

## **BUILDING SOCIAL CAPITAL FOR AGRICULTURAL INNOVATION**

Experiences with farmer groups in Sub-Saharan Africa



*Willem Heemskerk and Bertus Wennink*

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***'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'.***

***BEBBINGTON ET AL., 1994.***

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The practitioners of the Royal Tropical Institute and its research and development partners in Sub-Saharan Africa already have a wealth of experience in working with farmer groups.

This experience with farmer research and extension groups has been documented in projects reports and guidelines produced in Ethiopia<sup>1</sup>, Benin<sup>2</sup>, Mali<sup>3</sup>, Tanzania<sup>4</sup> and Zambia<sup>5</sup>. Key practitioners in this field, who have documented the cases are in Zambia: Mukelabai Ndiyoi, Sylvester Kalonge, Charles Chiluba, as well as the late Misheck Kaluba and Patrick Sikana; in Tanzania: January Mafuru and the late Efreem Wella; and in Ethiopia: Teklu Tesfaye and Fasil Kelemework.

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This bulletin attempts to synthesize these and other cases into a 'best practices and lessons learnt' bulletin on the role of farmer groups in agricultural innovation.

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Willem Heemskerk  
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# Table of contents

<b>Acknowledgement</b>	<b>5</b>
<b>Foreword</b>	<b>11</b>
<b>Executive summary</b>	<b>13</b>
<b>List of acronyms</b>	<b>15</b>
<b>1 Introduction</b>	<b>17</b>
1.1 RATIONALE	17
1.2 THIS BULLETIN	18
1.3 CONCEPTS	18
1.4 FARMER PARTICIPATION IN AGRICULTURAL INNOVATION DEVELOPMENT	20
1.4.1 WHY ENHANCING FARMER PARTICIPATION IS IMPORTANT	20
1.4.2 WHY FOCUSING ON FGs	21
1.5 DIVERSITY OF FARMER SOCIAL CAPITAL IN INNOVATION	22
1.5.1 BACKGROUND	22
1.5.2 RESEARCH GROUPS	23
1.5.3 EXTENSION GROUPS	23
1.5.4 LEARNING GROUPS	23
1.6 CHALLENGES	23
<b>2 FGs in the agricultural innovation system</b>	<b>27</b>
2.1 INTRODUCTION	27
2.2 HISTORICAL OVERVIEW	28
2.3 CHANGING CONTEXT	31
2.4 ORGANIZATIONAL DEVELOPMENT	32
2.5 INSTITUTIONAL DEVELOPMENT	34
2.5.1 INSTITUTIONAL FRAMEWORK	34
2.5.2 AGRICULTURAL RESEARCH CENTRES	35
2.5.3 AGRICULTURAL EXTENSION	35
2.5.4 CIVIL SOCIETY	38
2.5.5 LOCAL GOVERNMENT	38
2.5.6 PRIVATE SECTOR	38
<b>3 Functioning of FGs in the innovation process</b>	<b>41</b>
3.1 INTRODUCTION	41
3.2 FUNCTIONS OF FGs	41
3.3 INTEGRATING FARMERS' INDIGENOUS KNOWLEDGE AND FORMAL INNOVATION SYSTEMS	42
3.3.1 THE NEED FOR INTEGRATION	42
3.3.2 REPRESENTATIVENESS	43
3.3.3 RESEARCH GROUP ESTABLISHMENT	46
3.4 GROUP DYNAMICS	50

3.4.1	BACKGROUND	50
3.4.2	LEADERSHIP	51
3.4.3	INCLUSIVE MEMBERSHIP	51
3.4.4	FEMALE PARTICIPATION IN GROUPS	54
3.4.5	GROUP SIZE AND STRUCTURE	56
3.4.6	FARMER GROUP NETWORKS	57
<b>4</b>	<b>Practice of collective action for innovation</b>	<b>59</b>
4.1	INTRODUCTION	59
4.2	PROBLEM IDENTIFICATION	61
4.3	PRIORITY SETTING AND RESOURCE ALLOCATION	62
4.4	ACTION PLANS AND DESIGN	63
4.5	IMPLEMENTATION	65
4.6	MONITORING AND ASSESSMENTS	68
4.7	DISSEMINATION AND UP-SCALING	69
<b>5</b>	<b>Monitoring and evaluating the role of FRGs in innovation</b>	<b>75</b>
5.1	INTRODUCTION	75
5.1.1	BACKGROUND	75
5.1.2	FG EMPOWERMENT IN AGRICULTURAL INNOVATION	76
5.1.3	RESULTS AND IMPACT	78
5.1.4	COSTS OF FRG INVOLVEMENT	80
5.2	MONITORING OF FGs IN PRACTICE	81
5.2.1	JOINT MONITORING	81
5.2.2	SURVEYS	82
5.2.3	PRA TOOLS FOR PME	82
5.2.4	M&E CHALLENGES	84
<b>6</b>	<b>Enhancing the role of FGs in innovation</b>	<b>87</b>
6.1	INTRODUCTION	87
6.2	CONDITIONS FOR EMERGENCE OF SUCCESSFUL GROUPS	88
6.3	CAPACITY DEVELOPMENT OF FARMER INNOVATION GROUPS	89
6.4	BONDING SOCIAL CAPITAL	90
6.5	NETWORKING FGs (BRIDGING)	90
6.6	FARMER ORGANIZATIONS IN INNOVATION DEVELOPMENT (LINKING)	92
<b>7</b>	<b>Policy issues</b>	<b>95</b>
7.1	THE OVERALL CHALLENGE	95
7.2	GOVERNANCE AND MINDSET CHANGE	96
7.3	PRO-POOR SERVICE DELIVERY	97
7.4	CAPACITY DEVELOPMENT THROUGH EMPOWERMENT	98
7.5	DEMAND-DRIVEN SERVICE PROVISION	99
7.6	SUSTAINABILITY OF SOCIAL CAPITAL FOR INNOVATION	100
	<b>Notes</b>	<b>103</b>
	<b>Further reading</b>	<b>107</b>
	<b>About the authors</b>	<b>117</b>



## Boxes

Box 2.1	SSA: Communities' existing wealth of social capital	27
Box 2.2	Botswana: Early experiences with FRGs	28
Box 2.3	Zambia: Village research groups in technical innovation	29
Box 2.4	Tanzania: The widespread engagement of FGs in agricultural research	29
Box 2.5	Ethiopia: Participatory technology development involving FRGS	30
Box 2.6	Eastern Africa: Working with FGs to foster partnerships	32
Box 2.7	The T&V approach to extension	36
Box 2.8	Benin: The VLPA to Extension	37
Box 3.1	Lake Zone, Tanzania: FRG numbers in relation to Zones and districts	44
Box 3.2	Tanzania Lake Zone: Location of FRGs for strategic reasons	46
Box 3.3	Lake Zone, Tanzania: Experiences with establishment of FGs	48
Box 3.4	Tanzania: Important steps in FRG establishment in existing groups	49
Box 3.5	The Tanzania Lake Zone: Evolution of activities undertaken by FRGs	50
Box 3.6	Burkina Faso: Social and producer groups	52
Box 3.7	Zambia: Advantages and disadvantages of 'open' groups	53
Box 3.8	Lake Zone, Tanzania, addressing female farmers' priorities	54
Box 3.9	Uganda: Female farmer participation in FRGs	55
Box 3.10	Zambia: Female farmer participation in FRGs	55
Box 3.11	Tanzania: Advantages and disadvantages of large groups	56
Box 3.12	Tanzania: Guidelines for establishing sub-groups or interest groups in FRGs	57
Box 4.1	Uganda: 'Spider diagram' showing relation between phase of research process and the type of researcher and farmer (FRG) participation	60
Box 4.2	Lake Zone Tanzania: Farmers as members of a participatory survey team	61
Box 4.3	Tanzania, Meatu District: Example of priority setting by Bulyashi FRG	63
Box 4.4	Tanzania: Cost of FRG research activities as presented to farmers	64
Box 4.5	Tanzania: Farmer involvement in on-station research	66
Box 4.6	Tanzania, Kagera Region: an example of adaptability analysis	67
Box 4.7	Tanzania Ukiriguru/Maruku ARCs: Farmer assessment in practice	69
Box 4.8	Tanzania Lake Zone: Open days and field days organized by FRGs	70
Box 4.9	Mali and Benin: Organization of pre-extension trials by (CMDT) CARDER	70
Box 4.10	Tanzania Lake Zone: Examples of farmer-to-farmer training	72
Box 4.11	Zambia Western Province: FRG seed production through 'Seedbanks'	73
Box 5.1	Mali: FG roles in monitoring and contracting researchBox	80
Box 5.2	Tanzania Lake Zone: Cotton multi-locational testing by FRGs	81
Box 5.3	Lake Zone, Tanzania: Bonding type PME indicators for FRG functioning and dynamism	84
Box 5.4	Tanzania, Lake Zone: PME indicators for reciprocal monitoring of the role of FGs in research and extension	85
Box 6.1	Tanzania: Example of a farmer network	91
Box 6.2	Different tools to be used for strengthening the role of farmer groups in agricultural innovation systems	92
Box 7.1	Matching economic and social priorities	98
Box 7.2	Tanzania: Sustainability factors of farmer groups	100

## **Tables**

Table 3.1	Characteristics of FRGs with different origin	47
Table 4.1	Roles of FGs in different phases of the research process	60
Table 5.1	Criteria for the M&E of FRGs	78

## **Figures**

Figure 1.1	Forms and scope of social capital	19
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# Foreword

The Royal Tropical Institute ('KIT' in Dutch) in close collaboration with research and development partners in Sub-Saharan Africa (SSA), notably in Ethiopia, Benin, Mali, Tanzania and Zambia, attempts to strengthen multi-stakeholder agricultural innovation at the local level. KIT's partners are both from the 'supply' (public and private service providers) and the 'demand' side (local government, farmer organizations and the private sector). The role of all stakeholders in innovation development at the local level requires review and adjustment. The Client-Oriented Research Management Approach (CORMA) which was spearheaded by KIT mainly focused on the links between the various actors as seen by the public sector in relation to local innovation and on the organizational strengthening of National Agricultural Research Organizations (NAROs); lessons from this experience have earlier been summarized in a reference guide (Heemskerk et al., 2003<sup>6</sup>).

Recently more emphasis has been given to the functions and responsibilities of the other actors in local innovation e.g. the roles of local governments through zonal agricultural innovation funds, of the private sector through public-private partnerships, and also to direct relationships between the private sector and farmer organizations in agricultural market chains in which co-innovation principles<sup>7</sup> are being identified. The role of farmer organizations in innovation is being analyzed at different levels e.g. at the national level in relation to lobbying and representation, at the meso-level in terms of planning and resource control, and at the local level (communities, villages, etc.) through the roles of Farmer Groups (FGs) in implementation of innovations (development) and capacity building through learning.

KIT has been involved in pioneering the Farmer Research Group (FRG) approach in many parts of SSA. The building of social capital at the community level proved to be crucial to technological innovation for the development of more productive, profitable and sustainable farming systems. This bulletin intends to document these FG experiences in agricultural innovation at the local level. It will also address the extent to which service delivery for local innovation has become more demand-driven as a result of this community-based social capital, as well as its shortcomings and constraints to further development. The effect of including poor and vulnerable farmers in the innovation development process through the group approach will be assessed. The bulletin will address the challenges to link existing local social capital into higher-level networks and federations for true empowerment in setting the

research and extension agendas. Part of the objectives of this paper is to share experiences in monitoring FRGs and to improve the system of Monitoring and Evaluation (M&E) of FRGs. Conclusions on policy issues at stake in farmer organization empowerment in innovation development will also be discussed.

The main objective of this bulletin is to help in laying a stronger foundation for the generation of truly client-driven agricultural innovation systems in SSA in order to facilitate greater efficiency and effectiveness in achieving the overarching agricultural development objectives of sustained productivity gains, improved profitability and poverty alleviation.

# Executive summary

Renewed attention exists for agricultural development in SSA as the engine for rural development. This results in part from the drive for reaching the Millennium Development Goals (MDGs) by 2015 and in particular MDG 1: a 50% reduction of (predominantly rural) poverty in SSA. It is realized that in order to achieve the MDGs, a more effective approach to innovation for agricultural development is needed. The opportunities presented through the World Trade Agreements have led to changing roles of the three main groups of actors (i.e. public, private and civil society), in agricultural service delivery. At the same time, urgent demands for technological innovation have led to important organizational and institutional innovations in the local Agricultural Knowledge and Information Systems (AKISs). Decentralization of public administration and deconcentration of service delivery have encouraged empowerment of FGs and farmer organizations in agricultural innovation. Slowly the local innovation system is shifting from a linear 'Transfer of Technology' (TOT) process (from research to extension to farmers) to a more systemic partnership-based co-innovation process. FGs and farmer organizations are to play a stronger role at different levels in the national and local innovation systems with a formalized farmer representative role at national and meso-levels.

A major challenge for formal farmer organizations remains in effectively tapping into the existing social capital for innovation as a means to involve the rural and peri-urban poor. An overview is presented of the existing social capital involved in agricultural innovation, its different dimensions, its quality, as well as options for different stakeholders to strengthen this. A wealth of experience exists with community groups and community-based FGs in agricultural development and public sector-led innovation systems. This experience with FRGs, Farmer Extension Groups (FEGs), farmer learning groups, etc. at community level has shown that working with FGs is important to ensure greater inclusiveness of the rural poor in innovation development. The social capital at micro-level represents an important building block for agricultural development through local innovation. Social capital requires enhancement in all its three dimensions namely: 'bonding' (within groups); 'bridging' (between groups); and, 'linking' (with agricultural service providers or 'ASPs').

In many SSA countries, national agricultural innovation programmes are moving into a new phase through empowered farmer organization at all levels

based on the mobilization of social capital at village level into 'Farmers Fora'. These Ward and District Fora are not only essential players in the formulation of District-level Agricultural Development Plans (DADPs), and the steering of research and extension agendas but are also gradually becoming involved in the contracting of these services through de-concentrated (zonal or district-level) innovation development funds or District budgets, or in the actual service delivery themselves.

The experience of the Royal Tropical Institute and many other agencies has resulted in valuable lessons for the follow-up on this social capital formation in the form of FGs and in particular for the bridging and linkage dimensions. The effective empowerment of FGs into strong multi-tiered farmer organizations is the only way to strengthen the leverage of farmers over the agendas of (public) Agricultural Service Providers (ASPs) such as research, extension and education.

Specific lessons can be learned from the experience with FGs in relation to strengthening the linking dimensions of social capital, particularly with ASPs in research and extension. Challenges remain with the role ASPs can play in enhancing the bonding and binding dimensions of social capital, a role typically being taken up by civil society organizations, including well-established farmer organizations.

Structural forms of social capital at different levels (micro, meso and macro) are being strengthened in many SSA sub-sector agricultural services programmes, which vary from legislation and regulations at national level, to formal representation of farmer organizations at meso-(zonal or provincial level) to establishment of farmer networks and platforms at District, Ward and Village level. This process requires careful inventories of existing social capital already involved in innovation development, as well as efforts to link this existing social capital to national farmer networks and organizations.

In addition to these developments, a major governance change at national, meso- and local level with all stakeholders will have to take place, which is a change of mindset as well as emancipation in the case of farmer organizations. Traditional and other cultural barriers must be overcome before farmers, whether small or large, whether men or women, whether people affected by the HIV/AIDS pandemic or otherwise, have a real voice in steering agricultural innovation and development towards their most urgent needs.

The restructuring of public services and the shift of agricultural innovation services from the public to the private domain has also led to a need for involvement of Farmer Groups and Organizations in agricultural service provision. Public agricultural service delivery has in fact in many cases already been reduced to just one of the sources of information for farmers. Public investment in agricultural innovation will only continue to finance (directly or indirectly) public agricultural service providers if they become effective partners of farmer organizations.

## List of acronyms

AEZ	Agro-Ecological Zones
ARTP	Agricultural Research and Training Project, Ethiopia
ASSP	Agricultural Services Support Programme, Tanzania
AKIS	Agricultural Knowledge and Information System
ARC	Agricultural Research Centre
ARD	Agricultural Research and Development
ARPT	Adaptive Research Planning Team, Zambia
ASP	Agricultural Service Provider
CAADP	Comprehensive Agricultural Development Programme
CBO	Community-Based Organizations
CDD	Community-Driven Development
CIAL	Local-level farmer research committees (in Colombia)
CORDEMA	Client-Oriented Research and Development Management Approach
CORMA	Client-Oriented Research Management Approach
CSO	Civil Society Organisation
DADPs	District Agricultural Development Plans
DRD	Department of Research and Development, Tanzania
EARO	Ethiopian Agricultural Research Organization
EO	Exclusive Organizations
EZCORE	Eastern Zone Client-Oriented Research and Extension Project, Tanzania
FEG	Farmer Extension Group
FFS	Farmer Field School
FG	Farmer Group
FO	Farmer Organization
FMFI	Farmer Managed Farmer Implemented
FRC (or 'CIAL')	Farmer Research Committee
FRG	Farmer Research Group
FSA	Farming Systems Approach
IAC	InterAcademy Council
IAR4D	Integrated Agricultural Research for Development
ICRA	International Centre for Development-Oriented Research in Agriculture
IFAD	International Fund for Agricultural Development
IFAP	International Federation of Agricultural Producers
IO	Inclusive Organizations
IPM	Integrated Pest Management

KIT	Royal Tropical Institute
M&E	Monitoring and Evaluation
MDG	Millennium Development Goals
MoU	Memorandum of Understanding
NAADS	National Agricultural Advisory Services, Uganda
NEPAD	New Partnership for African Development
NGO	Non-Governmental Organisation
PLAR	Participatory Learning and Action Research
PLWHA	People living with HIV/AIDS
PME	Participatory Monitoring and Evaluation
PRA	Participatory Rural Assessment
PRSP	Poverty Reduction Strategy Paper
PTD	Participatory Technology Development
RAAKS	Rapid Analysis of Agricultural Knowledge System
RMFI	Researcher Managed Farmer Implemented
RMRI	Researcher Managed Researcher Implemented
SSA	Sub-Saharan Africa
T&V	Training and Visit System of Agricultural Extension
TOT	Transfer of Technology (innovation system)
VEO	Village Extension Officer



# 1 Introduction

## 1.1 Rationale

Ever since the general adoption of the Farming Systems Approach (FSA) in agricultural service delivery in SSA, research and extension have been working with different types of informal and formal FGs. Experience of the International Fund for Agricultural Development (IFAD) and the International Federation of Agricultural Producers (IFAP), and other international organizations shows that the involvement of FGs (and more formal associations and organizations) and their capacity to provide effective representation and services especially for small farmers is a key factor in achieving more rapid and sound rural development (IFAD/IFAP, 1987; Rivera et al., 2000; WB, 2000). FGs at the community and village level represent the building blocks of any real farmer organizations. Empowerment of these groups into farmer organizations and platforms, which can become networks or federations to make their voices heard, is essential.

In order to understand how farmer organizations can better use the existing social capital, it is important to understand the role of different types of FGs in innovation development, as well as the different types of social capital involved. FGs have been established and emerged for a variety of reasons and with different socio-economic or political backgrounds and objectives. Groups can have different functions ranging from a production focus (management of resources, marketing) to consumption orientation (inputs, credit, household goods). However one of the important functions of FGs also concerns agricultural innovation development. Farmers have been innovating in agriculture for centuries through local traditional networks, often driven by food security, market forces and migration. Only in the last 100 years or so, has innovation development been supported through extra-community organizations. In SSA, these developments in agricultural research are even more recent and initially were based on 'Western' experiences and research styles with little attention for the traditional innovation systems. The idea that farmer organizations, networks and federations have a role in agricultural research and extension at national, meso- and local levels has only recently gained momentum (IAC, 2004; ASSP, 2004). Links to existing social capital for innovation, whether traditional or newly established, however, remain weak. This publication attempts to explore these linkages in greater depth and studies the results of FG involvement in agricultural innovation. It attempts to improve understanding of how FGs can become more effective in guiding agricultural

development in SSA and other regions such that achievement of the MDGs may be accelerated.

## 1.2 This bulletin

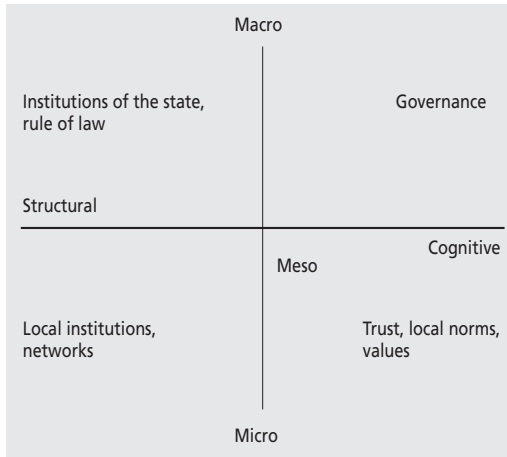
This bulletin will particularly focus on: (i) informal FGs operating in the Agricultural Knowledge and Information System<sup>8</sup> (AKIS) at the local level and opportunities for their strengthening; and, (ii) institutionalization of such groups into more formal structures. Concepts and different types of groups will be discussed in Chapter 1 and definitions used in the social capital theory and for different types of FGs in agricultural innovation will be presented, followed by a review of the main challenges of inclusion of the poor in the agricultural innovation system. In Chapter 2, an overview is given of the present situation in relation to social capital for innovation as well as the current institutional and organizational changes taking place with emphasis on the links between FGs and other actors in AKIS. Chapter 3 focuses on the functions of FGs and the challenges faced by the community-based groups, their establishment (whether based on existing groups or newly started) and membership, and internal dynamics, as well as their horizontal and vertical links with other groups and organizations. In Chapter 4, the actual current role of FGs in the different phases of innovation and development is presented. Chapter 5 highlights the existing experience with the Monitoring and Evaluation (M&E) of social capital for innovation and the costs of FRG involvement assessed; Participatory Rural Assessment (PRA) tools for M&E are presented and challenges outlined. Chapter 6 reviews the requirements for successful FG involvement in agricultural innovation and emphasizes the need for a proper balance between the three core types of social capital (bonding, bridging and linking); the options for enhancing the role of community-based social capital are explored, Chapter 7 presents the required policy and governance changes to achieve a situation of true empowerment of FGs and organizations in the agricultural innovation system. A list of references used is included for further reading, and Box 6.2 refers to special tools for strengthening community-based social capital.

## 1.3 Concepts

*Social capital* refers to the value of connectedness and trust between people and as such to one of the five key assets (human, social, physical, financial and natural) for sustainable livelihoods and is defined as ‘the institutions, relationships, attitudes and values that govern interactions among people and contribute to economic and social development’ (Grootaert et al., 2002). Social capital can occur in different forms and scopes. Uphoff (2000) distinguishes two main forms i.e. ‘structural’ and ‘cognitive’ social capital. The former comprises the objectively and externally observable social structures such as networks, associations, institutions, rules and procedures. The latter is represented by the more subjective and intangible elements such as attitudes, norms of behaviour, shared values and reciprocity and trust, as well as governance. The scope of social capital can be at micro- or local level (horizontal networks of individuals and households), meso-level (both horizontal and vertical networks, fora,

platforms and regional groups and networks) and at macro-level (e.g. national farmer organizations). There often is a continuum of social capital from micro to macro in part because there are important effects of complementarity and substitution (Figure 1.1). The emphasis in this bulletin will be on the structural forms of micro- and meso-level of social capital (Uphoff, 2000; Grootaert et al., 2002; Pretty, 2003) and on the need for attention for cognitive forms. Social capital enables collective action, in this case in agricultural innovation. The important features of social capital are: relations of trust, reciprocity and exchanges, common rules, norms and actions and, networks and groups or connectedness (Pretty, 2003). Connectedness can be considered from different angles: ‘bonding’ (within groups), ‘bridging’ (between groups) and ‘linking’ types i.e. with agencies concerned with Agricultural Research and Development (ARD). *Agricultural innovations* are activities and processes associated with the generation, production, distribution, adaptation, adoption and widespread use of new technical, institutional, organizational or managerial knowledge in the agricultural sector (Pretty, 2003; Chema et al., 2003). Agricultural innovation goes beyond research and extension activities and requires many different activities for implementation; in this bulletin the emphasis will however, be on agricultural research and extension. The agricultural innovation concept will be used in the context of the overall AKIS (see above).

**Figure 1.1 Forms and scope of social capital**



Source: Grootaert and van Bastelaer, 2004.

*Farmer or producer organizations* are membership-based; they manage relations with other organizations that are active in the rural and agricultural sectors and can take the form of multi-tiered organizations (micro, meso and macro).

