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No. 19

Assessing the Quality of Participation in Farmers' Research Groups in the Highlands of Kabale, Uganda

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Assessing the Quality of Participation in Farmers' Research Groups in the Highlands of Southwestern Uganda

Abstract

In recent years, there has been increasing interest in farmer research groups (FRG) to catalyse farmer participation in research, and to widen the impact of participatory research. However, there is dearth of systematic empirical studies that evaluates the quality of participation in FRG. Using empirical data from a sample of 21 FRGs in Kabale, Uganda, this paper investigates what types of participatory research occurred at the different stages of the research process, how farmer participation occurred, who participates in FRG, what are the factors that determined farmers' participation in FRG, and what criteria should be used in monitoring and evaluating the performance of FRG. Results showed that the types of participation were more of functional consultative and collaborative types, but varied in the different stages of the research process as farmers were increasingly taking on more roles and responsibilities. Results showed that farmer participation in FRG tend to follow a "U" shaped curve, with high participation at the initial stages of the process, followed by dramatic decrease as many farmers drop out from the groups, and slow increases towards the end of the first seasons. Similarly, there was a significantly higher participation of male farmers at the beginning of the process, compared to women. However, as FRGs progressed, the proportion of men decreased while the relative proportion of women increased dramatically to reach about 67% of farmers in mixed groups, and 24% of the FRGs were women only. These results suggest that FRG proved to be a more effective mechanism to involve women and the resource-poor farmers in research who would otherwise be bypassed by conventional approaches. The results of the Logit regression model confirmed that the probability of participating in FRG was higher for women compared to men, and that there were no significant differences in wealth circumstances between FRG members and the rest of the community. We argue that FRG as an approach has a great potential for catalyzing the participation of farmers as partners in research and development activities. However, this requires significant support and personal commitment of researchers to broaden the scope of FRGs from a functional consultative type to a more collegial empowering type, and from variety evaluation to broader natural resources management research and other developmental issues.

Key words: *Quality of participation, Farmer Research Groups, Gender, Participatory research, performance, Uganda.*

1. Introduction

Farmer participatory research (FPR) is increasingly receiving considerable recognition in both international and national agricultural research and development organizations as an important strategic research issue, vital to achieving impacts that benefit poor people in marginal, diverse and complex environments (PRGA 1997, Chambers *et al.* 1989). There is now a large body of literature that demonstrates considerable advantages and potentials of involving farmers in the research process (Ashby *et al.* 2000, Braun *et al.* 2000, Ashby and Sperling 1998, Martin and Sherrington1997, PRGA 1997, Ashby *et al.* 1995, Pretty 1994, Okali *et al.* 1994). It is argued that FPR can significantly improve the functional efficiency of formal research (better technologies, more widely adopted, more quickly and wide impacts), empower marginalized people and groups to strengthen their own decision making and research capacity to make effective demands on research and extension services (PRGA 1997, Martin and Sherrington 1997), and thus have payoffs both for farmers and for scientists (Humprhies *et al.* 2000). It is becoming increasingly imperative that priority be given to consolidating, mainstreaming and institutionalizing participatory research in national and international research organizations (Ashby and Sperling 1995, Ashby *et al.* 1994).

Institutionalizing FPR requires developing and strengthening a community based adaptive research capacity which can be achieved through working with groups of farmers, rather than individuals (Ashby and Sperling 1994). However, until recently, FPR professionals have tended to work with individual farmers (Pretty 1994), and may not have the skills to work with groups (Ashby and Sperling 1994). The importance of groups in FPR has been largely underestimated. Yet, it has been pointed out that " when individual farmers are the researchers' point of contact, there is nothing to ensure that other farmers will learn from their experiences: participation is often limited to a handful of farmers who have plots on their fields" (Bebbigton *et al.* 1994: 2-3). As observed by Jassey (2000), while working with individual farmers has been a centralized process controlled by researchers and focusing on technology, working with groups is a more decentralized process which can be owned by farmers, and can focus more on learning and empowerment of farmers.

In recent years, there has been increasing interest in community-based approaches to catalyse farmer participation in research, and to widen the impact of participatory research. It is argued that group approach is more effective as it promotes collective learning and exchanges that occur in group settings (Hagmann *et al.* 1999, Heinrich 1993), and ensures that more people participate, thus making participatory research cost-effective, and relevant to the needs of different categories of farmers (Ashby *et al.* 2000, Braun *et al.* 2000, Pretty 1994, Bebbington *et al.*1994). Given the diversity and complexity of farmers'

needs, the more people participate in the research process, the better the benefits should be. Particularly, if groups can act as intermediaries and take on some of the cost of communication with members and other farmers, then they can generate efficiency savings in the process of participation (Carney1997:118).

Notable examples of group-based participatory research approaches that are spreading widely include the "local agricultural research committees "CIALs" in Latin America (Ashby *et al.* 2000, Humphries *et al.* 2000, Braun *et al.* 2000; Ashby *et al.* 1995), farmers field schools-"FFS" in Asia (Braun *et al.* 2000), and farmer research groups "FRG" in southern and eastern Africa (Jassey 2000, CIAT 1999). An additional important advantage of farmer research group approach is to ensure that the risk is shared and not borne by individuals. Furthermore FRG may also be the most culturally acceptable way of working with farmers in most African rural societies (Jassey 2000). Over the past five years, the African Highlands Initiative (AHI) has made substantial efforts to catalyse and promote participatory research in natural resources management in five countries in eastern Africa (Ethiopia, Kenya, Madagascar, Uganda and Tanzania). Similarly, the International Centre of Tropical Agriculture (CIAT) in collaboration with national agricultural research and development organizations established the participatory research for improved agroecosystem management (PRIAM) project which is supporting community -based participatory research projects in six countries in East Africa (CIAT 1999). Both PRIAM and AHI's approaches emphasize the use and formation of FRG as a central strategy to participatory research. The approach is also rapidly gaining ground and attracting the attention of many other research and development institutions to address agricultural and natural resources management problems in the region.

While there is widespread support to FRG in participatory research, the issue of assessing the quality of participation in FRG is of central concern. However, there is a dearth of systematic and empirical studies on evaluating participation in farmer research groups. We still lack authoritative insights into this complex issue (Ashby 1997, Okali *et al.* 1994, Oakley 1992). Yet, such analysis is critical to building more effective ways of organising and working with farmers' groups, building their capacity to innovate and experiment, and to facilitate the sharing of experiences, knowledge and skills among farmers. This paper presents the results of an empirical analytical study to assess the quality of participation in FRG, using data from 21 FRGs in AHI benchmark sites of Kabale, Uganda.

The rest of the paper is organized into four sections. The next section outlines the quality of participation framework. Section three describes the data collection procedures, while section four presents and discusses the results of the study, also in four points. First we examine the types of participatory research

at the different stages of the research process from the perspectives of both farmers and researchers. Then we discuss how farmer participation occurred and how the process is managed. The next sections investigate who is participating in FRG, and the factors determining farmers' participation in FRG. In conclusion, the paper outlines some issues that need to be considered in improving the quality of participation in FRG.

