38	3	1	10
Las Cruces	Silvia	6	57	3	3	15
Pescador	Caloso	13	66	5		17
San Bosco (Female)	Santander de Quilichao	5	58		9	15
San Bosco (Male)	Santander de Quilichao	12	58	3		
San Isidro (Male)	Santander de Quilichao	7	66	5		
Cinco Dias (Female)	Timbío	11	205	2	13	52
El Diviso	Rosas	12	83	4	2	

Results and Discussion

Characterization of the CIAL members

The objective of this characterization is to learn the differences between the CIAL members and non-members within the CIAL communities through the analyses of some socioeconomic indicators. The objective was to find out if CIAL members representative of the community. The following socio-economic characteristics of CIAL members and non-members were compared: Amount of own land, if they work off the farm or not, educational level, whether the person hires labor or is hired (work days hired during the year), yearly availability of food and participation with community organizations.

Table 1 shows the relation between land size and CIAL membership versus non-CIAL members. In general, it can be observed that 41.6% of the farmers have land sizes whose area is less than 1 hectares, whereas 32.4% have areas that range from 1-3 hectares.

Additionally, a small percentage of the farmers (26%) have land over 3 hectares, which makes them all small-scale farmers. Table 1 also shows that a larger percentage of non-CIAL members (43.8%) have land sizes of less than a hectare, while amongst CIAL members this percentage is lower (33.3%). This implies that there is a slight tendency for the farmers with less land to be less interested in belonging to a CIAL.

Table 2 compares the two groups in relation to CIAL membership, off-farm labor, and land size. The results show that there is no significant difference between CIAL members and non-members in terms of off-farm activities. If we compare members and non-CIAL

members, we can see that there is no major difference in relation to land ownership, whether the farmer seeks off-farm employment or not, and land size.

Table 3 compares the total months the household contracted laborers in the year 2003. The results show that a larger number of CIAL members (75%) hired labor during some time of the year, which contrasts significantly with the non-members (47.5%) who hired labor during the same period of time.

Table 4 compares the total months in which the household faced food scarcity in the year 2003 between the members and non-CIAL members. In general, it was observed that at a certain time of the year, there was a scarcity of food of at least 3 months in most of the households surveyed. However, in comparing the two groups, 30.6% of the CIAL members and 14.6% of the non-CIAL members, stated that there was no scarcity of food. This may imply that one benefit of the CIAL methodology is improved food situation, which is expected because a majority of the CIAL work focuses primarily on crops that are important for food security in the region, such as common beans and maize. The rest (85.4% of the non-CIAL members and 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, although those belonging to the CIAL indicated they were less affected.

Table 5 compares the educational level of CIAL members and non-CIAL members. The results show that in Cauca department at least 76.3% of the farmers have had primary education and only 13.3% have 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 major difference is that at a higher percentage of CIAL members (30.6%) have had secondary education as compared to non-CIAL members (8.8%).

Given the foregoing, it could be inferred that the farmers that are CIAL members have the higher levels of schooling. This may indicate that educational level is an important quality in enabling a community member 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.

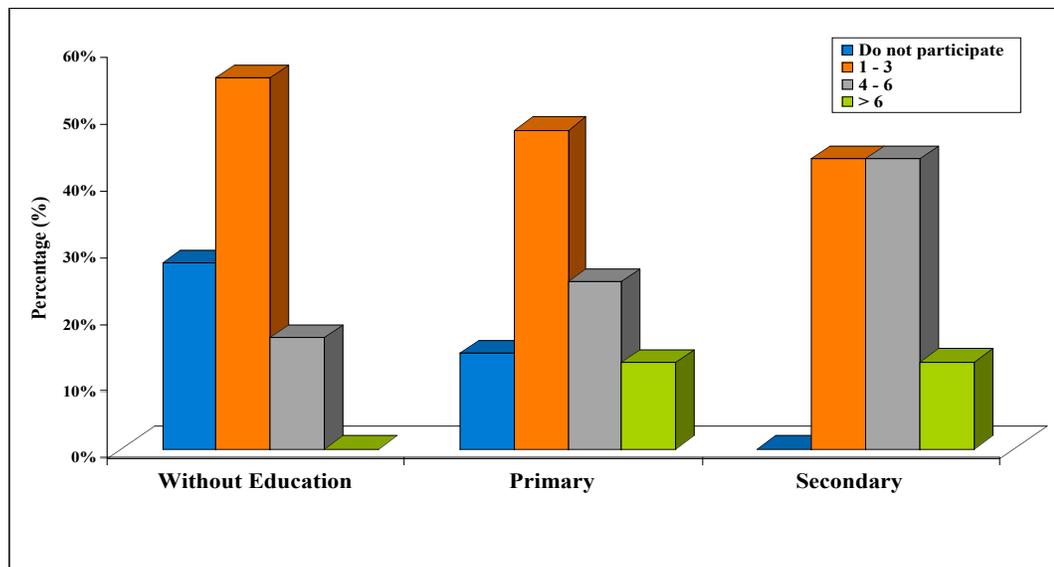


Figure 1. Comparison between educational level and participation in community organizations

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% participate in 1-3 community organizations. On the other hand, 63.9% of the CIAL members participate in at least four organizations.