FGs are more informal (without formal membership) and operating mainly at the community level. FGs can either be based on existing groups or specifically set up. FGs involved in the innovation process mainly focus on exchanging

knowledge and information between members of their community and with organizations active in ARD. Different farmer groups can be distinguished in relation to agricultural innovation. *Farmer Research Groups* (FRGs) are working with public (or private) research, *Farmer Extension Groups* (FEGs) are part of the public (or sometimes private) agricultural extension systems and *Farmer Field Schools* (FFS) focus on joint learning with agricultural research, extension and/or education organizations. Groups that focus on innovation based on farmers' indigenous knowledge have been referred to as *farmer innovation groups* (Reij and Waters-Bayer, 2001). Apart from the earlier mentioned community-based groups involved in agricultural innovation, more formal groups exist at the community level with clear economic objectives e.g. 'farmer associations' and 'farmer cooperatives' (similar to associations but with a discredited name especially in SSA). These cooperatives and associations have a varying level of specific targets, joint assets and have a basis in collaboration (mainly joint marketing). These different forms of groups, associations and cooperatives all relate to community members and can network or are federated into farmer organizations at higher levels.

## 1.4 Farmer participation in agricultural innovation development

### 1.4.1 WHY ENHANCING FARMER PARTICIPATION IS IMPORTANT

With the change from the linear TOT model (research-extension-farmers) to the social organization of innovation networks came the realization that an effective agricultural innovation system requires a multitude of organizational and institutional changes. Some of these relate to the participation and empowerment of farmers in this new approach based on their own knowledge and information system (Engel, 1997). Agricultural research practitioners now accept that communities have considerable capacity to plan and implement programmes, which has often been cloaked by a lack of empowerment. Social capital is therefore considered a much-neglected asset, the enhancement of which can yield high economic dividends (WB, 2001).

In order to capitalize on this asset, many different forms of participatory approaches have developed, all having the common aim of involving farmers in the process of research and extension. The nature or type of participation, however, may vary from one approach to another. Types of participation of farmers in agricultural innovation have been categorized into the following five groups (Sanginga et al., 2001):

- The 'informative/contractual' type: farmers are just being kept informed by researchers and extensionists, while farmers' land and services are contracted (borrowed or hired) to provide agro-ecologically diverse conditions for local verification and if necessary adaptation of technologies developed on research stations.
- The 'consultative' type: researchers consult farmers, generally progressing from each of the stages of research (diagnosis, design, technology development, testing, verification and diffusion), and then make decisions. Consultation often is on a group basis.
- The 'collaborative' type: this involves continuous interaction in all phases of the research process. Farmers are fully involved from the start.

- The 'collegial' type: researchers actively encourage the informal research and development systems in rural areas. Researchers facilitate farmers' experimentation. Farmers have influence over the joint programme also in terms of resource allocation.
- The 'autonomous mobilization' type: farmers rely on their own experimentation and there is no organized communication of farmer innovators with researchers.

The first two types are often nominally participatory, practically employing a transfer of technology model with top-down characteristics. The last three are forms of farmer participatory research, the last two showing a high level of emancipation and empowerment; they are part of the innovation system or network. The challenge is to broaden farmer participatory research from the consultative and collaborative type to the collegial type (Sanginga et al., 2001).

#### 1.4.2 WHY FOCUSING ON FGs

Institutionalizing farmer participatory research requires developing and strengthening a community-based adaptive research capacity which can be achieved through work with groups of farmers rather than individuals and linking these up with research and extension agencies (Ashby and Sperling, 1994). Working with groups is a more decentralized process and less top-down than working with individuals (Sanginga et al., 2001). A group or collective action approach has proved to be an effective way of enhancing empowerment of farmers in the innovation system. Collective action may be aimed at different purposes and functions (generating, spreading, sharing, utilizing and applying knowledge and information) and different types of groups have developed in farmer-led research and extension (Knox et al., 2004):

- FFSs: intensive field-based learning initially in Integrated Pest Management (IPM) essential for safely reducing pest infestation;
- Local agricultural research committees (called 'CIALs' in Colombia): provide farmer-led research on crop technologies to communities;
- FRGs: more members than CIALs and acting for themselves; and,
- Farmer innovation approaches: farmer innovators to promote indigenous knowledge, no new technologies introduced by researchers: collective action during dissemination.

Important FG functions are: interfacing between users and ASPs, representing the user constituency, and pro-active roles in the generation and extension of agricultural technologies (Bebbington et al., 1994). Technology development and dissemination has been found to improve through FRGs and groups contributed to greater diffusion of information (Andima et al., 2002). Working with FRGs is necessary in order to overcome reluctance to share information. Groups enhance dialogue, facilitate the organization of field days, promote efficient use of resources, improve farmers' collective confidence, ensure that their needs are taken into account, and the reaching of consensus positions. FGs provide opportunity to share ideas and labour and the exchange of information and thus create a multiplier effect, which facilitates the spread of relevant technologies (Mavedzenge Blasio et al., 1999). In this context Chema et al. (2003) refer to

four types of learning and knowledge accumulation, which can contribute to innovation development:

- Learning by doing as a joint outcome of other activities.
- Learning by using a product leading to feedback.
- Learning by interacting resulting from links with other organizations.
- Learning through an internal discovery process.

All four learning processes are important for all actors in the AKIS, but are particularly enhanced in mixed (social and productive) farmer groups compared to individual farmers. Effective producer organizations can also add to the social capital of a community enhancing the likelihood of effective cooperation in areas such as natural resource management (IAC, 2004).

## **1.5 Diversity of farmer social capital in innovation**

### **1.5.1 BACKGROUND**

Farmers have been working in groups ever since farming started, varying from cooperation in harvesting and threshing, joint storage of produce and collaborative grazing and management of animals. Under the influence of outside forces such as markets, input supply and knowledge and information development, farmers have organized in less informal groups, either as specific FGs or as community groups with a wider agenda. FGs have been given different names in relation to the various functions in the AKIS. Many different formal and informal FGs, associations and organizations exist (Heemskerk and Wennink, 2003). Rondot (2004) distinguishes three major types of FGs: (i) 'social' FGs that produce purely public goods; (ii) 'productive' FGs that produce private goods; and (iii) 'mixed' FGs combining both activities. FGs involved in innovation processes are mostly mixed, ranging from informal to formal, but they have in common that they generally are the result of interventions of (public) service providers.

FGs can be newly established for innovation purposes, or can be existing groups, which have either been approached for research and extension activities or have taken the initiative to request research and extension services. Various types of mixed FGs have been distinguished: those that are involved in generation and sharing of innovation (e.g. conducting on-farm research activities such as FRGs); those participating in the sharing and diffusion (e.g. sharing information on agricultural technology, final testing and dissemination of a promising technology during the pre-extension phase (e.g. extension groups in the modified Training and Visit (T&V) system referred to as 'Contact Farmer Groups' (sharing), and FEGs (for testing and diffusion), and those engaged in sharing and learning (such as FFSSs).

### **1.5.2 RESEARCH GROUPS**

A research function of a group of farmers can be both a single purpose of the group mostly stimulated by Agricultural Research Centres (ARCs) or programmes, or be a side activity related to a main function of a group (e.g. purchase of inputs or marketing produce). Groups such as 'Village Research Groups' can have a research function within communities (Sikana et al., 1989)

or be unrelated to the community (part of the community or across communities) e.g. FRGs. Sometimes the emphasis is on the service function to the group and a small group of farmers is actively involved in research services on behalf of other farmers e.g. with 'Farmer Research Committees' or 'CIALs' in Spanish (Ashby et al., 2000)<sup>9</sup>. FGs in which farmers' experimentation and innovation are strongly based on farmer's own knowledge are referred to as 'farmer innovation groups' (Reij and Waters-Bayer, 2001).

### 1.5.3 EXTENSION GROUPS

In relation to agricultural extension, different group concepts have developed. In the T&V system, 'contact groups' are groups of farmers providing a platform for interaction with public extension staff. In case farmers are playing a more active extension service function (farmer-to farmer extension), groups are referred to as FEGs; they play an important role in the dissemination of technology. FEG members assess acceptability of technologies across a representative choice of farmers. Consequently, the FEG should be composed of various farmer categories; the number of its members can be larger than of an FRG because of the less intensive monitoring required.

### 1.5.4 LEARNING GROUPS

FFSs are special groups in which joint learning (with extension and research staff) on agricultural innovation is the main focus. The FFS approach is an effective blend of participatory and experiential learning techniques (Bruin et al., 2001; Owens and Simpson, 2002). FFSs were originally developed for complicated farm management topics such as Integrated Pest Management, Integrated Soil Fertility Management, but have now been mainstreamed in many action- and discovery-based farmer-learning programmes. FFSs are oriented towards providing agro-ecological education through participatory learning and have been linked to interdisciplinary research approaches such as attempted through the 'convergence of science' program <sup>10</sup>.

## 1.6 Challenges

FGs have become part and parcel of agricultural innovation systems, particularly in terms of technical innovation; institutional, organizational and managerial innovation has just started. Initially farmer-focused research and extension approaches such as the FSA, Participatory Technology Development (PTD), etc. struggled with different methods for the upgrading of participation from the consultative to eventually the collegial mode. In the absence of decentralized public administration, deconcentrated research and extension organizations and strong farmer organizations, researcher induced farmer research groups appeared to be the only way out (KIT, 1997). Upgrading from the consultative to the collaborative mode was made possible with the introduction of FRGs. A next step to the collegial mode in which farmers would be truly empowered and acquire lobbying functions for resource allocation purposes has yet to be made; this will require institutional innovation beyond the FRG concept. As discussed by Chambers (1983), obstacles to upgrading might be political/economical (bias of research) and cultural (attitude of

researchers). In addition to this there is the common understanding element: empowered stakeholders who are partners must understand each other.

The main challenges in relation to making farmers full partners in the innovation system are threefold:

- How can existing social capital at the micro-level be strengthened and its use in agricultural innovation for pro-poor development be enhanced?
- How can community-based farmer groups be truly empowered through up-scaling into broader farmer organizations, networks or federations (broader in the sense of themes, geographical or social coverage, etc.)?
- How can farmer knowledge and farmer innovation systems be scaled up into the wider agricultural public-private innovation system?

These three challenges relate to the three types of social capital, which are at stake: bonding, bridging and linking social capital. As outlined below, with respect to each, there is a wide range of important questions to be answered.

*(i) Bonding social capital*

Can community-based FGs get involved in generic agricultural innovation development, avoiding exclusion of the poor? How can these groups deal with group composition and dynamics in terms of informality and flux in membership, as well as internal conflicts? What is the ideal group size and how can disadvantaged groups be optimally involved? Can FGs focus on innovation (research and extension) without other (more commercial) major functions (Drinkwater, 1994)?

*(ii) Bridging social capital*

What is necessary for FGs to link up at meso- and national level into federations and networks and multi-tiered farmer organizations without losing the group level strengths of inclusion and pro-poor orientation? Can national farmer organizations involved in innovation be truly linked to community-based social capital? What is optimal geographic coverage for effectively influencing and controlling research and extension service provision? How can structural social capital as well as the cognitive social capital across groups be strengthened? How to strengthen the role of FRGs/FFSs at higher system level (Röling, 2002)? Important issues at stake in relation to up-scaling are representation and upward and downward accountability in farmer organizations.

*(iii) Linking social capital*

If farmer-led agricultural innovation is to be enhanced then policy issues at national level and organizational and institutional issues have to be addressed at meso-level.

Can farmer organizations be truly empowered and become full partners in all phases of the innovation development process? Can community-based groups? When FGs get involved in research and extension or are established for this purpose, how can these groups and organizations remain independent from public research, while being trained and supported by public actors? How can the role of farmer organizations in the innovation system as well as the scaling-



up of farmer's knowledge (both vertically and horizontally) be monitored? Are only farmers involved in the development of economic chains demanding innovation development support? Can FGs contribute to an enhanced focus by research and extension providers on the rural poor and hence directly contribute to the reduction of rural poverty (MDG 1)? Can FGs be effective partners in innovation considering problems such as interdisciplinarity? How can FGs effectively deal with different research and extension disciplines or in a wider context how can the divide of cognitive values be overcome? What are the governance issues to be addressed?



## 2 FGs in the agricultural innovation system

### 2.1 Introduction

One of the key forms of social capital in innovation development is the linking element. This refers to the ability of social groups to act in their own collective interest. The institutional view on social capital suggests that political, legal, and institutional environments are the main determinants of the strength of communities and networks (Grootaert et al., 2002). FGs can only effectively link up to the national and local innovation system if there is an enabling environment of good governance, legislation, regulations and institutional support. In the recent past, the initiative for linking up with FGs for innovation has come from public agricultural research and extension. Increasingly however, the initiative is coming from FGs and other local-level organizations themselves looking for support for their innovation systems. The capacity of these groups and organizations has often been developed through facilitation by civil society and increasingly by the private sector through farmer and producer associations. The synergy concept aims to integrate both micro-, meso- and macro-levels as well as both structural and cognitive forms of social capital (see Figure 1.1), emphasizing the fact that the public and private sectors as well as communities/civil society have no access on their own to the resources to develop innovation for sustainable and equitable growth (Grootaert et al., 2002). An enormous wealth of social capital for innovation, for learning-by-doing exists out there in rural space, waiting to be mobilized into the formal agricultural innovation systems and already raising a voice (Collion, 2004; Rondot, 2004; Place et al., 2002). Although no inventories are available, some studies are leading to believe that at least 30-60% of farming households are members of community-based groups (Box 2.1). An historical overview of the link with social capital for innovation provides an introduction to the rapidly changing institutional context requiring organizational and institutional innovation for partners in AKIS.

#### **Box 2.1 SSA: Communities' existing wealth of social capital**

The institutional wealth of FGs is expressed by the function and types of FGs and the type of household membership in these groups. The number of villages with groups increased rapidly in the last 20 years from 9% to 65% in Senegal (Collion, 2004). Almost every village in Burkina Faso has at least one FG and 61% of rural households participate in an FG (Rondot, 2004). In the Mozambique Poverty Reduction Strategy Paper (PRSP) background material, a group of NGOs concluded that one in every three households participated in some sort of FG (in: Heemskerk et al., 2004).

## 2.2 Historical overview

Different forms of social capital, initially with an emphasis on the structural forms have played a role in agricultural innovation in SSA in recent decennia. The TOT model was dominant in the 1970s and 1980s. The poor adoption of technologies by small-scale farmers was then attributed primarily to weak extension systems. This resulted in the evolution of T&V, which was basically a management model for the TOT approach, although T&V centred on TOT with very little attention for institutional and organizational conditions for technology adoption, it later adapted from a contact farmer focus to a contact group concept. The latter change allowed to reach many more farmers but was still considered highly top-down, although it increasingly had a built-in diagnostic element (see also Box 2.7).

### Box 2.2 Botswana: Early experiences with FRGs

In the late eighties, researchers and extensionists started to work with researcher-oriented and extension-oriented FGs in the Mahalapye and Francistown areas of Botswana. In the context of on-farm research an FRG was conceived as a group of farmers who come together to test and adapt new agricultural technology options, to discuss the results of those tests and to identify on-farm needs for other technology options. The FGs had three main purposes: firstly to expand the range of technologies being examined in an on-farm research programme; secondly to include farmers in the technology development process; and, thirdly to create a forum for direct interaction between farmers, researchers and extension personnel (Worman et al., 1990). In the Francistown area in the 88/89 season, FGs implemented over 140 on-farm comparisons with nine different technology options. Groups in Botswana met throughout the season with researchers and extension staff on a monthly basis. The main perceived benefits were: greater efficiency of the on-farm research programme; an expanded range of technologies tested; enhancement of research-extension liaison; immediate feedback on the appropriateness of new technology from group dynamics; development of farmers' own production packages; farmers becoming involved in teaching other farmers; and, a flexible response to on-station research encouraged by field testing of new technologies (Worman et al., 1990).

In the eighties the FSA and the inherent need for on-farm experimentation, verification and demonstration led to a move from the individual contact approach in research and extension to the group approach mainly for efficiency reasons. This strong need to work with farmer organizations at community level also resulted from the absence of professional farmer organizations influencing research and extension (Kleene et al., 1989). Towards the end of the eighties, many experiences with community-based groups working with research and extension started to emerge (see Boxes 2.2, 2.3, 2.4 and 2.5).

Farmer participatory research emerged as a response to the generation of station-based, sometimes inappropriate technology by scientists whose work was based on the TOT model. Those working in this field began to develop a series of new research approaches resulting in technologies beneficial to, and therefore adopted by small-scale farmers. The FSA to research and extension arose as a response to diminish constraints to the adoption of technologies. The

**Box 2.3 Zambia: Village research groups in technical innovation**

The provincial Adaptive Research Planning Teams (ARPTs or 'Farming Systems Teams') introduced the village research group concept in 1989 in Northern Province (Sikana, 1989). The emphasis shifted from the consultative mode of participation to a partnership and collaborative mode, although the establishment of FRGs as such was no guarantee for this shift. ARPTs also identified lobbying and advocacy as major strategic areas and hence the establishment of FRGs as a step towards empowerment of farmers in the innovation system. By 1994 almost all provincial research teams had established a mode of working with formal and informal groups of farmers (Drinkwater et al., 1994)

basic features of the FSA were in addition to the holistic systems view, farmer participation and a multidisciplinary approach in problem diagnosis and development of technologies. Major limitations encountered by the FSA to research and extension were:

- Farmers were not active partners in research; they were initially excluded from the planning M&E processes and only subject of diagnosis or reduced to labourers during implementation.
- Scientists had problems of working in multidisciplinary teams.
- Most FSA projects/programmes did not focus specifically on helping small-scale, resource-poor farmers.

**Box 2.4 Tanzania: The widespread engagement of FGs in agricultural research**

Tanzania has a rich diversity of FGs, which have been in existence across the country for many years. FGs attempt to improve access to technology (for example through experiential learning such as in participatory FRGs and FFSs, access funding (e.g. credit and saving groups), for crop processing and marketing (commodity groups), for livestock production (dairy or poultry groups), for gender-based activities, or for support to members in case of need (indigenous/traditional, religious and cultural based groups).

The Tanzania Department of Research and Development (DRD) Lake Zone Agricultural Research Institute with its research mandate for Mwanza, Shinyanga, Mara and Kagera Regions operates in all the main Farming System Zones of the Lake Zone. In each of these Farming System Zones (i.e. agro-ecological zones in which a particular farming system is dominant), representative villages have been selected in which FRGs have been established. FRGs are also active in most other Districts with a high quality productive resource base in which the necessary follow-up is facilitated in FEGs (although not in all villages) of the findings of the FRG. The number of FRGs in the Lake Zone is presently limited to twelve (six in the cotton-based farming system zones and six in the coffee-based zones). Given the financial and human resources constraints, the number of FRGs has to be limited in order to be able to permit maintaining strong partnerships between farmers and researchers (Heemskerk et al., 2003).

The objectives of the Eastern Zone Client-Oriented Research and Extension Project (EZCORE) are among others to enable the demand side for research (District Councils, NGOs, FGs) to formulate their research problems based on a needs assessment, to be able to procure services from research organizations and to implement the findings. During phase I (1999-2002), EZCORE was working with FGs in 15 villages in 4 Districts, with an expansion to 30 villages in Phase II (2003-2005). Major constraints so far have been: (i) researchers are stronger in tackling production oriented constraints than in addressing other issues; (ii) researchers are locked-up in their professional interests and research programmes, (iii) VEOs are generally technically weak, and (iv) districts are finding the project's procedures difficult to follow (ASSP, 2004).

### Box 2.5 Ethiopia: Participatory technology development involving FRGs

Researchers of some commodity research programmes<sup>12</sup> of the Ethiopian Agricultural Research Organization (EARO) were exposed to more client-oriented research approaches applied in Tanzania and Kenya as well as through 'Agricultural Research for Development' (AR4D) training by the International Centre for Development-Oriented Research in Agriculture or 'ICRA' (Dubale et al., 2001). As part of this approach, the programmes started emphasizing farmer participatory research through FRGs. Also, strong alliances with farmers made research more client-oriented. The FRGs were initially limited to the commodity programmes in a few research centres, but the concept quickly expanded to other research programmes and research centres of both the federal (EARO) and regional research organizations. The approach was further facilitated through the Agricultural Research and Training Project (ARTP) and supported by the International Fund for Agricultural Development (IFAD) and the World Bank. FRGs are mainly commodity-based although some are thematic (such as in crop breeding, soil fertility, and vertisol management). In 2003, a total of 67 FRGs were established with an average membership of 18, largely men but including some women. At the same time farmers (some being FRG members) are represented in the Research Centre based Research Extension Advisory Committees (REACs). On average, three farmers participate in REAC meetings in which they represent 1/6 of the total number of participants. Many groups are involved in follow-up activities such as seed production e.g. onion seed at Melkassa ARC, seed potatoes at Holetta ARC and lentil seed at Debre Zeit ARC (Fasil Kelemework, 2003).

- Scientists often lacked skills for effectively communicating with and learning from farmers.

In the 1990s, some researchers came to realize that it was not enough to carefully study the farmers and their farming systems (*cf.* FSA), but that farmers' indigenous knowledge had to be brought into the system more directly. The innovation system changed from the linear TOT to a 'systemic innovation network' (Engel, 1997). This marked the emergence and gradual evolution of farmer participatory research, an approach aimed at creation of appropriate technology based on the demand of the clients, based on farmers' own knowledge. Client-Oriented Research (COR) was designed to promote a community-based research approach through involving organized farmer groups at village level in experimentation, development and extension of technologies. CORMA emphasized change management in local agricultural research centres in order to allow FGs and organizations to become real partners.<sup>11</sup> Since then many of these approaches were also applied in countries such as Uganda (Sanginga et al., 2001), Kenya (Rees et al., 2000; Place et al., 2002) and several countries in West Africa (Boyd et al., 1999).

FG experiences are often linked to the public sector, but in relation to production (community-based associations and cooperatives) and inputs (credit and savings associations) groups are also relating to private service delivery for innovation.

External agencies find it easier to form groups of subsistence cultivators than to guarantee that they will be self-sustaining<sup>13</sup>. In a number of cases such as in Uganda<sup>14</sup> the administration of privatized extension is linked to decentralized government structures (that provide the funds and liaise with FGs). Although a

structure of FGs and forums has been put in place, much will depend on the ability of the majority of resource-poor farmers to make their voices heard and to develop the capacity to evaluate the services provided to them. As many governments in SSA are involved in decentralization, this can provide an impetus for private extension, but if the decentralization process itself is badly managed ('decentralization by default'), then prospects are not good. In addition, there are many past examples of farmer organizations that get politically involved and do not really serve the needs of their members (Agren, 2003).

### 2.3 Changing context

Particularly as a result of (agricultural) sector-wide approaches and decentralization of the public administration system, emphasis in rural service delivery shifted in the nineties to deconcentration<sup>15</sup> and client-orientation of agricultural services such as research and extension. Farmers were no longer seen only as the 'target group' but also as partners in planning, decision-making, resource allocation and importantly, M&E. Farmer groups until then were mainly involved in the planning and implementation of research and extension activities but the newly solicited roles in research and extension administration required more formal farmer organizations and the issue of representation emerged. At the same time, the effects of liberalization of marketing and input supply as well as the globalization of markets enhanced the role of the private sector in agricultural development, encouraging farmers to organize themselves in larger blocks with stronger negotiating powers. While FGs at the grassroots were exploring networks and federations to exert their influence on agricultural services, farmer organizations at the national level or commodity-based federations were challenged to create a stronger grassroots basis. The drive towards decentralization in many countries and the subsequent deconcentration of agricultural services further strengthened this need.

New roles for the national and local levels of government emerged in relation to the empowerment of farmer organizations. The opening-up of markets in the context of the WTO agreements provides new economic opportunities for federations of farmer groups, while the reduction of the role of the public sector (Governments and their bilateral and multilateral partners) has led to tremendous opportunities for farmer networks and federations. At the same time, these informal groups, which are in the process of establishing more formal networks, require a new legislative framework for their development (IFAP/IFAD, 1987). Only then can federated FGs become true partners in agricultural development.

In the new millennium, agriculture is once again seen as a key sector in economic and rural development. The New Partnership for African Development (NEPAD) has launched an agricultural development strategy with ample attention for agricultural innovation as a driving force (Jones and von Kaufmann, 2004)<sup>16</sup>.

### Box 2.6 Eastern Africa: Working with FGs to foster partnerships

Working with FGs strengthens the involvement of farmers by:

- Creating an opportunity for a continuing dialogue between farmers, researchers and extension staff.
- Encouraging increased farmer-to-farmer interaction in technology development and dissemination.

This is particularly essential in conducting research on and implementing technologies/management practices that go beyond the individual farm level. For example, research on and management of common pool resources such as forests and natural grassland, requires an FG approach in addition to a multi-stakeholder approach and needs strong partnerships to solve and implement such complex issues involving farmer communities as well as other stakeholders. FGs are also needed to enhance efficiency, as research products are scarce public goods. Real partnerships cannot be developed when large inequalities exist between partners in decision-making capacity and power. Therefore, although rarely an explicit objective, FGs are also an important means to foster partnerships and a group approach to (KIT, 1997):

- Improve farmers' capacity to analyze their problems and needs, thereby increasing their self-awareness and subsequently their ability to influence research and extension agendas through more intensive exchange of information between community members.
- Facilitate farmer empowerment, thereby increasing their influence on other stakeholders.