2. Analytical framework: The Quality of Participation in Participatory Research

Uphoff (1978) observed that participation, and participatory research, is an overreaching concept best approached by looking at its more specific components or its dimensions. The dimensions of participation concern the kinds of participation taking place, who participates in them, and how does the process take place. In this paper we use the term "quality of participation" in a more general sense to mean special or distinguishing feature of the participation process, and not in its more normative sense of how good or bad something is (Oxford, 2000). Recently, the CGIAR system wide programme on Participatory Research and Gender Analysis (PRGA) developed a framework, which distinguishes two components of quality of participation: the building blocks or dimensions of participation, and the management principles of participation (PRGA 2000). The building blocks represent the analytical variables to describe participatory research, and ask questions such as:

- What type of participation is involved? When, at what stage of the research, should stakeholders be involved?
- What is the degree or strength of the participation? What is the objective of participation? How is the participation process managed?
- Who participates? Who should make key decisions? What roles should the different participants play?
- What are the criteria for successful participation? How do the participants evaluate the process of participation and the results?

The management principles ask the question "how do we do participatory research (Ashby 1997), and concern methods, skills and principles in facilitation, reflection and systematization of learning processes. They refer to some elements that need to be considered in managing participatory research processes, and some methods and criteria used to determine the appropriateness, effectiveness and validity of participatory research processes. As pointed out by Oakley (1994) and Uphoff (1978), identifying the critical traits or vital signs of participation should be the basis of evaluation of participation. This paper is thus concerned with the analysis of the "building blocks" or dimensions of participation in FRG. A subsequent paper will present empirical findings on the performance of FRG, and the factors explaining their success or

failure in participatory research. The study also sets to test the following hypotheses with respect to the process of participation:

- *Hypothesis 1:* Different types of participation occur at the different stages of the research (experimentation) process in FRG
- *Hypothesis 2:* Farmers' participation in groups tend to follow the normal adoption curve (Roger 1995), rising slowly at first, accelerating to a maximum, and then increasing at gradually slower rates.
- *Hypothesis 3:* Farmer Research Group may exclude certain categories of local people, particularly women and poor farmers, who may not be able to absorb the cost of participation and experimentation. More specifically we hypothesized that :
  - Men tend to dominate community organisations (and therefore FRGs) as they are more likely to have land and other resources for experimentation, and are more likely to be in contact with external (research) organisations.
  - Resources-rich farmers are likely to dominate FRG as they have resources to absorb the cost of participation and of experimentation.
  - There are significant positive relationships between farmers' education level, membership in local organizations and farmers' participation in FRG.

3. Data collection methods

The empirical study was conducted within two benchmark sites (Rubaya and Kashambya) of the African Highlands Initiative (AHI) in Kabale, south-western Uganda. AHI was established in 1995 as an ecoregional programme to develop and implement a participatory research and development programme on natural resources management in the intensively cultivated, diverse and complex highlands of eastern and central Africa (AHI 1999). The current programme operates in eight benchmark sites in five countries (Ethiopia, Kenya, Madagascar, Uganda and Tanzania) and focuses on developing, testing and adapting technologies and management options, approaches and methods to foster farmers' and community innovations in relation to NRM. AHI's approach emphasizes the use and formation of FRG as a central strategy to participatory research. The Kabale benchmark site is located in the highlands of south-western Uganda. The site is characterised by high population densities (456 inhabitant/km^2), adequate bimodal rainfall (1000-1500 mm), numerous catchments with steep cultivated slopes (1900-2400 masl), with severely declining soil fertility, fragmented and scattered small land holdings (AHI 1998). Research is conducted by a multidisciplinary team of scientists of the national agricultural research organization (NARO) in collaboration with international agricultural research centres (IARCs) and non-governmental organizations (NGOs).

The data come from an empirical study of 21 FRGs using a combination of participatory methods and sample survey questionnaire. Focus group discussions were conducted with FRG members. Informal and semi-structured interviews were conducted with group leaders, group members as well as non-participating farmers. The analysis was complemented by an econometric analysis of survey questionnaire of a sample of 129 FRG members, and 61 non-participating men and women farmers within the communities. The empirical model of the factors determining participation in FRG was estimated by the Logit model using the LIMDEP econometric software (LIMPDEP 1994). The Logit model is a regression technique that has been shown to be appropriate for examining qualitative dependent variables (such as participation), and permits their interpretation as probability (Lia 1994). It has been extensively used in empirical adoption studies (CIMMYT 1993, Feder et al., 1993).

4. Results and Discussions

4. 1.Types of Participation in FRG

There exists a large body of literature suggesting various typologies of FPR (Selener 1998, Martin and Sherrington 1997, Pretty 1994, Okali *et al.* 1994, Biggs 1989, Ashby 1987, Ashby 1986). However, Biggs' classification, based on the different relationships between researcher and farmers, and their decision-making roles at various stages of the research process, is probably the most used. Drawing upon Biggs' classification, Lilja and Ashby (1999) developed a checklist to assess the types of participatory research at different stages of the research process, based on the locus of decision making. The checklist (appendices 1) distinguishes three research stages with about sixteen activities, and five types of participatory research depending on who makes the decision at various stages in the innovation process.

The five types of FPR are:

- Type A *(contractual):* Scientists make the decision alone without organized communication with farmers, usually contracting farmers to provide land, labour and other services needed for on-farm research, without being involved in decision making.
- Type B *(consultative):* Scientists make the decision alone but with organized communication with farmers. Scientists consult farmers about their problems, opinions, preferences and priorities through organized one-way communication, but the decisions are not made with farmers nor are there delegated to farmers.