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; non-scarcity of food; and high levels of community participation (more than 6 organizations).

How do CIAL members Benefit from Participation

This section analyzes the impacts resulting from participating in the CIAL. The CIAL methodology is based on the premise that participation will human and social capital through the enhanced capacity to experiment with new agricultural practices (Ashby 2003). Strengthening human capital, which involves enhancing farmer's knowledge and understanding processes is seen as an important component for building rural people's capacities to innovate, and is probably more important than just involving them in developing the technology. Various studies show that strengthening group working processes and enhancing social capital, is an important asset that can provide a variety of supportive mechanisms for

enhancing rural livelihoods. At the community level, strengthening the social capital of rural communities and their organizational capacity is critical for horizontal and vertical linkages among communities, and between communities and rural service providers. A hallmark of the CIAL methodology is that social and human capital are necessary because these types of benefits will only occur in empowering participation.

In this study, human capital was measured by assessing leadership potential, enhanced capacity to experiment with new agricultural practices and the capacity to facilitate problem solving in the community. This study looked the relationship between the trials / farmer experiments conducted outside the regular CIAL activities and new crops tested within the CIAL. The results showed that 23 CIAL members did not conduct trials outside of those done by the CIAL. Of the group 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. Additionally, 94.4% of the CIAL members indicated that they had acquired new skills, and of those that indicated that they had acquired many skills, 73.9% also said they had tested new crops. CIAL members indicated that they had received capacity development activities in: New technologies for crop management; doing research in agriculture; organizing and administering agriculture and livestock production; marketing; speaking in public; and 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.

Another indicator used to assess change in human capital was the number of positions a person holds in the various community organizations. The study found that within CIAL members the capacity to organize and lead community meetings increased with number of years the person had been a CIAL member. Additionally, when CIAL and non-CIAL members were compared in terms of participation in community organizations, the study found that although there was no significant difference in participation in community organizations. However, a larger percentage CIAL members (85.4%) were in leadership positions in the various community organizations, as opposed to non-CIAL members (15%).

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.

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.

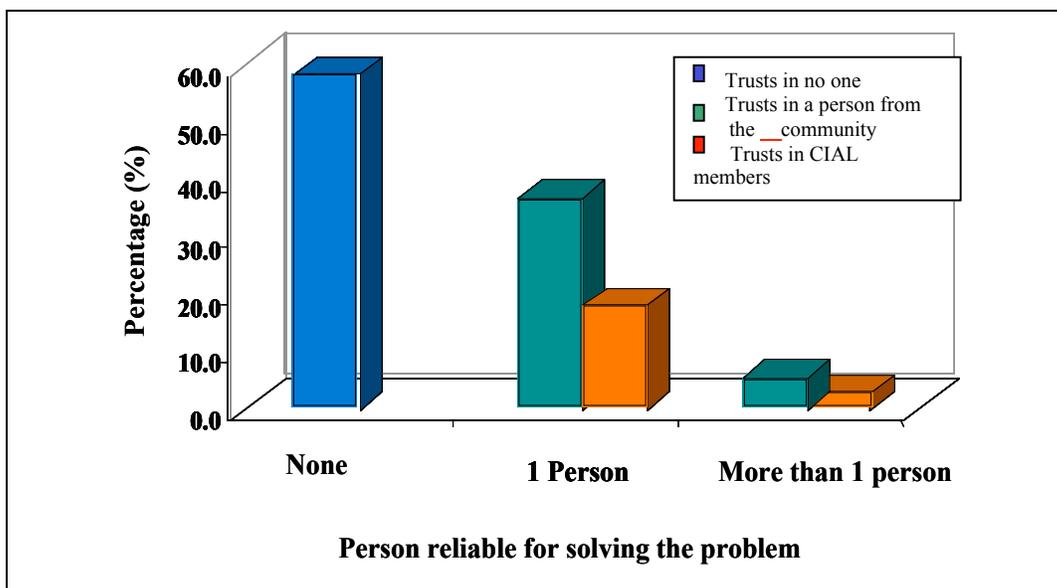


Figure 2. Relationship between the members of the community trusted to solve an agricultural problem and the CIAL members recognized for coming up with a solution.

In the analysis, 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.

Conclusions

References

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TABLES

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	44	15	18	137
	43.8%	32.1%	10.9%	13.1%	
Yes	12	12	6	6	36
	33.3%	33.3%	16.7%	16.7%	
Total	72	56	21	24	173
	41.6%	32.4%	12.1%	13.9%	

Table 2. Percent comparison between members and non-CIAL members in relation to land size and seeking labor opportunities off farm

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

Table 3. Comparison between members and non-CIAL members in relation to the Hiring / contracting labor (work days/year)

CIAL Members	Hire / Contract Labor (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 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 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

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 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

Appendix I

Sampling Frame for the Study

	CIAL Level		Community Level	
	Active CIALs	Inactive CIALs	With CIALs	Without CIALs (Counterfactual)
Focus Group Discussions	13 CIALs	4 CIALs		
Individual Household Questionnaires	Four CIAL members from each of 13 CIALs		Household level interviews conducted in 6 communities	Household level interviews conducted in 4 communities