Agricultural innovation can and has to play a major role in the enhancement of this sector. Agricultural innovation is the result of close interaction between three main functions: planning for, financing of, and implementation of innovation. Three main groups of actors are responsible for the innovation process: Public sector actors, private sector actors and civil society at large. Innovation development is a difficult and on-going process with different interests and rationales, different institutional set-ups and different organizational capacities, requiring organizational and institutional innovation, as prerequisites to achieve technological innovation. The enhanced role of FGs and organizations as part of the civil society group of actors is one of these institutional and organizational innovations.

## 2.4 Organizational development

Farmers are increasingly involved in agricultural research and extension. From mere recipients they are now often regarded as partners in the technology process. In agricultural research, the relationship between researchers and farmers has gradually changed from one in which farmers merely carry out trials, to one in which they become genuine partners in problem definition, planning, and implementation/evaluation.<sup>17</sup> Considerable differences still exist between (and within!) countries in SSA in the extent of farmer involvement in the technology innovation system. Whereas in some cases their role is largely limited to trial implementation, in others a more collaborative type of relationship has developed in which interaction between researchers and farmers is more dynamic and diverse, involving farmers in data collection, trial evaluation and identification of research topics. The changing roles that researchers, farmers and other partners have in technology development has consequences for the design, implementation and evaluation of experiments<sup>18</sup>, and requires different ways of working together.



Strong involvement of farmers is not easily achieved when working with individuals; FGs and organizations are therefore an essential part of innovation development platforms. A group approach fulfils a number of conditions, which are essential in fostering genuine partnerships (see Box 2.6). An FG approach generally has the following structure and characteristics (IFAP, 1987):

- An organizational structure with links both horizontally (between groups) and vertically (with higher level farmer organizations), respecting customs and traditions and based on the voluntary right of association.
- Representing farmers and providing services to the members.
- Being an organization with its own funds and adequate, competent staff (at higher level).

IAC (2004) concludes that farmer organizations can only act as full partners in the multi-stakeholder innovation platforms if they are voluntarily organized, economically viable, self-sustaining, self-governed, transparent and responsive to community and producer-based groups (downward accountability).

The ability of farmers' organizations to ensure that they achieve their intended results is dependent on the demands of its members and the organizational structure in which it operates. The ability to exert a strong demand-pull on service providers is likely to be a crucial determinant of the effectiveness of research and extension partnerships (Boyd et al., 1999). FRGs operate on a permanent basis and are self-sustaining. The basic philosophy of the approach is (Sikana, 1989; Kalonge et al., 1995; Steinmaier, 2001):

- to empower farmers to analyze their farming situation;
- to identify and prioritize farmers' agricultural problems;
- to seek solutions by integrating farmers' indigenous knowledge and skills into the generation, testing and adaptation of technology in order for technology development to become a shared concern; and,
- to formulate and present demands to agricultural extension and research institutions and exert pressure on service providers to deliver these efficiently.

But in addition to these roles of FGs, other objectives of the service providers are part of this approach such as the need to:

- strengthen equity and continuity of access to service providers;
- enhance the efficiency of resource use (multidisciplinarity, human, infrastructure, etc.) of service providers such as ARCs.

An FRG in Zambia acted as an umbrella group at local level and consisted of farmer representatives of different community groups of the respective areas. FRGs thus served as a platform where extension officers, farmers and researchers meet to develop and test relevant technologies with farmers who are operating under different conditions. To ensure that this platform functions, it was important to have a group of the same farmers over several years so that all parties involved (research, extension and farmers) have an opportunity to get used to each other, including to each other's language and habits. The FRGs were also meant to be a way for empowering farmers: through gaining knowledge and increasing acquaintance with research results, they should be

able to influence the research agenda setting more effectively and thereby promote their interests and identify constraints in agricultural production. Through FRGs, research could become more demand-driven and client-oriented, although this will require further development of the organizational structure at higher level with strong vertical interaction.

FEGs provide a tool to improve the cost efficiency of collaboration of researchers, farmers and extension workers as a result of logistical reasons (e.g. joint meetings, joint evaluations). In the context of privatization and liberalization trends in agriculture, farmers are forced to work together in order to cope with these developments and jointly procure resources such as means of production, inputs and knowledge. The emphasis on decentralization and downward accountability in many SSA countries gives more opportunities for Farmer and Village Groups to exert influence over District Development Plans and public research and extension priority setting, as long as FGs are capacitated to address this more empowered role.

## **2.5 Institutional development**

### **2.5.1 INSTITUTIONAL FRAMEWORK**

Three types of institutional agents exist in agricultural development, i.e. firstly the public sector agents such as Local governments, sectoral departments, secondly the private sector agents, such as corporate enterprises, producer organizations, farmer groups, farmer and trade organizations, and thirdly community-based organizations with FGs, village development committees, watershed management organizations, water user associations, etc. These three kinds of groups provide the institutional framework at local level, which in the context of agricultural development is referred to as AKIS. The role of each actor in the AKIS and the interactions between stakeholders are subject to continuous development and need constant analysis and monitoring (Engel, 1997). Decentralization, deconcentration, privatization and farmer empowerment processes, which are on-going in most countries in SSA, lead to drastic changes in the AKIS; for example, providing funds directly to the producers can change the entire incentive and accountability structure, leading to downward accountability to poor and marginalized individuals and groups, who can be provided with real buying power.

These ongoing processes in the agricultural sector all aim at strengthening the demand for agricultural services in order to make services more client-oriented. In the absence of sustained political and social pressure from and on behalf of small-scale producers, agricultural development institutions are unlikely to become more accountable or demand-responsive (Bebbington et al., 1994). Successful contracting of research and extension services requires among other things an effective demand for these services, which is usually weaker than the supply side. Farmer organizations are critical to the strengthening of the demand for technical services because they provide economies of scale and a mechanism for promoting small-farmer interests. In order to be able to do this, farmer organizations need technical competence and

hence farmer education and training are crucial to enhance agricultural development over the long term (Rivera and Alex, 2000).

### 2.5.2 AGRICULTURAL RESEARCH CENTRES

Initially ARCs started working with FGs for reasons of efficiency and effectiveness and hence the main functions of FRGs as viewed by researchers were twofold:

- To provide a platform where farmers, researchers and extension workers exchange ideas, experiences, discuss problems and identify solutions; in other words, farmers are conceived as 'partners in research'.
- To facilitate technology up-scaling and dissemination.

The FRG concept became part of the local innovation system in which farmers, district staff, village extension officers and researchers were brought together. In both referred institutional scenarios, with emphasis on innovation and dissemination respectively, the community-based groups are engaged in research activities in collaboration with research and development organizations. ARCs can maintain a formal working relationship with the FGs, making them part of the formal research process. These links can be established through formal 'contracts' or more informal 'Memoranda of Understanding' through which each actor knows his/her tasks and roles. For that purpose, Terms of Reference (TORs) for the tasks of extension, research and farmer groups were established. Research is expected to provide input into the partnership with farmers in terms of technical leadership, small quantities of experimental materials, and field assistants (directly or through extension) who provide technical training and facilitate the learning process e.g. for data collection.

A need exists also for facilitation on group dynamics and supporting FRGs in terms of organizational capacity. Some of these roles can be shifted to farmers (Sanginga et al., 2001). It is important to note (see below) that FRGs and FEGs in addition to the relationships with the ARC also link with other actors. Since a variety of researchers and disciplines were involved in working with FGs, research needed to appoint a contact person for the FRG, who would act as coordinator of communication to and from the FRG, to respond in case of problems or new FRG requests, as well as to ensure coordination and to oversee the M&E of group functioning. Coordinators would also keep track of the information generated: FRG minutes, researchers' trip reports, etc. It should also be stressed that farmers of research and extension groups are certainly not the only (organized) farmers in experimentation. Farmers themselves are continuously trying-out new practices and technologies, some intensively, others to a minor degree, and it is generally recognized that ARCs should use the ideas and experiences of 'experimenting farmers' as much as possible (Reij and Waters-Bayer, 2001).

### 2.5.3 AGRICULTURAL EXTENSION

Until now, new technologies are usually disseminated by public extension services. Quite often the impact of agricultural extension is not as tangible as expected. Some of the reasons are the way in which the technology is

disseminated (such as ‘blanket’, ‘top-down’ and relatively ‘high input’), and the conditions under which the technology was generated (rich-farmer-biased, little farmer participation hence lack of ownership). Another reason for lower than expected adoption is that the conditions under which on-farm experiments have been conducted often differed too much from the conditions under which the technology would have to be broadly adopted. Such differences may include:

- research villages not sufficiently covering the socio-economic and bio-physical variations of the ARC mandate area;
- intensive working relationships between researchers, extension workers and farmers in research villages compared to the rather extensive contacts between inadequately trained extension workers and farmers during technology transfer;
- free-of-charge provision of (external) inputs in on-farm trials has given researchers an erroneous impression of farmers’ interest in and evaluation of the new technology;
- the small size of experiments conducted often does not show the full implications for the production system when applied on an operational scale;
- institutional and market constraints sometimes not being adequately considered during on-farm testing.

As illustrated in earlier sections, research approaches and methodologies are of necessity changing towards more, participatory and group-approaches. Similar developments are taking place in agricultural extension. Extension services in SSA have been criticized for their inefficiency and ineffectiveness in responding to the diverse and complex needs of farmers. The rather top-down T&V approach heavily sponsored by the World Bank in the eighties and early nineties (Box 2.7) has been widely replaced by the more participatory VLPA

**Box 2.7      The T&V approach to extension**

For a few decades, public extension in Africa has been dominated by the T&V approach (Benor and Baxtor, 1984). This system was based on a linear ‘TOT’ approach. Extension agents mainly acted as ‘teachers’ trying to convince farmers to apply a new farm practice or technology. Innovations were usually uniform packages developed by research and supposed to be effective over a large zone and wide range of farmer categories. Under the T&V system, extension agents initially worked with a limited number of so called *contact farmers* in each of their intervention villages. Demonstration plots on contact farms serve as a learning ground for other farmers. Extension supervisors and research staff trained village extension workers in regular (bi-monthly) extension workshops. However, adoption of extension messages by others than contact farmers was rather disappointing. General dissatisfaction among policy makers, farmer organizations, and donor agencies with the performance of extension services triggered a call for institutional and methodological change to increase the effectiveness of support of extension to rural development.

In some countries, the T&V approach was modified from working with individual contact farmers to working with ‘contact groups’. However, this adaptation did not change the fundamental problem that extension agents did not really respond to farmers’ needs as extension messages were still identified by extension staff and did not take sufficiently into account the diverse agro-ecological and socio-economic conditions of farmers; in other words there was no ‘performance contract’ between farmers (groups) and extension workers.

(Box 2.8). In both approaches, FGs play an important role, although with completely different responsibilities. In T&V, the modified approach was working with contact groups of farmers for efficiency reasons. In this newly envisaged set-up, T&V farmer contact groups continue and will play a different role in developing and testing extension messages. However, these contact groups will be formed on the basis of farmer interests rather than on geographical location in the village, and will evolve over time (depending on the duration of the on-farm work and follow-up activities). Extension workers may suggest themes and provide guidance concerning group size and mode of operation. However, villagers are entirely responsible for managing such groups.

**Box 2.8 Benin: The VLPA to extension**

The extension approach in some countries recently changed from one using groups as an audience to transfer messages to a more participatory approach whereby group members decide on their own development priorities and extension needs. In Anglophone Africa, this approach is known as the 'Village Level Participatory Approach' (VLPA), in French speaking countries as '*Approche Participative au Niveau Village*' (APNV). Key elements of this approach are: (1) a participatory diagnosis is undertaken and a problem analysis made integrating the issues and constraints of various social and professional groups in a village; (2) villagers are defining their own action plans for social development; (3) villagers create or strengthen their internal organizational capacities; and, (4) the village extension worker is facilitating learning processes rather than teaching villagers. Extension specialists at regional level (subject matter specialists, technical supervisors, district and sub-district staff), are involved in the training programme for their staff in these participatory extension methods. This approach builds on the experience with PRA tools (practised by research teams) and on results of community development programmes. It has led to a reconsideration of the role of extension by making it part of a more general programme of development activities in the village, whereby extension workers become facilitators of village development rather than trainers in extension messages.

In Benin the new APNV was developed by the Division of Land Use Management (Cellule Gestion de Terroir) of ARC-Borgou in North-Benin as a method to discuss matters of environmental management with all social, professional and ethnical groups at village level and to seek solutions in a participatory way. The methodology is based on earlier experiences in Mali and uses current PRA tools in a logical sequence leading from diagnosis through planning to implementation and evaluation.

The participatory village approach proved very successful in that it:

- reached all target groups in the village;
- created the ability among villagers to identify their own problems;
- helped villagers to identify local solutions to their problems;
- enabled villagers to discuss technical issues with extension services and other government representatives and NGOs;
- created an effective internal village organization to manage local development programmes.

The regional extension service of Borgou adopted this method and launched a vast training programme for its extension agents in 1997. The responsible ARC provided training materials and assisted in the training programme. As of 1998, all regional extension services of Benin will have been trained in the APNV. Trainers from Benin have been requested to provide training courses in neighbouring countries, and have been hired by the World Bank to mount a similar training programme in Anglophone Africa (Uganda and Malawi).

In the VLPA approach FGs are formed through the empowerment process leading to groups with strong ownership over the research agenda and hence enhanced effectiveness (Box 2.8).

#### **2.5.4 CIVIL SOCIETY**

Civil Society Organisations (CSOs) such as Non-Governmental Organizations (NGOs) traditionally have a major role in capacity building of Community-Based Organizations (CBOs). Civil society has been particularly active in the development of social capital at community level, both in terms of all three types of connectedness (bonding, bridging and linking), as well as in building trust and relations. Special capacity building programmes for CBOs and hence FGs focus on a variety of training activities such as leadership training and financial management training (in Tanzania and Zambia, Church organizations train FRGs on financial management). The role of empowerment of FGs is often seen as a typical role for NGOs, although advocacy groups and farmer organizations often become difficult to distinguish at higher levels (World Neighbours: <http://www.wn.org/>). CSOs have also increasingly been involved in service provision and the development of alternative innovation approaches with stronger involvement of FGs.

#### **2.5.5 LOCAL GOVERNMENT**

With the continuing emphasis on decentralization and the empowerment of local government in terms of political, administrative and fiscal decentralization, the role of FRGs is also changing. Increasingly, local government is moving into the driving seat of service delivery (planning and financing) also for agricultural research (notably adaptive research) and agricultural extension. This leverage of local government over research and extension can take different forms (direct control as in case of extension, or indirectly through technology development funds as in case of research) and has various dimensions (from priority setting to fiscal contribution and control). The influence of local government on innovation development is based on priorities and action plans of village communities, which can be either through community groups with a mainly social objective or through FGs with a more economic objective. In this context new opportunities emerge for FRGs and/or FEGs to influence these local government priorities. FRGs (or FEGs) can be either subgroups of community groups, become part of larger farmer associations across communities or remain separate groups in the community. At the same time LG-based agricultural service provision is more inclined to involve the same groups and organizations in actual service delivery.

#### **2.5.6 PRIVATE SECTOR**

The private sector is often closely linked to farmer groups with economic objectives (producer organizations, farmer cooperatives, farmer associations, credit and savings associations), which are more formal local groups, mostly aiming at greater efficiency in input supply and/or marketing. Farmer associations can also form networks, unions and federations at higher level and develop sufficient leverage to negotiate with the private sector. Some groups can develop their own private or commercial functions such as in grain banks,

seed banks and credit and savings associations. The private sector can also work with FRGs, although this is mainly related to cash crops (e.g. testing of new varieties for cotton in the Lake zone of Tanzania, as well as multiplication of new coffee clones in the Northern Zone in Tanzania).

However, caution is required here: private sector actors have sometimes been less critical about the legal standing and composition of their farmer groupings e.g. in Zambia. In fact, almost none of the private sector-initiated FGs were registered. Post-harvest survey data showed that most of the recipients of these inputs were better-off farmers, with higher farm and non-farm incomes, larger pieces of land, and more educated and male household heads. Such households also portrayed a higher likelihood of having at least one member in the civil service. Only NGOs seemed to be more inclined towards serving less well-off farmers (Bingen et al., 2004).





## 3 Functioning of FGs in the innovation process

### 3.1 Introduction

The communitarian perspective on social capital describes the local organizations and groups at community level; emphasis has been on the structural forms. The external links and attention for cognitive elements such as values and trust can be essential for linking up with local innovation systems (Grootaert et al., 2002). A major challenge to community groups is to develop these norms, values and trust which will allow a high level of inclusion of both resource rich and poor households, men and women of different ethnic, religious and political background to participate in the FGs. This chapter will focus on both the bonding and bridging types of social capital at community level; structural elements such as leadership, including membership and the actual establishment of groups will be looked at, as well as the dynamics of groups which relate to the cognitive elements.

### 3.2 Functions of FGs

The functioning of farmer innovation groups in terms of capitalizing on their bonding and bridging assets can not be seen in isolation from the different functions of community-based FGs. The basic collective action functions of different FGs at community level are:

- giving an opportunity for all community members to participate in a group with an economic perspective (e.g. farmer associations);
- providing a platform for discussions through meetings in which constraints, options, solutions and actions are discussed (farmers fora);
- implementing actual activities agreed upon by the group for the group;
- enhancing access to services by the group, using the economic chain;
- improving efficiency and economies of scale in all the above functions;
- exercising lobbying functions through an empowered group on the basis of information gathering, knowledge, etc.;
- playing important roles in agricultural innovation i.e. research, extension and education. For example, representatives of FRGs can link up to higher-level farmer organizations and/or be members of research and extension advisory committees at village, district and ARC levels.

The abovementioned functions require at least some amount of bonding social capital, as collective action is not possible without it. In relation to research and extension, the question arises whether social capital at community level will

ever be strong enough to influence the formal innovation system unless some level of bridging capital is developed. The specific role of community-based FGs in agricultural innovation (FRG and FEG group functions) has primarily been in participatory technology development, participatory learning and action research, and technology adaptation/dissemination. In addition to these tasks, FGs can have other functions in relation to the innovation system; some of the most important are:

- *Communication and information function.* FRGs are popular hosts of external visits and representatives may participate in farmer radio programmes (Tanzania, Zambia). FRGs contribute to the development of extension material. FRGs legitimize the concept of farmer-to-farmer trial visits and researcher-farmer trial visits at least in a normative sense (Drinkwater, 1994).
- *Dissemination functions.* Apart from the organization of field days as part of the contribution to the technology development cycle, FRGs play an active role in linking up with FEGs and can have a leading role in farmer-to-farmer extension. FRGs are often involved in seed and vegetative planting material multiplication and contribute in this way to the dissemination of technology.
- *Networking functions.* FRGs can link up with other FRGs, as well as with FEGs and other community groups and form horizontal networks, which can exercise a stronger lobby function. The networks can develop into local farmer unions, which federate at a higher (national) level.
- *Other activities* that are not directly related to the innovation system. Many FRGs will have other functions; notably existing groups, but also new groups may develop additional functions. These are often along the lines of marketing and input supply including credit and savings associations.

Research and extension facilitators (public and non-public) contribute to the functioning of FRGs. This will demand considerable attention and time if working with groups is expected to effectively contribute to the improvement of innovation development efficiency and quality.

### **3.3 Integrating farmers' indigenous knowledge and formal innovation systems**

#### **3.3.1 THE NEED FOR INTEGRATION<sup>19</sup>**

A major recent step forward has been the recognition that innovation is not something alien to farmers and that farmers do have their own innovation system based on farmers' knowledge and connectedness within and between communities. Formal innovation systems with public/private research and extension providers are increasingly tapping into the farmers' own innovation systems. Institutional and organizational innovation is needed to better integrate both formal and farmer innovation systems into one single system (Reij and Waters-Bayer, 2001; Chema et al., 2003). In order to establish or enhance a working relation between service providers for innovation development (such as research and extension) and farmers, both sides have to see incentives to be interested. The issues at stake for the FGs and for the service providers are:

- FGs are expecting to get the required relevant information from service providers, have access to relevant technologies, as well as have influence on setting priorities with the service providers.
- The service providers are expecting to work with FGs in order to reach more farmers of different categories (efficiency) as well as have contacts with relevant groups in representative areas, which will facilitate up-scaling of the results (and their effectiveness).
- Successful contracting of research and extension services requires among other things an effective demand for these services, which is usually expressed less strongly than the supply side. Farmer organizations are critical to the strengthening of the demand for technical services because they provide economies of scale and a mechanism for promoting small-farmer interests. In order to be able to do this, farmer organizations need technical competence and hence farmer education and training are crucial to enhanced agricultural development over the long term. Providing funds directly to the producers can change the entire incentive and accountability structure, leading to downward accountability to poor and marginalized individuals and groups, who can be provided with real buying power for agricultural services (Rivera and Alex, 2000).

In practice there will be FGs approaching service deliverers with requests and priorities, while in particular agricultural research organizations will be looking for contacts with groups that will be representative for a wider area or category of stakeholders; this raises issues of representativeness.

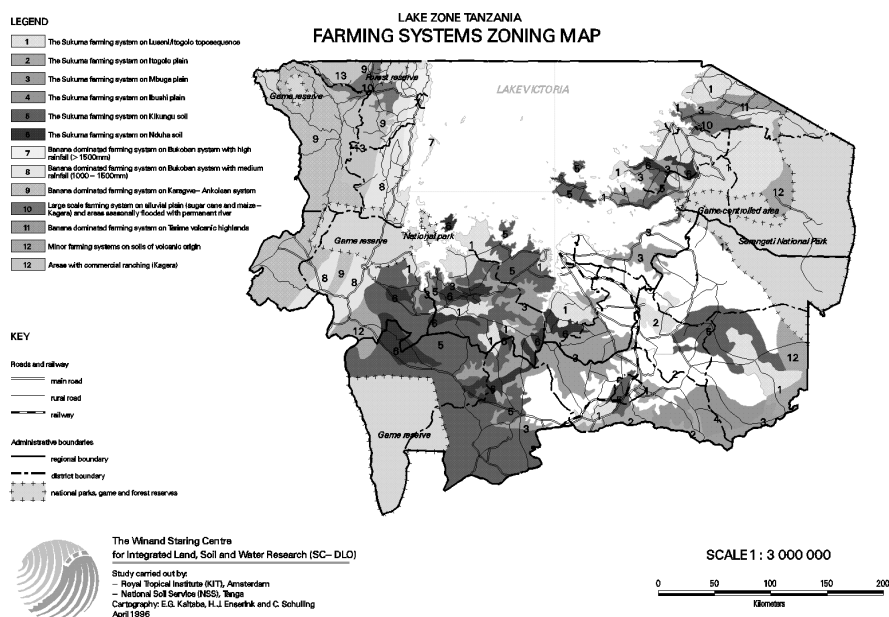
### 3.3.2 REPRESENTATIVENESS

Research, extension and farmers all have different interest in relation to farmer participation, which is translated into differences in number and scope of FRGs. ARCs with a geographical mandate, go for a balance between the lowest possible numbers of FRGs, which are still representing the AEZs in the mandate area (see Box 3.1).

Extension for dissemination purposes prefers to work with as many groups as possible. All communities of farmers are interested in having groups for innovation purposes, although differences exist between different categories (e.g. social, gender, etc.). Public authorities of decentralized districts contributing to research will require at least one FRG in the District. As a consequence of such political pressure, ARCs tend to work with too many FRGs. Often several 'research-villages' have been selected per agro-ecological zone. This situation may be aggravated where, due to poor collaboration among research departments, each research programme of an ARC has its 'own' research-villages (Fasil Kelemework, 2003). Research activities can best be concentrated or clustered in one or two villages per farming systems zone, depending on its heterogeneity. Restriction of the number of FRGs will help reduce research costs (less travelling and researcher-time required) and improve supervision and management of trials by fostering interdisciplinary co-operation and collaboration with farmers and extension agents. Although there have been many initiatives to involve FGs in innovation in several countries, the number of groups involved is generally smaller than in

**Box 3.1 Lake Zone, Tanzania: FRG numbers in relation to Zones and districts**

The Lake Zone in Tanzania is one of seven research and development zones and consists of 4 Administrative Regions. In total there are 21 rural and four urban Districts in this zone. All Districts with decentralized public administration and de-concentrated extension services have a strong interest in getting direct research intervention in their District through the support to FRGs. At the same time the Zonal Agricultural Research Centre has been given a public mandate to do agricultural research for all farming systems and smallholder farmer categories in the zone. In the agricultural zonation exercise, based on agro-ecological and some socio-economic data, 15 different Farming System Zones were distinguished (see map).



For various reasons (mainly in terms of importance based on population density and agricultural potential) ten AEZs were selected by all stakeholders as priority zones for research. FRGs were established in all ten zones and located in areas that were accessible and in districts (financially) committed to follow-up activities. Consequently, the two sub-ARCs in the Zone together operate with 12 FRGs located in 10 Districts in ten AEZs. In each of the directly collaborating districts, the work of the FRGs is scaled up to 2-4 FEGs facilitated by extension and with 50-60 Village Contact Groups under the T&V system (Lema et al., 2003).

watershed, irrigation, forestry or micro-finance and IPM programmes. (Pretty, 2003) and Sanginga et al. (2001) found in Uganda that it is more effective to invest in improving the quality of participation for good quality research rather than increasing the number of farmers and/or groups.

