

Workshop Report no 2

Promoting Farmer Innovation

Harnessing local environmental knowledge in East Africa

edited by

Will Critchley

with

Roshan Cooke, Tijan Jallow,
Sophie Lafleur, Mineke Laman,
Janet Njoroge, Verity Nyagah
and Emmanuelle Obas

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Abbreviations

ASAL	=	Arid and Semi-Arid Lands
ASIP	=	Agricultural Sector Investment Programme
Bw.	=	Bwana (Mr.)
CBO	=	Community Based Organisation
CCD	=	United Nations Convention to Combat Desertification and Drought
CDCS	=	Centre for Development Cooperation Services (Vrije Universiteit Amsterdam)
DONET	=	Dodoma Environmental Network
FI	=	Farmer Innovator
GTZ	=	Deutsche Gesellschaft für Technische Zusammenarbeit
IFSP-E	=	Integrated Food Security Programme - Eastern
INADES-F (IFTz)	=	<i>Institut Africain pour le Développement Economique et Social Formation</i> (Tanzania)
IPR	=	Intellectual Property Rights
ISWC	=	Indigenous Soil and Water Conservation
ISWC2	=	Indigenous Soil and Water Conservation (Project, Phase 2)
KARI	=	Kenya Agricultural Research Institute
M&E	=	Monitoring and Evaluation
MAAIF	=	Ministry of Agriculture, Animal Industry and Fisheries (Uganda)
MFPEd-NEX	=	Ministry of Finance, Planning and Economic Development – National Execution Unit (Uganda)
MOA-SCLUPS	=	Ministry of Agriculture – Soil Conservation and Land Use Planning Section (Tanzania)
NAC	=	National Advisory Committee
NARO	=	National Agricultural Research Organisation
NGO	=	Non Governmental Organisation
NRM	=	Natural Resource Management
OMM	=	Organic Matter Management
PE	=	Participatory Extension
PELUM	=	Participatory Ecological Land Use Management
PFI	=	Promoting Farmer Innovation
PLUM	=	Participatory Land Use Management Planning
PM&E	=	Participatory Monitoring and Evaluation
PRA	=	Participatory Rural Appraisal
PSSP	=	Public Sector Service Provider
PTD	=	Participatory Technology Development
RELMA	=	Regional Land Management Unit
Sida	=	Swedish International Development Assistance
SUA	=	Sokoine University of Agriculture (Tanzania)
SWC	=	Soil and Water Conservation
TOT	=	Transfer of Technology
TSP	=	Technical Services Project
ULAMP	=	Uganda Land Management Project

UNDP	=	United Nations Development Programme
UNSO	=	United Nations Development Programme - Office to Combat Desertification and Drought
UNSO/SEED/BDP	=	UNSO/ Sustainable Energy and Environment Division/ Bureau for Development Policy
USCAPP	=	Uganda Soil Conservation and Agroforestry Pilot Project
VPO-DOE	=	Vice-President's Office, Division of Environment (Tanzania)
WH	=	Water Harvesting
WOCAT	=	World Overview of Conservation Approaches and Technologies

Preface

This booklet has its origins in a programme entitled 'Promoting Farmer Innovation' (PFI) and specifically in a sub-regional workshop held under PFI, in Dodoma, Tanzania between 23 and 25 February 1999. The objectives of that workshop were given by Mr. Dumea, Head of the Soil Conservation and Land Use Planning Section of the Ministry of Agriculture, Tanzania as:

*to exchange experience between the three countries (Kenya, Tanzania and Uganda);
to assess progress of PFI at its mid-term point;
to discuss specific issues, including: monitoring and evaluation, scaling up the programme, identification of farmer innovators, gender etc;
to assemble material for booklet on farmer innovation.*

The final objective is thus the basis for this booklet, which seeks to take the lessons of the programme so far, and to set these in the more general context of 'farmer innovation', for we believe that there is tremendous potential in using this untapped resource in the fields of research and development. Potential is a key word here: the project is young, and despite considerable early strides, and all round enthusiasm, it does not yet claim to have set out a cast-iron case. For example, though many fascinating and undoubtedly effective innovations have been uncovered, these have yet to be scientifically validated. Neither is the 'vision' complete: we are still working out how local innovation can best be harnessed. To what extent can the approach be integrated into on-going rural research and extension systems in Africa?

For those who follow RELMA publications, there is an obvious, and natural progression from Technical Report no 20 ('Traditions and Innovation in Land Husbandry') which tells the story of an innovative project in Uganda, pioneering such developments in East Africa. This booklet takes both the theory and the practice further. It also differs in that 'Promoting Farmer Innovation' is not written specifically for field workers. Neither is it primarily the voice of the farmer innovators themselves – though they speak to us in these pages, just as they did at the workshop. It is not a set of guidelines, but an introduction to a new and exciting concept which is explored from various angles.

This publication has been a joint effort of all those who attended and participated in the workshop. Inevitably it has to be a summary, and an editorial team bear the responsibility for what has been put in and what has been left out. Some presenters will be disappointed that their full papers have not been included. Some discussion groups will say that various conclusions are missing or have been absorbed and presented under other headings. We apologise for what is inevitable in such proceedings. Finally we warmly thank all those who have contributed to what we believe (in the context of East Africa at least) is a watershed publication. This is not the last we will hear of farmer innovators.

Will Critchley, on behalf of the editorial team

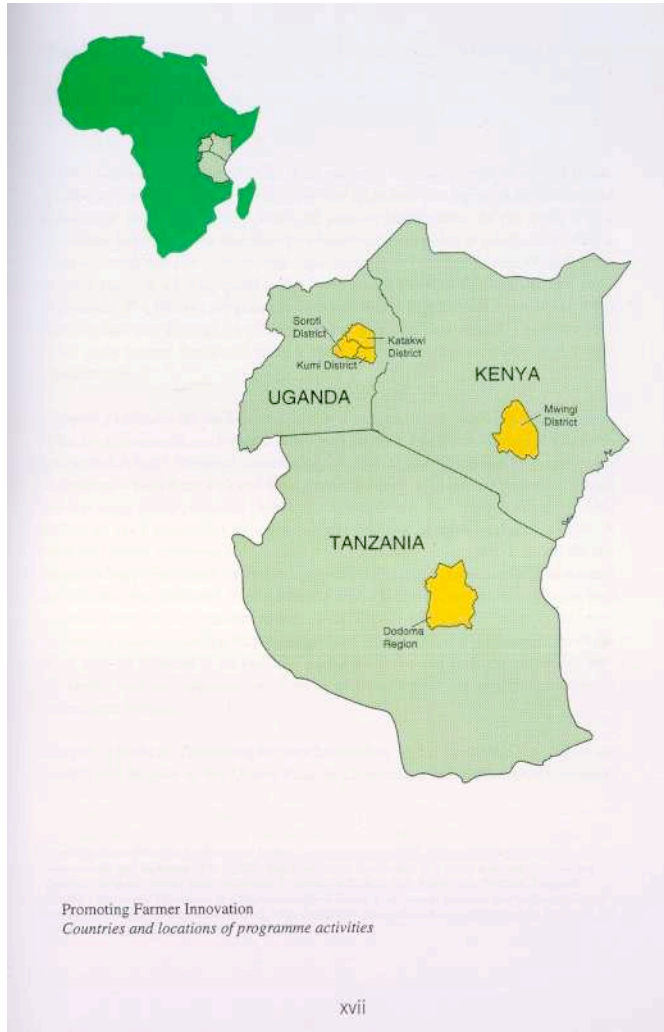
Publisher's Preface

RELMA, through its predecessor, the Regional Soil Conservation Unit, has been supporting soil and water conservation and agroforestry related initiatives for close to two decades. Its new mandate, which is to *contribute towards enhanced food security and improved livelihoods* is much wider than before, thus encompassing virtually all the major subject areas in agriculture and related rural sciences. The geographical focal area for RELMA remains the same as in RSCU and covers Eritrea, Ethiopia, Kenya, Uganda,, Tanzania and Zambia.

‘Promoting Farmer Innovation’ is the type of initiative that RELMA appreciates, and is keen to collaborate with. Not only does PFI have a focus on natural resource conservation at the local level, but it embraces a participatory methodology that RELMA endorses. There are many thematic connections with initiatives that RELMA is already promoting in East Africa. There is also the obvious link of personnel. In each of PFI’s three countries of operation, the soil conservation branches of the relevant Ministries of Agriculture are focal points for RELMA as well as PFI.

The production of this publication has been a joint effort between RELMA, UNDP-UNSO, and CDCS. This is a mutually beneficial collaboration which we hope will prosper, and ultimately be of benefit to the farmers in the region.

Mats Denninger
Director, RELMA



Chapter 1

Introduction

Farmer innovation is a subject that is increasingly making people sit up and think. At the very least it underpins a refreshing new approach to indigenous environmental knowledge that goes further than just passive admiration. At the most it is a potentially important new direction for research and extension in sub-Saharan Africa - and wherever else the conventional approaches have failed to deliver. What follows in these pages is a background to the topic and, viewed in this context, the early experience of a vibrant programme entitled 'Promoting Farmer Innovation' (PFI) which is halfway through its pioneering first phase in East Africa. There are also some early lessons borrowed from a sister project, 'Indigenous Soil and Water Conservation 2'¹.

Chapter 2 explores the background to why we should work with farmer innovators. Who are they exactly, and what do they have to offer that is not already available in textbooks? A brief literature review sets the context, and this is supplemented with experience – both from PFI and from related projects. Caveats are provided. There are warnings about potential pitfalls: for example innovators don't *always* provide lessons or land husbandry systems that are relevant to more ordinary people. A methodological framework is proposed for innovator programmes, based on the model being refined under PFI: both *programme development processes* and *field activities* are laid out and discussed in some detail. There is also a look at the new roles and responsibilities of the various stakeholders. Finally the chapter introduces some important issues regarding farmer innovation that need to be addressed. Amongst these are: *the definition of an innovator; gender; monitoring and evaluation; incentives; cost-effectiveness* and *institutionalisation*. Several of those topics are explored further in subsequent sections.

Chapter 3 looks at 'Promoting Farmer Innovation' as a programme. Its origins are traced, and its links to the United Nations Convention to Combat Desertification and Drought (CCD) and to the activities of the resultant National Action Programmes (NAP) are made explicit. An organisational chart helps explain the relationship between the United Nations Development Programme's Office to Combat Desertification and Drought (UNSO)² and the executing and implementing agencies involved. Strengths and shortcomings of this framework are briefly presented. This chapter then moves into a country-by-country presentation of PFI and the way the programme has been moulded to each particular set of circumstances. We also hear about the impressive early achievements in each sub-programme, together with lessons learnt, constraints faced, and plans for the future.

¹ *Promoting Farmer Innovation* is a three-year project, co-ordinated by UNSO, implemented by National Governments and backstopped by CDCS, Vrije Universiteit Amsterdam. It is active in Kenya, Uganda and Tanzania. *Indigenous Soil and Water Conservation 2* operates in Burkina Faso, Cameroon, Ethiopia, Tanzania, Tunisia, Uganda and Zimbabwe. It is implemented by a variety of in-country partners, and backstopped by a European-based consortium, led by CDCS, Vrije Universiteit Amsterdam. Both programmes are funded by the Government of the Netherlands

² The origin of the acronym is in the previous title of UNSO: namely the United Nations Sahelian Office, which has now changed its name but not its abbreviation

Chapter 4 takes us to the heart of the matter – the farmer innovators themselves. It opens with an analysis of the 74 farmer innovators who had been identified under PFI by the end of 1998. This analysis was carried out on the basis of a systematic ‘characterisation’ format prepared by the programme under its monitoring and evaluation system. The idea was to provide a clear picture of what constitutes an innovator and what are the type of innovations that have been picked up under PFI in its early stages: *what is the gender balance? where did they get their inspiration?* and so on. Portraits of twelve individual farmer innovators, who constitute an interesting and diverse cross section drawn from the three countries involved, then follow this.

Chapter 5 takes several special issues as its theme. *Identification* of farmer innovators is, interestingly, a topic that is not as straightforward as it sounds. It’s not *just* a question of how to define innovators, but also to make sure we identify a representative sample of men and women, young and old. The process of verification is crucial: screening the first ‘catch’ of innovators for those who match the criteria determined. And what constitutes a true innovation? How unique does it need to be to qualify? *Partnership* is looked at from the perspective of stakeholders in the participatory technology development (PTD) process that characterises the group of approaches to which PFI belongs. *Gender* aspects within farmer innovator programmes is the next topic: here are many things in common with other rural development programmes in the same locations. The central issues are (a) *why have we identified so few women innovators?* and (b) *how can we make sure that the beneficiaries are women and men in equal numbers?* *Monitoring and evaluation* receives thoughtful treatment, and a prototype format for testing under PFI is proposed. It is pointed out that the current development interest in *participatory monitoring and development* (PM&E) is healthy and timely, but PM&E should be seen as a component of M&E more broadly, and should not deflect attention from the wider issue.

Chapter 6 was initially conceptualised as one of the topics under the previous chapter, but subsequently ‘upgraded’ to a chapter on its own. This is simply because scaling-up, institutionalisation, policy dialogue and lobbying are considered to be an extremely important group of issues. Furthermore there is a considerable amount to be said about the topic, both in theory and from practical experience. Farmer innovators should not be allowed to remain the focus of merely local ‘project’ interest, but related programmes should reach out for recognition at a higher level.

Chapter 7 comprises the conclusions to the workshop. It constitutes conclusions regarding practical experience with farmer innovator programmes to date – particularly PFI - and picks up on areas of weakness as well as strengths. Amongst the former is the limited involvement so far of the research community, and therefore a certain lack of progress in verification of innovations: there is need for PFI to validate and document ‘best innovative practices’ before the end of its current cycle. However the potential of the innovator approach is not doubted, and the challenge put forward is that of crystallising the approach and then moving it forward and onwards, through institutionalisation.

Chapter 2

Innovation, Farmers and Land Husbandry: *An overview of methodology and issues*³

2.1 Introduction: *farmer innovators – a new way forward?*

Background

Inherent within the new approach to rural development that has emerged in the last two decades is an acknowledgement that indigenous knowledge has intrinsic merit, and holds development potential. In terms of both water harvesting (WH) and soil and water conservation (SWC) rich traditions have been shown to exist in sub-Saharan Africa (Pacey and Cullis, 1986; Reij *et al*, 1996). Indeed it is common now to accept that there are real possibilities of building on those traditions and local environmental knowledge instead of relying on often inappropriate technologies from outside (Critchley *et al*, 1994). The conventional ‘transfer of technology’ (TOT) process whereby recommended technologies are taken from research institutions through advisory services or extension agencies and on to farmers has proved largely tired and ineffective where small scale farmers living in dry zones are concerned. Neither has its more focussed and iterative relation the ‘training and visit’ system (T&V) fared better in these areas.

So is there a systematic, alternative way of generating effective and adoptable technologies for this group of land users? What about the implications of the comment by Richards (1985) who talks of Africa’s rural population being *inventively self-reliant*? Four years after this, a landmark publication (Chambers *et al*, 1989) shot down the TOT model, put farmers metaphorically in the driving seat and noted that: *farmers, especially resource-poor farmers, continuously experiment, adapt and innovate* (Chambers *et al*, *ibid*). The new role for outsiders – that is extension agents and researchers - according to these authors should be as catalysers and facilitators of this process. The natural phenomenon of innovation and spread of ideas may have been masked by TOT, but it has not been crushed: it has endured for centuries (van Veldhuizen *et al*, 1997a). Innovation, indeed, is the dynamic that leads to the development of tradition (Critchley, *in press*). It could boldly be premised that Africa’s rural peoples hold the answers – or at least many of the potential answers - to Africa’s rural problems. Once this is recognised, it is logical to seek out and stimulate the innovative processes inherent within local communities.

The theory of innovators and adoption isn’t of course new, nor is it limited to agricultural matters. A standard work on innovation and diffusion of innovation was produced in the USA as long ago as 1962 (Rogers, 1962; Rogers, 1995: 4th edition). While Rogers’ definition of innovators does not entirely coincide with ours (his meaning is those who are the quickest to adopt new ideas – especially new products) there are nevertheless many relevant lessons. It is intriguing that he identifies ‘venturesomeness’ (a rather quaint

³ expanded and modified from the paper ‘Innovation, Farmers and Land Husbandry:

An Overview’ presented by Will Critchley at the Dodoma workshop. A summarised version of this chapter has been accepted for publication in *Physics and Chemistry of the Earth* under the title ‘Inquiry, Initiative and Inventiveness: *Farmer Innovators in East Africa*’

but telling term) as being the central characteristic of innovators. He talks of the important role of innovators in *importing the innovation from outside the system's boundaries*. There is also theory regarding adoption of innovation: this follows an 'S' shaped curve, starting slowly, accelerating and slowing down again. A final lesson is that of the 'homophily' of innovators – the fact that they tend to intercommunicate better among themselves than with others.

In the last ten years in the developing world, further experience has been gained with indigenous knowledge, innovation and participatory technology development (PTD) within rural communities. Although this has mainly been in fields other than land husbandry, such as traditional medicines, indigenous technologies and crop selection, farmer experimentation has become widely accepted as having validity and has been studied, integrated into projects, and increasingly written about (e.g. van Veldhuizen *et al*, *ibid*). Turning specifically to land husbandry⁴ in Africa, Segeross *et al* (1996) describe early efforts under a pilot programme in Southern Africa to tap previously underestimated resources of *local experience, skills, enthusiasm*, and to build upon *the self regenerating capacity of land*. At the same time, individual success stories of conservation and production in the 'environmental gloom' of Lesotho were being identified and analysed (Critchley and Mosenene, 1996). Networking amongst these farmers was said to *release creativity*. The keynote publication for the International Soil Conservation Organisation conference (ISCO) of 1996 raised the profile of indigenous soil and water conservation (ISWC) and indigenous knowledge (IK) even further with repeated reference to the topic (Hurni *et al*, 1996). Outside the African continent, Scarborough *et al* (1997) talk of farmer innovators and farmer solidarity being the two pillars of the Latin American *campesino-a-campesino* (farmer-to-farmer research and extension networks) and point out that the basic principles haven't changed since the seminal work on that topic by Roland Bunch in 1982. What *has* changed, of course, is the new interest in this field in Africa.

Two recent initiatives in sub-Saharan Africa are worth noting in the context of building on local environmental knowledge and specifically indigenous soil and water conservation. The first is the experience in Zimbabwe under the *kuturaya* approach where a conventional development project was transformed – demonstrating commendable responsiveness - into a participatory technology development initiative with considerable success and well documented lessons (Hagmann *et al*, 1997a&b; 1998). The second is a project in south-west Uganda which set out in 1994 specifically to develop a field-tested methodology of building on traditions of land husbandry, taking the process right through a 'full routine' from *identification*, to *verification* to *value addition* and on to *dissemination* (Critchley *et al*, 1999). These helped to set methodological precedents for a wider, more systematic programme of tapping into the rich vein of farmer innovation in land husbandry within Africa.

Rationale

What, in summary, is the basic justification for using farmer innovators constructively in a research and extension process? Why aim to promote and stimulate innovative activity and to improve communication skills of these innovators? These questions can be answered succinctly. Farmer innovators potentially:

⁴ *land husbandry* used here in its broadest sense to accommodate soil and water conservation, water harvesting and all land management practices related to improving production through conservation: this is the technical focus of PFI

comprise a 'storehouse' of existing knowledge and ideas;
provide a fast track towards successful and adoptable land husbandry systems;
provide a direct and quick entry into a community;
constitute a 'pre-selected' team with which to work;
respond well to recognition (through the psychological mechanisms of 'positive feedback' and 'reinforcement');
network well together (see previous mention of 'homophily');
make good on-farm researchers (as they already have relevant experience and inquiring minds); and
enjoy spreading knowledge (in many cases).

Potential limitations

This is, then, the compelling rationale for basing programmes on farmer innovation and around farmer innovators. But a word or two of caution are necessary. First of all, it is self evident – as Blaikie and Brookfield (1987) amongst others have pointed out - that if local knowledge and innovation were the answer to environmental and development issues....then there wouldn't be a problem. And it is easy to get carried away with the theory of utilising local knowledge in various research and development fields and to speculate on how effective this *might* be. However there are indeed potential and already evident limitations with this new approach, acknowledged by some of those who have tested it (see Reintjes *et al*, 1992). Are we in danger of 'trapping a butterfly in a jar', in other words actually hindering a natural process by trying to capture it?

Chambers *et al* (*ibid*) warn of the uneven spread of innovation between peoples, and locations. This can be caused by specific technical factors. With respect to soil and water conservation, variability in innovativeness may be partially explained by the fact that areas with more sloping landforms tend to stimulate more innovation, for the straightforward reason that water and soil *move more* on sloping land, and this dynamic can be exploited. The presence of loose stone can also be an important factor. Where plenty of surface stone is available, it tends to be used creatively.

There are human constraints to the spread of innovation. Farmer innovators tend to act as 'magnets': some of them *attract* other farmers whereas others *repel*. Those innovators who are located well outside social norms in terms of behaviour (as extreme innovators are) are not accepted as role models. Indeed they have the opposite effect, inciting jealousy or antipathy. Some innovators may be destined to remain as islands. There have been exceptional cases where certain innovators have been persecuted, for example by having their fences burned or livestock let into their fields. On the other hand, the *plus side* to peer pressure is that once an innovation starts to be taken up, spread and adoption can accelerate quickly as the practice becomes the social norm (Rogers, 1995). Again on a positive note, innovativeness itself can even result from peer pressure: Millar (1994) identifies four types of farmer experimentation: *based on curiosity, problem solving efforts, adaptive trials* and *peer pressure driven*.