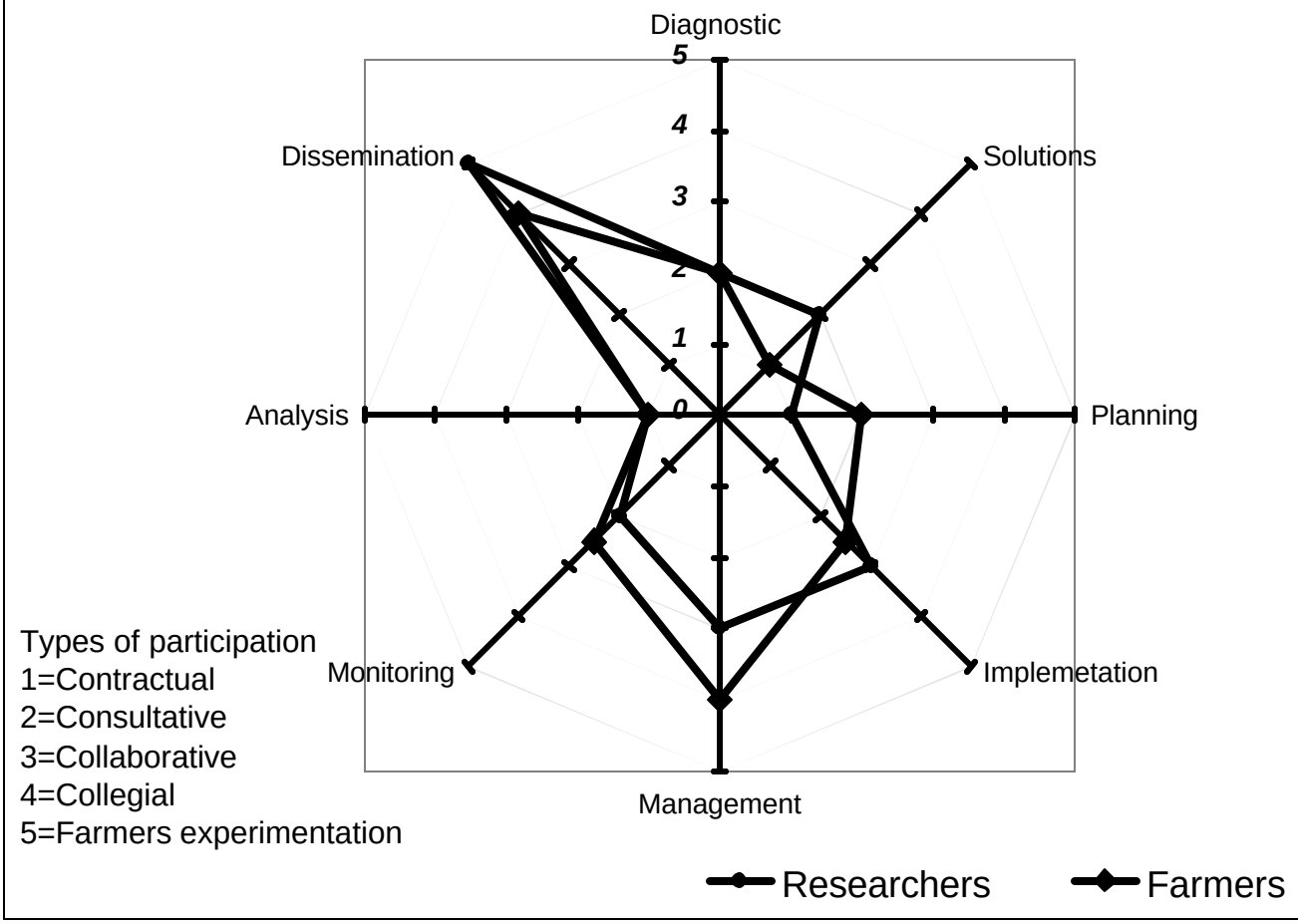
- Type C *(collaborative):* The decisions are jointly made by farmers and scientists through a two-way organized communication, and continuous interaction between farmers and researchers who are seen as partners in the research process.
- Type D *(collegial):* The decisions are made by farmers collectively in a group process or by individual farmers who are involved in organized communication with scientists. Farmers have the major say in running the experiment, but may seek advice from scientists who may be facilitating the collective or individual decision-making of farmers or may have already built the ability of farmers to make the decision with little outsider involvement. The major emphasis here is on activities designed to increase the ability of farmers to do research and request information and services from formal research and extension organizations.
- Type E *(farmer experimentation):* Farmers make the decision individually or in a group without organized communication with scientists. This concerns research-minded farmers who experiment on their own.

An analysis of the types of participatory research in AHI-Kabale revealed that typically, farmers' participation occurred in the stage of technology evaluation and dissemination. We distinguished eight different stages within AHI's participatory agroecosystem management (PAM) approach. These included: diagnostic, solutions identification, trial planning, trial implementation, trial management, monitoring (data collection), data analysis (evaluation), and dissemination. In general, PRA exercises provided starting points to identify problems by developing problem trees with farmers, which were then used as a basis for identifying and selecting solutions and best-bet technologies that were the most likely entry points. Once the entry-points were established, PAM planning workshops were organized to develop participatory research action plans (PRAP). Then scientists designed adaptive research experiments, which were established on farmers' fields, managed by farmers and evaluated to select best-bet options to disseminate to farmers. The major thrust of AHI is to promote greater participation of farmers in all the research process, moving from the consultative to more collegial type of participation. However, this is far from being reflected in actual practice.

We hypothesized that different types of participation occurred at the different stages of the experimentation process in FRG, and that farmers and scientists may have different perceptions of the participatory process. Figure 1 shows the analysis of the types of participation in different stages of the participatory research process from the perspectives of researchers and farmers. Results show some interesting differences between farmers and researchers in their perception of type and degree of participation at the

different stages of the experimentation process. For instance, in diagnostic stage, researchers relied on PRA to identify major problems, and develop problem trees, mapping resources bases, and current farming strategies. However, while researchers indicated that farmers were consulted in identifying and designing solutions, farmers did not recognize their active participation, and instead believed that researchers "brought" solutions ("medicine") to their problems. It appeared that after diagnozing problems with farmers, researchers then identified on-shelf solutions or best-bet solutions to be evaluated by farmers in farmers' fields. Then simple trails were designed by researchers and established with farmers in group experiments to evaluate different varieties of crops and management practices.

Figure 1: Types of participation in Farmer Research Groups



Similarly, farmers' involvement in data collection and analysis of trial results was rather limited, except in some cases where field visits were organized and informal evaluations carried out without organized

communication between farmers and researchers. This points to a lack of systematic feedback process to scientists and to the research system. However, we observed that in many cases, farmers recognized to take some independent initiatives in the management of trials on a more collegial mode. In many FRGs, farmers seemed to be keen on taking over control of some stages in the research, often without researchers' knowledge. Dissemination of proven technologies was a spontaneous farmer-to-farmer dissemination, without knowledge of or recommendations from the researcher.

Although there are opportunities to give more roles to farmers (such as monitoring, evaluation, trial management), researchers were still applying more of consultative types of participation. These differences in the different roles and responsibilities of researchers and farmers seem to point to a more functional type of participation and a lack of ownership and responsibility of the process by the farmers. There is need to support research teams and farmers to improve the quality of participation, moving from where it is now towards a more collegial type of participation to build farmers and communities capacity to innovate and conduct experiment on their own. It is interesting to note that this figure and the checklist can be used as a monitoring tool to assess the progress and changes made in the degree and intensity of participation of farmers at different points in time.

4.2. HOW does participation occur in FRG?

Table 1 gives a brief profile of the FRG in Kabale. The majority of the 21 FRGs in AHI sites were newly formed groups (71%) and only 29% were existing groups. Most FRGs were formed between 1998 and 1999, and have conducted three to six seasons of experiments. The average number of farmers in each group was 28 ranging from 10 to 45 farmers. FRGs were either mixed (76%) or exclusively women's groups (24%). Most experiments are still on the basics of improved farming methods, testing and evaluation of new varieties, fertilizer application, and other agronomic practices that most farmers did not have prior experiences on. Generally, the experiments compare different improved crop varieties and improved agronomic practices to local varieties and local farming methods. Virtually all FRGs have experiments on new varieties of beans and potatoes, the two most important food and cash crops in the area, with some FRGs reaching the stage of seed multiplication for the two crops. Other experiments include testing and evaluation of different varieties of maize, wheat, sorghum and sweet potatoes. NRM research focuses on soil fertility management and includes experiments on different regimes of inorganic fertilizer application, farm yard manure management, leguminous cover crop, integrated disease management of potatoes bacterial wilt and beans root rot. These are often conducted on individual plots of group members. However, it is interesting to note that a growing number of FRGs have expressed high

interests in agroforestry technologies, after some exposure exchange visits both to research station and farmers' fields. In 2000 season, some four FRGs (19%) initiated agroforestry experiments, starting with tree nurseries, while another one FRG had prior nurseries of forest trees (eucalyptus and pines).