As stated earlier, FRGs and FEGs should represent the social, economic and biophysical conditions of the system or zone under study. Hence selection of FRG villages should be based on an agro-ecological or farming systems' zonation of the mandate areas (Enserink and Kaitaba, 1996). Various zonal delineations may exist in the minds of research staff. However, quite often

there are no zonation maps that have been accepted by research and extension staff and district agricultural authorities or other stakeholders, let alone farmer organizations. Although the location of FRGs may be decided upon without zonation maps, this is likely to jeopardize research results at a later stage when it is concluded that the selected villages insufficiently represent the region's diversity. In each farming system, representative villages are selected in which FRGs are established. The number of FRGs is limited in order to be able to have strong partnerships between farmers and researchers, given the financial and human resource constraints.

In addition to agro-ecological and socio-economic zonation, several other criteria are considered when selecting FRG villages:

- An interest of the village community to establish a relationship with researchers to test new technologies for a number of years.
- Accessibility of the villages throughout the season.
- Proximity to the ARC.
- Presence of extension workers and other development actors (such as NGOs) to facilitate the implementation of research and technology dissemination activities. Village selection is undertaken jointly with important partners in the innovation process such as the extension service, government agricultural offices, development organizations, local NGOs and FGs.
- Institutional conditions favouring the transfer of new technologies, such as the presence of rural development programmes.
- Possibilities for villages to link with neighbouring villages (to facilitate dissemination of research results) or availability of options for networking between groups.
- Villages not suffering from poor organization or serious internal disputes.

Although seasonal accessibility of the villages and proximity to the research station sound very logical, research villages are quite often found in remote areas whereas similar farming conditions may be found at much shorter distance from the research station<sup>20</sup>. As a result, meetings, trial installation, data collection and other often time-bound activities may have to be cancelled due to poor road conditions during the rainy season. This not only frustrates collaboration with farmers and other partners involved, but also puts at stake the quality of research and seriously restricts the efficiency of research.

A selection criterion that is not related to either logistical or organizational aspects but is important with respect to successful adoption of new technologies is the presence of rural and agricultural development programmes. Or, in other words, to look within identified agro-ecological zones, for areas in which conditions favouring agricultural development, such as institutional support, marketing facilities, availability of credit, and quality extension, will be adequately met. Here in fact we are directly concerned with orienting research efforts towards the opportunities of farmers. Researchers need to look for other actors or intermediaries who are capable to provide farmers with advice and who can create and facilitate the necessary conditions to favour technology adoption. The latter will be difficult to realize in areas where support services are inadequately available (Box 3.2).

**Box 3.2 Tanzania Lake Zone: Location of FRGs for strategic reasons**

FRGs will require support services for introducing the actual innovation as well as the up-scaling of technologies beyond the development phase, hence the need for powerful development partners, such as advisory and financial services. The ARC Lake Zone in Tanzania solved this problem by locating research-induced FRGs in villages where other developmental stakeholders already were operating (e.g. presence of extension workers, NGOs, ongoing implementation of development programmes<sup>21</sup>, and relatively easy access to markets)<sup>22</sup>. This type of research-based FRGs is preferred to those established without attention being paid to potential linkages with development stakeholders. Such an approach provides the potential for research to demonstrate to developmental agents the critical need to provide support in the dissemination of certain technologies and practices. Also such strategic location of research-induced FRGs resolves the dilemma researchers are often faced with in the absence of developmental stakeholders, which is to provide such support functions themselves in order to encourage adoption. This, tempting as it is to many researchers is not a viable solution as it distracts them from their main tasks.

Research entities and at a different level also extension organizations, on the basis of abovementioned criteria try to identify FGs in selected locations. Sometimes existing groups can be identified, sometimes new groups or subgroups of existing organizations have to be established.

### 3.3.3 RESEARCH GROUP ESTABLISHMENT

When starting to work with FGs in research, one of the first questions is whether this should be carried out by new groups, established for that particular purpose, or whether these tasks may be carried out by existing groups, in which case research-related activities constitute an additional task. Advantages of working with existing groups relate to the established relations of trust and the sustainability of multi-purpose groups (Pretty, 2003). Existing groups used as FRGs are usually producer-based groups, established to improve access to inputs and/or marketing of products, although customary or religion-based organizations have also been included (Heemskerk and Wennink, 2003). The many existing self-help groups, which have been encouraged such as the 'Harambee' movement in Kenya, provide potential entry points for knowledge generation and dissemination (Rees et al., 2000). Newly established research-based groups have the advantage that conducive structures and norms and values can be laid out to make it possible for all households to participate and groups can act freely without having to refer to traditional habits and structures.

The advantages and disadvantages of both for the innovation function are listed in Table 3.1. Experience shows that, as long as potential problems are taken into account both FRGs grafted on existing groups and those that are specifically 'research-based' can be suitable partners in participatory technology development (Norman, 1997). Research-based groups permit greater flexibility in the location of on-farm research sites. This is an important aspect, as FRGs have to be *strategically located* both in terms of accessibility to research and in terms of the various farming systems on which research has focused its attention. In existing, well-established organizations, *leadership* conflicts are less likely as members of existing groups already know each other and have

since proven their ability to *work together*. Leadership needs to be democratic to facilitate a free exchange of ideas and opinions between members.

**Table 3.1 Characteristics of FRGs with different origin**

Characteristics	Origin of the FRG	
	Existing group	New, research-based group
Site location	Possibly wider than community	Community-based selected
Research function	Additional activity	Starting with a single activity
Leadership	Existing leadership might not be representative	Researchers can still influence the leadership
Membership	Often not equitable. Numbers often regulated	Open and more flexible
Research topics	More commodity-innovation oriented	Seeking additional support for innovation
Linkages with other stakeholders	Already established	Not yet built up
Influence on research agenda	Strong but biased	Initially weak but balanced
Empowerment	Generally more powerful	Need to grow, outside-induced
Sustainability of organization	More autonomous	Depending heavily on research/extension unless other activities are included

However, in *group composition* and *membership*, research-based FRGs are more flexible than producer-based FRGs creating greater opportunity for equitably representing various farmer categories. However, this does not necessarily indicate that in case of specific FRGs, the needs of all types of farmers will automatically be met as relatively resource-rich farmers may dominate decision-making. Producer-based groups, the most commonly established FGs, frequently have specific commodity interests which may prevent their members from becoming interested in collaborating on other *research subjects* related to their farming system. Furthermore, it may not always be easy to superimpose a *research function* on a group whose initial reason for formation was different. An advantage of existing groups, mainly when it concerns producer-based groups, is that to some extent *access to development stakeholders* may already have been gained (i.e. linking social capital). This is an important consideration since as emphasized above, adoption of improved technologies and practices often requires support of some sort from development agents. In contrast, research-focused FRGs do not initially have such linkages (but might develop them). Consequently, there is a risk in such situations, that it will not be possible for farmers to adopt promising technologies and practices due to weak linkages with development stakeholders. Existing organizations should be capable of expressing their needs and preferences. Research-based groups may not be strong at the start although they may rapidly develop this organizational strength.

### Box 3.3 Lake Zone, Tanzania: Experiences with establishment of FRGs

In The Lake Zone in Tanzania, the ARC mainly followed two approaches for the establishment of new FRGs (Mafuru et al., 1997):

- Group establishment following as part of a participatory rapid rural appraisal and the agreed follow-up of identified constraints and action plans; or,
- Group establishment with interested farmers in testing technologies presented during a village-based 'technology market'.

These two approaches have the following characteristics:

1. Group establishment as part of action plan development following a PRA works well for the following reasons:
  - A properly executed PRA or survey involves different groups/types of farmers. Farmers involved in such an exercise can be personally invited and are then more likely to attend the debriefing. Thus, a varied selection of farmers is likely to attend.
  - Farmers participating in PRA have gone through the stages of identification and analysing problems, often in groups and sometimes individually. The first steps towards group formation have been taken.
  - This PRA method however is rather time consuming and it often takes some time between the collection of data and presentation of the findings to the villagers. It should be used when little information is available on the farming system or the area concerned.
2. Group establishment through the organization of a technology market: researchers present different technologies, either in the village, at on station field days or at other (FRG) field days. The choice of the presented technologies is based on earlier surveys and identified needs in the same farming system zone.
  - As experience has shown, it attracts a lot of farmers, which means that different categories of farmers would be present. Individual farmers write down their name for a certain technology they would like to test (a specific technology for specific group of farmers).
  - The technology market is not as time consuming as a PRA and it can be done in one day.
  - There is neither prioritization nor identification of constraints at village level.
  - The number of subscribers can be very large; no selection criteria for participants are applied.
  - The number of trials and experiments is often higher than with the PRA approach.
  - These two last aspects (many interested farmers and more trials) may make a new group difficult to manage.

As illustrated in Box 3.3 it depends on the circumstances which method of establishment is most suitable under certain conditions: when there is little time and/or human resource availability for conducting a PRA, when constraints of a farming system are known and when there are sufficient technologies giving a solution to those constraints, then a 'technology market' could be considered. For example, if a technology is already in the validation phase, it can be publicized during a technology market. In case there is hardly any knowledge on the farming system and when there are adequate time and resources for a PRA then such an assessment has to be conducted. An important factor to consider is the level which technology testing has reached.

A third way of establishing an FRG is to link up with an existing group in the village. It seems the easiest method because the group does not need to be



created and its functioning can be assessed before initiating interactions with it. However, there are some major issues to consider before associating with an existing group (Box 3.4).

**Box 3.4 Tanzania: Important steps in FRG establishment in existing groups**

Existing groups have advantages over groups that are to be established newly as FRGs, but groups need to be screened at least concerning their membership (ensuring inclusion of all household categories) and objectives (including poverty reduction):

- Existing groups are targeted towards the needs of a specific group in the village (women, youngsters, economic interest groups, religious groups, etc.).
- The objectives of the existing group should be carefully screened to see whether they match and do not conflict with the objectives of the FRG.

Some of the following steps are to be taken (Kingma et al., 1996):

1. The formation of an FRG must take place during a meeting with many farmers.
2. Explain the purpose and meaning of an FRG and the role it plays in technology generation and dissemination.
3. Establish with the group whether to establish a subgroup or work with the whole group.
4. Discuss composition of existing group in terms of household categories, women, etc.
5. Assist in electing a chairperson and a secretary of the sub-group and establish relation with existing group.
6. Discuss the criteria to be fulfilled by a chairperson and secretary. Define the role and tasks of these positions e.g. in reporting, monitoring and evaluation.
7. Discuss potential conflicts between existing objectives and additional objectives.
8. The issue of (additional) membership fees is to be discussed thoroughly with the group members, as well as relation to new membership to (sub) group.

Whether newly established or existing groups, an interaction between the different functions of the group either exists or will soon develop. It is an illusion and probably even a misconception to assume that FGs will exclusively operate in agricultural innovation. Groups can start for many other reasons and develop a function in the AKIS or innovation system; groups also can start with an AKIS focus and then develop other functions. Experience has shown that sooner or later FRGs tend to engage in other activities, most likely income generating activities. Monitoring by research, extension and farmers of the other activities of the group and possible negative interactions with the innovation function in particularly newly established groups is important. When such developments take place, researchers need to discuss with the FRG members whether the income generating activity is interfering in any way with the equitable innovation function objectives of the group. Although it is up to FRG-members to decide on the activities they would like to undertake, it is important to assess the reasons for FRGs to start other activities. Conflicts can for example easily arise due to deficient or a lack of transparency in management of FRG-funds by group leaders. In Tanzania such conflicts have sometimes put the effectiveness of FRGs at risk and thereby their sustained existence (Box 3.5), illustrating that research and extension staff involved in

FRG establishment and operation must be trained in group-facilitation and that FRG-leaders need coaching and back-stopping skills in the organization and management of their groups.

**Box 3.5 The Tanzania Lake Zone: Evolution of activities undertaken by FRGs**

FRGs in the Lake Zone of Tanzania, which started off as groups of farmers involved in on-farm trials soon enhanced their social capital through other activities.

Various FRGs started in their second season to establish revolving funds, which were used for short term, commercial credit supply. Some FRGs also established communal cotton fields to generate income for the FRGs. According to some FRG-members the reason for these activities was that positive research results and proper functioning of these FRGs, inspired them to expand the group's activities to speed up agricultural development.

Group friction can result from these activities if not properly managed e.g. conflicts arose in an FRG in Tanzania because the money of the 'ifogongo' (traditional credit and savings associations) was not properly managed. Other groups showed a shift in composition with equity effects, due to the effect that women were not interested in a communal cotton field. In most cases however, additional activities related to the production-to-consumption chain can have a strengthening effect on the FRG. It is therefore important for research and extension group facilitators to help ensure the positive effects of incremental group activities (Kingma et al., 1996).

### 3.4 Group dynamics

#### 3.4.1 BACKGROUND

Once groups have built relations of trust and have started a process of reciprocity and exchange in the group, the need arises to establish common rules and sanctions (Pretty, 2003). In established groups these rules will evolve over time. Pretty (1995; Sanginga et al., 2001) distinguishes three stages in group dynamics:

- 'Storming' stage, lots of dynamics in the beginning, everybody wants to participate.
- 'Norming' stage, rules, norms and sanctions are established which often leads to lower participation.
- 'Performing' stage, membership increases when the group stabilizes and starts to have successful activities.

Some of the elements, which play a role in each of these stages and which have to be set out are rules relating to group leadership, membership and representativeness, group size and structure, etc. i.e. the more structural forms of social capital. Group dynamics are also explained by cognitive forms of social capital, which relates to trust, local norms and values.

Another element of group dynamics is the change over time of the group purposes. Social farmer groups are mostly older than productive farmer groups (Rondot, 2004). After the storming stage an increase of inactive groups and the number of mixed groups can be observed (Rondot, 2004; Sanginga et al., 2001). A shift will occur in the major purposes of groups i.e. support for generating revenues, natural resource management, social purposes, training and information sharing and representation.

These shifts can be greatly influenced by the leadership and membership of the groups as well as having consequences for the same.

#### 3.4.2 LEADERSHIP

Adequate leadership is of crucial importance to the FRG functioning. Changes in leadership have turned passive groups into innovative and committed groups, and vice versa. Research (and extension) staff can exert little or no direct influence on the choice of FRG leadership. However, they can facilitate the choice of suitable persons by clearly explaining the tasks that group leaders need to perform, responsibilities they must face and qualities they must possess. Important qualities that future leaders need to possess such as respect and honesty, a dynamic personality, (preferably) able to read and write, being dedicated farmers with sufficient time to spend on their new leadership tasks, etc. Furthermore, it needs to be explained to participating villagers what the implications of their partnerships in research are and possible misunderstandings leading to false expectations (e.g. free-of-charge inputs, availability of credit, and the implementation of development activities within the village), are to be removed. Sharing experience by leaders from other FRGs can also be helpful in avoiding raising false expectations. Although FRGs are usually part of the formal village organization and are answerable to the village leadership, village leaders are generally not the most suitable candidates as they are often political figures and involved in other leadership tasks. Additional tasks will be created with time when the number of trials likely increases and the variety of activities undertaken by FRGs grows with enhanced empowerment of the groups (organizing trial evaluations, field days, and representation at district planning meetings). Often leadership is with a chairperson (often a man), secretary and treasurer (often a woman). Sometimes, particularly in larger groups, an executive committee is formed of up to 5 to 7 people (Sanginga et al., 2001).

#### 3.4.3 INCLUSIVE MEMBERSHIP

In order to have a voice of all categories of farmers, FGs are to be inclusive in one form or another (sub-groups), all depending on the local context. Inclusive Organizations (IOs) are more oriented towards providing public goods, mutual insurance and natural resource management through collective ownership. Often these inclusive groups with a more social background are appropriated by (traditional) leaders, but trust and social proximity is more important than economic capacity (Box 3.6). Exclusive Organizations (EOs) are oriented towards providing services and private resources to support the generation of income. These groups can be appropriated by those farmers with additional assets (Collion, 2004).

The selection of group members is crucial to the effective functioning of the group. Often there are no strict regulations so that groups can be flexible; changes in membership can occur quite frequently (Kalonge et al., 1995). However, some FRGs have established specific criteria for membership. These criteria are often related to the social behaviour of potential members. Other FRGs charge a membership fee, as a means to exclude those people that 'are

**Box 3.6 Burkina Faso: Social and producer groups**

In Burkina Faso the majority of household group members are in the poor category (63.5%) and 27% are very poor. More households participate in social farmer groups (IOs) than in productive farmer groups (EOs); this is however reversed in cotton-producing areas. Productive farmer groups are mostly not as old as social organizations. Rondot (2004) also found more homogeneity in groups than in villages; the poor of the villages are the ones who benefit the most from FGs.

not serious'. Researcher facilitators should see to it that the criteria for admission do not exclude certain important farmer categories. Internal regulations are often drawn up and stipulate, for example, that members should regularly attend FRG/FEG-meetings. If not properly planned, such regulations may exclude people from small households or might exclude women from participating. Sanginga et al. (2001) found that FRGs can be effective mechanisms to involve women and resource-poor farmers in agricultural research; these categories are often bypassed by conventional approaches. Although membership is on a voluntary basis, researchers can influence the choice of members, through facilitation on timing, structure and priorities for the group. A bias in FRG members towards a certain category of households often happens when asking interested farmers to join the FRG during a village meeting (community approach). Experiences with a few FRGs in regions with cattle owning households show that the cattle owning households are frequently over-represented (Kalonge et al., 1995). Therefore it can be useful to identify (categories of) farmers who are eligible to join the FRG. When talking about different (sub-)groups of farmers the following categories could be thought of:

- Farmers from different sub-locations.
- Cattle owners and non cattle owners
- Men and women farmers.
- Young and old farmers.
- Small-scale and large-scale farmers.
- Households affected by the HIV/AIDS pandemic and those that are not.

It is important to find out whether there are farmers who are interested but cannot or dare not join an FRG. It is known that experimentation often involves some risks. Resource-poor farmers might not dare to take such risks and special measures to limit their risk may be needed. Married women might think that they are not eligible and that only their husbands are. Facilitators need to discuss with the (potential) FRG members whether the group should be 'closed' or 'open' to new members after establishment. Advantages and disadvantages should be mentioned (Box 3.7).

How can facilitators influence the choice of members for an FRG? If a PRA has been conducted in the village, it is likely that the various farmer categories of the village are already known. During the FRG establishment meeting, researchers could discuss the specific participation expected from each of the important farmer categories.

Another way to ensure a balanced composition of the FRG is to discuss the heterogeneity among farmers during the establishment meeting. Farmers are

asked to identify the various farmer categories in their village. For each category the importance and specifics of participation are discussed (are they members of the FRG, should their number increase, how to involve them, how to identify potential members of a certain category, etc.).

The question is often raised as to whether it is a priori possible to select representative farmers for each type of on-farm test or for the various potential solutions to a problem. It is recommended not to be too definite about the potential target group or recommendation domain. One solution could be to ask for volunteers for a specific experiment and to ensure that the relevant farmer categories are sufficiently represented. During trial evaluation by both farmers and researchers, the latter should verify the attractiveness of the solution tested for each of the various farmer categories. Alternatively, various potential solutions might be proposed in a 'menu', letting farmers choose the preferred solution. In this case, the attractiveness of the different technologies for the various farmer categories can be evaluated. Final verification of the most appropriate technology-farmer category combination can only be made through adoption studies.

At a stage where a technology seems to be promising, the FRG can, if it is within their capacity, start to disseminate the technology to other interested farmers. But that does not necessarily imply that those latter farmers have to become FRG members.

There are some indications that FRG membership tends to become more homogeneous, the more formalized they become. When specific obligations being placed on its members (e.g. membership fees) increase, the exclusion of less-advantaged farmers tends to result. Researchers and extension workers should be aware that such situations might occur and try to encourage continued participation of a wide social and economic range of farmers. On the other hand, some research programmes try to engage in an active selection of FRG members to involve research-minded farmers, 'innovator farmers' or 'commodity experts'. This approach is based on the assumption that such persons are more likely to provide ideas for new options (Sperling 1992, Lof, 1997).

**Box 3.7      Zambia: Advantages and disadvantages of 'open' groups**

Open groups that allow fluctuations in membership but which still can have formal membership have the following advantages (Kalonge et al., 1995):

- Interested farmers can join the group whenever they want.
- Potential for improved group dynamics.

The disadvantages of such open groups could be:

- No continuity guaranteed in the group (farmers can join and quit when they want), which could constrain the sustainability of relations with extension and research.
- It will be more difficult to address long-term integrated issues such as soil fertility, agro-forestry and pest management.
- The group could become too large.

The question of open versus closed groups does not necessarily have to be answered by selecting either one of the two options. There are also possibilities of compromises between the two. For example, a choice could be made to have a core group of farmers who commit themselves to membership for several years. In addition to this, farmers can join the FRG for a specific trial for a specific period. However, for research purposes it is necessary to have at least a core group of farmers that collaborates during several years with research<sup>23</sup>.

#### 3.4.4 FEMALE PARTICIPATION IN GROUPS

Different categories of households based on farmer typology or cluster types, (Drinkwater, 1994) can have different relationships with research such as more collegial with larger farmers and more collaborative with smaller farmers. For example, it is already accepted that women often need to be encouraged to join the FRG, which means in fact, influencing the composition of the FRG to make it more effective in expressing the demands of this important group. Often, women cannot easily express themselves in a mixed group and hence the need for special subgroups in such situations (Fasil Kelemework, 2003).

##### **Box 3.8 Lake Zone, Tanzania, addressing female farmers' priorities**

Based on a participatory survey in a village in the Lake Zone of Tanzania, which focused on local innovation systems and farmer experimentation, differential interests between male and female farmers were established. Male farmers were more interested in cash crop and soil fertility management research, while female farmers were very much involved in testing quality seed and varieties of major and minor food crops (Budelman, 1996).

As a result of this survey, special attention was given to the priority setting and planning meetings of the FRGs and particularly to the priorities of the male and female sub-groups. The female farmers in some FRGs gave priority to testing cowpea varieties in order to address pest problems and other constraints. Female farmers tested different early maturing cowpea varieties on-farm, and cooking characteristics and taste were determined in the kitchen. Female researchers and extension staff facilitated the interaction with the trial farmers. After two years of variety testing of cowpea, many female farmers became interested in some specific varieties. In the last year, seeds were distributed to many farmers (also male) in the village and during the field day farmers presented dishes made of cowpeas for general appreciation. The variety testing trial was followed by a storage trial with different traditional (local herbs, anthill sand, ashes) and semi-traditional (tobacco, *Tephrosia* extract) additions on request of the same female farmers. Hence, researchers established a long term relation with a female farmer sub-group of the FRG (Mafuru et al., 1997).

The following strategies could be followed to get female farmers involved and to better take note of their interests. First, it should be taken into account that female farmers are not a homogenous group i.e. like between male farmers, there also exist many differences between women in terms of access to resources and their say in decision making. Thus, a first distinction is to be made between women heading a household (female-headed households) and married women (members of male headed households). Each of these groups is likely to have their own interests and priorities and the way they are best

involved in trials can be different as well. The following steps are advisable to enhance women participation in FRGs:

1. Adjust the period and timing of the group meetings so that they fit within women's programs.
2. If necessary, discuss issues with women separately (in sub-groups) so that they may feel free to give their opinions.
3. Try not to involve women only in trials with 'women's crops or tasks'. As women are an integral part of the household, they are also involved in trials dealing with less typical women's tasks or crops. Discuss with men and women how this involvement can best take place.
4. Include trials, which address women's specific problems and constraints.

**Box 3.9 Uganda: Female farmer participation in FRGs**

Results from Uganda show that farmer participation in FRGs tends to follow a U shaped curve, with high participation at the initial stages of the process, often followed by a dramatic decrease as many farmers drop out of the groups; a gradual increase occurred again towards the end of the first season. Similarly, there was a significant 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 67% of farmers in mixed groups (24% of the FRGs were 'women only'). These results suggest that FRGs proved to be more effective mechanisms to involve women and resource-poor farmers in research groups that would likely be bypassed by conventional approaches. Further statistical analysis showed that the probability of women participating in FRGs was higher, but no significant differences were found for the participation of different wealth categories as compared with the rest of the community (Sanginga et al., 2003).

In seeking solutions to a particular problem it is important to take account of the specific needs of the entire range of the different categories of farmers. In other words, new technologies and practices should not be limited to those that are likely to be attractive only to resource-rich farmers.

**Box 3.10 Zambia: Female farmer participation in FRGs**

The ARP Team in Western Province of Zambia was working with eight FRGs in different agro-ecological zones. The average membership of these groups was 17 of which on average seven (54%) were women. The participation of women in zones with less market-oriented agricultural production was lower at 54% (Kalonge et al., 1993).

In Ethiopia few women participate in FRGs, also women do not speak out in groups dominated by men. The formation of sub-groups for women was found to be a way out of this. The formation of women subgroups started with special attention for important priorities for women such as cooking quality of cereals and legumes as well as processing characteristics in general. These topics raised great interest amongst women (and not men) and on this basis, new priorities were established with the women subgroups of the FRGs which were then subsequently tabled in the larger groups (Asgelil Dibabe et al., 2001).