Other subtle psychological mechanisms are also at work. In some cases there seem to be barriers to acknowledging the ingenuity of close neighbours. The explanation may be that it is simply human nature to begrudge the innovativeness of a direct neighbour, while embracing enthusiastically a similar trait in a distant stranger. Successful uptake of an innovation may be hampered also because it might imply not just a simple change in practice, but a change in *commitment and attitude* for that innovation to work. It is often the case that innovators are more committed to 'the cause' than others. Of course where successful uptake occurs, we may find that the follower becomes not just a mimic but a second-generation innovator him/herself.

A final cautionary point is that for all their benefits, the participatory family of research and development approaches are very taxing on human skills, and take time to have impact. This is a

constraint to any related scaling-up process. In the initial stages of a project is tempting to hand pick people and institutions with whom to work. As a programme expands, the element of choice dissipates: we have to accept the people and institutions that already exist. The need for farmers, extensionists and researchers to work together, which must be at the heart of such a participatory approach, is easier to propose than to translate into a replicable model that can be institutionalised.

The Programmes

Despite the potential limitations (and to a certain extent the ‘devil’s advocate’ has spoken in the foregoing) it is nevertheless increasingly acknowledged that there *is* real potential in such an ‘innovator approach’. The early evidence from the related initiatives – ‘Promoting Farmer Innovation’ and ‘Indigenous Soil and Water Conservation 2’ - is one of consistent enthusiasm and goodwill at all levels. Though the idea of promoting and creatively utilising farmer innovation is not new, what is novel is the development of a systematic process of identifying innovation in the field of natural resource conservation, and then ‘harnessing’ this phenomenon to further develop technologies and to spread these to neighbouring farmers. It is also new to attempt to achieve this through a restructured partnership between researchers, extension agents and farmer innovators and then to take this process through to a national programme level, rather than protecting it as a favoured enclave project. That is behind PFI and ISWC2. The ultimate objective of both is to stimulate and eventually sustain the process of innovation, through appropriate institutionalisation.

***Promoting Farmer Innovation (PFI)** is a three-year project, co-ordinated by UNSO, implemented by National Governments and backstopped by CDCS, Vrije Universiteit Amsterdam. It is active in Kenya, Uganda and Tanzania. PFI began in mid 1997 and lasts for a 3 year period. PFI is the main focus of this booklet.*

***Indigenous Soil and Water Conservation 2 (ISWC2)** operates in Burkina Faso, Cameroon, Ethiopia, Tanzania, Tunisia, Uganda and Zimbabwe. It is implemented by a variety of in-country partners, and is both managed and backstopped by a European-based consortium, led by CDCS, Vrije Universiteit Amsterdam. It received funding in late 1996 for four years. Both programmes are funded by the Government of the Netherlands.*

2.2 Innovators and Innovations in Land Husbandry: *who and what?*

We have already talked of ‘farmer innovators’ and ‘innovations’ as though these are well known concepts. It is important to be clear, and to draw attention to the fact that it is a *specific type* of farmer innovator with *particular innovations* that PFI is looking for. Farmer innovators (FIs) are those who (in local terms at least) have developed or are testing new ways of land husbandry that combine production with conservation. The innovations themselves may be related to crop production or livestock. They may be simple cultural measures (perhaps a particular form of mixed cropping) or sophisticated structural designs combined with integrated production systems (for example controlling gullies while simultaneously harnessing the runoff for intensive cropping). The innovation may be an on-going experiment, or already proven and effective. It may even have become established as a local tradition.

The recent analysis by PFI of farmer innovators and their innovations⁵ (see section 4.1) demonstrates the wide range of innovations that has already been uncovered. It also shows that a cluster of interconnected innovations often occur together as a result of a farmer developing synergetic linkages between resources. The three most common technical categories of (main) innovations are all, as would be expected, production related. These are: *water harvesting*, *organic matter management* and *gully control/harnessing* (though this reduction into categories hardly does justice to the complexity of many systems). We must be aware that innovations that are too costly, or over-demanding in terms of labour are unlikely to be adopted by others. This is a special category that should be recognised, and treated with caution. Indeed there are often links between highly labour intensive innovations and the extreme ‘oddball’ innovators that repel other people. A final point about innovation is that we should keep our eyes open for institutional or organisational innovation – as well as technologies.

The innovators themselves may be men or women, rich or poor, but it is likely that they will have an important stake in the land. They will thus often tend to be more or less full-time farmers (taking their other rural livelihood enterprises into account). There are also, of course, hobby farmers but their innovations are less relevant to the target communities of programmes such as PFI. Another group which are excluded are ‘project pets’: farmers who have been intensively coached or (to continue the metaphor) groomed by projects. Their ‘innovations’ are again less interesting to us, as they often turn out to be project-driven. As we have already discussed, a final group that should be treated with caution comprises those extroverts so eccentric that they simply cannot act as role models for others.

The innovators that we are seeking share certain distinctive characteristics: opportunism is one. According to various sources, innovators tend to be *curious, proud and willing to take risks*, and *they pick up ideas from here and there* (CDCS, 1997); *they respond to recognition* (Gupta, 1998); *they have latent skills and enthusiasm* (Segeross, 1996), and are triggered to innovate by various factors including *problem solving and accidental or even playful discoveries* (Roling, 1997). Critchley and Mosenene (*ibid*) summarise five common traits of FIs in Lesotho which echo some of the foregoing. They:

- *depend on the land;*
- *pick up piecemeal advice and blend with their own experience;*
- *focus on intensification and integration of resources;*
- *are typically concerned with water and runoff management; and*
- *demonstrate pride in their own achievements.*

Some other points about farmer innovators that have emerged from the analysis carried out (see footnote) are that they are commonly driven by a financial motive as well as a general concern with production, and that common stimuli to innovation are travel outside the area, and information from various sources. There is undoubtedly a population pressure factor propelling agricultural intensification and associated innovation (Boserup, 1965). It is also increasingly recognised that there may be a role of crises and shocks in propelling people into innovation (Naresh Singh, UNDP, *pers comm*). The droughts of the 1970s in the Sahel, for example, forced people to adapt to their ‘new’ environment by

⁵ Based on the paper ‘Who are the farmer innovators and what are their innovations’ by Will Critchley prepared for the Dodoma workshop

improving their methods of harvesting rainwater runoff. Chris Reij talks of these Sahelian innovators as *having their backs to the wall* (C. Reij, CDCS, *pers comm*).

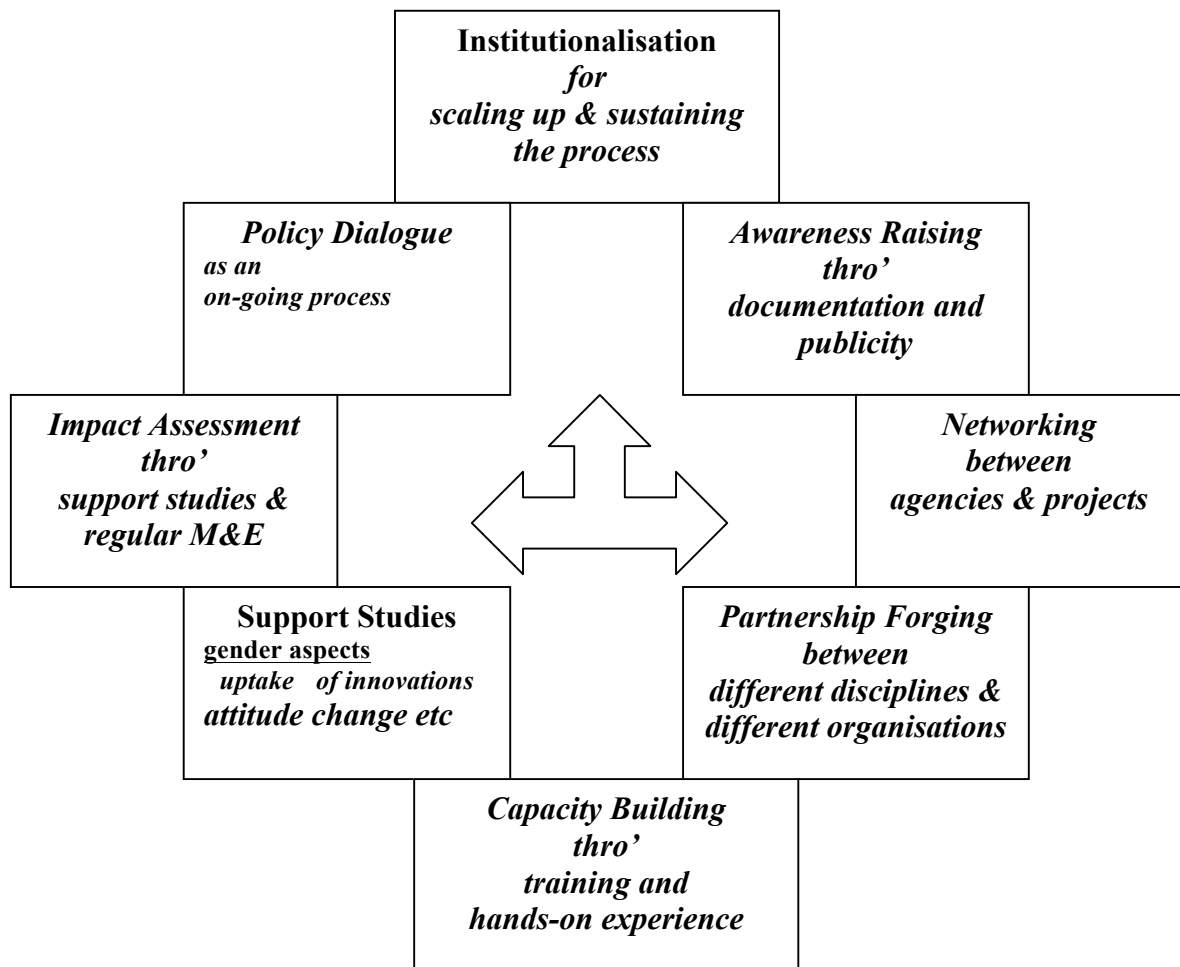
While necessity may indeed be ‘the mother of invention’, that proverb would be too simplistic an explanation, and would ignore the inherent creativity of many innovators. They may be people who merely enjoy testing and trying new ideas; people who look for positive interactions and synergies. They may have an aversion to wasting the natural resources (primary or usually discarded by-products) of water, vegetation, stone or labour. Putting it almost mystically, innovators may have vision or *see the patterns* that escape the less imaginative amongst us.

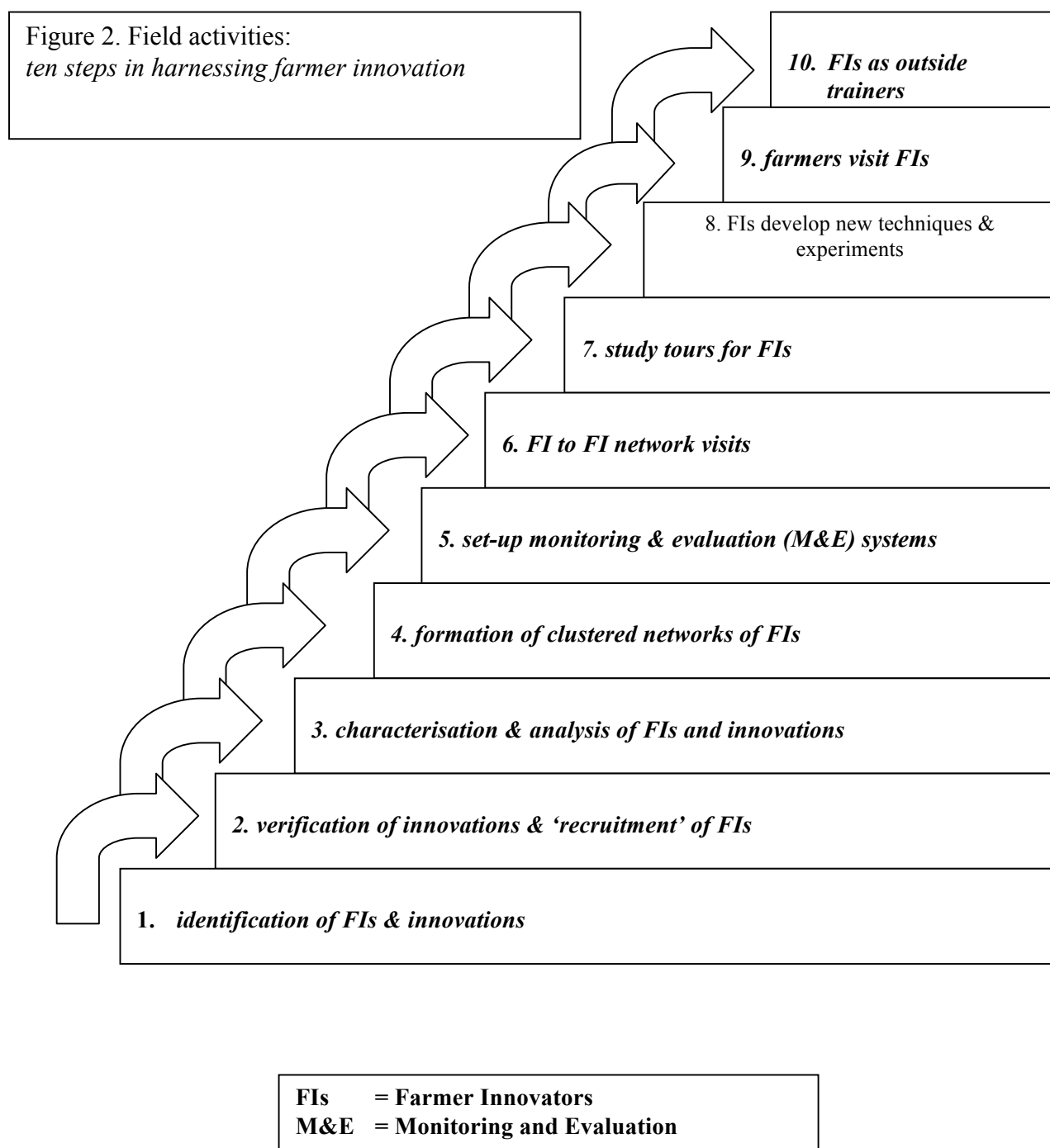
2.3 Methodology: *how do we go about it?*

Processes and procedures

The methodology underpinning a farmer innovation programme has its foundations in the family of participatory research, development and extension approaches, of which *participatory technology development*, *participatory monitoring and evaluation* and *participatory extension* are the most prominent sub-disciplines (see, respectively, van Veldhuizen *et al*, 1997a; Guijt, 1998 and Hagmann *et al*, 1998). PFI (in collaboration with the ISWC2 programme: see Critchley, *et al* 1999 for an initial description of the methodology) is in the process of testing and refining a methodological framework. This basic framework is based around two sets of procedures or processes. These relate to (a) *programme development processes* and (b) *field based activities*. The programme development processes can be viewed as a ‘shell’ within which the field activities operate. These are presented, respectively in figures 2.1 and 2.2, and are followed by some explanatory notes.

Figure 2.1: Programme Development Processes





Programme Development Processes: *some explanatory notes*

The programme development process ‘shell’ (figure 2.1) highlights some of the most important processes that need to accompany field-based implementation activities. There is no strict sequence, other than to say that the training component of capacity building needs to have a high profile at the commencement of the programme, and institutionalisation takes up relatively more time and energy in the later stages. That is why they are located where they are in this shell. The other processes ‘kick in’ at various stages and tend to continue throughout, sometimes at centre stage, sometimes in the background.

Capacity building is a foundation stone, but is also integral *throughout* the course of such an unconventional programme. Training is required primarily in re-orientation of roles (see section on *roles and responsibilities*) and in methodology – the programme development processes and the field activities. Training is also necessary for specifics such as *participatory learning and action (PLA: including PRA, PTD etc)*, *farmer innovator identification*, *gender sensitivity*, and *monitoring and evaluation*. It may also be needed for elements which are determined on an *ad hoc* basis as they arise. But capacity building is more than just training. It incorporates ‘learning by doing’ which is integral to such a process approach. **Partnership forging** between the various disciplines (especially research and extension) and between organisations needs to be addressed systematically. This is ‘coalition building’ to use the term favoured by Broerse (1998). As in all workable coalitions, they depend on mutual benefits to justify their existence. Uneasy and unstable alliances are a real danger. **Support studies** result from specific needs that arise at different stages of the programme: examples are *gender studies* and *inventories of related project initiatives* (in preparation for networking) or *evaluatory analyses* of various aspects of the programme, such as effectiveness of training or adoption of innovations. **Networking** between agencies and projects can be an important means of exchanging experience and sharpening ideas, as well as a rapid means of upscaling through the ‘lateral’ adoption of the methodology by network partners. **Overall impact assessment** needs to be carried out at critical points within the cycle – typically towards the end of specific programme phases. This should be based on a combination of existing data (from the M&E programme: *see following methodological section on Field Activities*), participatory workshops and special impact studies. **Awareness raising** basically implies publicity. This can be carried out directly through media campaigns as well as more informatively and indirectly through publication at various levels of academic sophistication (or, to put it another way, at different levels of accessibility, taking into consideration the relevant target audiences). **Policy dialogue** and lobbying are essential prerequisites if the programme is to lift itself above mere local and temporary impact, and if it is to achieve **institutionalisation** within permanent agencies. Institutionalisation is placed at the top of the Programme Development Process shell to denote the fact that it is the ultimate objective.

Field activities: some explanatory notes

The ‘ten steps’ of field activity have been developed to help guide those involved in programme implementation who have had little or no experience with participatory technology development-type projects. The steps may seem too prescriptive to those well versed in such approaches, but it would be a misinterpretation to take them as a blueprint.

Step 1 is the **identification of farmer innovators** (FIs). Here we are looking for innovations or for special traditional practices. We must be careful to trace an innovation back to its roots, in other words we should always try to find the original innovator. Identification can be achieved through a process of PRA, or more simply by starting with what extension staff and local contacts know already, and then following up this process. A sister project (the ISWC2 programme) in Ethiopia has even used a competition to attract new innovators. **Step 2** is the process of **verification** – i.e. confirming that the innovation is genuine and important. This puts a judgmental burden on whomsoever is vested with the responsibility (ideally a team involving research, extension and peer farmer innovators). Sometimes field agents find an ‘innovation’ which isn’t really one at all. This step also includes **recruitment**: it’s essential to make sure that the innovator (the FI) really *wishes* to join a network, and take part in all the activities that it entails. He or she may not want to be ‘recruited’. **Step 3** follows the recruitment in step 2. This is **characterisation** of the FIs and innovations. It means recording certain, basic information about the person and the technology at the start. It could be called a ‘snapshot’ of information. Where innovations are particularly promising (and some cannot be technically improved) it is urgent to ‘write them up’ at this stage. Characterisation is followed by an **analysis** of this data, which should help to answer questions such as: *what type of person is an innovator and why do they test and try new systems?* and *what sorts of innovations are there and where have the ideas come from?* **Step 4** consists of the **creation of farmer networks**, from farmers who live close together (in clusters). From experience it’s best to have around 8 in a group for pragmatic reasons: the whole group can then easily meet in a small room, and can also fit into a vehicle for study tours. Groups should be encouraged to fall into place naturally. Each network should be as balanced as reasonably possible in terms of men and women, and in terms of the young and the older. **Step 5** involves setting up a **monitoring and evaluation** (M&E) system, with discussions between partners (farmers, researchers, extension workers) about who measures (and who analyses) what and for what purpose. We are looking particularly for an emphasis on ‘farmer measurable indicators’ based on parameters that the farmers *want* to measure. Labour and other inputs, yields, rainfall and runoff events can, for example be monitored by the farmer (if he or she wishes to do so). Changes in soil fertility or moisture are examples of parameters that need to be measured by the researcher with special equipment. Evaluations are invariably carried out *jointly* by farmers, extensionists and researchers.

Step 6 is when **FI to FI cross visits** begin – logically first between FIs within the *same* network, and then visits between FIs of *different* networks. This is the process of getting to know what others are doing, sharing ideas, and ‘releasing creativity’. **Step 7** takes the visits one stage further. **Study tours** for each network are now carried out. This means taking the whole network (or sometime representatives from several networks) outside the area to visit other farmers, or research stations etc. There will also be other farmers from outside visiting the area – reciprocal visits. **Step 8**: it is hoped that the study tours (and of course the network visits as well) will stimulate the adoption and further **development of new techniques**. Ideally FIs will then expand their range of experiments, and these will again be monitored through the M&E processes described in step 5. This should lead to further technologies (which though still possibly undergoing adaptation by farmers) that can be *described and made widely available in the written form* so they can be spread further than just by farmer-to-farmer means. **Step 9** sees the beginning of the dissemination process. When we have a technique that can be recommended to other farmers – or at least worth looking at - these farmers can be brought to the farm of that innovator to gain inspiration from what they see. The extensionist should help facilitate this **training or**

‘field day’. **Step 10** then involves using the farmers to go out to spread messages with the extensionists. **Farmer innovators act as outside trainers**. Farmers often learn best from their own colleagues. In an example from Tunisia, farmer innovators are given exposure on the radio in a regular ‘slot’ (C. Reij: *pers comm*). In both dissemination steps (9 and 10) the extensionist has a key role to play as facilitator and organiser.

n.b. four different types of ‘cross visits’ can be differentiated: these are FIs to FIs (step 6) study tours (step 7), Farmers to FI (step 9) and FI to Farmers (step 10)

n.b. there is no strict sequence between steps 1-10, and there will be repetitions of various stages adapted from Critchley et al, 1999

Roles and responsibilities

An innovative, participatory programme of this nature demands a redefinition of roles and responsibilities amongst the various partners involved. A form of institutional reorganisation is implicit. A *partnership* is indeed how it should be viewed: a new alliance between farmers, extension workers and researchers. But this can be an uneasy alliance, at least initially, as it is essentially an alien relationship. Thus the need for coalition building, in which shared commitment and relationships based on trust are built up. Each of the partners needs to be given confidence and support. Clearly this highlights the requirement for orientation and capacity building alluded to in the foregoing methodology. Let us briefly look at the new roles of the three key partners.