Table 1: Profile of Farmers Research Groups in Kabale

FRG Characteristics	N= 21
Number of mixed groups	16 (76%)
Number of all-women groups	5 (24%)
Number of all-men Groups	0
Proportion of women in mixed groups	67%
Average number of members	28 (range 10-65)
Number of Existing groups	6 (29%)
Number of New groups	15 (71%)
Average number of technologies	2.1 (range 1-7)
Average number of experiment seasons (2 seasons/year)	3.5 (range 1-8)

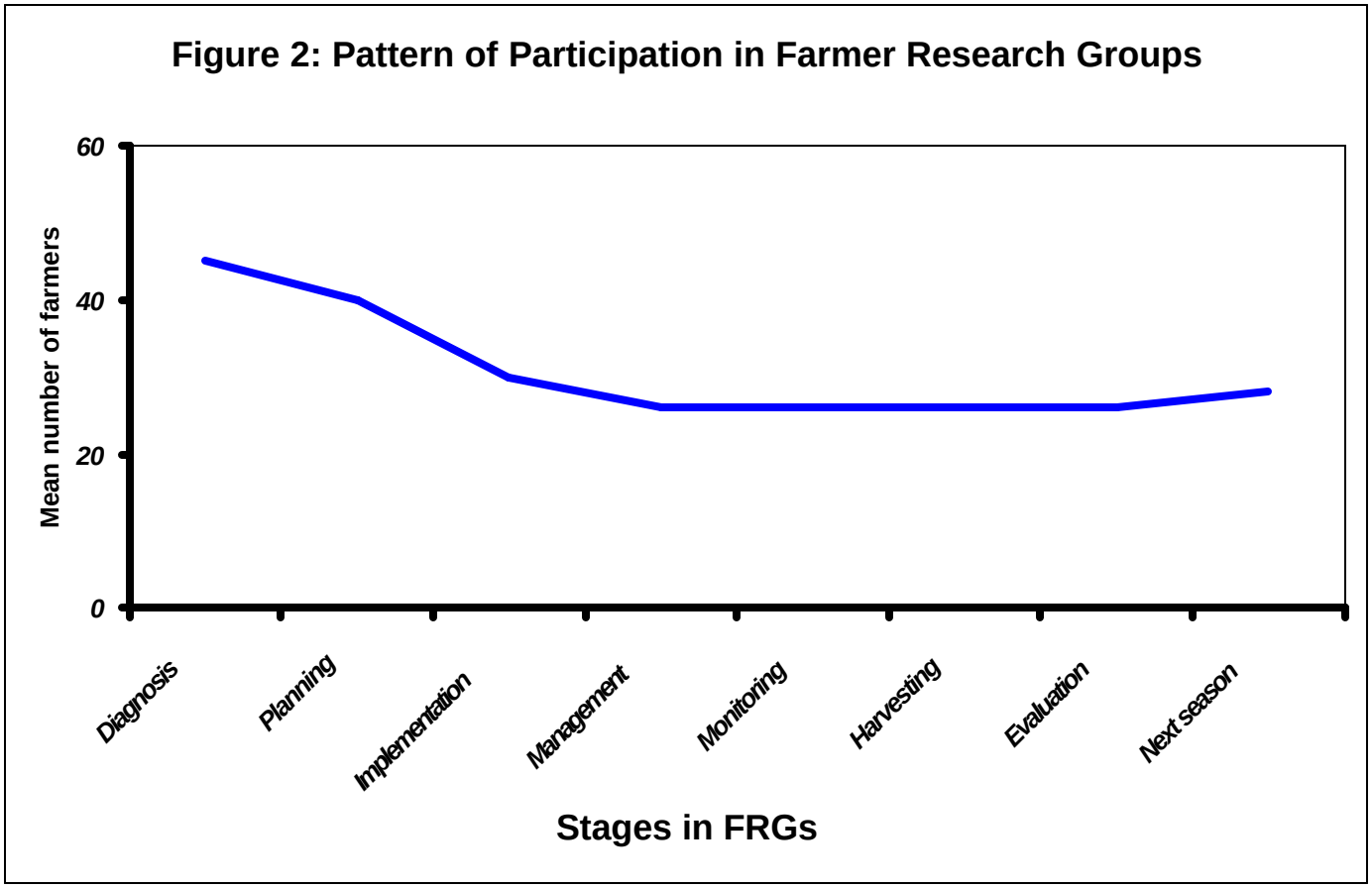
As noted above, the majority of FRGs were initiated specifically for the purpose of research. Analysis of FRGs formation and development process showed that virtually all have passed the “storming” stage and reached the "norming" stage (Pretty *et al* 1995) with clear efforts to establish group structures, norms and regulations. Only a few have reached the performing stage where group members are raping some of the benefits of participation in FRG. In the newly formed FRGs, initial participation of members was mainly through voluntary self-selection of farmers based on their interest and willingness to participate in research. Usually, after initial PAM diagnostic and planning stages, farmers were advised to form groups to be able to participate in the research programme. No explicit criteria for membership were laid down, and there was no proactive role of scientists to facilitate or guide the selection of members. In contrast to the CIALs, FRG members are not elected by the communities, nor are they conducting research on behalf of the communities.

In line with the different roles of scientists and farmers implied in the different types of participatory research, scientists generally provide technical leadership, supply small quantities of experimental materials (mainly seeds and inorganic fertilizers), and in most cases field assistants provide technical training to farmers in experimentation practices and monitor the experiments (data collection). The

research team has also a sociologist who, among other things, facilitates group dynamics and supports FRG to strengthen their organizational capacity. Experiments are usually planned and conducted by the group on a collective group plot often donated by one FRG member, or rented out by the group, or in some cases on individual plots managed by the group. All routine experiment management activities (land preparation, planting, weeding, harvesting) are carried out collectively on the group plot for two or three seasons, before seeds are shared among individual farmers for further experimentation and for seed multiplication. FRGs are then expected to conduct other rounds of experiments on other technologies, while continuing with informal seed multiplication to sustain both the group and the interest of members in group activities. It is interesting to note that these roles are evolving and in some successful FRGs, farmers are increasingly taking on some of the researchers' roles, and are willing to take on more responsibilities.

We analysed the trend of participation in the 21 FRGs, at the different stages of the experimentation process. Our initial hypothesis was that farmers' participation in groups tend to follow the normal adoption curve (Roger 1995), rising slowly at first, accelerating to a maximum, and then increasing at gradually slower rates. Results show that farmer participation in FRG tend instead to follow a *"U*" shaped curve (Figure 2), with high participation at the initial stages of the process, followed by dramatic decrease as many farmers drop out from the groups, and slow increases towards the end of the first seasons. Many farmers participated in the diagnosis and group formation stages expecting free handouts (fertilizers, seeds, pesticides and credit…). They later dropped out when they discovered that there were no immediate personal benefits and free handouts. Ashby *et al.* (2000) also observed that CIALs often go through a difficult period during their early development when the initial enthusiasm experienced at the motivational stage and diagnostic meetings has worn off. Some members lose interests, other drop out. However, after going through this "storming" period (Pretty *et al.* 1994) when many members drop out, the FRGs established their group structure by electing a five to seven member executive committees, and by agreeing on some common rules, norms and regulations. Towards the end of the first season when groups harvest their successful experiments, more farmers want to join FRGs. While some groups were inclusive and open to new members, the majority of FRGs established strict norms to restrict new members.