### 3.4.5 GROUP SIZE AND STRUCTURE

It is generally felt that FRGs should not be too large. Various projects indicate that optimum membership ranges between 20 and 50 people, but groups of less than 20 farmers can also function well (Pretty, 2003; Sanginga et al., 2001). Group size should not be determined by research and extension staff but be discussed with the members keeping in mind that often research inputs (researcher-time, seeds, implements) are limited (Heemskerk et al., 1999). Large FRGs, on the one hand gain a wide range of experiences and are likely to include people from various farmer categories. However, on the other hand such groups are sometimes characterized by a less intensive exchange of experiences among members; they tend to be more subject to social problems and are often difficult to manage (strong leadership is required). The ease of management of larger groups may be enhanced by creating sub-groups of farmers who implement a particular activity or trial, and by delegating tasks and responsibilities to sub-group coordinators). Small groups of 10-20 members maintain a greater sense of solidarity and mutual responsibility (Uphoff, 1974; ASSP, 2004). Small FRGs seem more easily manageable and very dynamic; however, they risk representing only a small group of farmers and making the research enterprise less efficient<sup>24</sup>. It is likely that the more research inputs are provided free-of-charge, the more 'interest' there will be in participating in trials.

Research and extension staff should facilitate the discussion about group size, emphasizing tasks of FRG members, avoiding false expectations, indicating that information about new technologies must be accessible to all villagers and seeing to it that FRG-members represent the various socio-economic categories in the community.

#### Box 3.11 Tanzania: Advantages and disadvantages of large groups

Different advantages of relatively large farmer groups have been reported (Kingma et al., 1997):

- Many farmers can be reached by service providers.
- Dissemination of technology within the group will be fast.
- There are many experiences to be exchanged.
- It is more likely that various farmer categories are reached.

Large groups have, however, also disadvantages:

- Strong leadership is required.
- Farmers may not know each other well enough, which can cause distrust or jealousy.
- A large number of opinions and views are generated which may not be easily handled.

The FRG is a group specifically and collectively involved in technology generation, adaptation and dissemination. A group is something different from a collection of individuals gathering on request of researchers. It is necessary for the extension officers and for the researchers to facilitate group creation for this particular purpose.

Not all members of an FRG participate in all research activities. In the larger group different trials can be distributed among the members on the basis of



interest. Participants in the execution of a certain trial can be by the members of a sub-group, often referred to as an 'interest group' within the community (and hence the FRG). Subgroups for specific activities, sanctioned by the larger group report back to the 'umbrella' FRG, while meeting more frequently in the smaller group.

Mavedzenge Blasio (1999) reported common interest (sub)-groups in Zimbabwe of an average of 7-8.5 farmers (with 57% women). For adaptability analysis, an optimal common interest (sub)-group size for development of flexible recommendations is a minimum of 15 members (see Box 4.6). Some special guidelines have been developed for the effective formation of sub-groups; Box 3.12 gives an example from Tanzania. In some cases subgroups are almost independent and exist on their own (e.g. parts of Ethiopia and in Bukoba in Western-Tanzania).

**Box 3.12 Tanzania: Guidelines for establishing sub-groups or interest groups in FRGs**

Some guidelines for the establishment of sub-groups (Kingma et al., 1997):

- Select a name for the group. The group name can be derived from any language the potential members want: local dialect, national language or English. For subgroups it may be useful if the name reflects the technology being tested.
- Draw up a list of names of members. Members should be known to each other and to outsiders. Every season the list has to be reviewed and if necessary revised.
- Set clear objectives for the group. The members should focus on goals they themselves want to reach with the group. It should be clear to the FRG that the group belongs to themselves, and not to research or extension.
- Elaborate with the group the regulations for the proper functioning of the group. For example, group members are expected to attend meetings. If members do not attend 3 times in a row without proper reasons, they may be dismissed. The group should also decide after how many years and/or under what conditions a chairperson will be dismissed/replaced.
- Let the group define the tasks and role of the group leaders i.e. for the chairperson, the secretary and the trial coordinators.
- Ensure that the group meets regularly.
- Also make sure that the sub-group regularly reports to the main group (at least twice each year).

### 3.4.6 FARMER GROUP NETWORKS

Farmer groups can form a horizontal network between farmer groups, thus creating opportunity for a vertical bridge between the FGs and the network at meso-level. This dimension of social capital is referred to as of the bridging type (Grootaert et al., 2002; Pretty, 2003).

The challenge for such networks can be manifold e.g.:

- Empowerment at meso-level for lobbying and farmer representation functions.
- Up-scaling of generated technology through farmer and extension group links.
- Direct interaction between groups for innovation purposes.

In Zambia, a challenge encountered in 1993 was to have genuine FGs evolving in farmer representation at district and provincial level (Kalonge et al., 1993). A network of FGs was expected to lead to stronger representation at the meso-

level, the ARC level, etc. An inventory was made of all types of social capital at community level in each District and representatives were invited for a District meeting to establish a network (Kalonge et al., 1997). The inventory provided a directory of farmer and community groups, some of which were subsequently approached to become FRGs. The directory did not develop into a network due to lack of investment into the horizontal links (bridging) between the groups, individuals at district level, continued to represent only their own groups (Kalonge et al., 1997).

For up-scaling purposes, Districts in Tanzania established FEGs (mostly four), whose representatives interacted closely with the FRG in the district and verified the identified technologies. Representatives of FRGs were also involved in demonstrations in the FEGs. FEGs subsequently, informally linked up with T&V contact groups for dissemination purposes. It is important to stress the point of dissemination at an early stage, once promising results are achieved, and to explore how farmers can organize themselves for that purpose. It should also be determined whether the FRG could have structural bonds with other groups in the village to which they could provide the new knowledge e.g. women groups, youth groups, etc.

The FEG is the forum where the first assessment at large scale of adoptability of a technology is being done. There is thus a clear linkage between the FRG and the FEG. FEG villages are in the same AEZ (or farming system zone) as the FRG village. Extension staff introduces to the members of the FEG the promising technologies responding to constraints in the farming system and positively assessed by the FRG members. Similarly FRGs link with other FRGs, either in the same research mandate area of a particular ARC (e.g. through meeting at field days) or in other areas (through study tours). These exchanges have as the main purpose the exchange of knowledge, which can lead to new innovations.

In a recent development to mobilize social capital, community-based FGs are brought together in local networks at Ward and District level with support from public and NGO programmes both in Uganda, Mozambique and Tanzania (ASSP, 2004).

The 'spontaneous' formation of local networks of FGs in many SSA countries suggests that bridging social capital is possible, but requires a proper mix of local initiatives and external support in order to get to a sustainable network.

## 4 Practice of collective action for innovation

### 4.1 Introduction

Social capital is required for any sort of collective action and therefore also for research and extension activities for local technological innovation. Collective action can take place in all phases of the technology development process; this will be analyzed in more detail in this section. Local innovation is the key to sustainable improvement in agricultural production, natural resource management and rural livelihood systems. Involving stakeholders in early stages of IAR4D is of crucial importance as it leads to: better targeting technologies; greater sense of local ownership; economically securer livelihoods; reduced time between initiation research and adoption; increased rate and pace of adoption; greater impact on farmers' human and social capital and joint experimentation and sharing of innovations (Knox et al., 2004). Collective action for organizing farmer participation and knowledge sharing is important in order to: (i) add value to on-farm research; (ii) effectively scale-up technologies; and, (iii) enhance local human and social capital/capacity (Knox et al., 2004).

The role of FGs and organizations varies according to the phase they are in (see Table 4.1). On the basis of identified problems, priorities are being established which lead to programmes with different activities. Programme priorities as well as the corresponding resource allocations are established at research mandate area level (AEZ or research mandate area, extension target area) with farmer representatives (representative farmers, farmer organization delegates, etc.) in a consultative, advisory or partnership mode. Problem identification, action plan development and implementation of priority activities within priority plans are mostly done with farmer groups at community or village level. M&E of both programmes and activities will take place at the corresponding levels; this also allows for effective dissemination, up-scaling and feedback at the different levels.

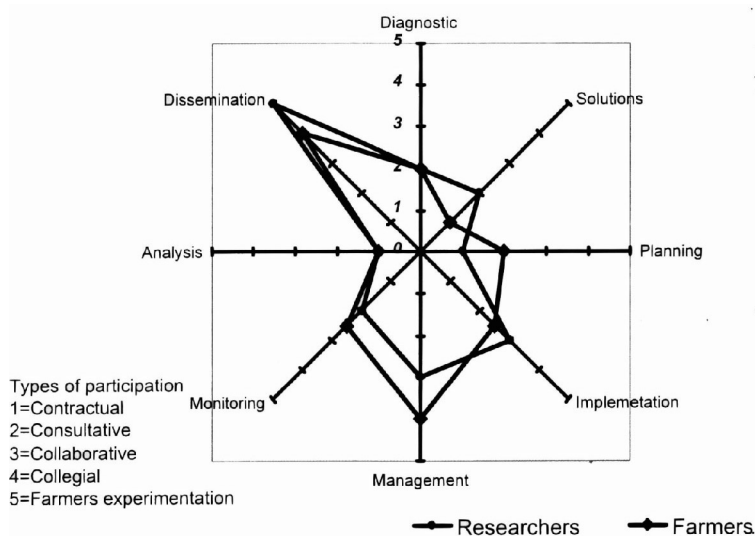
The type of participation (see 1.2) in relation to the different phases in the innovation process can be variable amongst groups. FRGs in Uganda are heavily involved in dissemination and (on-farm) management of research activities, but play a minor role in the generation of solutions and data analysis (see Box 4.1). A collegial mode between researchers and farmers only exists in trial management. The perception on the type of participation between researchers and extension can vary accordingly. The biggest difference in perception relates to planning and management. Researchers often consider

**Table 4.1 Roles of FGs in different phases of the research process**

Phase in the process	Role of farmer groups
Problem identification	PRAs with expert farmers and FGs in targeted areas and according to farmer categories
Priority setting and resource allocation	Wide variety of groups, networks can play a role. For resource allocation, special structures are required
Action plan and design	Elaboration with limited number of groups and approval by larger (Zonal/ARC) technical committees with farmer (network) representatives
Implementation	Representative farmer researchers (typology) on behalf of representative FGs (zonation)
M&E	Established role in activity level monitoring. However, groups also increasingly involved in resource allocation monitoring. Results to be adopted by group members
Dissemination, up-scaling and feedback	FRGs provide services in these areas to other groups and farmers, and play representative roles as well.

these processes more participatory than the members of FGs. Researchers and farmers do agree that diagnostics as well as monitoring is mainly consultative and that analysis is not even that, but only informative/contractual. Farmers and researchers both indicate that the level of partnership is higher for implementation and management of trials as well as for dissemination of the results.

**Box 4.1 Uganda: 'Spider diagram' showing relation between phase of research process and the type of researcher and farmer (FRG) participation**



Source: Sanginga et al., 2001.

## 4.2 Problem identification

The rationale for decisions on research programmes is often found in diagnostic surveys/studies. Over the years, the emphasis has changed from formal to informal surveys and to PRAs. With it, at least during the initial stages of a research programme, costly, more researcher-centred surveys aiming at the collection of largely quantitative data have been replaced by rapid, less expensive surveys. In the latter, more emphasis is placed on understanding farming systems among others by stimulating interactive processes. Minimal data sets are collected and analyzed in order to start the first experiments as quickly as possible. Additional (if required, quantitative) information might be obtained at a later stage through in-depth surveys and on-farm experiments. A shift towards more participatory forms of diagnostic studies has resulted in the development of a range of methods and techniques in more intensive farmer and stakeholder involvement and, in a stronger focus on understanding and identifying farmer-perceived problems and the use of farmer knowledge and terminology (e.g. local names for soil classification). Hence, participation and interaction are pursued at two levels. Firstly, at team level: PRA-teams are usually composed of persons from various services, like for example research organizations, extension services, agricultural officers, development programmes, NGOs, etc. In Tanzania participation of farmers in survey teams met with suspicion at the start but in time they proved very successful (Box 4.2). Involvement of farmers in the survey teams is an opportunity for farmers, if properly coached, to get sufficient emphasis on local knowledge. Secondly, in the execution of surveys by involving a large variety of resource groups as well as applying participatory methods to collect and analyze information.

Advantages of group diagnostics and targeting are that groups can become representative of zones and recommendation domains, groups can involve different target groups and a minimum bias, and group discussion can contribute to problem analysis and identification.

### **Box 4.2 Lake Zone Tanzania: Farmers as members of a participatory survey team**

In a diagnostic survey with emphasis on participation (PRA), different tools are facilitating the participation of all (including the illiterate). These tools, which are of a highly visual type (maps, resource flows, ranking, transects) result in strong ownership of the results by farmers. The results form an important part of the diagnostic survey report providing a base for priority setting by farmers.

In the Lake Zone of Tanzania, the initial surveys also resulted in the identification of farmers who were regarded by the community as resource persons. Some of these were subsequently involved in in-depth analysis of e.g. agro-forestry systems and nutrient flow analysis (Budelman et al., 1996).

Development of PRA-tools and methods are described in numerous publications and this was a major step forward towards greater stakeholder involvement in agricultural research. However, application of PRA techniques and participation of extension staff in diagnostic surveys are conditions but not a

guarantee for a good quality survey. Lately, it often seems as if PRAs have become too much routine and tend to be superficial and pseudo-participatory exercises. Measures to prevent this, based on experiences of a number of research organizations (KIT, 1997) relate to timely and complete involvement of farmers and other stakeholders in the whole process (Heemskerk et al., 2003) with an emphasis on participation rather than consultation.

Another important element in this is the use of farmers' knowledge such as the traditional soil and land use classification and making farmers' knowledge the starting point of any research plans (see Box 3.1 and also Enserink and Kaitaba, 1995). PRAs also form an important tool for development organizations to formulate district or regional agricultural development programmes. ARCs may make interesting partners for the implementation (read contracting) of such studies due to the skills developed in this field. Consequently, NGOs, international organizations and local governments, particularly following the decentralization of public services, often request ARCs to provide technical assistance in conducting PRAs for District Agricultural Development Plans (DADPs).

### **4.3 Priority setting and resource allocation**

Experiences described in Chapter 2 indicate that through stakeholder involvement in sub-national planning and review meetings, the latter may influence the research agenda for ARC on-station research (Box 3.15). This is illustrated by the presence of representatives of FRGs in ARC planning meetings in Ethiopia, Zambia and Tanzania and particularly in research executive committees and boards. Increasingly, farmer representatives influence the allocation of resources for the research priorities at community level. The prioritization of the proposals is done by research groups and communities or in sub-groups according to sex or age. The use of subgroups avoids that some individuals use their voice to dominate the priority-setting process (Box 4.3).

FGs are not often directly involved in resource allocation for different research activities. At the meso-level farmers are mostly represented in the technical and advisory boards and have as such some influence on resource allocation. However, these farmer representatives are often not linked to the existing farmer research and extension groups and/or networks. Increasingly, farmers also have a voice in the management committees of local agricultural research and development funds, but with the same restrictions indicated before. FGs do actually contract research and extension services in Uganda under the NAADS programme, where farmers will be responsible for contributing an increasing share of the funds necessary for services<sup>25</sup>.

At the community level, FGs have been exposed to research activity costs as a first step to make research costs transparent for future priority setting also on the basis of an existing budget (see Box 4.4).

Farmers will, however, only manage to play a real and direct role in resource allocation for research and extension if they are organized in federations and

**Box 4.3 Tanzania, Meatu District: Example of priority setting by Bulyashi FRG**

Farmers discussed in a plenary, facilitated by the research and extension officer, the results of last season's trials (these are printed in bold in the table); they also listed and discussed new emerging problems. The plenary subsequently split into three groups: older men, younger men and all the women (both young and old). The three groups ranked the newly identified problems as well as the earlier identified problems already addressed in trials through pairwise ranking. The results of each group ranking were then presented in a plenary and an action plan for the next season was prepared for research and extension for follow-up. The plan considered the following questions:

- The three top priorities for all three groups to be approved for inclusion in the programme after plenary discussion, which resulted in starting new activities (in italic).
- On-going activities to be continued or discontinued after discussion, which resulted in dropping the simsim trials and emphasizing simsim marketing instead (in bold).

Researchable topic	Older men	Younger men	Women
<i>Sorghum pests</i>	1	5	5
<b>Ox-drawn planter</b>	7	3	2
<i>Ox-drawn weeder</i>	6	2	6
<b>Sorghum seed production</b>	2	9	4
<i>Soil erosion</i>	14	1	1
Maize diseases and pests	3	7	7
<i>Magoye ripper</i>	5	4	8
<i>Tick-borne diseases</i>	12	6	3
Cotton pests and diseases	8	10	10
Cattle fodder	4	11	14
<b>Cotton varieties</b>	10	8	11
Sweet potato varieties	13	13	9
Chicken diseases	11	16	12
<b>Simsim and its market</b>	9	15	16
Rosette virus in groundnut	15	14	13
Dry season vegetables	16	12	15

networks. In order to achieve this, District and Ward 'Farmer Fora' have been organized in Tanzania and Uganda.

#### 4.4 Action plans and design

Groups can give more emphasis to the farmers' own design, e.g. interest to locate the experiment where the problem is, size of experimental plots according to the available budget and the number of options, labour and inputs needed, etc. Similarly groups will like to adjust trials and treatments over years using new insights obtained in the group. Different farmers could design the trial differently and this can be discussed in groups in order to allow for comparisons. In this way capacity building for farmers' own research and analysis is supported. Groups also facilitate the resolution of conflicts such as between researchers and farmers on variability versus adaptability

**Box 4.4 Tanzania: Cost of FRG research activities as presented to farmers**

The cost of the various trials was calculated on the basis of the budgeted amount (without transport). Note that the number of trial sites at the Bukangilija location is small, which greatly increases the cost of the research work at the site. Data were presented to farmers as an input in the FRG's total priority setting process.

<b>Bukangilija trials</b>	<b>No farmers</b>	<b>Budget</b>	<b>Cost/farmer</b>	<b>Rank</b>
<b>Maswa District, Lake Zone</b>	<b>involved</b>	<b>TAS</b>	<b>TAS</b>	
<b>1998/1999 season</b>				
Forage species testing	5	314 850	119 770	6
Grass/legume mixtures	4	284 000	71 000	10
Maize weed management	5	730 483	146 097	5
Cotton/maize/manure rotation	6	610 000	101 667	8
Sorghum/legume rotation	2	535 923	267 962	3
Mpwapwa breed testing	3	635 000	211 667	4
Cotton advanced lines	4	1 100 000	275 000	2
Maize ST varieties	5	422 000	84 400	9
ISFM PRA follow-up group activities	Several	500 000	Not known	nk
ISFM FRG Manure x crop trials	5	570 000	114 000	7
Response farming (climate x crops)	3	900 000	300 000	1

The members of the farmer research group considered the number of farmers involved in each trial too small. Most trials should involve a larger number of farmers for cost-efficiency reasons (clustering of trials), increased exposure, as well as for statistical reasons<sup>26</sup>.

(1 US\$ was equivalent to 600 TAS in 1998)

(Hildebrand and Russell, 1998). In groups, action plans and calendars can be better developed with respect for culture, religion and gender roles (Mavedzenge Blasio et al., 1999).

Objectives and requirements of trial design are to be stated clearly, while there needs to be greater clarity with respect to assigning responsibility for implementation and evaluation. Annual group meetings are an important mechanism in this process, including their timing, objectives and approach. Rationally, the very first meeting between the FRG and researchers will need to deal with the outcomes of the PRA or client survey. This is however, in each village, a one-time meeting. The actual research planning meetings take place at the on-set of an agricultural season. Objectives of these meetings are:

- Explaining new trials and adjusting the design of the ongoing trials.
- Selecting participants based on group decisions.
- Discussing details of the programme for the coming season and the roles of the different collaborators (farmers, researchers and extension staff).
- Formalizing a tripartite action plan (researchers, extensionists and farmers).

Often a need exists for strengthening the role of farmers in the design of research trials and activities. Increasing farmer involvement can be realized in:



site selection, selection of participating farmers, data collection, monitoring and analysis of trial results, etc. Advantages of using groups in planning include the fact that joint planning avoids a personal bias, different research needs and opportunities can be assigned to different sub-groups and the priorities established are more likely to be well-focused and not random.

#### 4.5 Implementation

Involvement of farmers and other stakeholders in technology development should not be restricted only to participatory surveys. The realization that researchers, whatever the depth of participation in diagnostic surveys, can never fully incorporate farmers' knowledge and experience, has led to the belief that farmers are the best implementers (and monitors) of on-farm research<sup>27</sup>. In agricultural research, both researchers and farmers play a role in management of the trial activities as well as in the actual implementation. The balance between the two main actors is linked to the type of trial and is often expressed in the assigned name e.g. 'Researcher-Managed/Researcher-Implemented' (RMRI) trials are fully controlled by researchers (often on-station or in multi-locational testing), 'Researcher-Managed/Farmer-Implemented' (RMFI) trials although often on farmers' fields are strictly managed by researchers, and 'Farmer-Managed/Farmer-Implemented' (FMFI) trials, where researchers are at most only involved in the design and the use of results (Norman, 1997; Heemskerk et al., 2003).

As mentioned before, farmers and other stakeholders can and should also influence on-station research, even though it is managed and implemented by researchers. Client-orientation of research implies more openness of ARCs with respect to activities undertaken on-station. The better the relevance and focus of on-station trials, the sooner it might be expected that new technologies can be tested on-farm. Although possibilities for direct stakeholder involvement in on-station research are limited, successful experiences have been reported on the participation of farmers in evaluating on-station research results, particularly with respect to crop variety selection and in participatory plant breeding (Box 4.5).

To improve adoption of promising technologies, a final test under 'real farming conditions' has proved a successful complement to the on-farm testing phase. This final test is best conducted in a number of villages scattered across the zone to which the technology is supposed to be applicable. This phase mostly covers one season; a new technology is being disseminated more widely and its adoption (or for that matter need for further 'adaptation') monitored. In addition, at this stage, possible institutional constraints are also identified and the manner of best disseminating the new message evaluated. Testing conditions should therefore resemble as much as possible the conditions of the potential adopters of the technology such as: plot size, information provided by extension workers, inputs to be paid for by participating farmers, etc.

**Box 4.5 Tanzania: Farmer involvement in on-station research**

In cassava breeding farmers at ARI-Maruku and ARI-Ukuriguru in the Lake Zone of Tanzania are involved as early as possible in the selection of segregating materials of F1 populations. While researchers record quantitative data, most farmers' assessments are visual and provided as verbal comments and observations. The following examples show how participatory methods have been exploited for cassava breeding in the Southern African Root and Tuber Research Network (SARRNET) and International Institute for Tropical Agriculture (IITA) programs. FRGs both near ARI-Ukuriguru and ARI-Maruku were invited to make a selection of varieties they would like to test on their farms. In Tanzania's Bukoba District (in which ARI-Maruku is located), farmers' participation in the selection of cassava varieties from on-station experiments resulted in the selection by farmers of varieties for specific interests (i.e. for high root yield, intercropping, use of leaves as a vegetable, or processing qualities). However, before letting farmers test the varieties they selected on-farm, some of the selections were deleted from on-farm testing after farmers were briefed on the disease susceptibility of their preferred varieties (Kapinga et al., 1997).

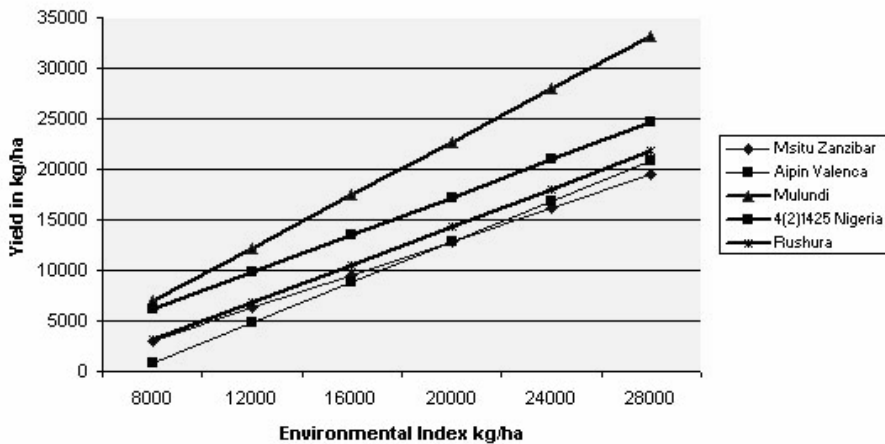
Many ARCs also support 'informal farmer experimentation', where farmers themselves experiment, and try out new practices and technologies, outside the formal research structures. Researchers provide extension staff with adequate information on the new technology and assist in the evaluation of testing results. Technical deficiencies observed result in renewed on-farm research. FMFI<sup>28</sup> testing is used to confirm (and if necessary adjust) the potential recommendation by assessing the characteristics and needs of interested farmers and the production (technical/physical) and socio-economic environments in which they are operating. In being the principal partner in the experimental phase, the most common task performed by FRGs, concerns conducting on-farm experiments, and the testing of the most 'promising' technologies<sup>29</sup>. Adequate training (in for example data collection and compilation, organization of FG meetings, etc.) and guidance by research and extension staff are prerequisites for a successful further involvement of farmers in trial preparation and implementation. Village extension workers must be involved in supporting on-farm research activities and generally have a tight schedule with respect to their main activities: visiting contact farmer groups and collecting statistical data (e.g. data to calculate crop forecasts). Formal arrangements between extension and research organizations (e.g. MoUs) are usually required to enable extension workers to adequately participate in research activities at village level<sup>30</sup>.