Farmer Innovators are brought to the fore as key actors in technology development, and also in communication (extension). They also become involved in monitoring and evaluation. FIs are seen, in this new paradigm, as active agents contributing to change, not mere recipients of advice. Much is expected of their enthusiasm and latent abilities to communicate with other farmers.

Extensionists (field agents) become facilitators and recorders of the process rather than merely relayers of messages. They are involved in all of the ‘ten steps’ of field activity, and greater demands are made on them in terms of inter-personal skills. However the professional rewards are correspondingly greater. Many extension agents in sub-Saharan Africa are currently ‘high and dry’ in under-resourced systems. A farmer innovator programme can help restore their professional dignity, and revitalise what has commonly become a disfunctional relationship with farmers.

Researchers are expected to move outside the confines of their stations and meet the farmers on their farms and on the farmers’ terms. Instead of designing their own experiments, researchers are key in helping to design monitor systems to validate the farmers’ innovations, based on a combination of both farmer measurable, and researcher measurable, indicators. They can help farmers improve the design of their innovations by bringing in ideas from outside. We are talking not only of biophysical researchers, but social scientists also: they are crucial for example in training and in carrying out specific impact studies.

It is the forging of these new partner relationships that will determine the success and sustainability of such a programme. Before, there were clear-cut hierarchical roles and defined, different responsibilities. Now there needs to be a much more organic relationship and common purpose.

2.4 Special Issues

There are a number of issues that we need to come to grips with while developing farmer innovator-based programmes. These are points for debate, and issues that need to be resolved, especially as we look towards scaling-up and institutionalisation of the programme. The following are some of the most important.

Who is a true innovator? What is a true innovation?

A question that has arisen frequently under PFI (and ISWC2 also) is about the veracity of innovation. Does an innovation have to be absolutely unique? Or unique to a locality? Does it have to be new, or can it be an established tradition? This is obviously a question of where to draw the line, as there is a continuous variation from unique innovation to local best practice, and also from ancient to modern. We must be careful however to distinguish between mere adoption of techniques promoted by government or NGOs and something *more* than this. Simple adoption

should be obviously excluded from our definition, whereas evidence of some subtle *adaptation* - indicative of initiative - presents a different picture. As pointed out before there is a heavy onus on the initial identifiers and the screening/ verification team. Section 5.1 looks at this question in more detail.

Role of researchers and ‘hard science’

We have already discussed the changing roles of farmers, extension workers and researchers. A true *partnership* is required, and not just a loading of more and more responsibilities on farmers to achieve ‘participation’. Perhaps the most difficult role to change in practice is the researcher’s. The researcher has been used to working in isolation, determining his/her own agenda (or at least the agenda being determined from within ‘research’), and concentrating on experiments which produce readily publishable results. Integration into a multidisciplinary team may not be an attractive proposition, especially when the lead appears to them to be taken by development oriented professionals and the farmers’ research agenda is emphasised over their own. Local biophysical researchers may feel themselves marginalised. This is more than a pity: it is a situation that should not be allowed to happen. Section 5.2 looks at this topic in the context of partnerships and roles.

Gender, age and innovation

No development debate these days is engaged without the topic of gender being brought to the fore. With respect to farmer innovators most of the classical problems associated with gender and development in Africa apply. Whatever the *real* gender spread amongst innovators (and that remains currently a matter for speculation), not surprisingly it is proving trickier to identify women innovators than men. Those who carry out the identification tend to be men, looking for men. In turn, men tend to volunteer themselves as innovators even when they may be part of an equal domestic innovator partnership. They may claim their wives’ innovations as their own. What is the right balance between sensitivity and potentially confrontational affirmative action in the gender sphere? Section 5.3 debates the issue and proffers recommendations. Let us not forget *age*, which may be an equally important element. Again, young innovators may tend to be overlooked: are they not key to the future of rural innovation?

Livelihoods

One of the most recent realisations about the small scale ‘farmer’ is that farming is often merely one string to his or her economic bow. Thus the increasing focus on ‘sustainable livelihoods’ (Carney, 1998). Poor rural folk tend to gain income and sustenance from a variety of sources (both legal and illicit of course!) and these include petty trade, micro-enterprise, brewing and casual labour. Where does this place innovation? Is it correct to look solely at innovation in the context of farming, or even indeed more narrowly - in terms of land and water management? Clearly we need, at some stage, to think about innovation more broadly. Surely the same principles apply across the spectrum of livelihood activities?

Monitoring and evaluation/ impact analysis

Guijt (1998) points out the very real need for participatory programmes to improve their hitherto feeble record on monitoring and evaluation (M&E). This is not just to satisfy the demands of the funding agencies – but for enhanced internal learning and better future planning. We need to monitor the ‘nuts and bolts’ of numbers, names and dates (for example recording details of cross visits) but also to measure specific detailed technical aspects of the innovations themselves. Evaluation of innovations (and the process itself) must be done in participatory partnership. It is simply not sufficient to sit back and admire innovations, or to dismiss them for that matter, without hard evidence. There are also crucial, though less tangible, aspects that need to be monitored and evaluated. How do we assess ‘improved ability to innovate’ or ‘enhanced capacity to communicate’? There is a fine line, however, between too little monitoring and overloading the system. There is also a balance to be struck between participatory, and conventional, M&E. This topic is explored in more detail in section 5.4 where a proposed M&E system is laid out.

Intellectual property rights: sharing or stealing?

While water harvesting or soil conservation techniques are hardly likely to become marketable products in the way that indigenous medicinal remedies can be, there remains a question of 'ownership'. What may be most important is that we must be careful not to name a system after a person without first 'tracing the system to its roots'. That is a lesson that has been learned by experience from PFI-Tanzania where an innovation was initially 'claimed' by a relation of the real adopter. Of course, as we have already discussed, this same situation happens each time that one domestic partner claims ownership of an innovation that actually belongs to his/ her partner, or is in reality a joint effort. Recognition must be given, but we have to take care that credit is awarded where credit is due.

Incentives

In some countries more than others, but probably in all, the vexing question of incentives raises its head whenever soil conservation/ natural resource management programmes get underway. This tends to relate mainly to implementation-type projects, but even with PFI and other innovator programmes, the incentives question is eventually posed. Interestingly the topic is so low key under PFI at the moment, that it was not even discussed at the workshop. Where it *has* been discussed the consensus is that it should prove to be incentive enough for farmer innovators to be associated with a programme that organises study tours for them and helps them design and record their trials and innovations. Indeed we must be careful that this is not *too great an incentive*, and that as a result other 'ordinary' farmers feel slighted and marginalised. When it comes to the proposed use of farmer innovators as outgoing extensionists (step 10 in the methodology) then of course there needs to be some recompense. Who pays and how will it be arranged? Those are the next questions to contemplate.

Cost-effectiveness

There are two aspects to cost-effectiveness, and these are at different levels. The first is simply this: is the innovation that we have uncovered a cost-effective measure? Is the labour involved worthwhile and within the means of the less well resourced, or the capacity of women? It is tempting to applaud innovation that looks good and works well. But innovations *can* be the result of initiative mixed with dedication that goes beyond economic rationale. The pitfall then is that such a technology is admired by outsiders (and why not?), vigorously promoted (the problem!) but fails to take off (not surprisingly). Input-output monitoring is necessary, though the bottom line is that an innovation will simply not be copied if it is too much labour, or if the benefits are simply not commensurate with the costs. The second element is the cost-effectiveness of the project itself. While pilot project initiatives are normally granted a degree of freedom from hard-nosed economics (and there is a strong case to object to even this dispensation), any proposal for scaling up must take cost-effectiveness into account. The danger in this case is establishing a methodology which may be *potent*, but is simply too *costly* (or more accurately, *cost-inefficient*) to justify an expansion. Indeed one of the most appealing aspects of farmer innovator programme to governments (and donors) is the potential cost saving in terms of research and extension.

Product or process?

This issue regards the overall purpose of a farmer innovator initiative. Is the intention to stimulate a process of innovation amongst farmers, *or* to generate 'products' (= technologies)? Surely the simple answer is: *both*. The real question is one of balance. By stimulating innovation, we help to stimulate the process and to perpetuate it. But the process must lead to some tangible benefits or it is meaningless. On the other hand, production of a predetermined target number of defined technologies (= products) must not become an obsession. Technologies are (theoretically) forever evolving if the innovation process is at work. They are 'moving targets'. As Bunch and Lopez (1995) note: *while specific technologies do not generally have long-term sustainability, the process of agricultural innovation does*. In support of the definition and description of validated

technologies (and potential integration into a regional database through WOCAT⁶ for example) is the fact that we need innovations to be spread more widely than local farmer innovator extension networks permit.

Add-on or stand-alone?

A pilot farmer innovator programme which begins to lift off and show distinct promise conjures up an image of the larger picture. We have already talked of the imperative for institutionalisation if a sustained process of stimulated innovation and participatory dissemination is to be ensured. But should this be a separate initiative within, say, a Ministry of Agriculture, or should it be an add-on dimension to an on-going programme? While it might make sense for a pilot project to focus exclusively on innovation, are we seriously suggesting that this is an alternative model to existing research and extension systems? Perhaps harnessing innovation is best looked at as a supplement to on-going programmes to boost their relevance and potency. It is also worth considering how relevant the 'innovation theme' might be to other rural development sectors.

Scaling-up and institutionalisation

Enclave projects with a narrow focus in terms of area of intervention and duration are becoming increasingly discredited. Often they leave little behind other than locally cultivated success: there is little or no effort to create an institutional memory. And spots don't necessarily spread spontaneously. On the other hand, up to present there have been few examples of participatory projects within the government sector in sub-Saharan Africa. Institutionalisation is the ultimate objective of PFI. The goal is to internalise the methodology into the existing system. It is vital that links are drawn with relevant government agencies (in the case of PFI, the Ministries of Agriculture are involved in either technical supervisory capacities or implementation, or both) and that policy lobbying takes place. Another way of scaling up is through lateral influence – that is when project and programme network partners absorb the methodology by osmosis. Section 6 looks at this important topic in detail.

2.5 Conclusion

A systematic programme focussed on the role of local innovation, ingenuity and intuition is undoubtedly an exciting new direction in terms of resource conservation in sub-Saharan Africa. It comprises joint action, and disdains the temptation to merely sit back and admire local ingenuity. However we must keep matters in perspective and acknowledge potential shortcomings as well as the fact that this is only one dimension to what must be a multi-faceted approach to improving rural livelihoods. While initial feedback and encouraging results demonstrate that there is a fount of goodwill *and* a promising route charted out, there are real issues regarding the role of innovation that have still to be adequately addressed. What is clear already from the experience gained by PFI (and ISWC2) is that there is a storehouse of local knowledge, inventiveness and of course *innovation* in some of the poorest rural areas. It surely is worthwhile continuing to develop a system of tapping into this latent pool of ideas and enthusiasm.

⁶ WOCAT = The World Overview of Conservation Approaches and Technologies, an on-going project of the World Association of Soil and Water Conservation

Chapter 3

Promoting Farmer Innovation: The Programme

3.1 PFI and its context⁷

The overall PFI programme

‘Promoting Farmer Innovation’ was developed within the context of the Convention to Combat Desertification (CCD), under an UNSO global initiative, ‘Promoting Sustainable Water Management’ (PSWM) in the drylands. Three sub-programmes were conceived under the PSWM: 1) pastoral land-use systems, 2) small-scale irrigation and 3) promotion of farmer innovation in rainfed agriculture in sub-Saharan Africa (PFI). Two of the three sub-programmes are still at the design phase, but PFI – since the funding of its East African cluster by the Netherlands government for a three year period in mid 1997 - has progressed to the point that it has begun producing positive and interesting results. The basic objective of PFI is to sustainably improve rural livelihoods and improve ecosystem dynamics through the identification, verification and diffusion of local innovations related to soil and water conservation (SWC), water harvesting (WH) and natural resource management (NRM).

The development of the PFI strategy requires a paradigm shift – in the spirit of the CCD and associated National Action Programmes (NAPs) - so as to ensure the development of a truly participatory approach that seeks to: *decentralise decision making to local people; develop flexible implementation mechanisms; ensure goals, targets and timing are decided by local communities; maintain a modest scale; and use local technologies*. The guiding philosophy of PFI is the recognition that communities facing resource scarcity have a greater incentive to further develop *innovative* resource management techniques than those communities that have sufficient resources, or perceive it as such. The incentive in this case is the very survival of the individual farmer, and in many situations the community as a whole. Rather than viewing farmers as being passive individuals vulnerable to changing environmental conditions, PFI recognises that many farmers use their ingenuity to develop systems to mitigate whatever environmental challenges they may face. Considering that farmers are closest to the land and its resources, they are imbued with knowledge of the ecological dynamics that govern the productive capacity of the land. As such, they function as rational actors who seek to maximise the output of their land through the development of various resource management techniques. Taking these factors into account, the PFI strategy identifies farmers as being the central actors in the development, refinement, and dissemination of SWC, WH and NRM innovations. Let us look at some aspects of ‘desertification’ and the CCD before we move on to the organisational and institutional aspects of PFI.

The Convention to Combat Desertification and its relevance to PFI

Dryland ecosystems make up over one third of the earth’s land surface and are home to approximately 2 billion people. Globally, of the 5.2 billion hectares of dryland used for agriculture, roughly 70% is degraded. In Africa 73% of its drylands, or 1 billion hectares of land, is moderately or severely affected by desertification (Lean, 1995). The causes of desertification in Africa are many, and interlinkages and synergistic effects exacerbate the problem. Some of the primary causes of land degradation are related to recurrent droughts and the existence of severe aridity, increase in human populations and associated growth in livestock populations, and inappropriate national agricultural and human settlement policies. Land degradation can be a slow process, or extremely rapid depending on the environmental and social conditions. The resulting

⁷ edited by Roshan Cooke on the basis of presentations by Tijan Jallow and Verity Nyagah

outcome however is a reduced carrying capacity of the land due to the loss of ecosystem functions. This usually occurs through the erosion of topsoil, diminution of soil fertility, and the disruption of hydrological regimes and its consequent effect on the recharge of ground water resources. The erosion of the ecosystem's functions, as a result of 'desertification', acts to diminish agricultural productivity of the land, and impacts severely on local communities by threatening economic livelihoods and human survival. Considering that farmers constitute a significant proportion of the dryland population in Africa, land degradation poses a grave threat to their survival.

An opinion held by many is that people living in the drylands should be blamed for destroying their own livelihoods by overusing and denuding their land. However, this perception does not take into consideration two important underlying causes of desertification, namely poverty and ill conceived government policies. Poverty leads people to act (as some see it) 'irrationally'. Immediate means of achieving subsistence take priority over long-term ecological and socio-economic considerations. This should not be interpreted as ignorance, but understood within the context of the struggle for survival.

Tied to the perception that blames dryland populations for the situation they are in, is an associated response that argues for external technical support for solving problems faced by local people. As a result of this viewpoint, over the past two decades, outside experts have been the primary agents attempting to tackle problems of the drylands' people. Their efforts have achieved only limited impact. Past initiatives tended to adopt a sectoral focus, with large scale, capital intensive and centralised blue print approaches being the norm. One of the areas that received much attention was the agricultural sector, where the common perception was that African farmers were incapable of producing basic food requirements without external technical support. However, past experiences indicate that in a majority of cases external support failed to address fundamental problems faced by farmers. This was primarily due to a combination of technical failures and an inadequate policy environment. Furthermore, in several cases, outside technical support in fact led to the exacerbation of problems faced by farmers.

The CCD not only acknowledges the predicament of the communities living in dryland areas, but also identifies local people as being key to reversing the spread of desertification. It calls for:

.... long term integrated strategies that focus simultaneously...on improved productivity of land, and the rehabilitation, conservation and sustainable management of land and water resources. leading to improved living conditions, in particular at the community level.... (CCD: article 2, paragraph 2).

This is a radical departure from activities conducted over the past two decades to combat desertification, where priorities, objectives and projects were designed by outsiders with little understanding of the perceptions, capacities and knowledge of local people. In addition, local communities were viewed as adversaries that needed to be restrained from damaging their own environment. As a result, in many cases the needs and priorities of the affected communities were overlooked, and as a consequence very little success was achieved at the field-level. Given this history of failure, the CCD emphasises the need for action programmes to originate at the local level and be based on genuine local participation. The CCD attempts to avoid a repetition of past mistakes and places a strong emphasis on utilising local experiences and knowledge in combating desertification. Furthermore, it recognises that responsibility for management of natural resources needs to be placed with those closest to the resource, and most dependent on the maintenance of

the resource, while pursuing a vigorous effort to address the underlying causes of desertification.

PFI: its organisational and institutional framework

Three countries, Kenya, Tanzania and Uganda were selected for the first phase of the PFI pilot programme. The original plan was that two further clusters of countries (in West and Southern Africa) would later join the programme: this has not yet happened. The criteria for country selection was that the countries were:

- *signatories to the CCD;*
- *willing and ready to test this new idea as part of their National Action Programmes within the context of the CCD;*
- *affected by sub-humid and semi-arid zones with resource-poor rural occupants; and*
- *identified as concentration countries (at that time) of the government of Netherlands (the donor).*

PFI's Goal and Objectives (from Project Proposal of June 1996)

to sustainably improve rural livelihoods through an increase in the rate of diffusion of appropriate soil and water conservation and other relevant resource management techniques; to accomplish this by:

- promoting farmer to farmer exchange visits
- building capacity of farmers and supporting agencies to experiment and innovate
- promoting a policy dialogue at national level about innovators and innovation

The main institutional actors within the PFI programme are

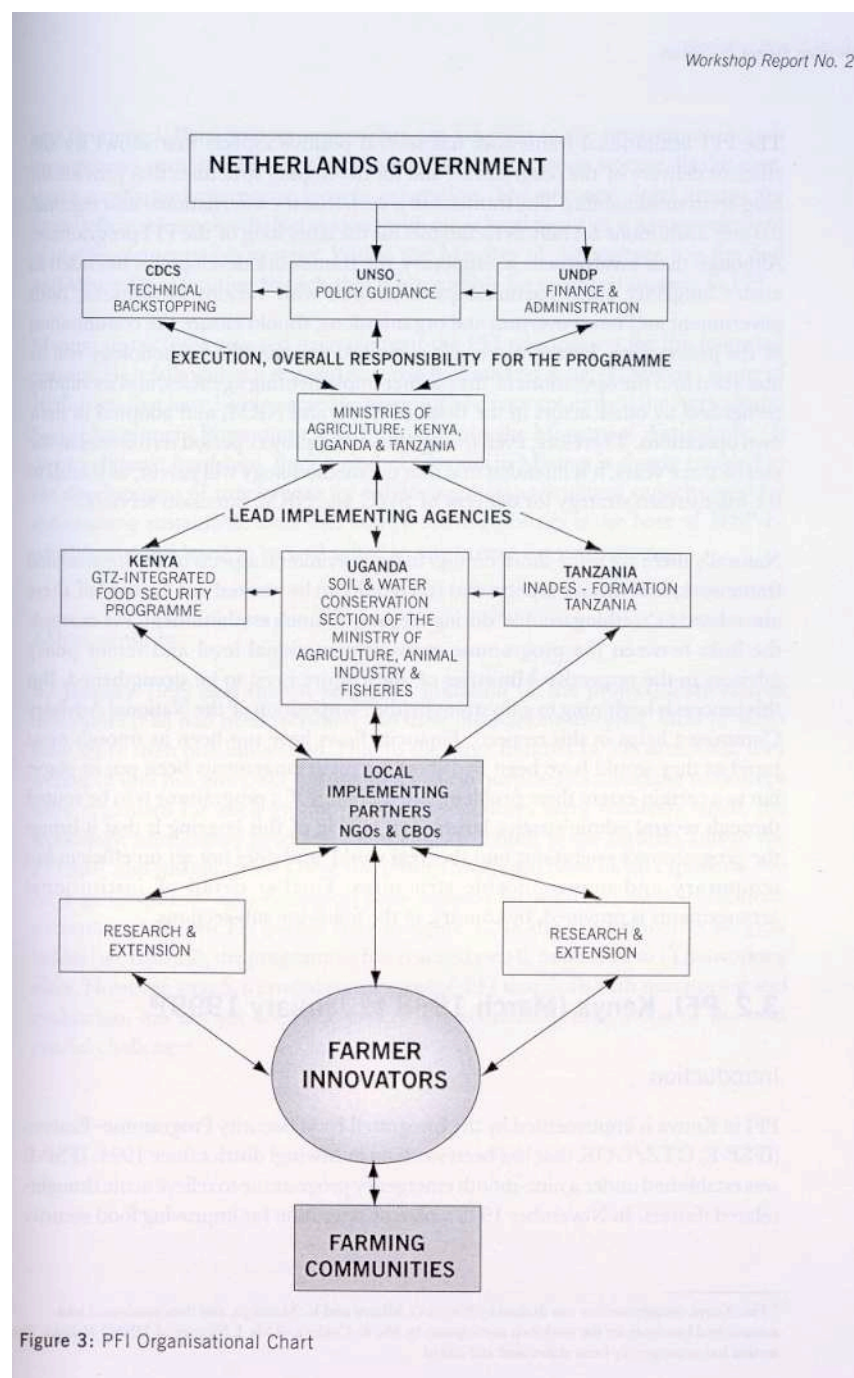
- United Nations Development Programme – Office to Combat Desertification and Drought (UNSO) New York;
- UNSO/ Technical Services Project (TSP) Nairobi;
- United Nations Development Programme (UNDP) in each participating country;
- Centre for Development Cooperation Services (CDCS) *Vrije Universiteit Amsterdam*;
- Ministries of Agriculture (and other Ministries: see country sections) in the three countries; and
- The government of the Netherlands (which provides funding for this programme).