4.3. WHO Participates?

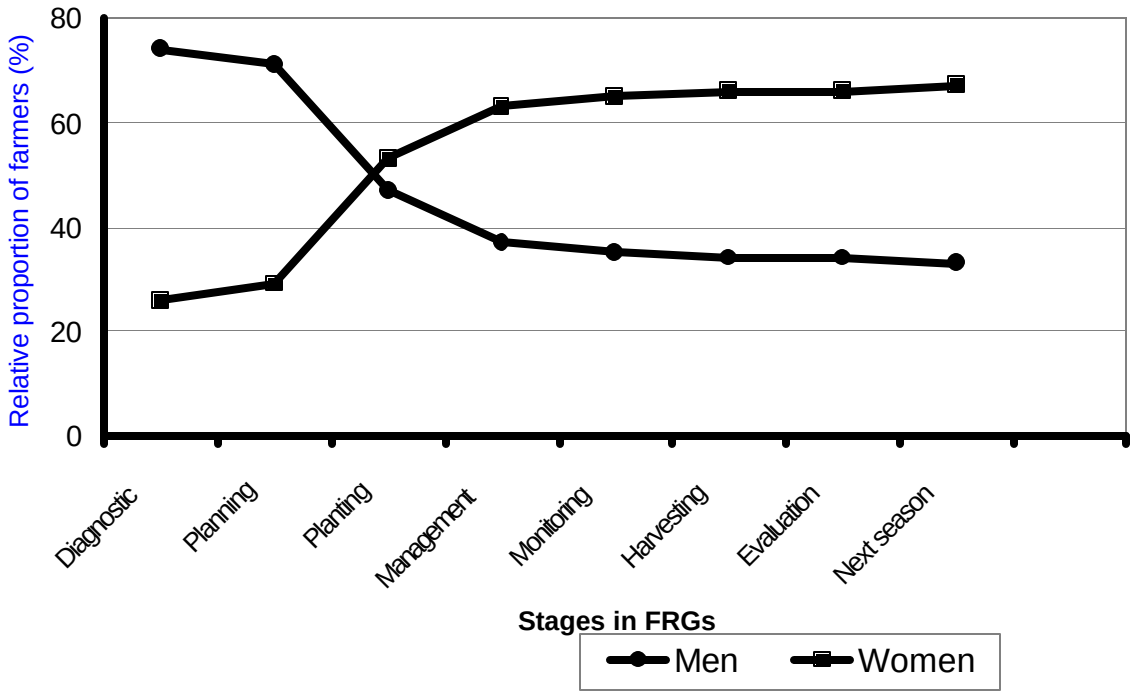


It cannot be assumed that farmers' oganizations will represent all groups in the local community (Bebbigton *et al.* 1994). The identification of the specific characteristics of the participants thus is important in assessing the quality of participation, as it determines who participates and how the process would be managed. Two aspects of who participates need to be clarified in order to interpret the nature (quality) of participation: representation and expertise i.e. whether the participants are representative of a population of end users, and whether the participants bring relevant expertise to the process (Ashby 1997). Gender and wealth are basic determinants of representation and expertise and need to be used as criteria for distinguishing who participates. We therefore hypothesized that: *Farmer Research Group may exclude certain categories of local people, particularly women and poor farmers, who may not be able to absorb the cost of participation and experimentation.*

Gender

Previous studies on farmers research organizations have reported significant gender differences in farmers' participation in groups. In his study on participatory evaluation of farmers' organizations in Asia, Uphoff (1988) found that membership in farmers' organizatios was only about 5% female, and less than 1% of farmer representatives were women. Similarly, Ashby et al (2000) reported that the majority of CIALs in

Figure 3: Men and women farmers' participation in FRGs



Colombia were men only (56%) while only 7% include women only, and women were in the minority (31%) in mixed CIALs and tended to drop out. In Honduras, specific efforts were necessary to include women given their rather low representation in CIALs (Humphries *et al.* 2000). This suggests that women may have less organizational responsibility. We therefore hypothesized that: *Men tend to dominate community organisations (and therefore FRGs) as they are more likely to have land and other resources for experimentation, and are more likely to be in contact with external (research) organisations.*

Results in figure 3 show that there was a significantly higher participation of male farmers at the beginning of the process, compared to women. However, as FRGs progressed, the proportion of men decreased while the relative proportion of women increased dramatically. Women represented about 67% of farmers in mixed groups, and 24% of the FRGs were women only. By contrast, there was no exclusive men's group, and men were reported to have lower participation rates in mixed groups. However, men

monopolized leadership positions in mixed groups. Analysis of leadership position in mixed FRGs showed that virtually all chairpersons were men (92%), while the majority of vice chairpersons were women (55%). Further FRG secretaries tended to be men (83 %) in mixed groups, while women are often assigned the role of treasurer (72%) because of their perceived integrity and reliability in keeping group funds and other assets. In general we found that men occupied about 62% of positions in mixed FRGs executive committees, despite the fact that women constitute the large majority of members.

These gender biases in leadership position can be explained by persistent gender relations within the household and the community that men are more able in making decisions, organize group activities and maintain discipline within the group. Also, men are better placed to establish contacts with external institutions, and to voice their needs and demands. Also, the majority of women interviewed argued that having some men in the group offers some protection to the women and serves some public relations within and outside the community. Even in women only FRG, it is common to find some men appointed as advisor or patron to women's group. In Zimbabwe, women indicated that it was not necessary to have separate women's groups since their needs were the same as the men (Jiggins 2001) However, it is interesting to note that there are important dynamics occurring in mixed groups, with women increasingly taking on leadership positions, often by duplicating men's positions or by creating separate women's activities. Furthermore, some 22% of women argued that men are not reliable, and are difficult to work with in a group for collective interest, rather than individual benefits. Early diagnostic survey conducted by AHI in Kabale (AHI 1998) also showed that alcoholism and idleness among men was indeed one of the most important problems constraining agricultural productivity.

The higher participation of women can be explained by their dominant roles and responsibilities in crop production. Like in many other parts of sub-Saharan Africa the feminization of agriculture (Kaaria and Ashby 2000) has meant that women are now performing most of the agricultural activities, even those traditionally done by men. Further, groups are known to provide women with a legitimate social space to foster a sense of solidarity and collective action. Several studies conducted by the World Bank in Africa, show that women's groups have proved to be one of the most effective entry points for activities reaching poor households, and among the most effective local-level institutions (World Bank 1998). Thus making significant efforts to involve women in research can bring significant returns to research. We argue that FRG is an effective mechanism to provide women with opportunities to participate in agricultural research and development.