Adequate involvement of farmers and village extension workers in on-farm research activities may reduce the required frequency of site visits by research staff and guarantee more regular monitoring of on-farm trials. Cost-efficiency and quality of on-farm research are improved when adequate training is assured for the extension staff involved. Farmers generally take charge of implementation of on-farm trials, however, even in FMFI trials, researchers still tend to hold on to some management responsibility, which they find hard to transfer to farmers. Farmer implemented trials are conducted with various treatments per farmer<sup>31</sup>. Researchers often fear that lack of scientific rigour will lower the quality of the on-farm research. Increased use of alternative

statistical techniques that have become available such as regression analyses including adaptability analysis (formerly called ‘modified stability analysis’), enables researchers to better analyze FMFI-type trials and likely results in more flexible recommendations for different socio-economic categories of farmers in different agro-ecological conditions (see Box 4.6).

Box 4.6 Tanzania, Kagera Region: an example of adaptability analysis

Adaptability analysis (i.e. regression and multiple variance analysis) of on-farm data over a wide variety of socio-economic conditions and agro-ecological environments often leads to more flexible technological recommendations. Recommendation A might have been the best average recommendation (so-called ‘blanket’), while recommendation B is best for the resource-poor and recommendation C is best for the resource-rich. The following example is from Kagera Region, Tanzania. Farmers tested five cassava varieties over different environments resulting in different performances. Variety Mulundi performed better under optimum conditions, but did not have a preferred taste, while the Nigeria variety performed better across all environments. Combined with the assessment by farmers of other characteristics, such a situation can lead to flexible recommendations: local varieties Msitu Zanzibar and Rshuhura with preferred tastes do relatively well in low potential environments, but Mulundi is recommended for the higher potential environments.



Source: Steenhuijsen Piters et al. (1997), Russell et al. (1995).

Substantial differences exist among research programmes<sup>32</sup> concerning payment for risks and inputs needed for on-farm experiments. Whereas some research programmes tend to pay for all inputs used and even pay for all or part of the labour involved to ensure farmers’ ready participation, others make a clear distinction between the extent of payment in relation to the type of trial. It is recommended that in on-farm experiments, labour costs of participating farmers are not paid. Incremental (to traditional practice) external inputs required for a trial may be provided and paid for in case of RMRI trials, but in case of FMFI-experiments it is recommended that participating farmers cover a significant part of the costs of external inputs to be applied (e.g. under the

current Tanzania ‘Participatory Agricultural Development and Empowerment Project’, 50% of the costs of purchased inputs for verification trials are paid for by FGs).

#### **4.6 Monitoring and assessments**

Traditionally, researchers themselves have largely taken responsibility for the evaluation of technologies concerning quantitative data on the technical feasibility (i.e. yield) and financial viability (i.e. partial budget analysis). New technologies and practices are now also evaluated based on indigenous knowledge including farmers’ evaluation criteria. Technology evaluation by farmers (‘farmer assessments’) has been gaining ground and become an important component of many on-farm research programmes and indeed in the national variety and technology release processes. A change has also been observed in the level of analysis. Previously, evaluations were largely restricted to the impact of the new technology on individual households. Currently, researchers feel increasingly responsible also for determining the (possibly negative) effects for society as a whole and/or the environment if the new technology would be widely adopted. Major issues covered by these evaluations include socio-economic differentiation between and within households (i.e. gender) and ecological sustainability.

Although inclusion of farmers’ criteria in an assessment of the tested technology is essential, farmer assessments are not replacing more formal assessments. Appropriate evaluation criteria are identified as farmers may apply entirely different criteria compared to researchers or development planners. Careful problem analysis (based on criteria agreed upon by all), observation and discussions need to be arranged during trial implementation. Adequate understanding of the subjects under consideration often requires farmer assessments to be made in the local language. Particularly elderly people and women may have difficulty understanding other languages, or visualization techniques. Evaluation techniques are therefore tested prior to the actual evaluation. During farmer assessments, semi-structured discussions may be combined with PRA techniques such as pair-wise and matrix ranking and scoring. The latter permit a certain degree of quantification of evaluation results by weighing the importance of criteria used. Attempts have been made to combine quantitative and qualitative methods to combine PRA-results and formal procedures. Matrix scores of assessments undertaken by various groups have been submitted to statistical tests comparing their variation and distribution. Because wealthier male farmers tend to dominate and direct village discussions, farmer assessments should be made with sub-groups of trial participants from various categories, followed by a plenary session to synthesize opinions (Box 4.7)

Farmer assessments also offer an opportunity to identify new research topics with farmers. Discussions on alternative technologies or the implications (constraints/opportunities) of adoption of the technology may give rise to new ideas for development and research, making the research process reiterative.

**Box 4.7 Tanzania Ukiriguru/Maruku ARCs: Farmer assessment in practice**

Normally farmer assessment meetings take place in the form of discussions. For example, researchers from ARC-Ukiriguru or ARC-Maruku in Tanzania organize meetings with those FRG members involved in the implementation of the trials. Farmer assessment meetings are held for each sub-group, which can be both the common interest group for the research activity, as well as groups for difficult farmer 'categories' (often young men, older men and women). Depending on the trial, one or two farmer assessment meetings are held during a season. The objective of the assessments is to visit trials and discuss in detail the opinions of farmers regarding the trial and its results. The outcome of the assessment is used as an input in village priority setting, the research programming and in the design of trials, as well as in data analysis. A large number of tools, approaches and methods exist for farmers' assessments. Experiences gained in the Lake Zone have been documented and guidelines developed (Kingma et al., 1997).

Below an example of pairwise ranking of cowpea varieties by farmers in Kwimba in 1995 and 1996, in the Lake Zone in Tanzania (Kileo et al., 1999)

Cowpea varieties	1	2	3	4	5
Fahari	x				
Vuli-1	1(1)	x			
IT 85D 2020	3(1)	3(2)	x		
IT 84D-552	4(1)	4(2)	3(3)	x	
Local spreading	1(1)	2(2)	3(3)	4(4)	x
Total score	2(4)	1(3)	4(2)	3(1)	0(0)

The pairwise ranking provided a group view on the most preferred variety, further substantiated by matrix ranking for different cowpea criteria considered important by both producers and consumers. Varieties 1 and 3 had the highest overall group score over the two years combined.

Farmer assessment meetings complement formal FRG research planning meetings. Furthermore, farmer assessments can fulfil an important social function by strengthening cohesion of FRGs as evaluation of the work of one or more seasons is often considered an excellent opportunity for celebrating the groups' achievements. After the agricultural season, a meeting is held with all the members of the FRG in order to evaluate the last season (no farmer assessment as such but using the outcomes of the farmer assessments). Modifications of trials, if needed, should be agreed upon; it should be clear which trials are concluded and which ones should continue. Farmers may also propose new trials for the next season. It is important to make sure that these proposals are first discussed within the FRG without researchers being present. In that manner, when these ideas for new trials are presented to the researchers, they have become a group concern and are not based on the interests of particular individuals.

#### 4.7 Dissemination and up-scaling

The most common initiative of ARCs in technology dissemination and up-scaling is to inform stakeholders on the progress and results of the ARC research programmes by the organization of field days, or 'open days'<sup>33</sup>. In

addition to being an important event in fostering an exchange of ideas between stakeholders and strengthening mutual confidence, these functions can be important in increasing political support to agricultural research and development. An interesting initiative is reported from Tanzania (Box 4.8) where the open day of an ARC is combined with field days in a research village in each of the agro-ecological zones. In this way, a coherent picture of on-going research, both on-station and on-farm, is presented.

**Box 4.8 Tanzania and Zambia: Open days and field days organized by FRGs**

Open days of the ARC aim at showing the clients of the ARC what are the results of the research programme, field days also aim at specific interaction with farmers and can contribute to assessment. Experience shows that open days and field days can be very well organized by FRG-members, requiring little help from research and extension staff. However, support from research/extension staff, particularly at the beginning, is important to discuss the objectives and programme with FRGs, striking a balance between field visits, discussions and the often highly appreciated social elements of singing, dancing, eating and drinking. Support from research/extension is also needed to invite (and often to transport) visitors. Financial support is often required although many FRGs are found to be quite willing to contribute a substantial part of the total costs 'in kind'. In the Lake Zone, the ARC however, usually covers all costs related to food for visitors from outside the village.

In addition to the activities of any formal extension services, FGs involved in research and extension (FRGs and FEGs), can play an important role in technology dissemination (Norman, 1997). Although it depends on the progress made with any given technology at what stage formal dissemination can start, farmers should never consider the work they do with research (and extension) as a secret that they have to keep among themselves. Ways for farmers to share information/knowledge among themselves are:

- organizing field visits to each other's trial sites (among members of the same sub-group and between sub-groups);
- participating during agricultural shows (e.g. annual 'nanenane' shows in Tanzania, at village, district, regional and national level);
- holding demonstrations for neighbours (see Box 4.9);
- sharing seed or planting materials (of improved varieties);
- giving information and/or arranging demonstrations during village meetings;
- becoming trainers to other farmers (farmer to farmer training).

**Box 4.9 Mali and Benin: Organization of pre-extension trials by (CMDT<sup>34</sup>) CARDER<sup>35</sup>**

In Benin and Southern Mali, 'pre-extension' has become an integral part of the research-development process. Each promising technology is submitted to pre-extension activities of intensified local testing, farmer training and dissemination before its final release.

CMDT extension staff is also involved in the pre-extension phase of the regional research programme. Selection of pilot zones by CMDT in consultation with the ARC normally includes villages where pre-extension activities are organized. Farmers are selected on the basis of voluntary interest. However, most farmers are growing cotton and are thus automatically members of a village association (AV).

A range of possibilities exists in involving these FGs in the exchange of information and dissemination of new technology whether generated by farmers alone or in collaboration with a research organization. As indicated above, one of these is farmer-to-farmer extension via *farmer field days* or exchange visits among villages. This is a suitable mode of technology transfer, notably in situations in which the adoption of a technology requires little training (e.g. introducing an improved variety). FRGs and FEGs provide an excellent vehicle for organizing farmer field days, in which farmers involved in on-farm research activities show, explain and discuss their on-going experiments to other farmers and stakeholders (Box 4.9). They encourage farmers from other villages and sometimes other zones, to test and/or adopt new technologies, they increase farmers' requests to researchers to solve their problems, and research and extension organizations will therefore have to intensify their efforts to come up with solutions to farmer-felt problems.

A not yet widely used method of disseminating new technologies and research results through FRGs and FEGs may be through *local radio broadcasts and agricultural shows*. During agricultural shows, FRGs have proved to be very capable and convincing demonstrators of new agricultural technology. Rural radio programmes have become increasingly popular providing an important opportunity for informing a large audience. Although dissemination of extension messages through radio programmes is not uncommon, research often only uses this method to a limited extent.

Innovative farmers, both men and women, from FRGs who have built up some experience in working with research and extension organizations have proved to be valuable participants in *workshops and seminars*. Not only do they provide important expert knowledge on constraints and on-farm experimental results, they also prove to be important practical and often critical commentators in presentations and ceremonial discussions among researchers, which are frequently too academic. Although many researchers initially tend to hesitate or oppose the idea of farmer participation, farmers' contributions are often highly appreciated, provided the nature of the meeting is appropriate and its organization facilitates their participation (e.g. language used, type of workshop facilitation, etc.).

Researchers are frequently requested to train extension staff or farmers in new technologies. Members of FGs can also be successfully involved in *training*. The effectiveness of the group in this respect depends to a great extent on its links with other organizations, agencies and individuals in the immediate community. In Tanzania, experienced FRG members are sometimes requested to replace research staff thereby considerably reducing investment of research staff time and costs. Furthermore, FRG members proved to be excellent trainers of both farmers and extension staff, as they know farming conditions better than researchers, speak local languages and possess important information on for example the effect of management, soil types and weather conditions on the performance of a certain technology. This kind of activity will support FRGs in a process of enhancing self-confidence and empowerment. Researchers and

extension staff should clearly discuss tasks, selection of trainers and modes of payment (e.g. whether or not, in addition to reimbursement of expenses, a fee must be paid, and if so, to whom, the participating farmer, the FRG/FEG, etc.). So far, little experience to draw conclusions on the efficiency of these approaches has been gained in SSA. Applicability and usefulness of the various ways to involve farmers in training have to be determined locally (see Box 4.10).

**Box 4.10 Tanzania and Zambia: Examples of farmer-to-farmer training**

FRGs representatives in the Lake Zone in Tanzania have been actively involved in demonstrations to other groups of farmers on the use of oxen-drawn equipment, previously tested by the group members e.g. the ox-drawn ripper and ox-drawn weeding equipment.

Also in Tanzania, ARI Naliendele links local individuals, FRGs and local institutions to multiply oil seeds of preferred varieties, which includes farmer-to-farmer training (Mponda, 2002). In Zambia, FRGs also performed additional functions such as farmer-to-farmer extension across zones (demonstrating cassava husbandry practices, legume seed storage by women, use of bulls and cows for draught purposes, use of urea-treated stover as supplementary feed, seed banks (sorghum, millet and legumes), monitoring field days, etc. (Kalonge et al., 1993).

It should be emphasized that the various suggestions made to involve FGs in disseminating research results and new technologies, and farmer training, require additional time, transportation facilities and, importantly, additional funds. Although no concrete evidence about returns on these investments is available, it is assumed that these activities greatly improve research efficiency and dissemination of research results.

Technology development can be viewed as a process that starts from identifying a constraint to large-scale adoption of the technology addressing that constraint. In principle, the process is characterized by continuous feedback (from farmers, extension officers to research and back), which leads to increased knowledge and refinement of the technology. During this whole process of technology testing, different types of experiments, trials and tests are conducted both on-station and on-farm. During the entire process of technology development, the roles of the researcher, the farmer and the extension officer evolve and are complementary.



**Box 4.11 Zambia Western Province: FRG seed production through 'Seedbanks'**

The Provincial Research Organization in Zambia's Western Province, which is part of the National Research Branch and based at Mount Makulu near Lusaka, implements a farmer-oriented research programme. One of the constraints identified in the diagnostic surveys in Senanga-West (one of the three main target areas of the program), was the shortage of quality seed, mainly due to drought. Every drought and corresponding famine (compounded by economic and political problems) resulted in shortage of seeds and corresponding emergency plans with seeds from other areas. Often these seeds were not well adapted, resulting in increased risks for the local households. In collaboration with the local authorities (Senanga District and extension staff) a survey was implemented in order to identify opportunities for local seed production and supply to overcome the problem.

The survey resulted in the following main findings (Kalonge et al, 1989):

The shortage of seeds of good quality was mainly related to local food crops such as groundnuts, cowpeas, sorghum and bulrush millet. Women are closely involved in the selection and storage of seeds. Two villages which had good logistics (accessibility) and soil characteristics (good soils) were identified which had a reputation of being able to maintain some seed even during worst droughts, and small quantities of the right seeds could be obtained there. Farmers from the two villages were involved in the testing of 'new' varieties on their farms for a few years, which resulted in recommendation of these varieties for use in Senanga-West. A Farmer Research Group (in one of the villages, Nangweshi) subsequently developed a 'seedbank' group (facilitated by research and extension with manuals and advice), providing farmers' seed of the referred varieties (on a commercial basis) to other villagers and outsiders. This seedbank activity proved to be very successful and sustainable.

Although detailed findings are not available (a study is presently on-going using this example as a case, Ndiyoi, Pers. Com.), a conclusion could be that this research and development activity in the early 90s proved sustainable due to the attempt to build on the local knowledge on seed supply and traditional seed supply systems (Kalonge et al., 1989).



# 5 Monitoring and evaluating the role of FRGs in innovation

## 5.1 Introduction

### 5.1.1 BACKGROUND

Monitoring is the systematic and continuous assessment of progress towards the realization of objectives as well as of the quality of the process leading towards it. Data collected and analyzed periodically can be used to increase the effectiveness and efficiency of the role of the FGs in the innovation system. Different actors can collect the required data: the FG members, Local Government Authorities, agricultural extension (public and private), the researchers and/or the ARC socio-economic section. The most important functions of monitoring are to:

- provide management support;
- provide the innovation system stakeholders with all information needed to oversee implementation progress, identify strengths and weaknesses and, if necessary, improve methods for timely and adequate adjustment of activities to reach the expected results or accelerate the process towards it;
- improve insight in the effectiveness of the interventions by drawing lessons from the information on the direct results and effects of specific activities;
- enhance the active involvement of all the beneficiaries in planning and decision-making or Participatory Monitoring and Evaluation (PME);
- document the process of implementation.

Evaluation is a series of interim reviews to analyze the monitored information in order to assess how things are going, if goals are achieved and to gain more insight in development processes. It provides insights in the target group's attitudes towards the results and the effects of interventions. This type of evaluation refers to the achievement of the immediate or short-term objectives of the program. It can be considered an element of effect monitoring and is therefore part and parcel of monitoring. Data collected during monitoring serve as a basis for the on-going evaluation.

With the change from the linear TOT model to the social organization of innovation networks and systems came the realization that an effective innovation system requires a multitude of organizational and institutional changes. Farmer groups innovate based on information and knowledge from a wide variety of sources, including their own, other farmers and public ASPs, but also from input suppliers, Farmer Organizations, private traders, rural radio, etc. The innovator can be the farmer but also other actors in the

economic chain. Monitoring of the functioning of such a multi-stakeholder innovation process and the role of the FGs in this is complicated since:

- the innovator (producer, processor) is central and no longer end of the TOT line;
- each stakeholder has his/her own dynamics;
- joint monitoring with group monitoring elements is required in this institutional setting;
- a simple logical framework cannot be used, as the process is multi-actor, multi-speed and there is a need for simplification.

The multi-stakeholder approach for innovation is seen as a condition for enhanced technological innovation (Chema et al., 2003; Bingen et al., 2004). This will also require new approaches to and mechanisms for M&E of the outcome of the process, but also the process itself, the institutional links (e.g. communication flows) and the organizational changes of stakeholders involved. In relation to the social capital at community level, M&E will relate to the actual quality of the social capital for innovation, based on local or endogenous innovation systems (i.e. bonding social capital), the quality of interaction with other groups of farmers in innovation (bridging social capital), as well as the relations and institutional links with other actors (i.e. linking social capital).

The three types of social capital also need to be monitored in terms of the performance of FGs in relation to agricultural innovation:

- Output: Empowerment of FGs in agricultural innovation through institutional and organizational change processes.
- Outcome: Results and impacts of the FG involvement in agricultural innovation.
- Input: Costs and other inputs in the effort to involve FGs in formal agricultural innovation e.g. in agricultural service delivery.
- The interactions between the various actors in innovation also make it necessary to monitor the system jointly, or least the links between different actors reciprocally.

Others issues related to these key organizational monitoring questions relate indeed to the internal organization of farmer networks and the internal accountability, the need for M&E of the multi-stakeholder innovation systems e.g. by independent knowledge institutions (e.g. PRSP observatories or University Research Centres) for the identification of developments (Collion, 2004) and the role of other stakeholders from mainly the private sector (rural financing institutions, marketing, processing, etc.).

### 5.1.2 FG EMPOWERMENT IN AGRICULTURAL INNOVATION

A FG is not a static entity; it is dynamic and goes through different stages. To know how the group evolves is important for the farmers themselves, for the extension workers, for researchers and other actors involved. Groups develop and change through many organizational innovations. Naturally, the relations of FGs with other actors equally change and develop on the basis of institutional innovations.

In order to monitor the development of FG empowerment in agricultural innovation systems, criteria for the measurement of its evolution and

strengthening have been developed for each of the three types of connectedness of communities: bonding within communities, bridging between communities and linking beyond communities (Pretty, 2003). The evolution of social capital can be divided in three development stages: (i) The reactive and dependence stage; (ii) The realization and independence stage; and, (iii) The awareness and interdependence stage. In order to analyze the stages of evolution of FGs in innovation, five sets of criteria (with three levels each between brackets) were developed for monitoring purposes (Pretty, 2003); they are:

1. Level of worldview and sense making (e.g. looking back, inward and forward).
2. Level of internal norms and trusts (limited, sharing and sharing beyond the group).
3. Level of external links and networks (few links, links and up-scaling).
4. Level of exposure to technologies and improvements (external, internal and ex-internal match).
5. Level life span expectancy (breakdown easy, break down only after achieving goals, are beyond breakdown).

Analysis of these criteria can provide a status of particularly the bonding type of social capital and the status of evolution to the desired level of awareness and interdependence of FGs, which not only allows demand-driven planning for service delivery but also FG driven agricultural service delivery itself.

In terms of actual participation in agricultural innovation systems a major challenge exists for FGs in broadening their scope from a functional consultative type to a more collegial empowered type and from single issues (e.g. variety change) to broader natural resource management and other more complicated, integrated technology issues (Sanginga et al., 2001). A dearth of systematic empirical studies that evaluate the quality of participation of FGs in innovation systems exists. Some of the key questions to be answered are:

- What type of participatory research exists at the different stages in the research and development process?
- How did farmer participation occur?
- Who actually participated?
- What are the factors that determined farmer participation in the FRG?
- What criteria were used in M&E of the performance of FRGs?

On this basis, Sanginga et al. (2001) developed more detailed performance criteria and indicators for the monitoring of the participation of FRGs in agricultural innovation (Table 5.1).

FGs could be evaluated according to this matrix in high, medium or low performance levels for each of the performance indicators (in %); in Uganda such an evaluation resulted in 24% high, 33% medium and 43% low overall performance of FRGs in agricultural innovation. The participation criterion scored highest and the bridging social capital criterion lowest (Sanginga et al., 2001).

**Table 5.1 Criteria for the M&E of FRGs**

Performance criteria	Performance indicators (to be quantified)
Social capital (bonding)	Cooperation, trust, collective action, cohesion, compliance, diversity, heterogeneity/homogeneity.
Human capital	Technical knowledge of members, new farming, self-esteem and confidence, skills, attitudes, innovativeness.
Group organizational capacity	Formation, objectives, leadership, structure, norms and rules, regulations, decision-making, meetings, activities, records, dynamics.
Participation process	Meetings, activities, decision-making, communication, dynamics, women.
Experimentation/research activities	Experiments, technologies, farmer researchers, extent, output.
Social capital (bridging)	Contacts, initiatives to contact, collaboration, exchange visits, field days, visits.
Reach or dissemination	Community relations, information sharing, farmer-to-farmer dissemination, sharing experience.
Sustainability	Financial contribution, diversification, vertical links, initiatives, plans, external dependence.

Braun et al. (2000) formulated another set of criteria particularly for the monitoring of the evolution of the scaling-up (vertical or linking) and scaling-out (horizontal or bridging) of Farmer Research Committees (FRCs):

- To what extent is there an advance from simple commodity research problems (e.g. breeding varieties) to more open and complex problems (Integrated Pest Management, Integrated Soil Fertility Management)?
- Is there a launch of small agro-enterprises based on results (i.e. from production to chain development)?
- Are also other types of services provided?
- Do FRC/CIAL members participate in other community organizations?
- Is there any formation of second-order organizations at meso-level involving FRCs?

The FG themselves need to decide what they want to monitor and how to do it. The results are to be discussed among group members themselves. The points to monitor should relate to the objectives that the FG members have set for themselves. The importance of monitoring should be made clear to the FG i.e. the FG should know how they can analyze the data collected and why that is important, and how they can use it for their own purposes and not for use by others only.

### 5.1.3 RESULTS AND IMPACT

In functional terms FGs and organizations can have three major roles with corresponding results in agricultural innovation development (Bebbington et al., 1994):

1. FGs provide the interface between the formal innovation development systems and farmer innovation systems.
2. FGs can act as a user constituency for the rural poor. FGs with representation of all categories of households, including the poor, can exert pressure and have a 'demand-pull' function, while holding research and extension organizations accountable for quality service delivery. Research becomes more demand-driven and relevant. This is expected to lead to more pro-poor research results and technologies and requires some form of structural as well as cognitive form of social capital. Agricultural service providers actively contribute to the development of this social capital at community level.
3. FGs can also be closely involved in the verification, adaptation and dissemination of agricultural technologies through their own adaptive research programmes (directly or indirectly through contracts) as well as through farmer-to-farmer extension. Formal research and extension becomes in this way more efficient as well as more effective in the dissemination of results. This has often been the original reason for working with groups as compared to individuals.