The government of the Netherlands channels finances for PFI through the UNDP Country Offices, while UNSO provides policy guidance and overall management of the programme. The lead technical backstopping is conducted by CDCS. At the individual country level, there are various arrangements that govern the implementation of the PFI programme. However, all of them follow a general format; a lead institution is identified at the national level for overall management of the programme; the 'executing agency', and another agency with the required capacity is designated for field implementation: the 'implementing agency'.

In **Tanzania** the overall responsibility and execution of the programme lies with the Vice-President's Office, Division of Environment (VPO-DOE). The Ministry of

Agriculture, Soil Conservation and Land Use Planning Section (MOA-SCLUPS) provides technical support, while *Institut Africain pour le Développement Economique et Social* Formation – Tanzania (IFTz), is the lead implementing agency. IFTz is a French international NGO with its Tanzanian operations based in Dodoma. In **Uganda**, the government through the National Execution Unit (NEX) of the Ministry of Planning and Economic Development retains overall responsibility for the execution of the programme. The Ministry of Agriculture, Animal Industries and Fisheries', Soil and Water Conservation Section (MAAIF-SWCS) is primarily responsible for the implementation of the programme at the field level. In **Kenya**, there is a collaborative arrangement between the government and *Deutsche Gesellschaft für Technische Zusammenarbeit* (GTZ) - Kenya, under which the programme is implemented through a GTZ initiative called the Integrated Food Security Programme Eastern (IFSP-E) based in Mwingi district. The overall responsibility for technical oversight of the programme is retained by the Ministry of Agriculture, Livestock Development and Marketing's Soil and Water Conservation Branch (MALDM-SWCB). In all three countries, the lead implementing agencies work in partnership with other government departments such as extension services, local NGOs and CBOs for facilitating the implementation of the programme.

Figure 3 Organisational Chart



Since there are many partner agencies involved in the PFI programme, each country has established a National Advisory Committee (NAC) which is composed of representatives of all the partner agencies as well as the PFI coordinator, participating research institutions, and extension agents. The NAC meets twice a year to review annual work plans, approve the budget, ensure involvement of stakeholders, mediate in any conflicts and advise on/ help engage in policy dialogue for mainstreaming the PFI methodology in national policies. The existence of the NAC is crucial in that it allows for a biannual

review of activities and provides an opportunity for reviewing the methodology. Also, it provides a forum for discussion of issues pertinent at the local level, which in turn can strengthen lobbying efforts. In addition to the NAC, a Tripartite Review takes place annually in each country: this exercise brings together UNDP, the executing and the implementing agency. This is a joint and participatory evaluation of the progress and relevance of the programme – as it incorporates the views of the target beneficiaries as well.

The PFI institutional framework has several positive aspects that allows for the efficient delivery of the programme, and for developing structures that provide for long-term sustainability. The framework is such that the international and regional partner institutions act only as facilitators for the launching of the PFI programme. Although their involvement is temporary, the framework developed is intended to assure longevity, since partnerships developed with various institutions, both government and non-governmental organisations, should ensure the continuation of the programme. Furthermore, it is envisaged that the PFI methodology will be absorbed into the operations of the partner implementing agencies, and its validity recognised by other actors in the fields of SWC and NRM, and adopted in their own operations. Therefore, even though the project period terminates at the end of three years, it is intended that the methodology will persist, as it adds to the mainstream strategy for delivery of SWC and NRM extension services.

Naturally there are some shortcomings in the operational aspects of the institutional framework, and various aspects that still require to be worked out. Several of these are related to ‘teething trouble’ during the programme’s establishment. For example the links between the programme at implementational level and senior policy advisors in the respective Ministries of Agriculture need to be strengthened. But this process is beginning to gain strength (the composition of the National Advisory Committee helps in this respect). Financial flows have not been as smooth or as rapid as they would have been had short circuit arrangements been put in place: but to a certain extent these problems are inevitable if a programme is to be routed through several administrative layers. The upside of this layering is that it brings the programme’s operations into the ‘real world’ and does not set up efficient but temporary and non-replicable structures. Further detail of institutional arrangements is provided, by country, in the following sub-sections.

3.2 PFI, Kenya (March 1998 to January 1999)⁸

Introduction

PFI in Kenya is implemented by the Integrated Food Security Programme–Eastern (IFSP-E) of GTZ, an organisation that has been working in Mwingi district since 1994. IFSP-E was established under a nine-month emergency programme to relieve acute drought-related distress. In November 1995 a plan of operation for improving food security was developed. Participatory approaches are inherent to the programme, which incorporates components on environmental protection, grain storage, health care, water supply and alternative income generation. The primary target groups are food-deficient households. Networking with other local agencies is a major element of the implementation strategy. Within the Ministry of Agriculture it is the Soil and Water Conservation Branch that is responsible for technical support to PFI.

⁸ this Kenya country section was drafted by C. Mburu and K. Mutungu, and then condensed into summarised handouts for the workshop participants by R. Cooke and J. Njoroge of UNSO Nairobi. The section has subsequently been elaborated and edited

Mwingi district was selected to implement the PFI pilot project for the following reasons: (1) it falls within a dry and hot, arid to semi-arid zone; (2) Mwingi is one of 16 districts that have been selected for testing a new concept termed the Agricultural Sector Investment Programme (ASIP), initiated by the Ministry of Agriculture; (3) due to climatic hardships, the survival of farmers in Mwingi is closely coupled to the development of innovations for enhancing their agricultural capacity, and for maintaining sustainable land use; and (4) Mwingi district is the base of IFSP-E, which was considered to be well suited to implement the programme.

Achievements

By January 1999 (less than a year after initiation of the project) forty farmer innovators (FIs) had been recruited and their innovations assessed. Most of them have more than one innovation. Due to the large number of FIs identified, they were split into two groups of twenty for logistical purposes. Networking workshops were organised for each group, and as the numbers were relatively small, the workshops were highly productive and educative both to the farmers and to the PFI staff and stakeholders. These two groups have each been further split into two on a geographical/ agro-ecological zone basis to form four clusters to facilitate networking between FIs (please refer to diagram). In the 10-step methodological ladder (see figure 2.2), the programme has reached step 6, namely FI to FI networking visits. However, step 5, a crucial component of PFI that deals with monitoring and evaluation, has not yet been adequately operationalised: that is one of the next crucial challenges.

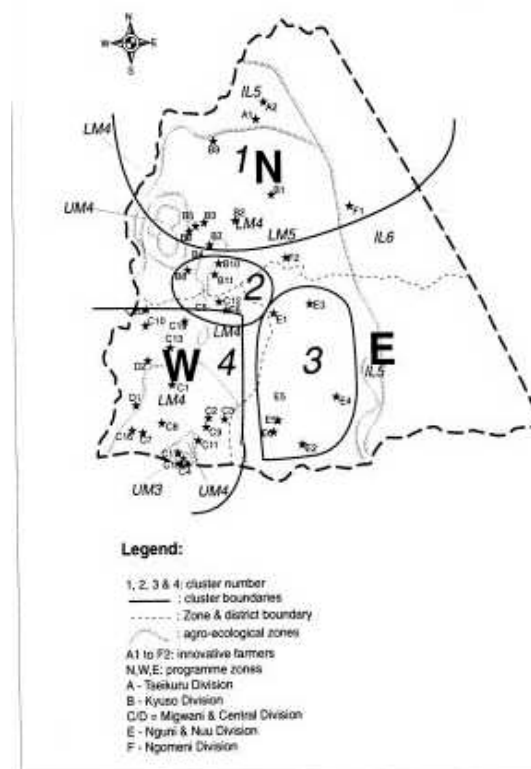


Figure 4: Distribution of Farmer Innovators (FIs) in Mwingi District, Kenya

In order to promote successful cross visits between FIs, and between farmers and FIs, training programmes to sharpen the skills of FIs ('training of trainers') in the art of presentation and message delivery have been initiated. At any one time, training is conducted for batches of 6 to 10 FIs. This step is unique to the Kenyan sub-programme and supplements the ten step methodological process of harnessing of farmer innovation. It was felt that such training helps groom the FI in terms of message delivery, and also prepares him or her psychologically for addressing public gatherings. In terms of group dynamics it also makes FIs outgoing by empowering the shy ones and mitigating problems related to age differences.

There are six women representatives among the selected forty FIs. This amounts to only 15% women's participation currently, but it is hoped that women's participation by the year 2000 will reach 50% (or more). Preliminary initiatives have been taken towards realising this objective. A gender study was completed in the second part of 1998 (which highlighted several opportunities for raising the profile of women in the programme), and a very successful one-week gender sensitisation seminar was held in March 1999 for stakeholders at all levels. There has also been a study carried out by a consultant entitled '*Natural Resources Management: baseline survey of stakeholders*'. This study identified other actors within related fields of activity, that is land husbandry generally, within Mwingi district.

Lessons, challenges and/ constraints

- as far as gender is concerned, due to cultural constraints, some potential female innovators have been pushed aside as their husbands appropriate ownership of their wives innovations. One interim remedy to this problem is to invite the family as a unit, so that the innovation is seen as a family affair. However, mechanisms need to be developed for identifying the legitimate owner of an innovator;
- time management: farmers in the district have their own cultural etiquette. Visitors cannot merely enter and leave a farmer's premises as they may have planned. Once on the farmer's premises, respect for their traditions are crucial. A visit to a single farm can take from half to a full day;
- innovators are proud of what they have achieved and are willing to share their knowledge with other farmers;
- innovation comes from a variety of sources. These include: *intuition, dreams, experience at work, training, the ideas of friends, observation elsewhere, trouble/poverty* and '*no way out*' *without being creative*;
- but innovation can also be hindered. Factors include: *taboos, tradition, culture, superstition* etc;
- land users are very varied in origin and interests. Some are retired Directors of government ministries, while others are subsistence farmers. As a result, delivery mechanisms have to be constantly modified to suit the heterogeneous composition of the target groups;
- relationship with Research needs to be developed and a concrete memorandum of understanding arrived at. In this respect negotiations are currently underway with the Kenya Agricultural Research Institute (KARI). When this has been achieved, it will open up the potential for improved on-farm monitoring and evaluation, and the integration of participatory but scientific research;
- appropriate bodies to 'house' PFI are vital if the programme is to expand to other districts, and for maintenance of long-term sustainability. These may be government or NGO institutions;

- a conducive institutional climate has to be created so that land users are allowed to participate in the diffusion of knowledge, which in turn will result in substantial outputs at a low cost. This again is a current challenge for the Kenyan programme;
- there may be a need in future for farmer innovators to acquire 'Intellectual Property Rights' (IPRs) to original and significant innovations. It will also substantially contribute to achieving the main goal of ensuring sustainability, as FIs could potentially be entitled to receive monetary compensation for their innovations, knowledge and training capabilities;
- eventually FIs could effectively become consultants (or 'private sector service providers' - PSSP). This would allow extension agents to hire the services of FIs to assist CBOs and farmer groups for training and adoption of soil and water conservation innovations;
- sound backstopping support for the programme at the time of implementation is crucial to its success.

Future activities

The Kenyan programme suffered from a slow start-up due to bureaucratic delays, but is now making every effort to forge ahead in the time remaining. A summary of the plans for the immediate future follows:

- January through June 1999: FIs will visit FIs *within* clusters;
- May through July FIs will visit FIs *between* (selected) clusters;
- between August 1999 and the end of this phase of the programme farmers will visit FIs for exposure to adoptable innovations;
- study tours: FIs will visit other districts between September and November 1999, and again in the year 2000;
- innovation in rural communities goes further than simply land husbandry: as a means of complementing soil and water conservation and land management innovations, other innovators in agriculturally related trades will also be identified i.e. seed producers, blacksmiths, masons and others involved in local construction industries that utilise raw materials from the area;
- Kenya PFI will seek institutional collaboration with research agencies (as mentioned above);
- Kenya PFI will take part in the production of a video featuring farmer innovations and the PFI approach.

PFI, Tanzania (January 1998 to January 1999)⁹

Introduction

The programme was initiated in January 1998 with the signing of a memorandum of understanding between INADES-Formation Tanzania (IFTz) and the Ministry of Agriculture, and with the preparation of a working plan inclusive of a budget for the first year. IFTz, which was selected at an initial PFI planning workshop in December 1998, is an NGO with its headquarters in Abidjan. It was registered as a Tanzanian NGO in 1994 with its head office in Dodoma. IFTz provides back-up to farmer organisations, offers

⁹ this Tanzania country section was drafted by P. Lameck and H. Dumea, and then condensed into summarised handouts for the workshop participants by R. Cooke and J. Njoroge of UNSO Nairobi. The section has subsequently been elaborated and edited

training through workshops, exchange visits and correspondence, and conducts socio-economic participatory studies. IFTz's policy guidelines for the current period focus on various aspects of farmer groups. The branch of the Ministry of Agriculture responsible for technical oversight of the PFI programme is the Soil Conservation and Land Use Planning Section (MOA-SCLUPS). In turn, the Vice-President's Office, Division of Environment has the ultimate executive responsibility for PFI Tanzania.

PFI field activities started in March 1998. Districts were selected based on the number of farmer innovators in proximity to each other. This was to facilitate the formation of clusters. Also, accessibility of these farmers had to be taken into account. The selected districts are located in semi-arid central Tanzania, where land degradation and poverty are prevalent problems.

Collaborating agencies / institutions

The active PFI partner implementing agencies based in Dodoma are: the Participatory Land Use Management project (PLUM); the Dodoma Environmental Network (DONET) which deals with environmental issues; MRVTC which is concerned with vine research; TIP dealing with traditional irrigation practices; Dodoma Regional Agriculture and Livestock Development Department under the Ministry of Agriculture; FTTP covering forestry; LPRI which conducts research in agriculture and livestock; Village Environmental Committees (VECs); and local government.

Achievements

The first activity was an orientation workshop held in May 1998 for the sensitisation of collaborating organisations to this new approach. Identification of farmer innovators began shortly afterwards. The total number of farmer innovators in the programme (after the filtering of a larger number of potential innovators) is currently 40. Fifteen of them are women. The first farmer innovator's 'networkshop' was held in Dodoma in July 1998. During the workshop, interesting innovations were presented, reflected on and appreciated. Many of the professionals present were visibly impressed. The following were some of the achievements of the workshop:

- familiarisation of FIs and professionals working in land use, and soil and water conservation;
- formation of FI networks (clusters) at the district level, and plans made for exchange visits within districts; and
- it was recommended that FIs start documenting their innovations by collecting and recording important data, so that dissemination of their innovations could be done more rapidly (this in fact came before the guidelines for monitoring and evaluation were developed by the programme at large).

A gender study and a follow-up workshop were conducted in September 1998. The following were the major findings of the study:

local cultural limitations on women's right to own land stifles the development of innovations; and

heavy manual earthwork requirements for some innovations limit women's participation, as they tend to be significantly poorer and are thus unable to hire labour.

A workshop was held in November 1998 to recruit front line extension workers who were willing to work with farmer innovators. Some of the issues that emerged were:

- extension workers felt that they did not command the respect that was due to them, especially from farmers and local-level leaders;

- there is also an attitude among some farmers that the extension agents are their labourers, and that whatever activities are initiated should be done by the extension agents, without the farmer's help;
- farmers on the other hand feel that extension agents lack sensitivity to their needs, and as a result do not address their immediate problems; and
- to avoid antagonism between farmer and extension agent, mechanisms have to be developed to foster mutual respect. Towards achieving this, an enabling environment needs to be created, so that a farmer is able to seek advice from the extension agent without the latter imposing any conditions.

A study tour/ exposure visit was organised for eight FIs from Dodoma to Kilimanjaro region. They visited Sokoine University of Agriculture's rainwater harvesting sites in Kisangara and Kifaru (in Mwaga district), and the Tanzania Forest Action Plan in North Pare to view improved bench terraces, contour bunding and a tree nursery as well as a 'Chomvu village model'. FIs under the Tanzanian PFI programme have won awards under the competition 'Indigenous Knowledge in Combating Desertification' which was held in commemoration of UNSO's 25th anniversary.

FI to FI exchange visits were conducted in August 1998, first among FIs within a district, and later between districts. The results were exceptional considering that some FIs adopted up to three innovations from other FIs, and some have even improved on innovations that they were introduced to. Farmers have sensitised their respective village governments for the facilitation of farmer to FI visits. FIs have been taking advantage of village gatherings and meetings to sensitise other farmers. They have also been conducting follow-up visits to innovation sites. The result has been that each FI has sensitised on average about 100 farmers; at least 10% of the sensitised farmers have adopted innovations. Each FI keeps a record book of adopters of his/her innovation(s).

Challenges / constraints

Many of the problems encountered have been related to delays in the release of funds for programme implementation. The funds reached IFTz in October 1998, about 10 months after the start of the programme: up to that point IFTz had to support the programme using its own resources in anticipation of reimbursement. UNDP Dar es Salaam in conjunction with UNSO Nairobi are in the process of developing mechanisms for the smooth release of funds. Other constraints include:

- unfamiliarity with UNDP's new financial procedures which also led to start-up delays. The project co-ordinator is to attend a short course to familiarise himself with UNDP's new financial procedures;
- equipment such as raingauges and measuring tapes for the maintenance of records have yet to reach FIs. They have been requested to use nearby raingauges, and to pace out fields to measure farm size;
- the requirement that the (IFTz) project co-ordinator spends lengthy periods in Dar es Salaam to produce planned and unplanned reports has been a constraint;
- more farmers want to be recognised as FIs. However, in a real sense they are merely adopters of other's innovations. When the criteria for identifying FIs were explained to them they were not happy, although they understood; and
- some village government leaders complained that the programme should have approached them for identifying FIs, and as a result were resistant to PFI. The concept of PFI was explained to them, and they were able to accept that they would not have been able to identify FIs based on the selection criteria.

Anticipated challenges

- introducing into farming culture the habit of taking various measurements and making use of them;
- identifying and establishing verifiable indicators for assessing the impact of innovations;
- spreading the farmer innovations to other farmers;
- facilitating policy dialogue at the national level on land management, specifically on soil and water conservation, for ensuring the long-term sustainability of the programme, and for institutionalising the PFI approach;
- expanding target areas to incorporate Singida, Tabora, Shinyanga and Morogoro districts, by utilising FIs as resource persons. This is expected to result in an increase in transport costs, as a wider area will be covered;
- follow-up action is required for further identifying innovations and for developing participatory monitoring and evaluation mechanisms. Supplementary funding will be needed for conducting these workshops;
- support in the form of materials such as data sheets, measuring tools and other equipment needs to be provided; and
- internal evaluation of programme to identify strengths and weaknesses.

Future activities

- seek out information in all seven districts of the other four regions for promotion of PFI;
- a further orientation workshop to the PFI programme;
- verification of future FIs;
- a third and a fourth farmer innovator's *networkshop* and formation of farmer innovator groups in each village and a network in each district;
- identification and recruitment of extension agents who are interested to work with the PFI programme;
- gender sensitisation and training;
- workshops for exchange visits among farmer innovators;
- a National Advisory Committee meeting to be held;
- study tours/ exposure visit for FIs to locations with improved SWC, WH & NRM practices;
- self evaluation;
- annual planning workshop for the year 2000;
- initiation of a policy dialogue reviewing the PFI approach for institutionalisation within government; and
- the establishment of a data bank of farmer innovators and their innovations.

Conclusion

In our view farmers have begun to accept the PFI programme. The use of local resources and the existing economic power of farmers have contributed to the favourable response. However, there is no provision whereby other farmers and stakeholders outside the pilot area are able to benefit from this programme as yet. It should also be noted that the approach is a bottom-up one, which is new to many other actors in the field such as local leaders, extension agents and professionals. This poses unforeseen challenges. However, the similarity of the IFTz approach of **Action Research Training (ARTing)** - where the farmer remains the main actor and the rest play a facilitating role - provides us with a sound strategy for meeting most challenges. The task at hand

is the continued facilitation of encouraging farmers to embrace the programme, so that soil and water conservation innovations can be spread widely.

3.3 PFI, UGANDA (October 1997 to January 1999)¹⁰

Introduction

Promoting Farmer Innovation (PFI) in rainfed agriculture in the drylands of Uganda is being implemented on a pilot basis by the Soil and Water Conservation Section (SWCS) of the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF). It is executed by the National Execution Unit (NEX) of the Ministry of Finance, Planning and Economic Development (MFPED). PFI was initiated in Uganda on 2 October 1997, after a memorandum of understanding was signed between UNDP and the government of Uganda. The first planning workshop for all stakeholders was held on 15 and 16 of October 1997 in Soroti.

Effective implementation of project activities began in January 1998 in the three neighbouring districts of Soroti, Kumi and Katakwi. The three districts comprising the project area were selected on the following criteria:

- they have low incidence of rainfall and commonly experience famine;
- they are reasonably accessible (6 hours from Kampala to Soroti on good tar road, then reasonable access roads within the area); and
- the farmers there are responsive, knowledgeable and practice unique farming techniques.