Wealth categories

Similarly to gender, some authors have pointed out to the limited capacity of research and development organizations to work with the poorest groups who tend to select themselves out of activities which demand time, risk, or other commitments (Ashby and Sperling 1994). Rich farmers are likely to be in contact with researchers and development agents, by contrast to the poor who do not have resources and time to be involved in research activities, nor are they likely to have the political standing to get themselves elected into groups or committees (Humphries *et al.* 2000). Thus we hypothesized that: *Resources-rich farmers are likely to dominate FRG as they have resources to absorb the cost of participation and of experimentation.*

Table 2 shows the distribution of FRGs members by wealth categories. Wealth ranking exercises based on local socially defined well-being categories and interviews with FRG members showed that the majority of FRG members were in the average group (68% compared to 53% in larger community). Resources-rich farmers (not so poor) represented 18% of FRG members and 21% in the larger communities. The poor represented 14% in FRGs compared to 26% in larger communities. However, resources rich farmers and educated farmers dominated leadership positions in FRGs committees. It may be argued that there is a risk that participation in FRG may result in the capture of the benefits by the rich, to the detriment of the poor (Hoddinot *et al.* 2000). Rich farmers are more likely to retain knowledge and technologies for their own use instead of sharing them with the community (Ashby and Sperling 1994). There is thus therefore a real risk for FPR of creating a privileged group of farmers with access to technology. In Ethiopia, Adamo (2000) found that wealth differences have affected levels of participation among farmers, with many of the poor farmers struggling to participate in on farm trials. It has been argued that working with rich farmers may lead to technologies which are not appropriate to poor farmers, and which may not benefit them (Selener 1997, Sims and Leonard 1989).

In Kabale, to the exception of the small minority of valley bottom commercial dairy farmers, often residing in cities, it can be argued that virtually all farmers are small-scale resource -poor farmers using traditional methods of farming. Although there exists some differentiation among this category based on socially and locally defined wealth categories and assets, their production conditions are generally similar, and technologies developed with one category can also benefit the other. We found no evidence to support the hypothesis that rich farmers monopolised the benefits and technologies developed within FRG, as poor people also participate in FRG. Experience with the CIALs has also shown that poor people have successfully participated in research and conducting experiences (Ashby *et al.* 2000, Humphries *et al.* 2000), and that CIALs could also benefit poor farmers.

Table 2: Comparison of wealth categories between FRG members and other farmers in the communities (%)

Wealth Categories	FRG Members	Other farmers
Class 1: Resources-rich farmers (Not so poor farmers)	18	21
Class 2: Average farmers	68	53
Class 3: Resources-poor farmers	14	26
Total	100	100

4.4. Determinants of farmer participation in FRG

It cannot be expected that a single FRG would represent all categories of farmers in a community. In order to determine what categories of farmers were likely to participate in FRGs, and to investigate their characteristics, we conducted a survey of FRG members and other farmers in the community. The results of the Logit model (Table 3) showed that five out of the eleven variables included in the model were significant in explaining farmers' participation in FRG. These were gender, contact with extension services, availability of family labour, village distance, and household decision-making pattern.

Table 3: Determinants of farmers' participation in Farmer Research Group: A Logit model

Variables	**Coefficients**	**Std Error**	**T ratio**	**Mean of X**	**Std Dev. of X**
Gender (Men = 1, women =0)	-2.5027	1.251	-2.00**	0.4833	0.5016
Age of the farmer (years)	0.96791E-01	0.8403E-01	1.152	37.62	11.748
Education level (years of schooling)	0.39550E-01	0.2018	0.196	6.6207	3.6942
Family labour (household size)	0.60842	0.3162	1.924**	5.95	2.435
Extension contacts	2.4865	0.7762	3.203***	1.7583	2.2153
Village distance	1.3186	0.7599	1.735*	5.9500	2.4352
Decision making pattern	3.6912	1.486	2.484**	1.266	0.6576
Household headship status	-0.43874	1.256	-0.349	1.0667	0.49761

Membership in associations	0.29588	1.247	0.237	1.558	0.74242
Wealth category	0.35246	1.059	0.333	2.2272	0.52561
Constant	-22.941	9.761	-2.350**		
Log-Likelihood----	-117.33				
Percent of correct predictions:	94.17%				
Sample size	170				

*** Singificant at 1%, ** singificant at 5%, * significant 10%

The negative sign on gender confirmed our earlier observations that men farmers have a lower probability of participation than women farmers. Family labour as measured by household size was also significant in determining participation in FRG as the availability of family labour allows farmers to participate in group activities without negatively affecting their individual activities. Also, men farmers with available family labour were more likely to get their wives or children represent them when carrying out some group activities such as weeding, land preparation and other collective activities. The results also revealed that farmers from households where a cooperative and bargaining decision-making pattern prevailed, had high probability of participation than in households where there was a unitary, single decision-making pattern. The results concerning contact with extension services were expected as many empirical findings have indicated that contact with extension services increases the probability of participation as farmers become more aware of innovations, and tend to select themselves for experimenting with innovations. These results could be explained by a self-selection process by which the more risk-averse farmers seek more information. Similarly, village access was an important variable, as farmers living in remote villages were less likely to have contacts with external organizations such as researchers who limit themselves to more accessible villages.

In line with our earlier observations, the results showed no significant differences in the economic and wealth circumstances between FRG members and the rest of the community, suggesting that resources-poor farmers were also involved in FRG, along with resource-rich farmers. Although positive, the effects of education, age of the farmers, and household head status were not significant in explaining farmers' participation in FRGs. The results concerning membership of local organizations were unexpected, as it is known that farmers belonging to local organizations are more likely to participate and select themselves for new organizations. For example, Humphries *et al.* (2000) found that the majority of CIALs members have been involved in past projects, and served as community leaders or members of local organizations. In Kabale, we observed that local organizations that could facilitate participation in FRGs were generally non-existent or weak, and it was necessary to form new FRGs.

4.5. Performance Evaluation of Farmer Research Groups

This section attempts to address the last question posed in this paper: How do the participants evaluate the process of participation and the results? We initiated a participatory monitoring and evaluation system to more actively involve farmers in tracking changes and sharing results both for feed back to research, self-reflection and critical learning. Participatory evaluation processes evolved around a list of expectations, fears, and activities and objectives which relate to important aspects that FRG members were concerned with. Seven major performance criteria and their indicators were identified through a facilitated process of farmers' self- assessment by farmers.