The impact in all three functions can then be measured in terms of input (e.g. establishment of social capital) as well as output. In summary three types of enhanced impact of research and extension as a result of working with FGs can be expected (Bebbington et al., 1994):

- Enhanced effectiveness through the farmer learning approaches i.e. relating the formal knowledge system with the farmer's knowledge system.
- A greater demand orientation, which can be measured by the empowerment of FGs (farmers' voice in boards, etc.) and influence on the research and extension agenda, and also through enhanced equity.
- Improved efficiency and cost-effectiveness of research and extension, through the emphasis on up-scaling and dissemination.

All three together will eventually lead to greater impact on productivity, profitability and poverty reduction.

Heinrich (1992) found particular evidence of enhanced effectiveness of the innovation system; he identified: higher adoption rates (after several years of group functioning); wider discussion of, and access to, knowledge; researchers became more aware of farmers' ideas and circumstances; and, a larger number of replications entered into comparative analysis of trials.

The impact of research and extension through strong FGs can also be measured by other activities that groups employ and which increase their bonding type of social capital. The strongest organizations with impact on rural poverty have first concentrated on the context rather than on the content of rural livelihoods and based on this, agricultural research and extension strategies. Successful organizations acknowledge the need to enter into non-agricultural training and address off-farm income generation (Bebbington et al., 1993; Heinrich, 1993). Effects on family income can eventually measure impact, provided that the political and economic environment, as well as the historical context (less of a

conflict history) are conducive, and are further facilitated by long-term literacy and administrative training (Bebbington et al., 1994).

**Box 5.1 Mali: FG roles in monitoring and contracting research**

'In Mali, the experience of developing new partnerships between farmer organizations and research is only in its infancy, but it contains the necessary ingredients for an effective partnership as described in this paper: (i) farmers are involved at the bottom and top end of the decision-making processes which define the research agenda and set priorities; and, (ii) farmers have the financial power to negotiate with the government research institute (*Institut d'Economie Rurale*) and contract the research they need. At the grassroots level, Local Working Groups are being organized to participate in the programming and M&E of specific research programmes. The Working Groups provide the framework for farmers, extension agents, and researchers to meet annually to review research results and to decide upon the priority constraints to address and solutions to test. The Local Working Groups also elect one of their members to serve on a 'User Committee' which is part of the National Agricultural Research Council. Through this channel, farmers are able to influence decision-making at the national level about research objectives, priorities, projects, and resource allocations. The User Committee also manages a research fund, which is made available to farmers and processors' organizations to enable them to contract research on problems of particular interest. These organizations submit proposals, which, if selected for funding, are then further elaborated by researchers in collaboration with members of the organization. This gives farmers the financial power to contract research to meet their most urgent needs.'

Source: Merrill-Sands and Collion in Bebbington et al., 1994.

However, if there is insufficient dialogue between farmers and researchers e.g. because of the researchers' attitude, who can become wary if farmer leaders have very strong opinions, then the impact may be limited (Kaluba, 1995). Other elements that contribute to impact are effective training and encouragement of farmers, to clarify their role in dissemination, to create ownership, to address additional demands by farmers and to avoid largely consultative processes (Kaluba, 1995). Further major threats for reduced impact of the group approach in innovation are: the elite bias, the difficulty to scale up due to the attention required for group dynamics, and the lack of institutionalization (Owens and Simpson, 2002).

**5.1.4 COSTS OF FRG INVOLVEMENT**

The cost-effectiveness of working with FGs is difficult to assess, considering the limited information on costs and the few documented cases on impact. In Community-Driven Development (CDD), the costs of getting a participatory plan established by a community group and prepared for implementation is estimated in several East-African locations at US\$ 1/Household (ITAD,1999; Heemskerk, 2002). Braun et al. (2000) estimated that the follow-up facilitation of an FRC in Latin America cost about US\$ 486/year and later (after 3 years) US\$ 325/year, which would amount to similar figures as those found in East-Africa if an average community is assumed to have about 500 households. It is important to note that the monitoring effort should also include calculating the



costs in investments in FRG-related activities for the farmers and communities involved.

Costs can even be established, benefits are more difficult to establish, particularly in the absence of baselines and controls. As a consequence a lot of emphasis is always given to the costs of farmer empowerment. Nevertheless a group approach in agricultural service delivery is generally considered more efficient, although no comparison can be made with the individual approach (see Box 5.2).

**Box 5.2 Tanzania Lake Zone: Cotton multi-locational testing by FRGs**

Five main cotton-based farming system zones have been described in the Lake Zone of Tanzania (see map in Box 3.2). The Cotton Research programme operated some 20 testing sites in each of these zones in order to do multi-locational testing of potential new cotton varieties and fertilizer application trials on different soils.

In 1996, the testing sites were closed in the context of a civil service reform process ('right-sizing'). The earlier variety testing program was replaced by testing the varieties with farmers in five FRGs, which contributed to greater efficiency and had the following effects (Kapingu et al., 1999):

- Increased feedback from farmers on cotton variety characteristics, which was until then not used in selection programme (boll size, eight of the bolls, etc.).
- Varieties tested under farmers' conditions showed strong differences between varieties.
- Fertilizer responses were blurred by many other factors.
- Reductions occurred in costs of the programme.
- Results were recognized by the variety release committee (after some discussion).
- Results allowed differential variety release recommendations.

It is important to stress however, that it is not always certain that efficiency and effectiveness are increased through group work. It can be costly to create groups, and unless cost-reducing measures are found, the cost will not necessarily be justifiable. Furthermore, it is important to avoid the temptation to increase apparent cost-effectiveness by increasing the size of the group, as larger groups are prone to far higher rates of non-participation and lend themselves less easily to interactive learning. Even in small groups, a few farmers often dominate discussion, in larger groups this is even more likely to happen (Bebbington et al., 1994). Working with existing groups and/or having other NGOs or other FGs to play an important role in group formation can significantly reduce costs. Increasingly cost-reducing measures include elements of cost-sharing in research and extension activities, e.g. 2% in Uganda (NAADS programme), 5-10% in Burkina Faso (Faure and Kleene, 2002), and 10% of operational costs of research activities in Tanzania (Heemskerk et al., 2003).

## **5.2 Monitoring of FGs in practice**

### **5.2.1 JOINT MONITORING**

In local innovation systems, different stakeholders have a role in monitoring their own performance, as well as that of others including of the effectiveness of the corresponding links and channels of communication. Joint monitoring of

the role of FRGs is therefore part of this wider systemic M&E. Systematic monitoring of the FRG starts at establishment. Information on the meetings held by the FRGs is collected; their frequency, number of participants (men and women); and the issues discussed. This way of monitoring can be characterized as rather static (only recording of information) and low profile: no interaction between the FRG and researchers on the functioning and/or effectiveness of the former. The collected data give a good indication on the question whether a group functions and in how far the group deals with research issues (Sanginga et al., 2001). These data also provide useful information for discussion with the FRG members on their own functioning. The FRG is expected to write minutes of all its meetings, notably on the following points: date, number of participants (men/women), subjects discussed and actions proposed. These data are analyzed by researchers and discussed with the concerned farmers.

Some PRA tools have been developed to assess the functioning of FRGs. Some of the tools can be used annually, others less frequent. These PRA tools allow discussing and analysing with the FRG members: the functioning of their group, the representativeness of the group, the group's role in dissemination, etc. The data collected in regular monitoring should be used as an input into evaluation. Extension staff is normally responsible for collecting the monitoring information concerning the minutes of the group meetings. While researchers facilitate the meeting, researchers and extension staff are jointly involved in the use of PRA tools to determine opportunities and constraints, and to decide on plans for research. The recommended frequency of these planning meetings using PRA tools is once a year.

### **5.2.2 SURVEYS**

Supplementary to the regular collection of data, a survey among a sample of FRG members can be conducted using a questionnaire and checklist. Such a survey provides information on the group composition, opinions of members on accessibility of the group (fees) and on joining the FRG, knowledge of individual members on the group functions, its trials and other members, experiences with meetings and local experimentation, etc. The survey will give descriptive information on the FRGs involved, explain how and why farmers participate in the FRG and describe farmers' opinions. By focusing the survey on a sample of FRG members, an overall picture of the FRG will be lacking. Individuals give the information, which has its advantages and disadvantages. One of the advantages is that issues difficult to discuss in a group such as personal views and opinions for example on membership fees, can be touched upon. A disadvantage is that the FRG is not approached as a group whereas the monitoring and functioning of the group should be a common concern, which needs to be discussed by all the group members together. Survey information can also be used as a baseline for the exercises with the PRA tools (see below).

### **5.2.3 PRA TOOLS FOR PME**

A large number of PRA tools can be used for participatory M&E. The referred tools relate to the different types of social capital i.e. bonding, bridging and linking types.

Some commonly used tools are (KIT/WB, 2000):

1. *Checklist for group discussion*

The checklist aims at collecting data that are needed for an accurate description of the FRG and is related to the objectives of FRG establishment and the FRG functioning. The checklist often comprises two parts: the first part focuses on general background information of the group, the second part focuses on specific questions related to the functions of the FGs in innovation, as seen by the researchers (i.e. partners in research), by disseminators of technology (extension staff) and by farmers themselves. An observed advantage of the checklist was that some important neglected issues were raised and discussed (e.g. participation of disadvantaged households, leadership and expected roles of all parties). The information collected with a checklist is used as an input into the FG discussions and also for verification. To make the discussion more lively and visible, visual PRA tools can also be used.

2. *Mapping of group structure*

One of these visual PRA tools is the mapping of the group structure in terms of leadership, membership, geographic location, etc. Important elements in this are the lines of communication within the group and the community and the way the group is managed also in relation to the rest of the community. Both group structure mapping and social mapping relate to the bonding type of social capital (within the group), as well as the links with other groups in the community.

3. *Social mapping*

This tool relates the composition of the community in comparison with that of the FG and can be used to analyze and discuss the socio-economic composition of the group. In order to avoid too big a bias towards one group of farmers, the socio-economic composition of the group can be analyzed and discussed.

4. *Venn-diagram*

A Venn diagram is used for the analysis of bridging social capital of the group to other groups (outside the community) and the linking social capital of the group to other stakeholders. This will also help analyze the possibilities of dissemination of verified and released technologies. Furthermore, relations with other institutions, which are important for the functioning of the group, can be discussed. The tool is equally helpful for self-monitoring of groups over time and can develop into an indicator for group empowerment if the level and intensity of links and communication is indicated.

5. *The SWOT analysis*

The SWOT analysis provides the researchers, extensionists and the FRG members with the perceptions and opinions of the latter on the functioning of the FRG. A spider diagram for the different stages of research can be used here as well (Sanginga et al., 2001).

#### 5.2.4 M&E CHALLENGES

The different M&E tools all provide information on the functioning of the FRG, although not in equal degrees. The survey and PRA tools are tools that need not to be used frequently. Data collection on the meetings needs to take place at regular, frequent intervals. However, which tool to use depends strongly on the objective of the data collection and the degree of involvement of farmers in the process of monitoring and on going evaluation. Monitoring of FRG development and functioning by research is more intensive during the initial years and then can become less intensive once the FRG functions as a dynamic group and group consciousness is built. In this process of group building, it is worthwhile to know with which research activities an FRG should start. One could think of trials responding to a priority need of all groups or households and activities that give results on the short term. In this way, an FRG will be motivated to continue to participate in research and development, and the benefits of participating become clear quickly. Monitoring aims at both monitoring of organizational changes (bonding and bridging social capital e.g. functioning and dynamism of the FRG, participators in research and disseminators of new technologies) and institutional changes (bridging and linking social capital e.g. relations with research, extension and other groups and local government). For each of these, proper indicators can be elaborated with farmers (see Box 5.3); indicators can be of a structural form (meetings, decision-making structure) or of the cognitive type (capacity, group governance, effectiveness, etc.)

**Box 5.3 Lake Zone, Tanzania: Bonding type PME indicators for FRG functioning and dynamism**

- **Meetings:** What % of members attends, what is the number of meetings? Do participants engage in discussions? Do participants express their opinions/feelings and ideas?
- **Decision-making:** Are decisions taken during the meetings? Is decision making transparent? How is planning done: participatory/directive? Is financial management transparent?
- **Capacity:** What is the capacity of the group to plan and execute its activities? Can the group explain its objectives? Can it make a program for its activities? Does it evaluate its activities in a structural way? Does it follow-up the recommendations, which are an outcome of the evaluation? Does it possess the tools for M&E of its activities? Does it realize its activities in a successful way?
- **Effectiveness:** How effective is the group in increasing its knowledge and understanding? Has the group increased its technical knowledge? Has the group increased its knowledge on on-farm experimentation? Does every member of the group share in this knowledge?
- **Group governance:** How sensitive is the group towards different interests of its members? Is there openness to discuss the interests of women and poorer farmers? Are intervention/trials proposed to take into account these interests? Do FRG members consider the effects of the proposed technologies on the position of women and poorer farmers?
- **Gender issues:** Are gender issues considered? Do the group members discuss how men and women should be involved in a trial? Do the members discuss how men and women benefit from a certain technology? ( Kingma et al., 1998)

Special indicators can be developed for the bridging type of social capital. Important elements in this are the contacts with other FGs within the community and outside the community. The type of interaction and forms of

communication, as well as forms of joint representation at a higher level are key elements. For both the bridging and linking type of social capital in particular, the question of reciprocal M&E is raised; who should collect data on what and when? Indicators for reciprocal M&E of linkages have to be developed jointly (see Box 5.4). However, not all data need to be collected with the same frequency or by the same persons. For example, the collection of data on group meetings could be conducted only a few times a year. When researchers participate during an FRG meeting they make observations on the group functioning and dynamics. The functioning of the FRG and its effectiveness regarding achieving the stated objectives could be assessed once a year.

**Box 5.4 Tanzania, Lake Zone: PME indicators for reciprocal monitoring of the role of FGs in research and extension**

**Research partners:**

- How many ideas are brought up by FRGs that appear on the research agenda?
- How many trials are modified based on comments from the farmers?
- How many trials are influenced by the outcomes of farmers' assessments?
- Etc.

**Disseminators of new technologies:**

- How many field days were organized?
- How many demonstrations were given?
- How many FRG farmers of other subgroups are adopting the technology?
- Etc.

Source: Kingma et al., 1998.

The most crucial issue in the whole M&E approach is how the data are used. How will feedback be given to the researchers and to the FRG to improve performance?

Who will communicate the feedback? What is the role of FRG coordinators, farmers, ARC socio-economic sections and other researchers in the M&E system? These questions need to be answered in discussion with all the important actors involved in the process. The need for a participatory and reciprocal and systemic M&E system also requires further emphasis. The primary purpose of a participatory M&E system is that it is for the participants' own use. Actors themselves are therefore to decide what information they want to collect on the FRG's functioning in the innovation system and what for. This does not exclude data-collection for M&E purposes by researchers: some of the data could serve both FRG members and researchers own objectives. FRGs have to be facilitated and empowered on the use of collected data for their own understanding and benefit, as well as for demanding accountability of agricultural service providers such as research and extension organizations.



## 6 Enhancing the role of FGs in innovation

### 6.1 Introduction

The overall challenge for agricultural development in SSA remains to accelerate, improve and scale-up the local agricultural innovation process; this will require addressing the fostering of human and social capital at all levels (Knox et al., 2004). Building social capital is at the core of the empowerment agenda, together with promoting pro-poor institutional reform and removing barriers, and is as such a critical asset also for innovation (WB, 2000).

In order to get strong farmer-led innovation, a number of challenges are faced in relation to farmer empowerment, which relate to both the opportunity to exert influence and the quality/effectiveness of the FGs, and the related networks and organizations. In relation to this opportunity, key issues are the lack of listening skills of other actors in the innovation system (notably from the public sector), the weak responsiveness of other actors to farmers' initiatives (again notably from the public sector) and the general lack of respect for farmers' knowledge. This attitude towards farmers is probably even a greater obstacle to farmer empowerment than farmer organization capacity (Engel, 1997). A change in attitude, mindset and governance of both public administration and public and private agricultural service providers will be essential if farmer empowerment is to succeed (see CORMA; Heemskerk et al., 2003).

However, this chapter mainly focuses on the capacity of the FGs. The three capacities required at FG level are: (i) the information and coordination (i.e. organizational) capacities of the FG; (ii) the capacity of the FG to influence agricultural development planning and hence the agenda of ASPs; and, (iii) the capacity of the FG to link local knowledge and external knowledge for innovation and to scale this up and out.

#### *(i) Organizational capacity*

The critical elements in the FG's organizational capacity are: the communication with the rank and file members, the managerial skills for effective decision-making, the degree of representativeness (in relation to equity and agro-ecology), external contacts, but also the continuity and sustainability of resources (financial, organizational and institutional), and the handling of multiple concerns of their members whether they concern social or economical issues (Bebbington et al., 1994; Engel, 1997). Farmer groups are also more likely to be viable if some of the following enabling conditions are met: Groups are voluntarily organized, economically feasible, self-sustaining, self-

governed, transparent and responsive to community and producer-based groups (downward accountability) (IAC, 2004).

*(ii) Capacity to influence agricultural development agenda*

FGs such as FRGs, FEGs and FFSs at community level have played an important role in improving the research and extension agenda towards enhanced client-orientation. The research and extension interventions at community level have to some extent contributed to the development of this social capital. Farmer representatives<sup>36</sup> have become involved in the priority setting of research programmes, but both FGs and farmer representatives have so far largely failed to really influence the research agenda directly. A limited degree of influencing the agenda has taken place indirectly through FRG advocates, including NGOs some of which claim to be farmer organizations. In reality, researchers frequently still decide on the area of intervention since they dominate the planning agenda at the sub national level where aggregation of information and decision-making is taking place, often in isolation from processes at community and district level. True farmer participation in research and extension priority setting can only take place through strong FGs, which are accountable to their members and part of larger networks and federations that operate at the sub national level. In order to provide for a more appropriate balance, the network of FGs needs to be represented in research boards and committees through representatives capable of defending the farmers' interests in decision-making processes in research and extension institutions, and specialist FGs need to be involved in on-farm research, representing the FGs' network. This will require stronger emphasis on providing opportunities for networking between FGs and greater emphasis on grassroot-level planning. A major investment is required in the strengthening of the farmer organizations in order to have greater participation by the rural majority in decision-making (IAC, 2004). An important element in this FG empowerment process is the access to resources for both technical and group management counselling, as well as for agricultural service provision (Collion, 2004).

*(iii) Capacity to provide agricultural services*

FGs can play an important role in agricultural service delivery and can address in this way one of the major weaknesses of FGs in innovation development, which is the capacity to link local innovation with formal innovation. Farmer groups have to be part of multi-tiered farmer organizations in order to have sufficient human and financial resources to be involved in agricultural service delivery. Technicians in charge of service delivery and farmers' representatives responsible for the service policy have to be accountable to the members of the farmer groups that mandated them.

## **6.2 Conditions for emergence of successful groups**

Legislation and the registration of groups is a condition for the mobilization of social capital at the community level; Zambia e.g. has made significant progress in this respect<sup>37</sup>. Laws on farmer organizations are still mainly conceived for social (unions) and economical (cooperatives) functions and do not really



foresee service provision and especially innovation as a function of FGs. In addition to having the required enabling legislation and more diversified legal instruments, other obstacles, which relate more to governance issues, need to be eliminated or reduced such as e.g. in Mozambique and Benin: registration time is long, registration costs are high and specific registration demands for small groups are not foreseen, while these are only relevant for larger farmer organizations and NGOs (Heemskerk, 2004).

FGs can only be empowered if the government, as a neutral player spearheads the community empowerment process and ensures that all external interventions are aligned with local priorities. The government is also expected to provide the necessary regulations, infrastructure and institutional setting to facilitate the operations of both suppliers and demanders of agricultural services. If agricultural innovation development programmes are to include farmer empowerment, emphasis is required for both partnership building and farmer organization strengthening (e.g. group leadership training). Most of the successful FGs have a strong local leader who relies on his own local, social and sometimes political network (Bingen et al., 2004). Thus, there is need to identify, nurture and use leadership capabilities and skills resident in the local communities. Such efforts need to be complemented by strengthening and empowering all local planning bodies, public and private service providers, etc. but also by mechanisms that avoid politization of FGs by local politicians. NGOs may be effective in facilitating group formation but alone often do not provide for sustainability. Most NGO initiatives disappear as soon as the external supporting agency decides to withdraw support. To foster priority-based development, the local authorities need to coordinate activities of FGs and other service providers and ensure that any interventions in the communities are aligned with local and national priorities.

### **6.3 Capacity development of farmer innovation groups**

A proper balance is required between all three types of social capital: bonding, bridging and linking (i.e. connectedness). Each of these has its specific challenges. The main targets for capacity development of FGs and organizations broadly still remain as formulated years ago (IFAP, 1987):

- Facilitate the main initiatives of farmers themselves.
- Reinforce self-help efforts.
- Allocate financial and other resources.
- Provide for farmer training in the following main fields:
  - (i) Emancipation of the members of the groups through adult education to support the participation of women and resource-poor farmers, to enhance technical know-how and to strengthen the voice of farmers.
  - (ii) Training FG leadership including record keeping, account keeping, linkage management and other management skills.
  - (iii) Development of farming skills and adult education courses e.g. on the goals and functions of the different agricultural service providers, pros and cons of the different stakeholders in the innovation system and encouraging small and marginal male and female farmers to join the groups.

These targets contribute mainly to the bonding type of social capital, which is to contribute to collective actions, but more specific needs exist in relation to connectedness of FGs such as networking and linking with others actors in the innovation system.

#### **6.4 Bonding social capital**

Capacity development of FGs is now widely accepted as an important priority, but development of bonding social capital is not getting due attention. The various capacity building programmes at local level have led to a wealth of structural social capital (Place et al., 2002). Although there is a lot of attention for the structural variables such as size, and leadership, there is often no clear link between these variables and performance of groups for the benefit of their members. The cognitive form of social capital is gradually getting more attention. The emancipation of farmers based on their own strength and learning-by-doing approaches is rapidly becoming a recognized part of farmer empowerment e.g. in action research and FFS approaches (IAC, 2004). Specific examples are: Participatory Learning and Action Research (PLAR), FFS, Participatory Agricultural Extension, etc (Defoer et al., 2001).

#### **6.5 Networking FGs (bridging)**

The lack of farmer empowerment in agricultural innovation development on the one hand and the wealth of social capital and informal innovation systems on the other provide another important challenge: the need for connectedness between FGs and organizations into more powerful networks. An important prerequisite for this networking process, which starts at the community level, is to know what kind of social capital exists. Hagmann et al. (1999) argue that studying local organizations with regard to how members understand them, what their capacities and limitations are, represents an obligation for development projects before they engage communities. The challenge is therefore to ensure that FGs and their networks become more cohesive, organized and representative for the wider community.

FGs can be empowered at both the local level as well as higher (meso- and national) levels through fora, networks and federations of groups. Genuine farmer groups could eventually lead to farmer representation at district and provincial level (Mattee et al, 1996; Kalonge et al., 1993). Networks overcome the traditional barriers of each village on its own and facilitate a process of 'listening to each other and making oneself heard' (Lasalle, 1999).

In Uganda FGs at local level have entered into Farmers Fora (at District or sub-county level). The number of parishes can be many (up to 300 in Kabale District alone) and hence the question arises how these fora can be organized and sustained (Opondo et al., 2003). Such networking can follow a long process of facilitating communication between groups, meetings and workshops, before a network registers itself and requests an annual membership fee of all the group members (see Box 6.1). This is the more so since all sub-national activities will already be the burden of the groups and not of the network (Lasalle, 1999).

Second tier associations of FGs and networks of FRCs, FRGs, CIALs, etc. contribute to the sustainability of the innovation initiative, as they are stronger than individual groups, which can be too dependent on public institutions (Braun et al., 2000). The networks can also have other important functions such as: facilitation and formation of other FGs, organization of exchange visits, formulation and management of joint projects, provision of small credit, participation in local development projects and activities, etc. Task-oriented networks and innovation platforms are also important for the development of effective partnerships with other stakeholders and for the formation of learning alliances. These farmer congregations (Rees et al., 2000) can focus on research outputs, experimentation by farmer groups and teaching of trainers of trainers.

**Box 6.1 Tanzania: Example of a farmer network**

While no national formalized representative body for FGs exists in Tanzania, there is an emerging network with NGO status under the Swahili name Mtandao wa Vikundi vya Wakulima Tanzania (MVIWATA), which since its formation in 1993, has expanded to cover 120 local farmer networks with some 1,000 affiliated farmer groups over 82 districts (representing around 50,000 to 70,000 households). MVIWATA aims to ensure effective representation of farmer interests and takes part in a number of national fora for the sector. In other sub-sectors, groups are increasingly becoming formalized and networked at district level and higher. For example, in the dairy sector producer/marketing associations have linked with a national dairy board. Seed grower associations have successfully built marketing links for small farmers to produce and sell improved seed. In the proposed Agricultural Services Support Programme (ASSP), Ward and District Farmer Fora will be a core element, while Mviwata FGs would increasingly participate in the planning, management and control of financial resources for agricultural services, as well as in ASP contracting processes. Mviwata and other FGs would continue to access public agricultural services, while increasingly contracting private service providers, and also public service providers, which would preferably be aggregated at ward or district level (GoT, 2004).