Collaborating agencies / institutions

The agencies and institutions that are currently collaborating with the programme comprise: Makerere University (Faculty of Agriculture), the National Agricultural Research Organisation (NARO), Local Administration, Uganda National Farmers Association (UNFA) and MFPED – NEX Unit.

Achievements

- initially, a stocktaking of existing relevant projects, agencies and programme activities in the project area and other drylands of Uganda was carried out;
- during the first Annual Planning Workshop for stakeholders the project methodology was refined, and work plans were formulated for each of the participating districts. A National Advisory Committee for PFI was also established;
- field agents identified a total of sixty-eight (68) potential farmer innovators (FIs). These were screened in the field and the number narrowed down to twelve ‘credible’ innovators, comprising 10 men, one woman, one youth group (25 members - all male). In addition, two promising/ potential innovators were identified (man and woman) to make a full complement of fourteen initial innovators to work with;
- two farmer innovator networking workshops for the 68 potential innovators were conducted; the first for 33 FIs and the second for 35 FIs in January and June 1998 respectively. During these workshops the innovators shared their experiences and discussed details of networking for promoting their innovations;

¹⁰ this Uganda country section was drafted by A. Lwakuba and C. Rusoke and then condensed into summarised handouts for the workshop participants by R. Cooke and J. Njoroge of UNSO Nairobi. The section has subsequently been elaborated and edited.

- six rural networking workshops for FIs and neighbouring farmers were organised - two in each district. During the workshops, FIs who went on study tours to other districts of Uganda shared their experiences with those who were unable to participate in these tours. The FIs also presented their plans for improvements on their innovations, and discussed strategies for new experimentation;
- a gender study in relation to FIs and gender specific innovations was carried out in July 1998 and a draft report prepared. Another consultant has since updated the report. The first gender sensitisation workshop is scheduled for June 1999;
- two intra-district FI to FI exchange visits were organised in each of the three districts during 1998. There was great interaction among the FIs and a sharing of experiences. The visits also helped generate enthusiasm among FIs for the PFI programme;
- fourteen FIs went on a study tour (exposure visit) to four other districts; Mukono, Mbarara, Bushenyi and Kabale. Some of the subjects of interest on this tour were: soil erosion control; water conservation; organic farming; water harvesting; animal husbandry practices; pasture management; and income generating activities such as mushroom production, poultry, apiary and bakery. Only one month after the study tour, all the FIs that participated in this exposure tour adopted at least one of the practices they were introduced to;
- there was a reciprocal tour to PFI Uganda by two farmer innovators from the 'Indigenous Soil and Water Conservation 2' project in Kabale;
- FI to FI inter-district (between districts) exchange visits were successfully organised, involving the 12 'verified' FIs. These FI to FI visits were organised as a follow-up to, and also as a participatory evaluation of, the study tour;
- a total of 270 farmers have so far participated in the farmer-to-FI visits and in training activities. Preliminary monitoring results have indicated that in some areas there is over 60% adoption of new innovations by those exposed to FIs;
- one National Advisory Committee meeting was convened during which the work plan and the budget for 1998 were approved: a second such forum is planned for early 1999;
- a multidisciplinary team comprising representatives of the donors (UNDP, for the Netherlands government), and the executing and implementing agencies conducted a review of the project for 1998, and a draft report has been produced. The team recommended the following:
 - more training of FIs to acquire greater skills in creating innovations;
 - increasing funding to FIs to act as farmer trainers;
 - provision of appropriate transport for co-ordination and facilitation of cross visits; and
 - provision of hand tools to FIs.
- the PFI national project co-ordinator has participated in all aspects of the National Action Programme (NAP/CCD) process (Uganda ratified the CCD in June 1997) thus enabling him to advocate on behalf of local-level initiatives. He made a presentation of PFI at the first NAP forum in Uganda – which was well received.

Challenges / constraints

A basic constraint to the Uganda programme is the lack of reliable transport for co-ordination and facilitation of cross visits. This drastically curbs the rapid implementation of project activities. The Ministry does not have the resources for providing a vehicle. Increased bureaucratic procedures affect timely implementation of project activities. At the local level, it is not certain whether after the exhaustion of external funding, the

programme could still continue. It is therefore necessary to develop immediate strategies for accessing local resources so as to ensure sustainability of the programme.

Future activities

printing and distribution of the already-drafted countrywide newsletter 'the Innovator';

- further identification of FIs through an expansion of the programme;
- continue to organise farmer to FI, and FI to FI exchange visits;
- conduct a gender training/ sensitisation workshop;
- organise further rural networking workshops;
- convene regular National Advisory Committee meetings, starting with one immediately following the sub-regional workshop in Dodoma;
- convene the first tripartite (Executing agency, Implementing agency, UNDP) review;
- organise an inter-country study tour for FIs (probably to Kenya);
- organise further FI networking workshops;
- organise an annual review for 1999;
- organise a third planning workshop; and
- document PFI activities.

Conclusion

Despite the reported constraints, tremendous success has been achieved in relation to the project objectives, although it has only had just over a year of in-field activity. The Uganda sub-programme was the first of the three to be set up, and has continued throughout to set the pace. In the Ugandan context the approach is ideal for the uncovering and diffusion of local innovations. The participating farmers have generated a lot of interest in the programme. What remains now is to establish the basis for monitoring and evaluation, and to step up the cross visits of farmers to innovators. Finally, the ultimate challenge is ensuring long-term project sustainability through the adoption of the methodology by other agencies and institutionalisation through the Ministry of Agriculture. In the latter respect there is a strong will to learn from the lessons of PFI: this has been expressed regularly at National Advisory Committee meetings and elsewhere.

Chapter 4

Farmer Innovators: Case Studies and Analysis

4.1 Who are the farmer innovators and what are their innovations?¹¹

Introduction

Step three of the *'ten steps in harnessing farmer innovation'* (see chapter 2) is entitled *characterisation and analysis of farmer innovators and their innovations*. PFI set out to record specific details of the farmer innovators and their innovations after they had been identified and verified. It may be asked: *why did we do this?* The reason is that we need to know what characterises FIs and their innovations. We want to establish what sort of people they are, how they have been influenced and what are the types of innovations they practice. This will help us gain an insight into the people and factors involved in the innovation process. This is the chance to challenge – or confirm – our preconceptions about what type of people FIs are, and what their innovations comprise. Recording this data is indeed the very first step in systematic monitoring and evaluation. What follows here is an analysis of the first batch of 74 farmer innovators identified under PFI in the first year of its operation – up to November 1998.

However before going further it should be stated that this exercise is far from being flawless. As we will see there were differences in the way data was recorded between the three countries involved, and some questions asked in one country were not repeated in the others. An obvious, but important fact must also be noted: this is an analysis of *the FIs who were identified*, and of course we cannot be certain that our identification process was perfect. It may be that our sample of FIs does not represent the actual 'FI population' in the community at large. Weak representation of women is a case in point. Shortcomings are pointed out where they arise, and there is no pretence about absolute reliability. This is a pilot exercise. It should also be pointed out that this was an analysis carried out *at the central level*, which should not be seen as conclusive. There will be benefits from internal follow-up exercises on a country by country - or even district by district basis as part of the overall monitoring and evaluation process. As further FIs are identified so the processes of characterisation and analysis can be, and will be, improved. PFI embraces a process approach – learning by doing.

Methods

At each of the three initial PFI planning workshops in Uganda, Tanzania and finally Kenya, which took place between the end of 1997 and early 1998, one of the items on the agenda was the development of 'characterisation forms' for FIs and their innovations. Starting with the format designed in the first such workshop, in Uganda, the forms were variously adapted to include further information (or to adapt questions) to make them more relevant. We were left with three largely overlapping, but not entirely matching formats. The forms shown in annex three (Form A and Form B) are in fact the result of harmonisation of the three versions, and the addition of some extra, important questions. The latter include, for example, questions regarding the income level of the FIs. But these

¹¹ This section is based on a paper prepared for presentation at the workshop entitled 'Who are the farmer innovators and what are their innovations. *An initial analysis of characterisation data from PFI*' by Will Critchley

latest editions were devised after most of the initial data had already been collected using the original prototypes. In each country, farmer innovators were first identified and then subjected to ‘verification’ before characterisation data was recorded. The initial unscreened numbers of (‘potential’) innovators were 50 in Tanzania, 50 in Kenya and 68 in Uganda. After verification of the innovations, these numbers were reduced to 24 in Tanzania, 37 in Kenya and 13 in Uganda: this total of 74 farmer innovators is the basis for the current analysis. It will be noted immediately that the ratio of ‘screened’ against ‘potential’ farmer innovators varies considerably from country to country. The reason for this has not been investigated in detail. However the ratio evidently depends on (a) how widely the initial net is thrown and (b) how strictly the verification process is carried out. The characterisation data were collected by field workers through farmer interviews, and then collated in each case by the PFI coordinators. There was no specific training given to the field workers for that data collection/ completion of the forms. This, with the benefit of hindsight, would have been beneficial in order to ensure a common understanding of the questions and to help provide consistency in answering the less precise questions. The following is a broad analysis at sub-regional level. It is up to each country to take their own data, and carry out more detailed analyses as they find relevant and useful.

Findings and Discussion

(a) Sex, age and occupation of FIs

Table 4.1 Age and sex of farmer innovators under PFI (up to end 1998)

	Kenya	Tanzania	Uganda	Total/ Overall
Sex				
no. men	29 (78%)	15 (62%)	12 (92%)	56 (76%)
no. women	5 (14%)	9 (38%)	1 (8%)	15 (20%)
no. joint men/ women	3 (8%)	0 (0%)	0 (0%)	3 (4%)
Age				
age range	25 – 65	22 – 70	15 – 65	15 – 70
average age	45	45	43	44

It is not surprising that more men than women have been identified as innovators at this stage. There is a natural tendency for men to present themselves as innovators even when the woman of the household is equally (or mainly) involved. There is also a tendency for field workers, who are mainly men, to concentrate on their own gender (see section on gender in chapter 5). Tanzania has the most balanced – and probably most realistic – ratio between men and women innovators. This is partially due to a particularly gender sensitive approach in identification, but also less reticence by women in this location. An interesting idea is being tested in Kenya, where ‘family innovators’ have been recognised rather than singling out the husband or wife. With respect to age, a wide range is apparent, though an ‘average innovator’ in each country is in his/her mid-40s. Almost all innovators are said to be *full-time farmers*: this category covered 68 of the 74 (92%). A number of the total (n=17) who are full-time farmers are ‘retired’ from other occupations (23%). ‘Retired’ however does not necessarily imply old-aged: neither does it imply someone who has an adequate pension to live from. The level of education of FIs was not

determined, with the exception of Uganda where 6 of the 13 had progressed to secondary school or above.

(b) Source of ideas

This was a key question, namely: *what was the main source of the idea for the innovation?* The answer was open, and either a single or multiple source (*mixed influences*) was given. While it was not always easy to group the answers, and not all of the categories are quite at the same level, five common main influences stand out. Table 4.2 ranks the five main categories according to frequency of reply.

Table 4.2 Main source of ideas for innovation

Source of Inspiration	Number of Responses
own idea/initiative	22
influenced mainly by training/ advice	16
mixed influence	11
seen elsewhere (far from home)	10
a (family) tradition	10
other	5

It is not surprising that *own idea/ initiative* came top of the list. After all, farmer innovators are, by supposition, creative thinkers and doers. Neither are we surprised by the importance of *mixed influences*. Perhaps more would have answered this way, had specific categories including ‘mixed’ been offered. The importance of having travelled and *seen elsewhere*, far from home, is underlined by the ten who answered this way. This gives support to those who believe study tours to be an important component in influencing farmers. Imitating from elsewhere, though, means that ‘innovation’ is only *innovation in local terms* – relatively innovative rather than uniquely so. However the second most frequently mentioned category, namely those influenced by training and advice, might cause us to wonder: *to what extent are the farmers who give this answer real innovators?* Three farmers (all from Kenya) cited their neighbours as being the main influence (recorded above in the *other* category). Seemingly they would fit more comfortably with ‘adopters’ of technology than real ‘innovators’.

(c) Reasons for developing the innovation, and when started

The first is an important question, which yielded interesting and not wholly surprising answers. But it was one that was addressed by respondents in rather different ways, and this again made analysis difficult. Some answer overlap (for example ‘to increase productivity of land’, ‘better moisture conditions’ and ‘for better crop yields’). In several cases, more than one answer was given without clear prioritisation. Table 4.3, therefore, records every mention of specific reasons, and does not attempt to rationalise those replies that overlap.

Table 4.3 Motivation for starting innovation
(*more than one answer possible per FI*)

Reason ('to improve/ increase/ etc')	Number of Responses
Cash/ income	25
Crop yields	24
Moisture for production	13
Food	13
Productivity of land	11
Erosion/ gully control	10
Grass/ livestock	5
Land reclamation	3
Other reasons (4 biophysical, 1 religious)	5

The most striking finding here is the emphasis laid on *cash* or *increased income*. Rarely was this given alone; more usually together with one of the other reasons. But it does show that innovation has a close link to a desire to improve living standards, and is not just a hobby. The second point to note is one that has now become part of the new 'received wisdom' in soil conservation circles. That is the predominance of production-related concerns over conservation for its own sake. Farmers do not invest energy in innovative land husbandry without a directly productive purpose.

With respect to 'when started' only 39 (53%) of the innovations were begun within the last decade. The remainder (35 = 47%) have been in place for ten years or longer. There is a crucial difference between countries however. In Kenya, 26 of the 37 innovations are ten years old or more. But in the other two countries the majority of the innovations are recent (less than ten years old).

(d) Type of innovation

Perhaps the most exacting task in the analysis was to define and then separate out the different technical categories of innovation. Some innovations are easily characterised: for example *drainage*, *gully control* or *fish farming*. Others, such as trenches which are filled with compost - but also harvest some runoff, are not so easily categorised. The main technical function was taken as the defining criterion (therefore in the example given: *organic matter management*) but obviously with such an array of effectively multipurpose technologies, different bases for analysis could equally be proposed. Nether of course does this 'reductionism' do justice to the complexity of systems – which is a characteristic of so many innovations. It could be also argued that the classification adopted is not always consistent: a case in point is *soil harvesting* which is normally considered to be inseparable from *water harvesting* (WH). Indeed many of the WH systems do also harvest soil deliberately. But in these two particular cases from Kenya, the technical intention was very clear and specific, and warranted bringing out independently.

Table 4.4 Technical Categories of Innovations

Main Category	Sub Category (<i>number of responses</i>)	Number of Responses
Water Harvesting	<i>general/ macrocatchment (9)</i>	22
	<i>from roads (6)</i>	
	<i>microcatchments (3)</i>	
	<i>from gullies (3)</i>	
	<i>from house compound (1)</i>	
Organic Matter Management	<i>manuring/ incorporation of OM (6)</i>	13
	<i>compost trenches/ pits (4)</i>	
	<i>trashlines (2)</i>	
	<i>mulching (1)</i>	
Gully Control/ Harnessing	<i>earthworks/ live barriers and pits (6)</i>	10
	<i>trash barriers (3)</i>	
	<i>stone barriers (1)</i>	
Agronomic Practices		6
Small Scale Irrigation		5
Livestock Improvement		4
Forestry		3
Soil Harvesting		2
Drainage		2
Soil Conservation (log lines)		1
Grass Seed Production		1
Indigenous Pesticides		1
Fish Farming		1
Tool Making		1
Cultivation Methods		1
Organisational Innovation		1

It is hardly surprising that the most important technical category of innovations should be water harvesting: after all, PFI is located strategically in dry regions of East Africa. These WH systems are evenly spread between the three countries and are very broad in their nature – ranging from gully diversion to microcatchment ‘planting pit’ technologies similar to those seen in the West African Sahel. Although WH from the house compound is only the *main* innovation of one farmer (from Uganda in this case), it is a very common general phenomenon amongst the innovators. The importance of organic matter management (OMM) technologies is striking, and while some of these are merely variations on quite well known themes of OMM, there are some very imaginative uses of trash and compost in pits and trenches. Gullies have conventionally been looked upon as destructive, but farmer innovators look upon them as *opportunities*. All the gully control measures noted above (which are exclusively from Kenya and Tanzania where the locations are more hilly than in Uganda) make use of (‘harness’) the local concentration of water, sediment and organic matter to improve production of useful plants. Amongst the more unique innovations is a system (from Tanzania) of establishing and protecting a stand of indigenous forest (see case study of Bw. Mkupe Mkatalo in following section). Another particularly interesting system is an *organisational* innovation in Uganda where a group of young farmers has been coached by an older man to work together.

(e) Problems with, and spread of, innovations

These two topics are treated together because they are related. When asked: *what are the main problems with respect to the innovations?* by far the most common response was the *heavy labour* involved. This was cited 23 times. The next greatest constraint was considered to be *need for further training* though it is possible that this was ‘creatively suggested’ by the enumerators. The problems of *lack of equipment* and *pests and diseases* were each cited 12 times (n.b. articulation of more than one problem was permitted). With respect to the spread of the innovation from the FI to others, the answers were rather qualitative, and appear, at first glance to be exaggerated. Only eight innovations have not been copied at all: 49 innovations have been taken up by at least ‘some’ people (but less than ten), and the 17 remaining (23%) have *apparently* been copied by more than ten, and in some cases ‘50 or more’ neighbours. Nevertheless, the fact that some natural spread has undoubtedly occurred shows that the project is on the right track in supposing that appropriate innovations will be attractive to others.

Conclusions

Despite the constraints and problems in carrying out the characterisation – as noted and acknowledged - and the fact that many of the deductions drawn are necessarily tentative, this has been a most useful exercise. It has provided some basic information about farmer innovators and their innovations, and equally importantly it has helped pave the way to an improved characterisation and analysis process. We now have a broad profile of innovators and some insight into ‘what makes them tick’. We also have a good technical idea of the range of innovations and why they have been developed. It is probably true to say that our preconceptions of what we were likely to find have been, on balance, confirmed. What is missing, as yet, is a clearer picture of the dynamics of the innovations (to what extent they are still experimental: a question that was not clearly or consistently put), and some specifics about the FIs (for example their position in the family; their income level; education etc). However there is a valuable initial database, which has now been partially analysed and much more information lies within it waiting to be examined more closely on a country basis. It can act as a basis for comparison of *existing* innovators with *future* adopters. A further spin-off from this initial characterisation and analysis is that we have been able to test, adjust and harmonise the data collection forms. We have furthermore recognised the need for training of the enumerators. This exercise has been valuable in itself, but has also acted as a useful pilot procedure for improved monitoring in the future.

Case Studies of Farmer Innovators¹²

The following twelve farmer innovators are drawn from the overall sample analysed in the foregoing section. This is not a random sample nor is it deliberately chosen to be representative. It covers those innovators who attended the sub-regional workshop, those who were visited during the associated field trip, plus one other (Mutembei Mwaniki, from Kenya, who is to be filmed in the proposed video production). Nevertheless, it will give a good impression of the sort of innovators – and the type of innovations - that are found under PFI. It should be noted that the term ‘portraits’ might be more appropriate than ‘case studies’. The information about each is

¹² the information base for this section is drawn mainly from information prepared by the FIs who attended the workshop, as well as Roshan Cooke’s notes on the field visit. Some material from technical backstopping reports is also integrated

neither comprehensive nor subject to the same format, nor are the innovations described in any technical detail.

Mkupe Mkatalo (Tanzania): Protection of indigenous forest

Mkupe was visited during the field trip, though he did not attend the workshop. Mkupe has developed a very effective forest management system based on an indigenous tree, locally named *mpululu* (*Terminalia sericea*). When he settled on this plot of land in the early 1980s, it was virtually devoid of tree cover. But he noticed that there were shoots of *mpululu* being eaten by livestock. In 1987 he started experimenting with the management of this tree species by first corralling his livestock. Mkupe then began actively managing the *mpululu* tree through the nurturing of healthy and upright shoots, and the pruning of lower branches to reduce knots and for producing straight poles. He has been able to establish a robust forest stand, which will soon reach 10 acres (4 ha) in extent. Mkupe has had no advice from extension services, and developed these techniques through experimentation and his own ingenuity. The *mpululu* tree has multiple uses as it can be used as construction timber, wood for tools, fodder and fuelwood. Mkupe is careful not to harvest a tree until a healthy shoot has been established to take its place. This method allows for a sustainable annual yield. The threat that he faces however, is from the theft of his trees by neighbouring villagers. One of the additional benefits of managing tree cover has been the mitigation of the harsh hot Dodoma climate. The microclimate around his farm is relatively cool, shady and breezy. Since Mkupe began managing his forest stand, 10 other farmers have adopted his system.

Albert Muhembano (Tanzania): ‘Kilimo cha mfumo’

The system for improved crop production, developed by Albert, originates from two sources. The first is the well known traditional *matengo pit* (*ngoro*) system of south-west Tanzania, and the second is a system used around Dodoma for growing grape vines. In 1995 Albert ‘married’ the two systems with his own ideas and began to dig trenches across the slope, 2 feet (60cm) deep and 2 feet (60cm) wide. The trenches were sited 3½ feet (one metre) apart – edge to edge. Into these trenches he put cereal stover and whatever other vegetative matter was locally available, in order to increase the fertility and water holding capacity of the soil. Earth was then thrown back over the compost, but the trench not filled up to the top - so that it held rainfall and runoff all the better. Crops were planted along the trenches. Albert noticed a clear difference in crop performance in the first year – and therefore expanded the system in subsequent years. He now has half a hectare treated with 80 trenches of 100 feet (30 metres) length. Further additions to the system (which seems to be constantly evolving) are to mulch between the trenches with stover at the end of the season, and then to plant an opportunistic crop on residual moisture after the main harvest. He calls the system *kilimo cha mfumo*: that is ‘pattern farming’ in Kiswahili. At least eleven neighbours have copied his idea (during the field visit we noted one woman neighbour who had further adapted it to her own specifications) – but some others consider the labour input to be too much for them.