Table 4: Performance criteria and indicators of Farmer Research Groups

Performance Criteria	Performance Indicators
Group organizational capacity	Group formation, group objectives, leadership, group structure, norms, rules and regulations, decision-making, meetings and group activities, communication, record keeping, group dynamics
Experimentation/research activities	Number of experiments, number of options/technologies, number of people with experiments, extent of experimentation, expansion to other crops and plots, extent of own experiment, feedback to research, spill over effects, technology outputs,)
Participation process	number of people attending meetings, group activities, extent of participation, decision making, communication, group dynamics; participation of women in decision-making

Human capital	Knowledge of technical options, new farming methods, self esteem, self confidence acquired in FRG, skills in implementing options, attitudes; innovativeness
Social capital (Bonding)	Cooperation, trust, collective action, group cohesion, compliance to norms and rules, diversity of membership, heterogeneity/homogeneity of members
Social capital (Bridging)	Contacts with external institutions; Contacts and relations with other groups, associations and local institutions; Initiatives to contact external organizations; Collaboration/relation with local councils; Exchange visits, field days; visits by external organisations
Reach or dissemination	relations with rest of community, sharing of information and technology, farmer-to farmer dissemination; sharing of experience
Sustainability	financial contribution, diversification of activities, vertical linkages, own initiatives, plan for future, dependence to external organizations

These performance criteria were assessed using a five point scale (5-4= High 3= Average and 2-1=Low). The results of performance evaluation (Table 4) were mixed. About half of the groups had a low performance level. These groups were found to be in a "storming stage" where members are just beginning to have a loose sense of group. FRGs in the high performance category, have established norms and rules, elected their leaders, developed a group organizational structure and diversified their activities. These groups have reached a performing stage where members have started to gain individual benefits from the group. These groups also scored high on indices of group sustainability and social capital. The factors explaining differential performance of FRGs were reported in the 2000 Annual report and included size of the group, level and dimensions of social capital, contact with research and development agents, leadership, purpose and group formation process, range of activities within the group, homogeneity of members, and village characteristics.

Table 5: Performance Evaluation of Farmer Research Groups in Kabale (N=21)

Performance Criteria	**Performance Level % (N=21)***		
	High	**Medium**	**Low**
Group organization	29	38	33
Activities	48	33	19
Participation	33	52	14

Human Capital	24	38	38
Social Capital-bonding	33	28	38
Social Capital- bridging	14	19	67
Reach -Dissemination	19	38	43
Sustainability	14	19	14
Overall Assessment	**24%**	**33%**	**43%**

* Three newly formed groups were not included in the analysis

The results showed that the organizational capacity of the majority of groups needs to be strengthened. This would have beneficial implications on both social capital and sustainability. One of the indicators group sustainability was financial contribution, i.e. the extent to which groups generated money for its activities and functioning. Groups with high levels of performance had developed some rules for financial contributions. These included regular contributions by members or levy of contribution for special events, imposition of fines for failure to participate in group activities, subscription by new members, selling of seeds after harvest of experiments and seed multiplication plots, hiring out group labour to the community. In general contributions to groups did not exceed Shs. 1000 (US$ 0.6) per member and many members expressed difficulties in raising the money. Some group members pay for their fellow members against labour on their individual plots, or other dedicated members have to sell their labour to raise the money. Fines imposed to members for not participating in group activities were equivalent to local labour wages and varied between Shs 500 and Shs 1000 (US$ 0.3 and 0.6). In high performing groups, there was compliance to these rules, while no clear rules existed in other groups.

Although these contributions and fines represent important efforts by FRGs towards financial sustainability, the amount of money generated is still very limited for meaningful activities, i.e. purchase of inputs for experiment or other group activities (fertilizers, farm implements, improved seeds. There is need to develop more sustainable financial mechanisms to reinforce the organizational capacity of these groups in order to take advantage of current policies and opportunities and reforms in the agricultural sector in Uganda(decentralization and privatization of agricultural extension services, decentarlization of agricultural research centres, plan for modernization of agriculture (PAM), etc.

A number of factors were found to affect FRG performance. These include:

- Larger FRGs showed lower participation rates, higher rates of drop out, and higher number of inactive members which adversely affected group performance and cohesion. Leadership conflicts were common in larger groups.
- Social capital (relations of trust, cooperation, norms and regulations social interactions, group dynamics and collective action) was higher in smaller groups with a stable membership and leadership. However, there was a low level of bridging social capital, and only few groups were found to build some considerable amounts of this type of social capital. The leaders of such groups were also local council chairpersons, and thus had wider social networks and were often the point of contacts for external organizations and visitors. This suggests that effective embededdness of local leaders was key to social capital formation. In these communities where FRG leaders were also members of local councils or village communities, FRGs were likely to be more successful in communities where there was a local commitment to collective action and strong social capital. Similarly, FRG was found to be a very effective mechanism for building human and social capital in the communities.
- The successful FRGs were those that broadened the scope of their activities well beyond experiments. They were gradually becoming self-sustaining by diversifying their group activities beyond initial research activities and experiments.
- (Lack of) Personal commitment of researchers and regular monitoring were key in explaining FRG success ("failure"). FRG as an approach has a great potential for catalyzing the participation of farmers as partners in research and development activities.
- Simple and short-term experimentation on crop variety evaluation, seed multiplication and fertilizer application were good entry points to sustain farmer participation. However, FRGs may not be effective for research involving soil ferility and natural resource management, without short-term benefits to members.

The findings of self-assessment of FRGs suggest that more than increasing the number of farmers and farmers' research groups, we need to invest in improving the quality of participation to achieve good quality research. This requires significant support and personal commitment of RESEARCHERS. It also requires broadening the scope of PR from a functional consultative type, to a more collegial empowering type, from variety selection to broader natural resources management research.

5. CONCLUSION

This study was conducted against the background of increasing interest in community-based farmer participatory research as an approach to institutionalize and to broaden the impact of participatory research. One of the major strategies of the African Highlands initiative is to promote community-based participatory research methodologies for research and development by forming and using farmer research groups rather than individual farmers. This paper assessed the quality of participation in FRG, in Kabale, southwestern Uganda. The quality of participation provides a useful analytical framework for investigating the specific characteristics or dimensions of participatory research by looking at what types of participatory research are conducted, who participate in them, how participation is managed, what criteria should be used to monitor and evaluate the performance of FRG, and what are the impacts? A subsequent paper analyses the performance and impacts of FRGs.

The findings of this study showed that FPR is a dynamic process and that different types of participation can occur at the different stages of the research process. One of the major thrusts of Ahi is to move the process from it is now towards more collaborative and collegial participation of farmers to foster farmers' capacity to innovate and experiment with natural resource management technology options. The results of the study did not support the hypothesis that FPR may exclude certain categories of farmers, especially women and poor farmers who may not have the resources to absorb the cost of participation. On the contrary we argue that FRGs are in fact effective mechanisms to reach women and poor farmers who are by-passed by conventional research and development services. Although different types of participation occurred at different stages of the research process, the results showed that the participation of farmers was evolving toward a more collaborative mode, with farmers increasingly taking more roles and responsibilities, gaining confidence, enhancing their human and social capital, and sharing knowledge, skills and technologies. However, there are great prospects and good opportunities to invest efforts to enhance the quality of participation in FRG. This requires important skills , principles and methods and tools that researchers and farmers need to build together.

As observed by Braun *et al.* 2000, FRG approaches require and promote a much closer engagement of agricultural research and development institutions with rural communities, and building institutional structures and processes for agricultural development. Given the current problems faced by agricultural research in developing countries, we argue that FRG can help increase the relevance of research to the needs of small scale farmers, increase the efficiency of technology development and dissemination, and widen adoption and impact of agricultural technologies on the lives of resources poor farmers. FRG as an approach has a great potential for catalyzing the participation of farmers as partners in research and

development activities. This requires significant support and personal commitment of researchers. It also requires broadening the scope of PR from a functional consultative type, to a more collegial empowering type, from variety selection to broader natural resources management research. However, achieving such potentials require skills, capacities and personal commitment that researchers in Kabale need to internalize. As Booth observed *" the main obstacle in providing farmer participatory research is the research workers themselves* (quoted in Selener 1999). We concur with Bebbigton *et al.* (1994:28) that " if we are serious about fostering the external forces to make research organizations client-driven rather than research driven, investments will have to be made in developing local farmers' associations".