In order to achieve in particular a level of connectedness of FGs in terms of bridging and linking, different strategies can be followed:

- Inventories of social capital, community diagnostic studies and PRAs, as well as the analysis of development opportunities with farmers are undertaken in order to identify the barriers for FG networking, such as: weak existing groups, limited knowledge of local social structures and cultural values.
- The establishment of local networks in relation to research and development and the need to scale-up will require attention for agro-ecological zonation of villages, evaluation of existing groups, awareness creation for innovation development (PR, technology marketing, participatory planning), clear presentation, guideline development for social inclusion and the use of groups to start new groups and building networks.
- A crucial aspect of the networking is the monitoring of its functionality (what is the representativeness, what are the research priorities established and corresponding results). In order for the networks to become operational in experiential learning and dissemination, training for transformation (PLAR, FFS, PTD) and the development of community information and

communication systems need attention. Specific attention is required for the more informal farmer-to farmer in-season visits and inter-stakeholder relationships.

- Representatives of farmer networks can only be empowered by involving them in decision-making bodies as well as by stimulating and facilitating downward accountability.

## 6.6 Farmer organizations in innovation development (linking)

Increasingly, farmer organizations representing FGs are represented in boards and councils of research and extension organizations and institutions, as well as in boards of competitive innovation funds, etc. The development of efficient and effective organizations is dependent on strong grassroots social capital not only in terms of building blocks but also as a mechanism for development and sustainability of the organization. The FGs themselves are more and more seen as essential partners in agricultural development in particular in innovation and education-driven AKISs. In the multidisciplinary and multi-stakeholder approach to Agricultural Research for Development (i.e. IAR4D), research institutions as knowledge centres, extension as dissemination actors, learning institutions as education actors and farmer organizations as central actors within the innovation system, closely work together in an integrated and interactive innovation systems approach, rather than in a linear TOT model (IAC, 2004).

### Box 6.2 Different tools to be used for strengthening the role of farmer groups in agricultural innovation systems

Some examples of specific tools for strengthening the role of FGs in the verification, testing and adaptation of agricultural technologies are e.g.

1. Group establishment (IFAP, 1987; KIT/WB, 2000; DFID, 1997).
2. Facilitating research group meeting (KIT, 1997; DFID, 1997).
3. Priority setting in farmer research groups (KIT, 1997).
4. Scaling up the village research or farmer research groups (IFAP, 1987; Baltissen, 2000).
5. Facilitation of research programme by groups (Veldhuizen et al., 1997; Heemskerk et al., 2003).
6. Adaptability analysis (Hildebrand and Russell, 1996).
7. Working with Farmer Research Groups (KIT, 1997; Sutherland et al., 1998).
8. Working with Farmer Field Schools (Bruin et al., 2001; FARM, 1998).
9. Roles of the different partners of FRGs (Heemskerk et al., 2003).
10. Monitoring and evaluation checklist for Farmer Research Groups (Kingma et al., 1996, 1998).
11. FRG monitoring using different PRA tools (Kingma et al., 1996, 1998).

FGs are seen to be essential for the learning process while at the same time; they are the building stones for powerful organizations at the higher level. Research and development systems must therefore address the complexities involved in understanding agro-ecosystems (also as seen from the farmers' point of view) and socio-cultural environments, effectively associate farmers

and mobilise resources for the facilitation of farmer research and discovery-based learning. If FFSs and FRGs/FRCs/CIALs are at the centre of the rural development process, they can also through that pivotal role promote a closer engagement of agricultural research and extension in the same process (Braun et al., 2000). Farmer organizations therefore equally face the challenge to include farmer innovation groups in their organization and become accountable to this existing social capital.

Specific tools have been developed for the capacity strengthening of the farmer groups in the agricultural innovation development process. Some of these tools have been presented in Box 6.2 with some further references.

The different functions from group management to diagnostics, planning, implementation, monitoring, evaluation and dissemination of agricultural development require differential attention and consequently tools.



# 7 Policy issues

## 7.1 The overall challenge

The crucial role of agricultural development in SSA as the engine for rural development has recently been re-confirmed (NEPAD, 2002). This also results from the drive for reaching the MDGs by 2015 and in particular MDG 1: a 50% reduction of poverty in SSA, which is predominantly rural. It is also realized that a new approach to agricultural development is needed. The opportunities presented through the recent World Trade Agreements have led to changing roles of the three main groups of actors, i.e. public and private sector and civil society, in agricultural service delivery. At the same time an increasingly urgent demand for technological innovation has led to important organizational and institutional innovations in the national and local AKISs. Decentralization of public administration and deconcentration of service delivery have also allowed empowerment of FGs and organizations in agricultural innovation. 'New public management' principles put more emphasis on performance and output and give therefore a more important role to users of technologies. Slowly the local innovation system is shifting from a linear TOT process to a more systemic and pragmatic partnership-based co-innovation process. Farmer organizations are to play a stronger role at different levels in the national and local innovation systems with at least a farmer representative role at national and sub national levels. A major challenge for formal farmer organizations (fora, networks and federations) remains to recognize this function and tap into the existing social capital for innovation as a means to involve the rural and peri-urban poor. A wealth of experience exists with community groups and community-based FGs in agricultural development and public sector-led innovation systems that has clearly demonstrated the importance of including the rural poor in innovation development. The social capital at micro-level is an important asset for agricultural development through local innovation. Social capital requires enhancement in all its three dimensions: bonding (within groups), bridging (between groups) and linking (with ASPs).

As a consequence of the decentralization and deconcentration policies of most governments in SSA, public ASPs and notably research and extension services have come closer to their clients. Research and extension organizations are increasingly directly accountable to local government and to multi stakeholder committees composed of representatives of local government, farmers, the private sector, etc. In particular research, but also extension service providers operate at both local (community and meso), and national level and are

consequently influenced at both levels and need to link local and national policy priorities. To make farmer organizations effective in this process requires not only strong farmer representation at the local and national (e.g. multi-tiered farmer organizations with well-functioning internal accountability mechanisms), but also an enabling agricultural policy and institutional setting to allow FOs to exert some influence over the agricultural development agenda and the resources associated with this. But it is realized that this is only one of the many functions of FOs.

Farmer groups need accountability mechanisms through community organizations, to the local government and, through local farmer networks, to national farmer organizations. FGs will execute their own responsibilities in direct relation to local research and extension service providers, but also have to liaise with the appropriate farmer organization for direct support and empowerment at the local level and representation of their interests at higher levels.

Two main challenges therefore exist in relation to the need for networking of community-based groups:

- How to strengthen the representation function for priority setting, resource allocation and scaling up in multi-stakeholder driven agricultural innovation systems?
- How to get the existing social capital at different levels actually involved in agricultural service provision, either directly or indirectly by contracting service providers?

Development policies have to meet important conditions in order to have farmer empowerment in planning and implementation in agricultural service delivery for innovation: (i) governance and mindset change towards downward accountability; (ii) matching public pro-poor service delivery and private sector development; (iii) capacity development through learning by doing; (iv) establishment of demand-driven service provision; and, (v) drive for sustainable community and farmer organizations.

## **7.2 Governance and mindset change**

FGs can only flourish in an environment with the proper climate for group development and in a society in which groups are encouraged to speak and sure to be listened to (IFAP, 1990). This applies to all actors, equally to national organizations to be open for grass root voices and become accountable to their members, as well as government structures at all levels (i.e. downward accountability). The governance conditions for social capital to emerge can be both external and internal to the farmer community (Bebbington et al., 1994). A need exists to address governance issues at the local level such as the interaction and cooperation between producer organizations, communities and local governments (e.g. through community, village level fora with representatives from different groups). Local development initiatives can provide an enabling environment for FGs and organizations, in part since



farmer organizations contribute to the development of social capital and cohesion both horizontally and vertically. Social and economic concerns can only be properly balanced at the local level (in integrated community plans) in addition to the balancing of the provision of public and private goods and services with their implications for equity and access to services (Manssouri, 2004). Successful local-level service provision is the starting point for interventions and not an end in itself. At the grassroots, FGs and associations are community-based organizations specialized to deal with private goods and services, while many types of the community-based groups are involved in projects of a social and public good nature (health, education, etc.). Social funds (e.g. TASAF in Tanzania, MASAF in Malawi) are increasingly channelling resources for economic projects through referred community-organizations, while some farmer associations have become an entry point and sometimes vehicle for the development of a social agenda (e.g. in Mozambique) (see Box 7.1)

### 7.3 Pro-poor service delivery

In order to fulfil the millennium development goals and if rural poverty is to be reduced, access to services by poor and vulnerable groups is a must. ASPs have developed approaches for working with FGs, but have at the same time a natural bias to work with richer farmers (since they are often thought to be more innovative and are more resource endowed to take risks). It has also been recognized that the threshold for the rural poor to become members of community-based FGs needs to be low (which it generally is). This rural poor inclusive social capital needs to be empowered in networks and federations in order to force rural service delivery to better address the needs of the rural poor. Collaboration with FGs in less resource endowed areas with high percentages of rural poor will often be through 'community groups' which have mainly social objectives and fewer economic objectives than FGs which often originated from organizing supply of inputs and marketing agricultural products (see also Berdegué et al., 2002).

In this sense the entry point for economic activities in 'poorer' areas could be community groups, while the entry point for social activities in 'richer' areas could be farmer associations. The private sector can become more involved in community development through farmer associations. In some areas, FGs are becoming stronger through links with the community organizations; in other areas farmer organizations get involved in social projects and become community organizations (see Box 7.1).

Similarly, a challenge exists in terms of equity. FGs with some economic activities are generally considered to be more sustainable. A small number of groups can lead to the over-representation of outside stakeholders and consequently lead to low local autonomy and initiative. Previously, a bias existed towards powerful and eloquent farmers, which tended to be more resource-rich (Sikana, 1994). Can FGs of resource-poor farmers, often not fully integrated in the market economy, become part of sustainable farmer

#### Box 7.1 Matching economic and social priorities

The on-going shift from vertical sector planning in many SSA countries to horizontal area-based planning at local level has provided opportunities to integrate social sector objectives and economic sector objectives in development plans. Increasingly community groups are involved in integrated priority setting across social and economic sectors.

The 'social action funds', operational in most countries are in the process of integrating into the local government structure, increasingly also supporting economic projects, if operated through the same social groups (cf. TASAF<sup>28</sup>, Tanzania). On the other hand registered farmer associations in Northern Mozambique are being used for the implementation of social projects (with support from an NGO: Olipa), as these are the only officially registered community groups and consequently the only groups that are allowed to handle funds. Empowerment of community and farmer organizations leads to integrated planning of development programmes according to local priorities.

networks? What are the factors that can overcome this contradiction in terms? Is public support needed to bring out the voices of the poor even in farmer organizations? These are some of the issues to be addressed in pro-poor policy documents such as poverty reduction strategy papers.

#### 7.4 Capacity development through empowerment

With regard to community development in SSA countries two main trends can be observed:

- Strong emphasis, almost everywhere, on community empowerment in relation to decentralization of the public administration, cf. CDD (WB, 2000, [www.worldbank.org/CDD](http://www.worldbank.org/CDD)).
- Acknowledgement by the agricultural public sector of the role of farmer organizations emerging in rural economic projects and trade, but also in local and sector planning, as well as innovation development (e.g. PROAGRI II; Mozambique, 2004; Tanzania, ASSP, 2004).

Particularly in the agricultural sector it is realized that it is crucially important for the private sector to be involved in rural development and that it can often play a more efficient role than the public sector. Farmer organizations can be an important entry point for the private sector to support innovation development. But the public sector still stops short of widely involving community or farmer group in public resource allocation for agricultural service provision.

Some of the policy issues for farmer empowerment, which have emerged can again be grouped according to the three categories of social capital (DFID, 1997; Martin and Mafuru, 1997.): bonding, bridging and linking of social capital.

##### (i) *Strengthening existing social capital for innovation (bonding)*

- The issue of the use of existing groups or the formation of new groups for partnering with research and extension, has for sustainability reasons, largely been decided in favour of existing groups. The issue still gets full

attention in relation to specialized groups (e.g. commodity groups) vs. general issue groups and in relation to social inclusion and traditional hierarchies, as existing groups are not always socially inclusive, also through domination by traditional leaders. Existing groups also can have (material) input expectations and can be inappropriate for research.

- The need for investment in community-based groups e.g. on FRG management (locally), leadership training, and training for transformation is often mentioned but left to NGOs or not done at all.

(ii) *Strengthening connectedness of FGs (bridging and linking)*

- The need for a proper balance between representativeness and up-scaling on one side and the limited capacities of ASPs on the other side to intervene everywhere. The representativeness of FGs can be target related.
- The need to create an atmosphere in which the voice of the farmer is heard through local FG networks.

The farmer empowerment process can be deadlocked, as strict regulations are used in relation to allowing farmer groups to handle public resources e.g. for farmer-to-farmer extension. Not always it is recognized that a latent capacity may exist in the community to run a group's affairs even without the proper qualifications.

The learning-by-doing paradigm for capacity development emphasizes the facilitation of the empowerment process (cascade training, on-the-job training on request) rather than creating the conditions prior to the transfer of power. If farmer groups and organizations are to learn to be agricultural service providers in their own right, they need to be given a chance to develop this capacity by doing it. Some risk taking of public authorities, responsible for accounting of public funds, will however be necessary and has to be accepted at policy level.

## **7.5 Demand-driven service provision**

As stated earlier farmer empowerment will not work if the agricultural service providers are not listening or responding and are not becoming client-oriented (Heemskerk et al., 2003). In this context and based on the evidence presented in this paper, it appears imperative that research and extension organizations work as much as possible with existing groups, although some criteria of representativeness and leadership will have to be met. Specific research groups can be established in the absence of any social capital, which in many situations includes the rural poor, or as sub-groups of existing organizations.

ASPs have a responsibility in facilitation the networking between groups, which goes beyond the provision of opportunities for farmers to participate in meetings, committees and boards. If pro-poor service delivery to provide training in financial/administrative competencies and access to social projects for group strengthening is to be taken seriously, service providers cannot leave the full responsibility for capacity building of groups to NGOs but have their own mandate to fulfil. This is starting to be realized in a new generation of

donor-supported agricultural services support programmes (such as NAADS-Uganda, ASSP-Tanzania, PROAGRI II-Mozambique), in which the demand side (farmer, entrepreneur, innovator) is the starting point and an important focus for strengthening rather than solely the supply side.

## 7.6 Sustainability of social capital for innovation

Another responsibility of service providers is to avoid dependence of FGs and organizations on the public service provision (through funding or cooptation by the state). Although a true partnership on equal footing between service providers and farmer groups/organizations is difficult to achieve, a situation in which everything 'is coming from one side' needs to be avoided. Practitioners have long complained about the lack of sustainability of FGs that relate to short-term projects and programmes. Some argued that FRGs do not need to be sustainable, as groups have to change after some time, as innovation in the groups makes them no longer representative for research purposes. This viewpoint, however, has been largely abandoned as an aspect of the TOT model in favour of more development oriented approaches. At the same time it is realized that sustainable groups do not equal fixed composition. A fixed group composition can be an aspect of structural social capital while flexible group composition is an aspect of cognitive social capital and thus much more difficult to achieve, but important for agricultural innovation.

The main causes for the lack of sustainability are threefold (Mafuru, Lake Zone, Tanzania, 2004): the project drivenness of group approaches; a lack of ASP ownership of farmer empowerment; and the low emphasis on networking and linkage development of FGs. The group approach has been largely advocated by donor projects while the local government(s) have failed to sustain the demands of groups. The limited expertise among the local staff (both research and extension), combined with the fact that only few people are interested in the group approach are important factors (Box 7.2).

### Box 7.2 Tanzania: Sustainability factors of farmer groups

In the Lake Zone Agricultural Research Institute very few researchers (and extensionists) fully appreciated the linkage model, which put the FRG/FEG at the centre of the innovation system. There were only limited links of the FRGs to other projects or organizations in the area apart from research and extension. There were few efforts to register the FGs before the project's end (although at least one FRG has registered, Bukangilija, in order to have access to credit) and encourage other organizations and projects to work with these groups for activities related to their functions such as credit and savings groups, input supply groups, etc.

The on-going decentralization of the public administration in many countries, the emphasis on downward accountability and the new role of local governments provide new opportunities for sustainable group development. The sustainability of FGs working with ASPs can be further enhanced through emphasis on a strong core group of members, having FGs as homogeneous as possible (on ethnographic description basis), while taking care of social

inclusion (Kaluba, 1995). It seems important to have multi-issue groups rather than single-issue groups; groups with several functions have proved to be more sustainable and lock into locally specific indigenous initiatives and forms of organizations. The major conditions for sustainability of social capital therefore relate to commitment by all stakeholders and require an attitude or mindset change.



# Notes

- 1 EARO researchers were exposed to the farmer research group approach during a study tour to the Lake Zone Agricultural Research Institute in Tanzania. KIT further facilitated the establishment of the approach in some of EARO's research programmes and eventually in some of the main federal research centres (e.g. Holetta, Melkassa and Debre Zeit).
- 2 KIT's cooperation with the national agricultural research organizations in both Mali (IER) and Benin (INRAB) has seen the same evolution. It started in the 1980s with the development and application of research methodologies to build a bridge between on-station research and on-farm research in order to adapt and target technologies developed by research according to the various agro-ecological and socioeconomic situations of farm households. The methodological approaches developed (farming systems research and research-development) were characterized by participation of farmers in analyzing farming systems, identifying research priorities and the implementation and evaluation of on-farm trials. Still researchers decided on the research issues to be developed. Since this kind of on-farm research was also an interface between agricultural research and extension, attention was given to coverage of different types of households and to dissemination of technologies developed through the creation of 'farmer research groups' (farm counselling groups in Mali, village committees in Benin). During the 1990s the agricultural research organizations have seen some major reforms of which the most important was decentralization with the creation of regional research centres. These centres were in charge of managing regional research programmes and coordinating multi-stakeholder involvement in agricultural research (public and private research and extension organizations, farmer organizations, private enterprises, etc.). This provided an opportunity to institutionalize and take farmer participation to a higher level by creating user committees and multi-stakeholder research management platforms. Farmers were not only involved in setting research priorities but also in allocation of resources to research (e.g. competitive funds) and therefore gained considerable influence on the research agenda. They also benefited from training in skills needed for participation in research management. But the committees and platforms operate on a provincial level and linkage with local FGs involved in the research process through existing federations or unions of FO's is still weak.
- 3 See before under 2.
- 4 The Royal Tropical Institute (KIT) has been involved in providing technical support to the Lake Zone Agricultural Research Institute since 1988, and in particular to the farming systems research teams. As from 1998 the FSA was mainstreamed and KIT's technical support extended to Northern Zone and parts of Eastern Zone. From 1992 onwards the

farmer research group concept was pioneered in the Lake Zone and later on in all research zones of Tanzania. The Lake Zone Agricultural Research Institute worked with FRGs in main agro-ecological zones.

- 5 Adaptive Research Planning Teams (ARPTs) of researchers existed in Zambia in all nine provinces, and were charged with adaptive research in the provincial research centres, which were part of the national agricultural research branch of the Ministry of Agriculture. KIT was involved in providing technical assistance to the Western Province ARPT from 1988 till 1998. The FRG concept was introduced in the Western Province in 1991. The Mongu Regional Research Institute worked with several FRGs in all three main agro-ecological zones.
- 6 Downloadable at [www.kit.nl](http://www.kit.nl)
- 7 i.e. opposed to the linear innovation chain.
- 8 AKIS combines all actors involved in agricultural research, extension and education generating knowledge and information with and for farmers into one system and emphasizes the linkages between these actors (Röling, 2002).
- 9 A CIAL is a platform intended to build a permanent local research service that links farmer experimentation with formal research (Braun et al., 2000).
- 10 The Convergence of Sciences (CoS) project develops and tries out innovative research methods using experiences of Farmer Field Schools and other adult learning approaches. Within the framework of CoS, the research on agricultural research proposed here aims to develop an interactive framework for agricultural science and to identify criteria for the design and implementation of agricultural research that increase the likelihood of enhancing the innovative performance of small-scale agriculture (<http://www.north-south.nl/index.php/item/163>).
- 11 CORMA addresses five management areas: Human Resource Management, Financial Resource Management, Participatory Planning, Monitoring and Evaluation, Linkage Management and Output-orientation and Dissemination management. In particular the last three dimensions address partnerships with FGs and organizations (Heemskerk et al., 2003).
- 12 The Joint vertisol programme, the Cool season legume research programme and the Barley research programme (all Netherlands sponsored).
- 13 Some of these experiences relate to the actual service delivery by FGs (e.g. the CIAL experience) or the contracting of service delivery by FGs such as the study groups in the Netherlands, innovation funds in Latin America, and NAADS in Uganda (Proost et al., 2002; Rivera et al., 2002).
- 14 The costs of the National Agricultural Advisory and Development Services (NAADS) programme in Uganda uses the following cost sharing principle: National Government/donors 70%, Districts and County governments 28%, farmers 2%.



- 15 Deconcentration of public service delivery and decentralization of public administration.
- 16 In the context of the CAADP (*Comprehensive African Agriculture Development Program*), agricultural research, technology dissemination and adoption is one of four key areas for agricultural development in SSA Africa. Key to this is the concept of Integrated Agricultural Research for Development (IAR4D) to be conducted by multi-institutional multi-disciplinary teams and involving stakeholders in all aspects of the production for consumption chain (Jones et al., 2004).
- 17 Norman et al. (1997) describe the change in the type of relationship between research and farmers as characterized by the increasing intensity of interaction as 'contractual', 'consultative', and 'collaborative', respectively.
- 18 Practical consequences of these changes for the modes of collaboration in research and extension are highlighted in Chapter 5.
- 19 Experiences with the increasingly collaborative types of participation in different phases of research are further elaborated in Chapter 4.
- 20 This sometimes happens in situations where researchers are paid low salaries and where as a result, travel to distant villages resulting in increased allowances represents an incentive.
- 21 For example in Sukumaland, the District Rural Development Programme, received financial and technical support from the Netherlands' government.
- 22 They, however, also ensured that FRGs were located in each of the ecological zones covered by the ARC.
- 23 It goes without saying that these options should be discussed with the farmers of the FRG being established.
- 24 See also Braun et al. (2000), who worked in Latin America with Farmer Research Committees or 'CIALs', which are relatively small, based on volunteer researcher farmers who provided research services for their community with community consent.
- 25 <http://www.naads.or.ug>
- 26 In adaptability analysis a number of at least 15 farmers is recommended in order to capture the variation in farmers and their socio-economic and agro-ecological environments (Russell et al., 1995).
- 27 The involvement of FGs in the implementation of research activities should however, not be limited to on-farm research only.
- 28 As indicated earlier, FMFI trials are completely run by farmers.
- 29 Promising technology = technology or practice which has been evaluated positively following on-station and on-farm experiments.

- 30 As well as to avoid surprises such as sudden transfer of staff.
- 31 Sometimes even with more than one replication.
- 32 Differences often also exist among research departments of the same ARC.
- 33 A 'field day' is defined as the day on which guests (other researchers, other extensionists and other farmers, etc.) visit the farmers' fields where on-farm research is conducted. An 'open day' is the day that the ARC receives guests for showing the on-station research activities.
- 34 Malinese Cotton Development Corporation.
- 35 Centre d'Action Régionale pour le Développement Rural.
- 36 Farmer organizations at national and sub-national level often employ technical staff for this purpose. Downward accountability is not always part of their terms of reference.
- 37 Within Zambian laws, three Acts support legal formalization and regulation of different types of farmer organizations: the 1998 Cooperative Societies Act (primary cooperatives), the Societies Act (all society types, including unions, clubs and churches), and the Registration of Business Names Act (businesses and companies). Details of these Acts can be found in chapters 397, 119 and 389 of the Laws of Zambia (GRZ, 1995) and are summarized in Chabala (2000).
- 38 TASAF is the Tanzanian Social Action Fund, which is funded by both World Bank and the Government of Tanzania. Social action funds in general were set up as a reaction to the structural adjustment programmes, which severely affected the poor. The social action funds were mainly functioning in parallel to the public administration system from the national level to the community level. The decentralization of government structures to the village level in Tanzania has made it possible to integrate social action funds in this system, which means that communities plan priorities independent of (social) sectors. Economic projects are therefore increasingly becoming part of the programme at community level.

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### **Other useful websites**

- Agriterra: <http://www.agriterra.org/>
- GTZ-services: <http://www2.gtz.de/agriservice/>
- IFAP: [www.ifap.org](http://www.ifap.org)
- World Bank: <http://wbln0018.worldbank.org/essd/essd.nsf/producer/casestudies>
- World Neighbours: <http://www.wn.org/>



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Development Policy and Practice is KIT's department for development cooperation. The department conducts research, training and advisory services in four main areas: health, education, sustainable economic development, and social development and gender equity. Key to our approach is a focus on both policy and practice for development. We bring experience in the field to the policy debate and we bring policies into practice, translating initiatives between global, national and decentralized levels.

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