Grace Bura (Tanzania): Gully control and contour trashlines

Grace is in her early 50s and she has become the main farmer in the family. Her husband is a retired teacher and professes no interest in developing the land further. He does, however, tend a small plot of rainfed grapevines. In 1982 Grace acquired, and decided to reclaim, some badly gullied land. She packed the gullies with check dam ‘sandwiches’ of trash and soil in alternate layers. On top of these check dams she planted cuttings of *mikayeba* (tree cassava). Gradually the gullies healed, and she extended the lines of trash

and *mikayeba* until they formed a contour line across her land. Grace pointed out to the visiting workshop group that the *mikayeba* was not just a living structural support, but simultaneously provided her with a source of fresh vegetables from its leaves. She follows the land for up to 2 years. Then she digs in the young vegetation during the growing season as a green manure, and late in the season plants a catch crop of maize. If it produces cobs, then well and good. If not, she feeds the plants to her stall-fed dairy cows (she has one 'grade cow'; the other a local breed). Grace is continuing to rehabilitate land. Where the gullies are more severe she uses cuttings of *Commiphora* (*sp*) which forms a stronger barrier than *mikayeba* when it strikes and establishes. Closer to home – where the cattle are stalled – are fields which are intercropped with pigeon peas, and manured with waste from the cattle and house compound. There are also trash lines to be seen in these fields. Others have copied Grace's gully control system: but she doesn't know exactly how many.

Raphael Chinolo (Tanzania): Gullies harnessed for planting bananas

Raphael Chinolo was an active participant of the workshop, and though we were not able to visit his farm, he gave a vivid presentation of his activities, supported by a flip-chart drawing that he had prepared. He is pictured giving the presentation. Raphael and his wife are involved in the control of a gully system and simultaneously in the planting of bananas. The innovation is more in terms of an overall approach to the problems and opportunities of the farm than any one technical development. He talked of the farming problems of aridity, erosion and reduced fertility, and described the way he had tried to confront these constraints. *This is, in fact, characteristic of many of the innovators noted so far in East Africa: a multifaceted approach to a group of constraints.* Raphael began in 1992, by planting bananas in deep pits. Each pit he fills with one (20litre) tin of manure before planting. The pits capture runoff, but to give extra control of overland flow, he makes terraces of earth, 2 feet (60cm) high, upon which he plants *Makarikari* grass for stability. Raphael views his - and his wife's - achievements as (a) stopping development of gullies (b) increasing grain production (c) improving farm fertility (d) harvesting runoff water (e) reducing erosion (f) managing to plant 200 banana plants which he has now started to harvest (g) establishing a tree nursery which has 5800 fruit seedlings. What impressed the workshop participants perhaps more than anything was the fact that Raphael said that he and his wife worked on the innovations as an inseparable team.

Kenneth Sangula (Tanzania): 'Chororo pits'

Kenneth first developed planting pits for millet production as long ago as 1978. As a result of the first PFI hosted farmer innovator *workshop* in Dodoma (early in 1998) these pits have now been given the name '*Chororo pits*'. Chororo is Kenneth's home village. *Chororo pits* closely resemble the *zai* of Burkina Faso and the *tassa* of Niger: Kenneth smiled with recognition when we showed him pictures of these. His pits are dug 9 inches (22cm) deep and have a top diameter of one foot (30cm). They are spaced 2 feet (60cm) apart within rows, and 3 feet (90cm) apart between rows [nb these distances are from the edge of one pit to the edge of the next]. The rows are sited across the slope, and the soil which is excavated is thrown downslope to optimise the capture of runoff. The spaces between the pits remain uncultivated – apart from weeding – and therefore act as microcatchments. Kenneth plants millet or maize in the pits. The seed he covers with an inch of soil, so that 8 inches (20cm) depth remains to hold rainfall runoff - it thereby improves crop growth in this dry area. Kenneth tells us that he thought of the idea himself, and the specifications have come about through his experimentation. More than a

dozen neighbours have already copied his idea. When these pits were viewed during the current workshop, and discussed with Kenneth, the participants thought that Kenneth could benefit considerably from integrating manure into his practice to improve fertility – just as is carried out in parts of the Sahel. It was stressed to him by fellow innovators that he should not rest satisfied, but continuously strive to improve.

Musili Mbulu (Kenya): Improved mangoes

Musili Mbulu has retired and ‘gone back to the land’. He attended the workshop, and gave a presentation of his highly successful efforts to introduce improved mango production in Mwingi district. Mzee Mbulu was born in the late 1920s, and is spending his retirement building up an impressive rainfed mango plantation in an area with possibly as little as 600mm rain per year on average. He only became involved in serious production efforts in 1981 when he constructed *fanya juu* terraces on his farm. Later he tried bananas which failed. He then turned to mangoes in 1995, using his memory of what he had seen while on army duty in Juba (Sudan) and Baidoa (Somalia) during the 1940s to guide him. He travelled recently to Hola and Mombasa to collect seed of improved varieties (‘Apple’, ‘Scones’, etc) and grafted the shoots of these onto local rootstock to bulk up production. He now has a thriving plantation of 500 mature trees. As well as selling mango fruits, he also sells seedlings locally. He has trained five neighbours in mango production. Perhaps his main technical innovation is to excavate deep planting pits, and then remove the compacted, clayey soil replacing it with fertile sand that he has located nearby. An analysis of these two contrasting soils would make an ideal study for researchers. During the workshop Mzee Mbulu was an active participant, and always ready to make his point. *Soon after his return home from the workshop, Mzee Mbulu received letters (and a fax) from his Tanzanian counterpart farmer innovators asking if they could visit his farm to see for themselves.*

Kakundi Kiteng’u (Kenya): Water table management for sugar cane production

Mrs. Kiteng’u is now 50 years old and lives in a very dry zone of Mwingi district. She gained her inspiration through observing the movements of the water table in holes dug on the banks of a sand river. She decided to plant sugarcane (deep) in these holes just above the moisture, for the roots to reach the water. One cane is planted in the corner of each hole. She plants her sugarcane in broad and deep holes (about one metre by one metre wide at the top) which she excavates until she comes close to ground water (about a metre deep). This way she can successfully plant cuttings of cane which will thrive even in the driest of seasons. As the season progresses, so the plants grow tall, reaching well out of the pits, and their roots can resist temporary flooding. The holes gradually fill in. The sugar cane is sold locally where it commands a good price, and provides her with an income of (an estimated) KSh 40,000 per annum. Kakundi has been instrumental in spreading the pitting technique to seven other farmers, and furthermore she estimates that she has trained 70 women in tree nursery management. Despite being illiterate, Kakundi was confident in presenting her innovation to the participants in Dodoma.

Mary Mutemi (Kenya): Indigenous pesticide use

Mary Mutemi also attended the workshop and told the participants of her system of termite control in fruit trees. She is 48 years old, and declares herself to be ‘only semi-literate’. The inspiration for her innovation was a distant friend. She removes soil from the bottom of her fruit trees (mainly mangoes) and applies a form of wood ash which is leached into the soil and protects the trees from termite attack. Termites are a major problem in her area – especially during the dry season. She claims to be the only farmer who can successfully produce mangoes in that area. Mary told us that she plans, with the help of PFI, to educate groups of other women in this and related practices. Already, she told us, about five have adopted her indigenous pesticide practice. Mary ‘inherited’ the idea of growing fruit trees from her parents.

Mutembei Mwaniki (Kenya): Terraced gully

Mutembei’s innovation is a variation of what is occasionally found elsewhere in the drylands of Africa – but only amongst the most industrious and ingenious small-scale farmers. He has

terraced a gully bed with stone walls (complete with spillways), and thus established level beds for cultivation through the gradual accumulation of sediment. He originally purchased a plot of very poor land in a dry area of Mwingi district, and realised that the gully cutting through it offered him the best hope of creating favourable planting conditions. The stone walls have been built up piecemeal. When a layer of stone silts up, he increases the height. At the deepest point, there is up to 3 metres of sediment accumulated. The total area reclaimed is in the order of 500m². The rehabilitated gully currently (early season, 1999) supports bananas and pawpaws as well as green maize, when all around there is a failed cereal crop: he has effectively created an improved microclimate for farming. Mutembei says that he got the idea from seeing some rudimentary gully control efforts by a farmer not far away. Mutembei developed the technique further. Most interestingly of all (and of significant relevance to the rationale underpinning PFI) is the fact that Mutembei has been commissioned by a neighbour to rehabilitate a similar gully, and has already built the first stone wall.

Ojok Christopher (Uganda): Integrated home garden management

Christopher and his family live close to Soroti on a plot of 20 acres to which they moved some 5 years back. His interest in exploiting the productivity of the land around his house started when he noticed an existing orange tree that was ‘producing large juicy fruits’. The reason noted by Christopher was that it had been planted in a hollow where it was making use of rainfall runoff which collected there. Since that day, Christopher has systematically tried to trap every drop of rain that falls on or near his compound. He has trenches that carry runoff from his household compound to fruit trees, pineapples and cassava. He even throws manure from his stall-fed dairy cow into the trenches where it is transported by the water: an innovation that we could call a type of *water-borne manuring system*. Another ingenious idea of his is to dig pits below his mature citrus trees to collect the rain that flows down the stem so that it can infiltrate and feed the roots rather than running away. Christopher says that he makes sure ‘no water is wasted’ in the dry environment that he lives in. Visitors from Kabale have come to his farm on a study tour (innovators from the ISWC2 project) and in turn Christopher has taken part in a reciprocal tour, organised by PFI, to Kabale and elsewhere in western and central Uganda. What he has learnt there – including a closer spacing of his pineapple to produce smaller and more marketable fruit, and the use of ‘grow bags’ of compost for vegetable production – he has immediately put into practice. *Shortly after the workshop, Christopher was visited by President Museveni, who was told of PFI’s programme when he visited Soroti. Christopher was warmly complimented by the President, and featured on national television.*

Ms. Florence Akol (Uganda): Water harvesting in bananas

Florence is a farmer and a housewife: she is 40 years old and has a family of 12 to support. She is also the dynamic chairperson of a recently formed women farmer’s association (the Atege Innovators’ Farmers Association). Her main innovation is water harvesting together with soil fertility improvement in a *matoke* banana plantation. She started in 1990. She practices harvesting of water from the road into her plantation, and has a system of trenches whereby water circulates and is then held by basins around individual banana stools. She also mulches and plants grass barriers within the plantation. There is some doubt whether the water harvesting can really be claimed as her own innovation, as there are variations of this practice in several nearby farms. Nevertheless her holistic management system is probably unique in the area. Florence has been visited by the study tour group from the ISWC2 project in Kabale, and she received advice from those farmers in banana stool maintenance. She told the workshop that she was grateful for the ‘good technical advice’ she had received through PFI (she has attended various workshops, been on a study tour, and networked with other innovators). The advice and constructive ideas have covered mulching, pruning and compost manure. Florence looks upon her efforts as rewarding, and she noted various achievements – in her presentation to the workshop – which include

reduced erosion, water harvested and larger bunches of bananas produced. She has ambitious livelihood-related plans for the future, including setting up a home-bakery, and raising turkeys.

Oluka Stanley (Uganda): Organic matter management

Stanley comes from Kumi district, and is 57 years old. He was identified as an innovator by PFI with regard to his creative use of organic matter. He collects cow-dung from tracks used by animals on their way to public grazing land, and mixes this with 'rubbish' and applies to his crop fields. He noted much higher yields than under his previous practice where he only used sweepings from his house compound. However by merely dropping this cow dung raw in heaps in the field, two problems arose. If there was heavy rain some of it would be washed away. Secondly, the cow dung would take long to decompose. Then he thought about the situation and decided to dig a series of small pits, into which he placed the dung and in turn covered it with soil, in order to encourage in-situ decomposition of manure in his fields. This exercise is repeated in the same field each season (there are two planting seasons per year). Now neighbours are copying Stanley, and cow dung has now becoming a precious commodity in the area. So he has now turned his attention to collecting fallen leaves from under mature trees to supplement the organic matter available to him. He will soon test the system of compost making that he saw in practice on the PFI study tour late last year. Stanley is an example of an innovator who continuously tries new things. Interestingly he told the workshop that he got his initial inspiration from something he had read in the 1950s: *a wise man can even change rubbish to riches*. He took this maxim literally, and began his organic matter management initiatives.

Chapter 5

Special Issues

Several specific issues were discussed in the workshop: some of the discussion has been absorbed into the foregoing chapters (for example some points on cross visits and on networking) and one topic (policy dialogue and institutionalisation) has been selected for a chapter on its own. Four topics, however are covered in this chapter, namely *innovation and identification of innovators, partnership, gender and (participatory) monitoring and evaluation*. In each case the text represents a composition of original presentation(s), group work and discussion.

Identification: *who is an innovator and how do we identify them?*

In chapter 2 we have already looked at the basic distinction between farmer innovators and ‘others’: we have also tried to differentiate between those FIs who are likely to contribute most to a programme like PFI. While it is tempting to skirt these potentially problematic areas and talk of ‘continuous variation’ and ‘no clear distinction’ we cannot fudge the issues. It is surely necessary that a programme that builds on farmer innovation should have a clear vision with respect to who is an innovator and how to uncover them. A presentation by IFTz¹³ reviewed the Tanzanian experience with identification. Table 5.1 is an overview of the methodology used.

Table 5.1 Farmer innovator identification and group forming processes (Tanzania)

What	Why	How	Results
Initial Planning Workshop	To identify organisations dealing with SWC, WH and land management in Dodoma and to select lead implementing agency for PFI	Workshop where each organisation and institution presented their activities	PFI programme exposed to these stakeholders Lead implementing agency proposed (IFTz)
Orientation Workshop	For in-depth understanding of PFI programme and ‘who is a farmer innovator’	Workshop where each organisation shared a common understanding of FIs and proposed various FIs and where they were located	Accepted the definition of an FI Listed potential FIs Reviewed characterisation forms A and B
Verification of FIs	In order to be sure that the real FIs are selected	Individual interviews coupled with a site visit by a co-ordination team	40 FIs identified from 90 interviewed/ visited Some of the original 90 didn’t even have farms!
Farmer Innovator ‘Networkshops’	For FIs to learn from each other’s innovations and to plan how to go forward together	An indoor workshop where the first 24 FIs made presentations before experts, leaders etc. Some presented with the aid of flip charts	FI’s confidence boosted FIs appreciated by each other and by ‘outsiders’ 24 innovations reported FIs made rich presentations to

¹³ presentation given, and paper prepared, by P. Lameck

		A 'PELUM' workshop for farmers from East and Southern Africa	'PELUM' participants from other African countries FI clusters formed at village level Formation of district FI networks
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Group work attempted to throw more light on this topic. The following is based on the product of the working group, under the following headings.

- *what is an innovation, and what is not?*
- *what to do with 'volunteer innovators'?*
- *verification of innovations*
- *how to increase the number of women innovators?*
- *how to orientate frontline extension workers not to adopt a top-down approach?*
- *ownership/patents*

What is an innovation, and what is not?

During the group discussion a very strict interpretation of the concept of innovation was proposed, namely:

'a practice started and later improved by a farmer on her/his own initiative (problem oriented), without any external influence at all'

However, the farmer innovators' presentations during the workshop very clearly demonstrated that innovations often have a mixed origin, and include the integration of ideas from others – parents, excursions (while in the military; during migrant labour etc) to different countries, neighbours and so on. The proposed definition would also, operationally speaking, be too restrictive. Surely what is most important is that we remember that *every innovation must include an element of 'own initiative'*. As to the 'sector' of the innovations, it was acknowledged that innovation plays a role in various aspects of rural livelihoods, but it was considered best for PFI to restrict itself to SWC/WH and land management for the time being, in order to achieve a clear focus.

What to do with 'volunteer innovators'?

Understandably, the group first had to overcome the confusion that arose about the notion of 'volunteer innovator', which had been raised by the Kenyan delegation. Obviously, in a programme like PFI there is an incentive to being chosen as an innovator, and people tend to push claims to be considered as such. In the end, the group decided that in its view, a volunteer innovator is someone with good ideas, but lacking the time and/or resources to put these into practice: good ideas, but nothing to show at that time. So, what to do in PFI with these 'idea innovators'? They should not receive the same recognition as the genuine farmer innovators, but the programme does need to encourage them to put their ideas into practice and be creative. This is inherent in the title *Promoting Farmer Innovation*. An interesting related question might be: what to do with those FIs who don't know they are innovators? Obviously the answer to this one is sensitivity and diligence in the identification process.

Verification of innovations

A focused participatory rural appraisal was considered to be a good instrument in the verification process, but on the other hand it is time consuming and expensive. Currently the verification is carried out by extension agents guided by the National Coordinator (and judging by the very different potential : verified innovator ratios from the three countries, this is done with contrasting criteria and degree of severity: see chapter 4.1). A related question was put to the group: can extension agents under PFI really judge the

validity of innovations by farmers? Are they actually well enough equipped? The reply of the group was that in principle they can, but that the verification process can be improved by:

including all disciplines (forestry, water, etc) available at the local level;
having village workshops where other farmers/neighbours evaluate the innovations; and
involving researchers from the start.

How can we increase the number of women innovators identified?

The group started out by analysing why there are so few women innovators among the innovators selected by PFI. Many causes came up, most of them similar to the ones brought forward also in the two presentations on gender: lack of confidence of the women themselves, cultural reasons (*women have not been brought up to think they can pride themselves in innovations*), land tenure (*the farm belongs to the men*), family chores, heavy workload etc. The group was of the opinion that the best way to increase the number of women innovators identified was: *to sensitise the men, for example to bring their wives on cross visits and study tours.*

How can we orientate frontline extension agents not to adopt a top-down approach?

Again, the causes of the problem were first analysed. Why do extension agents often adopt a top-down approach? It was felt that they have been trained to feel superior to farmers, and not to accept that farmers themselves may have appropriate solutions to problems on their farms. Also, extension agents feel threatened in their job security, in general (restructuring of extension services, notably in Tanzania, where they have recently been brought under the districts, and it is up to the districts whether they choose to use them or not), but in particular by farmer innovators – who extensionists feel might be out to usurp their jobs. Two Ugandan farmers in this group noted that they had not experienced this top down approach. In their case, extension agents came to their farms to help, even before PFI had started. The suggestions for improvement made by the group included:

adapting the training curriculum for extension agents – obviously, this yields positive results only in the long term;

on the job training for existing extension agents;

an even better explanation of PFI's approach: making clear that extension agents need not feel that their job security may be threatened by farmer innovators because they have a very important role in the programme, namely the role of facilitator and organiser; and
developing partnership between farmer innovators and extension agents.

Ownership/patents

Not much time was left to discuss this important issue. However, the group agreed with several remarks that had already been made:

- it is not very likely that PFI will produce marketable innovations, so the real patent problem will probably not arise (see chapter 2);
- nevertheless, each innovation should be traced back to the original innovator – if the case is not clear, the name of the community instead of the name of a person should be given to that innovation;

- PFI should/will never suggest that it is the programme itself, which generated the innovations – the farmers, or farmers’ communities have the rights to the innovations identified.

5.2 Partnership: Issues on role & relationship of research, extension, NGOs and farmers¹⁴

Introduction

It is now widely accepted that small-scale farmers often have within their social, economic and environmental circumstance, technologies which it would be wise to preserve. An influential paper by Critchley *et al* (1994) which reviewed the state of knowledge and prospects for building on traditions provides a new way of looking at local knowledge in terms of soil and water conservation. A book by Reij *et al* (1996) has brought to public prominence some 27 African case studies of local resource management practices which have stood the test of time. It is also realised that the scientific and development community has much to learn from what farmers do (including characterisation of technologies – how they work, why they work and how they fit the production system and support to rural livelihoods). In turn the ‘scientific’ community have things to offer. These offerings could be categorised as facilitation of scientific and economic analysis of what farmers do, supporting adaptations of techniques to achieve greater, easier or more economic production and facilitation of access to technologies or resources which may alleviate constraints to adoption of local or improved practices. There is therefore an explicit link between ‘evaluation’ or the analysis of performance of local practices, ‘development’ or supporting their performance and ‘dissemination’ or relieving the constraints to adoption. All these call for activities and methods to encourage participation of men and women farmers in developing agricultural technologies: this is the essence of participatory technology development (PTD).

Developing technology with farmers

It should be emphasised that ‘technology’ needs to be taken in its broadest sense. In PTD, technology should not be understood only as covering agricultural tools, crop varieties and land husbandry practices, but should also include mental constructions (such as cultural codes and forms of management and co-operation). The basic PTD framework after van Veldhuizen *et al* (1997b) is given in annex two. In many ways this outlines the relationship and roles of stakeholders which is to be expected under farmer innovator programmes - and therefore under Promoting Farmer Innovation (PFI). The roles and relationship of partners in PFI are further implicit in the following exploratory and creative language about PTD given in box 1.

¹⁴ this section is based on the paper of the same name presented by Prof. Hamisi Omari Dihenga who also drafted the following acknowledgement: ‘The ideas and issues expressed in this paper draw strongly from the work and experiences of the ISWC2 programme. All those involved are therefore gratefully acknowledged’

Box 1: Roles, entry points and relationships in PTD

1. Improving the situation by farmers' own potential (discover opportunities for improvement within their environment).
2. Focus on skills and knowledge (rather than material inputs and money).
3. Trying out things that work.
4. Joint effort – extension agents working together with farmers.
5. Exploratory mindset rather than analytical: analytical versus exploratory
what is your problem? how can the situation be improved?
1. Diversity of outlook

Source: Kate Forrester, (1998) ISWC2: Report of Training of Facilitators in PTD/PRA: mimeo

The underlined phrases in the box are indicative of the roles and entry points in PFI through partnership of farmer innovators, researchers, and change agents. The strengths and weaknesses of PTD which in many ways reflect what is involved in PFI have been rehearsed in many forums. Those mentioned during one of the ISWC2 PTD training of trainers are given in boxes 2 and 3.