REFERENCES

African Highlands Initiative, (1997a), Phase II Work Plan and Budget 1998-2000; ICRAF, Nairobi, Kenya

African Highlands Initiative, (1997b), Proceedings: Stakeholders Planning Workshop, held in Kabale, Uganda on 21-23 May 1997. AHI, Kampala, Uganda

African Highlands Initiative-Characterisation and Diagnosis Team for Uganda. (1997c), Natural Resource Management Constraints and Prospects in Kabale District: A Participatory Rural Appraisal, NARO AHI Site Coordinator, Kabale, Uganda

Ashby, J.A. (1997. What do we mean by participatory research in agriculture? Pp 12-22 In New frontiers in participatory research and gender analysis. Proceedings of the international seminar on participatory research and gender analysis for technology development and institutional innovation. CIAT Cali Colombia,

Ashby, J. (1986). Methodology for the participation of small-scale farmers in the design of on-farm trials. *Agricultural Administration* 22:1-9

Ashby, A. J. and L. Sperling. (1994). Institutionalizing participatory, client-driven research and technology development in agriculture. *Agricultural administration research and extension network Paper* 49.

Ashby, J., T. Gracia, M. P. Guerrero, C.A. quiros, J.I. Roa and J.A. Beltran. (1995). Institutionalizing farmer participation in adaptive technology testing with the CIAL, *Agricultural Research and Extension Network* (AgREN) Paper no 57, July. London: ODA

Ashby, J.A.; A.R. Braun, T. Garcia, M.P. Guerrero, L. A. Hernandez, C.A. Quiros, and J.I. Roa . 2000. Investing in Farmers as Researchers: Experiences with Local agricultural research committees in Latin America. Cali, Colombia. CIAT.

Bebbington, A. J., D. Merill-Sands and J. Ferrington . (1994. Farmer and Community organizations in agricultural and extension: Functions, Impacts and Questions. *Agricultural Administration Research and Extension Network* paper 47. London, ODI.

Biggs, S. (1989). Proposed methodology for analysing farmer participation in the ISNAR OFCOR study. *Agricultural administration (Research and Extension) Network* paper no 17, London, Overseas Development Institute

Braun, A. R.; G. Thiele and M. Fernandez . (2000). Farmer field schools and local agricultural research communities: complementary platforms for integrated decision making in sustainable agriculture. *Agricultural Extension Network* Paper No 105. London ODI.

Carney, D. (1997). Scaling Up participatory Research. Pp. 113-121. In New frontiers in Participatory Research and Gender Analysis. Proceedings of International seminar in Participatory research and gender analysis for technology development, Cali Colombia 1996. CIAT

Chambers, R., A. Pacey, and L.A. Thrupp. (1989). Farmer First. Farmer innovation and agricultural research. London: Intermediate Technology Publications

CIAT, Network on Bean Research in Africa. (1999). Participatory research for improved agroecosystem management: proceedings of a synthesis workshop. CIAT African workshop Series, No 38., edited by C. Farley, Kampala, Uganda

CIMMYT Economics Program (11993). The Adoption of agricultural technology: A Guide for survey design. Mexico, D.F.: CIMMYT

Hagmann, J., E.Chuma, K. Murrwira and M. Connoly. (1999). Putting process into practice: Operationalising participatory extension., *Agricultural Research and Extension Network* paper No 94

Heinrich, G. (1993). Strengthening farmer participation through groups: Experiences and lessons from Bostwana. *OFCOR Discussion paper* no 3. ISNAR The Hague

Humpries, S.A.; J. Gonzales, J. Jimenez and F. Sierra. (2000). Searching for sustainable land use practices in Honduras: Lessons from a programme of participatory research with hillside farmers. *Agricultural Research and Extension Network* Paper No 104, London ODI.

Jassey, K. (2000). Farmer Research Group: Who benefits? Pp 111-136. In G.M. Heinrich, ed. Farmer participatory approaches. Proceedings of regional workshop on farmer participatory approaches , Harare Sheraton, Zimbabwe. ICRISAT, Bulawayo, Zimbabwe.

Jiggins, J. (2001). Tempered Radicals…..

Lia, T.F.. (1994). Interpreting probability models. Logit, Probit and other Generalized Linear Models. Sage University Paper series on Quantitative applications in the Social Sciences 07-101. Thousand Oaks, CA.

Lilja, N. and J. Ashby: (1999) Types of participation based on locus of decision-making. CGIAR programme on participatory research and gender analysis. PRGA working document no 6. CIAT, Cali Colombia

Lilja, N.; J. Ashby and L.Sperling. (2001). Assessing the Impact of participatory Research and Gender Analysis. CGIAR program on Participatory Research andGender Analysis , CIAT, Cali, Colombia

Kaaria, S. and J.A. Ashby (2000): Women and Technology Initiative. The Resources-to-Consumption Model. PRGA working paper no….

Martin, A. and J. Sherington. (1997). Participatory research methods: implementation, effectiveness and institutional context. *Agricultural Systems* 55(2): 195-216

Oakley, P. (1992). Projects with people. The practice of participation in rural development. Geneva: International Labour Office…..

Okali, C., J. Sumberg, and J. Farrington. (1994). Farmer Participatory Research: Rhetoric and Reality. London: Intermediate Technology Publications

Pretty, J.N.. (1995). Regenerating agriculture. Policies and practices for sustainability and sel-relience. Joseh Henry press, Washington DC.

Pretty, J., I. Guijt, J. Thompson and I. Scoones (1995). Participatory learning and action: A trainer's Guide. London. International Institute for Environment and Development.

PRGA (2000). Quality of participation in participatory research. PRGA Working document no…. International seminar on Uniting Science and Participation in Research, Nairobi Kenya,

PRGA. (1997). New frontiers in participatory research and gender analysis. Proceedings of the international seminar on participatory research and gender analysis for technology development and institutional innovation. CIAT Cali Colombia,

Rogers, E. M. (1995). Diffusion of Innovations. The Free Press. 4th ed., New York.

Rietbergen-McCarcken and D. Narayan, (1998) Participatory and Social Assessment tools. Tools and techniques. The World Bank, Washington D.C.

Selener, D.(1997). Participatory Action Research and Social Change. Cornell Participatory Action Research Network. Cornell University, Ithaca, New York, USA.

Uphoff, N. (1988). Participatory evaluation of farmers' organizations' capacity for development tasks. *Agricultural Administration & Extension* 30: 43-64

Uphoff, N.; M.J. Cohen and A. Goldsmith. (1978). Feasibility and application of rural development participation. A state-of art paper. Rural Development committee for international studies. Corneill University

World Bank. (1998). The World Bank participation source book, ESD, The World Bank, Washington DC