Box 2: PTD Strengths

2. Indigenous technology is respected and promoted
3. Encourages farmers to be innovative
4. It incorporates farmers' wishes
5. Makes use of cheap and locally available material
6. The technology is easy to adopt and to spread
7. It can empower individual farmer and rural communities
8. Strengthens link between farmer, extension worker and researcher
9. Farmer experimentation directs the research agenda
10. PTD ensures sustainability of technology
11. It involves farmers in all stages of technology development

Box 3: PTD Weaknesses/Constraints

1. It takes more time and resources initially
2. The site specificity limits the spread of technology
3. PTD requires a culture of openness and sharing – some village cultures hinder the PTD process
4. It requires skills, change of attitude and flexibility of mind on the part of both farmers, extension and research staff, which is often lacking
5. Unsystematic experimentation may lead to false conclusions

In facilitating farmer innovations two main themes evolve:

*supporting and sustaining farmer innovation and experimentation; and
farmer to farmer extension*

These give different roles to ‘change agents’ and researchers. This is exemplified in box 4 which looks at the roles under PTD extension – which should be contrasted with conventional extension methodology.

Box 4: Farmer to farmer extension

- Local channels and mechanism for communication
- religious groups, traditional groups, primary school pupils, school competitions,
- markets, farmers agricultural shows, farmers field days, ceremonies, etc.
- Farmer extensionist or ‘leader’
- e.g. farmer para-professional, farmer motivators, oxen trainers seeing/observing/discussing is very effective
- *intra inter-village farmer study tours*
- motivate farmers to initiate/organise themselves-remove dependency. (If farmers feel the need to learn something, they will send a representative, and then they will come to learn from that representative on his/her return. If it is all organised for them, rather being as a result of a directly felt need, the interest and thus the spread of the technology will be less.)
- Farmer training and extension materials
- *locally available materials*
- *informal setting, e.g. at the local market demonstration and success; size of harvest draws attention/interest*
- Phasing out of outsiders’ support
- Role of extension agents will change: as farmers become more aware, they will be the ones seeking out the extension agents rather than the other way round.

Box 5: Sustaining and supporting farmers innovations and experiments

- Sustaining the processes and phasing out
- Strengthening individual capacities
- Developing farmers’ institutions
- Local information bases
- Horizontal rather than vertical linkages
- Strengthening linkages with support organisation*
- Monitoring the capacity to innovate
- PTD organisations as resource centres
- Monitoring the impact on the agro-ecology

** supportive role without taking away farmers’ initiative and sense of ownership*

Conclusions

Forging effective partnerships under PFI is key to a successful intervention. And we are not alone in this process of reengineering the way we collaborate. In the winter 1999 edition of the Ford Foundation report, Susan Berresford (President of the Ford Foundation) outlined some principles for partnership which are worth noting (see box 6)

Box 6: Principles for partnership

- Be sure the partnership is driven by a clear and shared vision

- Allow flexibility in thinking about how to reach goals
- Allow time for partnerships to work
- Establish procedures for evaluating feedback and making adjustments
- Widen the circle of organisations that learn from collaborative efforts
- If policy changes are an objective: be explicit about the strategy
- Be sure community foundation in a project are similar enough to work together
- Provide consistent leadership
- Think about long term sustainability and the programme's end
- Treat each partner with respect and courtesy
- source: Berresford, S.V., 1999

It is my assumption that in spite of good success stories that we are yet to evolve an effective partnership in PFI. In looking at partnership we need to reflect on the following:

- what are the qualities of effective partnership?
- what are the achievements of effective partnership? How do we fare in this regard?
- are we creating an impact? Is there evidence of a change of attitude from the scientific community? How far is there evidence of extension and dissemination of the innovations?
- who are our partners in PFI?
- what role does each partner play?
- what other roles should partners play?
- how do we bring partners on board?
- how do we ensure sustainability of the relationships in a three-year programme?
- how do we address issues of gender in partnership?

•

Table 5. comprises a checklist, derived from group work on the topic. It covers the various partners and their roles and PFI's strategies to facilitate their potential in those roles.

Partners, roles and responsibilities under PFI

<i>Partners</i>	<i>Present role (i.e. before PFI)</i>	<i>Future role (i.e. with PFI)</i>	<i>Strategy to achieve future role</i>
<i>Farmers</i> <i>Farmer Innovators</i>	<i>Initiate, experiment, adopt new ideas</i>	<i>Training of farmer groups</i>	<i>Exchange visits; training days; publicity</i>
<i>Farmers (groups and communities)</i>	<i>Learning from FIs; Informal evaluation of innovations</i>	<i>Adaptation and adoption of innovations</i>	<i>Exchange visits; training days; awareness creation etc</i>
<i>Government Organisations Extension Staff</i>	<i>Identification and characterisation of FIs; learning from FIs; reporting & data base</i>	<i>Follow-up; facilitation of FIs in their programme</i>	<i>Training by researchers; work planning and reporting; increased mobility</i>
<i>Researchers</i>	<i>Learning about/ from the FIs; characterisation of innovations/ advice</i>	<i>Field investigations; technical training of farmer and extensionists</i>	<i>Change in attitude; clear understanding of PFI</i>
<i>Administrators</i>	<i>Community mobilisation and sensitisation</i>	<i>Community mobilisation and sensitisation</i>	<i>Sensitisation about PFI</i>
<i>Policy Makers</i>		<i>Development of land use and management policies; enabling environment for PFI to thrive</i>	<i>Policy dialogue; Lobbying</i>
<i>NGOs Extension Consultants</i>	<i>same as Government</i>	<i>same as Government</i>	<i>same as Government</i>
<i>Donors</i>	<i>Funding; Backstopping; M&E; Administration and finance; Networking; Policy influence</i>	<i>Documentation of the process</i>	<i>Field visits; Reporting</i>
<i>Private Sector</i>		<i>Marketing; Training and demonstration; Experimentation</i>	<i>Awareness creation</i>

<i>International Institutions</i>	<i>Consulting and backstopping; Reporting; Soliciting funds</i>	<i>Increasing delegation to southern partners</i>	<i>Networking; N-S exchange</i>

Finally and above all, partners should have common vision, common strategies, mutual respect and trust. There should be transparency, mutual gains, and no losers.

5.3 Gender

Introduction

The topic of gender has already been introduced in chapter 2. There it was noted that gender in relation to farmer innovator programmes is basically a sub-set of the larger gender debate with respect to rural development more generally. In other words, most of the issues, problems and potential solutions are not unique to farmer innovators programme. It should be recollected that PFI has a specific mandate to deliver benefits equally to both sexes (however realistic the attainment of that objective might be) and will be evaluated on that basis. It therefore behoves the project to reach for gender equality as far as it is possible: in simpler terms this means PFI must actively strive to increase women's involvement in all aspects of the programme. To that end, gender studies, followed by gender sensitisation workshops are part of the work plans in each country¹⁵.

What follows in this section is a summary of the thematic presentation at the workshop by the consultant¹⁶ involved in the Kenya study, and then a brief paragraph summarising the findings of the Tanzanian gender study, which was presented by the consultant¹⁷ involved in that exercise. Specific recommendations from these two presentations are consolidated in the concluding part of this section - which is a report of the group discussions at the workshop especially constituted to formulate gender-related recommendations.

*Gender and innovation*¹⁸

Farmers, both men and women, have always tried out new methods, new species and experimented on new sites on their farms. As a result, new knowledge and information have been generated and experiences built. This information, knowledge and experience is shared between farmers through informal methods such as visits to neighbours and relatives, informal meeting places, through communal workgroups and other such channels. Women have always communicated and shared valuable experiences at water points, at the market place and through individual and group contacts. It is in recognition of the value of farmer knowledge and experience and the importance of farmer-to-farmer extension that PFI is promoting the development and dissemination of farmer innovations as means to improving land management in a sustainable way. Research on technology generation and dissemination has shown that a majority of farmers rely on their own experience and on other farmers for agricultural knowledge and information. Because of their different roles and interests, women and men have different information knowledge and experience and often employ different methods and channels of communication. In addition, they have different needs and priorities, and experience different constraints in agriculture and land management in general. Any programme aiming at improving land management and agricultural production must concern itself with gender issues as these will have a substantial influence in the performance and sustainability of the programme.

¹⁵ at the time of the workshop, gender studies had been completed for Kenya and Tanzania, and one was underway in Uganda. The first gender sensitisation workshop was about to be held in Kenya

¹⁶ Ms. Milcah Ong'ayo

¹⁷ Ms. Pendo Nyanda

¹⁸ from the paper presented by Ms. Milcah Ong'ayo entitled 'Gender and Innovations'

Importance of gender differentiation in land management

In the past, farmers have been assumed to be men, while women's important contributions remained invisible. Fortunately this perception is changing and there is increasing recognition of the important role women play in agriculture. In fact, it is becoming more and more accepted that women constitute not only the majority small-holder, full-time farmers, but are also the day-to-day managers of a majority of small farms in Kenya. The activities of women impact heavily on the land and the way it is managed. It is also becoming increasingly recognised that while women in rural areas undertake most of the agricultural activities (including livestock related activities) and play a central role in reproductive and family maintenance, they have little access to and control over resources needed to undertake those activities and the benefits accruing from them.

Key gender concerns in agricultural innovation

The gender analyses in the three PFI projects have revealed a number of concerns to be addressed in order to reduce gender disparities in the programme and promote more effective participation of women. These include:

Women's low participation as innovators and disseminators

While women form a majority of full-time small-scale farmers and undertake most of the farming and household activities, the gender analyses indicate that the majority of innovator farmers currently working with the programme are men.

In addressing a UNESCO/OAU conference in 1985 (The Arusha Strategies for the Advancement of Women in Africa, 1985), Julius Nyerere stated;

....a person does not walk very far, or very fast on one leg; how can we expect half the population to be able to develop a nation...?

The participation of women and other marginalised groups need to be considered an important priority in order to achieve equitable and sustainable development.

Women's position is subordinate; this affects their participation

Traditional beliefs, low literacy levels, limited mobility and poor access to knowledge and information all contribute to making the status of women lower than men. Lack of confidence among women and the attitude of men seriously affect the participation of women in PFI activities. Because of their low self-confidence, many women do not come forward to explain their innovations, even when they have developed those innovations themselves and therefore understand them better. On the other hand, men being the owners of land, tend to consider themselves the owners of innovations whether or not they participated in their development. Some men believe their wives cannot explain innovations - so they do this for them.

Unequal division of labour

The traditional division based on age and sex, places all reproductive and family maintenance tasks on women and female children. In addition, women are involved in agricultural activities (including livestock production) as well as community activities. These triple roles result in a much heavier workload for women compared to that of men. Changes brought about by such factors as population growth, education, unemployment and mobility, have resulted in more and more responsibility being left to women. Because

of the deeply rooted cultural beliefs and values, men find it difficult to share family maintenance tasks with their wives. In few cases, men have taken up some tasks traditionally considered women's responsibility, such as vegetable production and marketing, threshing of beans or shelling of maize. This is usually when the produce is intended for the market. It shows however, that such changes are possible, and men indeed are able to perform such tasks.

Unequal access to and control over production resources and benefits

The patriarchal system of land inheritance puts the ownership and decision-making of land and other important family resources in the hands of men. Women, especially those in male-headed households, have little authority for decision-making and often have to seek permission from their husbands before undertaking or committing family resources. This hampers effective use of resources and also lowers the motivation of women to improve management and production.

Low gender capacity of stakeholders

PFI programme activities are implemented by various agencies. Some of these agencies do not have a specific policy or approach for addressing gender issues, nor does the staff responsible for implementing activities in the field have appropriate knowledge or skills for gender analysis.

Limited number of women extension/development workers

A majority of the contact officers implementing PFI activities are men. Considering the socio-cultural beliefs and attitudes of men and women in these communities and the subordinate position of women, lack of women extension staff further limits the possibilities for consulting and encouraging women farmers to participate.

A number of specific recommendations regarding gender capacity strengthening for the project staff and stakeholders have been made in the respective gender analyses. These include:

Gender awareness creation for farmers, focusing on the unequal relations between men and women with regard to the division of labour, access to and control over resources and benefits, and decision-making;

Organising specific activities for women to strengthen their self-confidence and increase their participation in innovation; and

Working with relevant stakeholders to develop and facilitate farmers to access labour reducing devices and technologies.

While this paper advocates the mainstreaming of gender in all programme activities, at all levels, it is considered essential that specific attention be given to women because they have special socio-cultural constraints which hinder their effective participation and access to project resources and benefits. The programme should strive to improve the position of women by:

- *recognising their contributions and making their activities visible;*
- *consulting women on their views, needs, constraints and activities;*
- *communicating with them and improving their access to information and technology;*
- *ensuring that women's concerns are reflected in all stages of the project; and*
- *sensitising men farmers and enlisting their support for women's issues.*

This way, the programme will be working towards the development both of the innovations and the people themselves, the men and women farmers, and hence the achievement of programme activities.

PFI Gender Study: Tanzania¹⁹

The main objective of this survey was to assess gender relations in the project area and to look at the extent to which the programme approach in implementation is geared towards achieving results and equal benefit to women and men as stated in the objectives and outputs of the programme. The study was conducted in 19 out of 21 villages of the programme in the four districts of Dodoma region namely, Dodoma Urban, Dodoma Rural, Kongwa and Mpwapwa. A very big sample size (of 19 villages) was selected in order to gather gender information from almost all target villages. The methodology of this study involved four steps:

- Literature review;
- Formal and informal individual interviews;
- Group discussion with farmers and other key actors; and
- Workshop with representatives of all key actors.

Main findings

These findings were identified so as to help the PFI programme to know exactly what is at stake in relation to gender in the community as well as in the project.

At farmers level (community level)

Women's participation in programme activities is still very low;
In the target areas gender constraints/problems are, and will continue to be, dominant, because people still adhere to traditional laws which discriminate against women;
There is insufficient collaboration between men/women FIs with their husbands or wives;
Most leaders in FI groups are still men; and
Some FI's spouses (male or female) worry about 'misbehaviour' when their innovator partner attends a workshop or exchange visits outside their homes.

At programme level

The dissemination of innovations has so far reached few women due to the existence of gender constraints in society;
There are institutions, individuals, projects and NGOs involved in promoting gender and addressing women's needs in the areas. This is a potential resource; and
The programme works hand in hand with government extension workers particularly at the follow-up stage. However there are few women extension workers in the Ministry of Agriculture.

The major challenge for the PFI programme – and other related rural development programmes in the area - still remains women's empowerment, in order to achieve the ultimate goal of gender equality.

Recommendations for better gender balance and sensitivity under PFI²⁰

¹⁹ summarised from the presentation made by Ms. Pendo Nyanda: please note once again the recommendations of this study/presentation are integrated into the concluding part of this section

²⁰ from group work facilitated by Milcah Ong'ayo

One of the group tasks at the workshop was to assess and discuss issues arising from the two papers presented on gender relations within PFI, and to formulate recommendations for action. The report from that group (which basically concurs with and accommodates the principal recommendations of the two presenters) is as follows: *the gender discussion group*.....

noted that:

gender analyses carried out in the field have shown that there is low participation of women due to various factors.

agreed that:

there should be deliberate efforts to encourage women to participate more in programme activities, i.e. in decision making, therefore representation in Advisory Committees, and in programme implementation, as innovators and as disseminators.

noted that:

the (gender related) objective of PFI is valid²¹, given the important role women play in land management.

noted that:

attainment of this objective has so far not been achieved due to, among other reasons:

heavy workload of women involving farm and off-farm activities, which does not allow them time to innovate and to be exposed to other's innovations;
decision-making as it relates to technology development is generally a man's responsibility; and
the majority of extension officers are men and have not been introduced to gender issues, and thus would not naturally go out of their way to reach women.

agreed that:

PFI should:

- consider ways to help ease the heavy workload of women in order to allow them time to innovate and to get exposure;
- collaborate with other implementing partners involved with programmes related to provision of appropriate labour easing tools;
- provide technical support in appropriate methods of rainwater harvesting for home consumption and for alternative energy sources;
- provide orientation to field officers and PFI co-ordinators in methods to encourage and reach more women;
- link women innovators to women groups;
- recognise small-scale technologies relevant to women;
- improve methods of identifying and selecting FIs and classifying innovations in order to allow more women to qualify as innovators;
- make sure that gender awareness programmes are an integral part of the programme, involving other implementing agencies;
- develop monitoring and evaluation systems that include components on gender indicators;
- make an effort to identify innovations from female-headed households;

²¹ 50% of the beneficiaries should be women

- consider introducing/ promoting the concept of ‘family innovators’ where appropriate; and
- sensitise local opinion and community leaders on the importance of recognising and encouraging women to innovate.

recognised that:

change of attitude as it relates to cultural practices and beliefs is an ongoing process.

thus agreed that:

- PFI should contribute to the policy dialogue with other partners i.e. NGOs, decision-makers (etc) on issues related to gender balance and women’s advancement;
- the 3-year project cycle of PFI does not allow for the development of strategies for addressing gender issues in time to increase women’s participation to the desired levels;
- donors need to be appraised on the difficulty of attaining 50% women participation within the current project cycle; and
- PFI needs to pursue a course of (gender related) affirmative action which will give women a better chance of involvement in the programme and in the field of creative innovation generally.

5.4 Monitoring & Evaluation (M&E)²²

Introduction

The topic of monitoring and evaluation has already been introduced in chapter 2, together with the related umbrella activity of ‘impact assessment’ or ‘impact analysis’. It was noted that *there is a very real need for participatory programmes to improve their hitherto feeble record on monitoring and evaluation*. This goes for NRM projects in general also. Other points already touched upon included the balance between monitoring of tangible aspects (numbers, dates, technical parameters etc) and evaluation of less clearly definable processes, such as increases in innovativeness among farmers. Who actually analyses the data is another key question. Furthermore there is a trade-off between quantity and quality of data collected. Truly appropriate monitoring and evaluation should both enhance internal learning and provide hard facts to provide evidence to support qualitative statements about the impact of a programme.

The whole topic of *participatory* monitoring and evaluation (PM&E) is currently a ‘hot’ topic in development circles (see, *inter alia* Arevalo *et al*, 1998; IDS, 1998, Guijt, 1998; Abbot and Guijt, 1998, and Herweg *et al*, 1998). What is generally meant by the ‘P’ in this context is the involvement of farmers (or ‘primary stakeholders’) in each step of the process. Unfortunately, by holding up the merits of PM&E against ‘conventional M&E’ the impression is sometimes given that the former can replace the latter. It cannot. PM&E is extremely valuable as a supplement to more conventional M&E, but it does not replace it. As Abbott and Guijt (*ibid*) rightly note: *participatory monitoring can help meet certain information needs but it clearly cannot meet them all*. Conventional M&E may need reforming, but it cannot be discarded. So what are we left with? Basically an overall M&E system that picks up standard ‘hard’ data, together with a subset of the system, termed PM&E, that involves primary stakeholders in monitoring and evaluation of other parameters using different methods and indicators.

What is certain is that there are currently no comprehensive examples to follow for overall M&E in the context of a programme such as PFI. This is another area where PFI (and the related ISWC2 programme) is helping to break new ground. In this section, the prototype system developed for testing under PFI (and ISWC2) is described. But first, a summarised version of the presentation and group discussion on the topic.

Working group discussions

The working group decided to approach the topic of M&E by focusing on the traditional questions of: *what, why, who, how and when*.

what?

In relation to the question *what is M&E in the context of PFI?* the group defined it as being a continuous process that attempts to assess different areas of the PFI programme, for gauging efficacy, credibility, replicability, accountability and transparency of the content and the methodology of the programme. Within the context of the workshop, the discussion on M&E mainly focused on methods and techniques of assessing farmer innovations, and also of assessing the PFI programme and its relevance as a legitimate methodology for delivering extension services. Some of the areas identified for M&E were; *innovations, innovators, cross visits, training, institutional collaboration, and impact*. M&E should be comprehensive without generating redundant information. It should also be cost-effective.

²² Alex Lwakuba who subsequently facilitated the group discussion made a presentation on this topic. This section is based on the presentation and the group work

why?

The consensus on this question was that M&E is needed so that relevant data can be accumulated for facilitating the modification and enhancement of farmer innovations, and also for assessing whether the PFI programme is achieving its objectives. In relation to the assessment of innovations, to name a few, it was considered necessary for compiling baseline data of the physical condition of a farm, socio-economic information of farmer households, and basic environmental conditions.

who?

M&E should be conducted in partnership by, and be a joint endeavour of, the following actors:

- a) Farmer Innovators
- b) Farming Community
- c) PFI Staff
- d) Extension Agents
- e) Research Agencies

how?

Specific characterisation forms have been developed under PFI that allow for the collection of primary data from farmer innovators regarding the size of their landholdings, condition of the farm, socio-economic information such as family size, income, education etc., and aspects of the main innovation. These forms are to be filled by the farmer, with assistance from the field agent. In addition, there are several other forms for recording inputs and outputs in relation to the innovation, observation diary, daily rainfall chart, cross visits, adoption rates etc (see annex three, and section below). An area identified that had not been included in the existing M&E methodology was the evaluation of 'institutional collaboration' which may need to be addressed as a specific study. The latter (together with other parameters) will be useful in developing evidence for impact at a higher level. It is crucial that, within the PM&E process, attention should be given to how farmers already monitor their innovations, and to helping farmers to develop their own indicators in a participatory way. Finally, *photographic monitoring*, of 'before and after' can be extremely powerful evidence of impact.

An issue that dominated the discussion was how research agencies would participate in M&E, and it was agreed that where there are indicators that cannot be measured by FIs and field agents, research agencies should conduct in-depth scientific experimentation. This research should be conducted with participation of the FIs and should follow clearly defined methodology.

when?

As stated earlier, M&E is a continuous process that should be carried out throughout the project period as well as into the future by all partners including the FIs and adopters.

Explanation of prototype M&E system

A prototype system for M&E has been developed for testing under PFI and the ISWC2 programme. The framework for the system, comprising a series of forms and formats, is presented in annex three. It is important to appreciate that these are merely guidelines, and not 'set in stone'. Currently (post-workshop) the system is being tested under the PFI and ISWC2 farmer innovator programmes, and will eventually be refined as necessary. In all probability each country programme will come up with its own tailored format. This is how it should be, as long as certain common denominators are maintained. The time is

not yet ripe to provide detailed guidelines for M&E, based on a body of experience in such a programme. That is a challenge for PFI in the future.

Let us take a closer look at the forms/formats presented in annex three. It should be remembered that the forms/ formats are intended to serve three main functions: first as a reminder, second as guidelines, third as a format for recording.

Overview: the first two sheets give an overview of what is to follow, under the headings *what?* (what categories of people, or technologies, or events etc); *parameters* (what parameters of the forgoing); *form/format* (which of the forms/ formats following covers the particular parameter; *when* (when the activity should take place); *who by* (who develops, monitors, analyses etc); and finally there is a column entitled *comment* (which gives specific explanation where required).

Forms A and B:

Characterisation of Farmer Innovator/ of Innovation. These forms are used, respectively, to characterise farmer innovators and their (main) innovation. They help us to develop a ‘snapshot’ of those we are identifying. This have already been tested and refined under PFI and the first batch of 74 have been analysed (see chapter 4).

Forms C and D:

Inputs/ Outputs. These are relevant where an innovation involves some aspect of land husbandry (as most currently do). They may not be appropriate however for (for example) improved tools. The idea is that *a small sample of volunteer innovators* keep up these detailed forms. Ideally they will be happy to do so because of the help it gives them in analysing the profitability (or otherwise) of their innovations. This was found to be the case under a programme in Uganda (which has now been adopted under ISWC2: see Critchley *et al*, 1999). However some observers doubt whether farmers will do so without incentives – which of course we would prefer to keep to a minimum, if used at all. There has also been some doubt expressed about whether farmers would be prepared to develop and monitor a ‘control plot’.

Form E:

Observation Diary. This is the simplest and least restrictive form, merely requesting farmers to make notes of observations regarding their innovations. Recording their own indicators is particularly welcome.

Form F1:

Daily Rainfall Chart. (the idea is that forms *F2*, *F3* can be developed for other specific technical parameters). Once farmers are trained to use a simple rain gauge they often enjoy it – and the information furnished can be very important in evaluating drought-mitigating innovations.

Format G:

Innovations: Seasonal Participatory Evaluation. This is merely a *format* or guide to joint, participatory, evaluations (by FIs, field agents and researchers) of particular innovations at certain points during the season.

Format H:

Researcher Measurable Indicators. This is essentially an ‘empty’ format as it stands, awaiting development by researchers (in collaboration with farmers and extension

agents). The concept is that researchers should be involved in technical (and socio-economic) ‘verification’ of the innovations. Further notes are given on the format itself. There is on-going debate about how researchers are to be involved in monitoring, and particularly to what extent their research topic and methodology should be ‘directed’ by the agenda of the farmer innovators. No doubt this will unfold differently from country to country.

Form I:

Cross Visits: Basic Data. This form gives a framework for recording essential details of the four main types of cross visits: to be recorded by the field agent.

Format J:

Cross Visits: Participatory Evaluation. Similar to Format G, but with a different focus for the evaluation.

Form K:

Training: Basic Data. A straightforward form to assist in recording basic data regarding training given.

Format L:

Training: Participatory Evaluation. Once again, a format to assist in facilitating and recording participatory evaluation.

Form M:

Adopters: Basic Data. This form is to record numbers of those who adopt/ adopt and adapt an innovation. This information is, of course, vital in impact assessment, and a standardised procedure for recording makes the assessment all the easier.

Form N:

Characterisation of Adopters. Here the concept is simple: let us record the details of (a sample of) ‘adopters’ with the intention being that we can thereby build up a profile of those to whom an innovation is relevant/ attractive. There is also provision to record what *adaptations* if any have been made to the innovation by the ‘second generation’ innovators.

It is then suggested that formats could be developed for specific studies (Formats O1, O2 etc) and for an overall review (Format P). Each country programme can do this, when the time is ripe.

Conclusions

The subject of M&E is still very much open for debate - but more urgently now for testing in practise. The latter is now perhaps the main immediate challenge facing PFI and related programmes. The workshop has marked a watershed, between completion of the initial debate and putting the prototype system into practice. By the end of PFI’s first phase, an analysis of the outcome of the experience of M&E will be one of the more important products of the programme.

Chapter 6

Institutionalisation:

*the potential for scaling up of farmer innovator programmes*²³

Introduction

A major objective of PFI is to influence and change current policy and practice in agricultural extension and land husbandry in the countries where it is working. Real impact of lasting importance can only be achieved if PFI succeeds in moving beyond the pilot stage, in the sense that its approach of stimulating and building on tradition and innovation in land husbandry is widely adopted. The farmer innovator approach should not remain confined to PFI programmes, but should become part and parcel of related natural resource management projects and of regular practice of government extension services; in other words, it needs to be *institutionalised*.

Creating such a process of continuous change clearly requires a timeframe which goes beyond the three years of PFI's first phase. Still, the workshop took a critical look at PFI's performance in this respect and at the way forward. The results of these reflections are presented below. Following a brief introduction on institutionalisation, we first look at the state of the art: *what progress has PFI made in its ambitions to institutionalise its approach, to influence policy making, or to create conditions to facilitate policy dialogue and lobbying in the near future?* Next there is a review of a number of the strategies identified in the workshop as ways to increase PFI's leverage: geographical expansion, policy dialogue and lobbying, allies and networking, and institutionalisation. Subsequently, the need for convincing evidence as a precondition for these strategies to succeed is briefly reviewed. The concluding section aims to summarise the steps to be taken during the coming second half of PFI's first phase.

Institutionalisation

'Institutionalisation of the PFI approach' (or more broadly 'the farmer innovator approach') is taken here to mean incorporation of the approach by existing institutions and organisations to the extent that external support and funding are no longer needed. The approach pioneered by the programme would, if effectively institutionalised, be effectively self-perpetuating. Institutionalisation thus requires at least the following challenges to be successfully met:

- design of innovative mechanisms to ensure that farmer-led experimentation continues and evolves;
- internalisation of participatory approaches by research institutes;
- internalisation of participatory approaches by NGOs active in land husbandry programmes;
- internalisation of participatory approaches by government extension services.

So far, while numbers 2, 3 and 4 are in the process of being nourished, number 1 seems to have been the least explored. Relevant experience is being developed in Zimbabwe with respect to institutionalisation and the organisational development involved in the case of *kutaraya* (Hagmann *et al*, 1998). An early – and hardly surprising – lesson from that country is the need for attitude change amongst those entrenched in conservative government bureaucracies. There are further valuable lessons to be drawn from upscaling of participatory watershed development programmes in India (Turton *et al*, 1998).

We should also not forget another important facet of institutionalisation, and that is creating the right environment to develop a self-sustaining process of innovation and dissemination at village level. This is the emphasis of similar programmes in Latin America (see Bunch and Lopez, 1995)

²³ edited from discussion groups and presentations by Mineke Laman

whose concern is 'the void' that often occurs after outside support terminates. That concerns us too.

State of the art in PFI

During the first years of the existence of PFI in Kenya, Tanzania and Uganda, the sub-programmes have gained considerable ground. Farmer innovators have been identified, networks have been created, and farmer innovators have been trained to identify new farmer innovators themselves. In each of the three countries, the sub-programmes build on existing experience: IFTz's preceding work with innovative farmers in Tanzania, the experience of the Overseas Development Administration funded 'Conserve Water to Save Soil and the Environment' (CWSSE) project both in Uganda and in Kenya also. There is close co-operation with national government structures, and quite a number of PFI's activities are actually implemented through in-line government departments (see chapter 3). This should prove to be a major asset to enhance the process of institutionalisation of the approach.

(Potential) allies among related projects, NGOs and donors have been contacted or have been allies from the start. In Tanzania, PFI links up with the ISWC2 project based at the Co-operative College of Moshi as well as maintaining very good links with the NGO community around Dodoma. In Kenya, the programme joins hands with NGOs (Action Aid and others) in Mwingi and has a firm place in the Ministry of Agriculture's Soil and Water Conservation Branch – with all the contacts that implies. Eventually, it aims to spread more widely through internalisation of its methodology through those networks. PFI Uganda has close working links with the Swedish supported USCAPP/ ULAMP and ISWC2 Uganda, all of which are co-ordinated out of the national Soil and Water Conservation Section office in Entebbe.

Also, there are already some convincing examples of the PFI approach starting to spread. PFI made well-received presentations at the first consultative forums on the National Action Plan to Combat Drought and Desertification in both Kenya and Uganda in late 1998. Senior policy makers of the government (including the Minister of Environment in the case of Kenya) and donors were present. In Kenya, GTZ are now planning to include an innovator component into other sectors of their IFSP-E project. In Tanzania, PFI has close relations with the ISWC2 Tanzania programme, which is negotiating with the Ministry of Agriculture to use the farmer innovator approach in its extension system. In Uganda, the growing sense of impact at policy level was noted at the Tripartite review meeting in Uganda which took place only a few days after the mid term workshop.

Another encouraging sign is the collaboration between the Sida-funded Regional Land Management Unit (RELMA) and PFI. RELMA's mandate covers a large part of anglophone Africa, including the three countries where PFI is now active (see annex one). Based in Nairobi, next door to the UNSO office, it is a natural neighbourly ally for PFI. RELMA appreciates having good access to interesting and relevant material for publication, and PFI needs to have its material spread well spread. This is proving to be a mutually beneficial alliance.

Thus we may safely conclude that PFI does carry with it the *potential* to make a lasting impact on policy and practice in land husbandry. Nevertheless, it is still in the stage of 'project islands' in huge national territories. The need for stepping up efforts in this respect is evident, but which is the best way forward?

Territorial expansion?

One strategy for stepping up influence is spatial expansion. The consensus in the workshop was that for the time being, caution is needed. The three national sub-programmes are in their early stages. They need to consolidate first, and with the current

level of manpower and funding it would be risky to expand geographically. In the case of Tanzania, where IFTz has been working with farmer innovators for a number of years now, there is sufficient confidence to start some pilot activities outside the Dodoma area.

Policy dialogue and lobbying

Policy dialogue and lobbying were identified as important strategies which should receive more emphasis in the second half of this phase. The representatives of the Ministries of Agriculture (of all three countries) in the workshop analysed current policies in their respective countries and concluded that the PFI approach fits quite well and has the potential to enhance those policies. Under current government policy in Kenya there is a focus on the arid and semi-arid lands (ASAL areas), indigenous knowledge and participatory approaches, all of which dovetail with the PFI approach. In Tanzania, the government is in the process of downsizing its extension services. As a result, it is in need of alternative delivery mechanisms. PFI can contribute to this process in a positive way. Areas currently under focus in Ugandan government policy are increase of yields; strengthening of extension, research and markets; provision of water for agricultural production (within the cattle corridor); and soil fertility and land management initiatives. PFI has possibilities of helping to strengthen these policies in several ways.

‘Lobbying’ was defined in the group discussion as the process by which those who are actively involved in the programme and who know its potential make a concerted effort to convince other important players in agriculture and agricultural policies to adopt similar approaches. Clearly, lobbying will be most effective and efficient if it is underpinned by convincing empirical evidence and successful practical examples. Participants/actors in lobbying are those who lobby as well as those who are being lobbied. Those who should be involved in lobbying are farmers, NGOs, CBOs, co-operative societies, professional and religious organisations, participatory natural resource management projects, media, and civil servants. The major target groups are:

Government (senior policy makers, legislative representatives, parliamentary committees);
Local-level government (within the context of decentralisation), notably extension workers; and
Donor community.

The PFI National Advisory Committees were viewed as being the most appropriate bodies for taking on the challenge of initiating the policy dialogue and lobbying campaign, as they comprise most or all of the key actors and are chaired by senior policy makers from within the respective Ministries of Agriculture. The National Co-ordinators should of course be involved, but lobbying should not distract them too much from their other heavy responsibilities.

Allies and networking

Creating alliances and networking were seen by the workshop as major instruments to increase impact. Networking was defined as a channel of communication for organisations/actors which/who have common visions, strategies and mutual respect for one another. The benefits to accrue from networking were defined as sharing of information, reduction and elimination of duplication of effort and resources, and accelerated achievements. Potentially important allies are all actors mentioned in the section on policy dialogue.

Convincing evidence: a precondition for impact on policy

Policy dialogue, lobbying, networking: in the long run none of these strategies will be effective if they cannot show convincing evidence of the success of an approach which stimulates and builds on tradition and innovation in land husbandry by farmers. Immediate action by PFI in two crucial areas is therefore needed. These are:

implementation of the monitoring and evaluation system, including farmer measurable indicators; and

greater participation of research institutes and universities, to help to define (and further develop) scientifically credible innovations.

Conclusions

It has been said before, but there is no harm in repeating the newly accepted wisdom, that unless project initiatives develop into something more durable, namely sustained processes or programmes, then they risk achieving little more than creating a ripple in a pool. PFI is not in the business of setting up neat, temporary ‘project enclaves’ outside national realities. That would be self-defeating. That is why the programme development processes, discussed in the methodology section in chapter 2, culminate in *institutionalisation*. Alongside creating real and visible impact in terms of spread of innovations and innovativeness, that is the crucial challenge now.

Chapter 7

Conclusions²⁴

The workshop concluded with a synopsis of the main issues that had arisen over the three days of deliberations and field trips. A summary was presented by Professor Opio-Odong, and supplementary comments were invited from Mineke Laman. The latter have been integrated into the former, and the result is a fitting conclusion to this introductory booklet on farmer innovation.

The workshop's objectives

There were four objectives set out at the beginning of the workshop. While these have been broadly achieved, let us look briefly at each in turn:

to exchanging experience between the countries

There has been a constructive exchange of experiences and views among the farmer innovators, though time has obviously limited comprehensive discussions. The rest of the participants have also found the workshop rewarding for it provided them with a glimpse of how the programme objective is being addressed in their respective countries.

to assess the progress of PFI at its mid-point

Despite the initial difficulties faced by Tanzania and Kenya (in setting up programme mechanisms), the programme is performing commendably thus far. There is clear enthusiasm among stakeholders and a common feeling that the relevant government ministries have been supportive of the programme. The involvement of the research organisations in the three countries however remain marginal, a problem that is partly attributable to the nature of the *memoranda* of understanding (MOUs). Increased involvement of research is now a priority issue.

to discuss specific issues

The discussions in the course of the workshop have been frank and were enriched by farmer experiences. The (perhaps surprisingly complex) issues of identification and verification of innovators and innovations remain somewhat unresolved, and need careful consideration as additional FIs are brought on board.

to assemble material for a booklet on farmer innovation

The programme has already generated a wealth of material. This can be used to produce a booklet on farmer innovation. There is need however to carefully use the slides to illustrate how the programme has progressed within and between countries. The booklet can help sharpen awareness about PFI, and about the role of farmer innovation in general.

Comments and suggestions

Much as the overall objective of PFI - to get farmer innovators, researchers and extension workers to promote and disseminate improved land management practices - remains valid, there is need to ensure that the three partners work very closely with each other. The researchers in particular should contribute towards validation of what the FIs are promoting. There is a need to begin looking at the economics of the technologies that farmer innovators are developing and disseminating.

²⁴ this chapter is based Professor Opio-Odong's presentation entitled 'Observer's summary of the review workshop on Promoting Farmer Innovation'. Concluding comments presented by Mineke Laman are also integrated as are some points from the participatory evaluation of the workshop

The targets set by PFI appear realistic, especially in respect of the number of exchange visits and the number of farmer innovators already identified and 'reached'. While the gender concern is valid, the desired 50:50 balance may prove very difficult to achieve due to cultural and other factors that impair the emergence or visibility of female innovators. An aggressive search for female innovators may need to be supplemented with (a) broadening the scope of what qualifies as an innovation in land management, paying particular attention to areas where women have been the most active, (b) enhancing the diffusion of innovations among female farmers to quickly attain the 50% target, (c) rethinking the process of identifying and validating FIs, and (d) adopting affirmative action on women's representation on the National Advisory Committees.

The use of a variety of implementing agencies has not compromised the quality of programme delivery. The implementing agencies however could improve performance (a) monitoring closely the process of innovation development, carefully documenting changes and reasons for them; (b) studying the adaptation of adopted technologies and the reasons for doing so; (c) gauging the extent to which knowledge sharing cuts across gender differences and the extent to which this is beginning to impact on the livelihoods of adopters; and (d) assessing impacts of PFI in relation to its overall goal. This is indeed the right time for monitoring and evaluation to be addressed wholeheartedly.

Cross visits among FIs are beginning to yield beneficial results. There may however be need to reconsider the methods of organising and timing of such visits. One possibility is to arrange the visits on a thematic basis (rather than purely by locally formed clusters which contain heterogeneous innovations and a spectrum of interests) while taking due account of the need to promote cumulative learning within the network.

PFI has a strong potential for producing best innovative practices before the end of the first cycle. To achieve these, PFI has to become a little more creative in its documentation. Innovations which appear to have achieved high impact but only at the cost of intensive labour input will require careful documentation. A case in point is rehabilitation of degraded land. Photographic recording of 'before and after' type would be useful in generating the impact desired. High impact documentaries could be used as a tool for resource mobilisation.

All the FIs are operating within specific agro-ecological, cultural and socio-economic context, which offer various opportunities and challenges. It is therefore important that PFI takes due account of the prevailing circumstances within and between countries in trying to assess progress being made. It is in this context that the implementing agencies need to provide concise background information on each location. What are some of the significant ecological, cultural and socio-economic factors that encourage or constrain the emergence and adoption of innovations in land management? What are some of the existing national policies, which promote or impair land management innovations? In a country such as Uganda where there is a concerted decentralisation policy, how can the implementing agency work closely with the district administration and some local NGOs to foster the sustainability of the PFI initiative?

Opportunities for integrating crop and livestock enterprises are beginning to emerge. In the case of the local Wagogo here in Tanzania, the cattle culture is deeply rooted and this explains attempts by some of the FIs to resort to stall feeding in areas where government

had legislated against free range. In the case of one farmer innovator – Grace Bura - use could in future be made of leguminous trees, for fodder production, fertility enrichment and soil stabilisation. This provides an example of where linkages could be forged between PFI and related initiatives: in this case the ‘Africa 2000 Network’ and ‘Heifer International’ which provide livestock for zero grazing to farmers.

Concluding remarks

Returning to remarks made in the preface and introduction we recollect that the programme experience of working with farmer innovation is still young. Early promise and good intentions do not of course constitute rock solid evidence of replicable processes. There also needs to be a clarified ‘vision’ of just how far this type of approach can replace or supplement conventional mechanisms of research and dissemination. But there is no doubting the enthusiasm with which this approach has been taken up at all levels – and it is not common that farmers, NGOs, extension, research and policy maker alike are united in this way. Furthermore the fact that so much creative innovation has been uncovered presents a refreshingly bright image of African land husbandry. Now, as we have continuously pointed out, it is the responsibility of PFI, in the time that remains, to prove the case for creative harnessing of farmer innovation. Thus, alongside the need for expanded implementation, monitoring and evaluation of ‘hard’ and ‘soft’ data leading to convincing impact analysis is imperative. Simultaneously the programme must make sure that its methodology is sufficiently simple, streamlined and clearly documented – and of course visible on the ground - to be attractive to other organisations, both government and NGOs. In that way the impetus can be carried forward through successful institutionalisation after PFI comes to an end.

Annex One

Summaries of Speeches made at the Workshop

Opening Speech

Hon. William J. Kusila, MP, Minister for Agriculture and Cooperatives²⁵

I wish first of all, on behalf of the Government of the United Republic of Tanzania to express my profound gratitude and appreciation for the invitation extended to me to officiate at the opening of the sub-regional workshop entitled 'Promoting Farmer Innovation under Rainfed Agriculture in sub-Saharan Africa'. Also, it gives me great pleasure and honour to have this rare opportunity to address this important workshop and to share with you some experiences and aspirations of promoting farmer innovation.

I believe the venue of this workshop reflects the fact that Dodoma is determined and well prepared for the implementation of PFI. I understand that you are meeting here to assess the progress of PFI, to discuss specific issues relevant to enhancing performance and ensuring sustainability, and to assemble material for a 'state of the art' booklet on promoting farmer innovation. This is indeed a vital exercise. I wish to encourage even faster implementation of this programme because of its significance in combating desertification, with an emphasis on the role of food security.

In Tanzania most rural householders are either farmers or livestock keepers. In fact, most of them are both. These land users together make over 80% of the country's total population. In the vast majority of rainfed areas, there is clear evidence that land degradation is seriously affecting the production base. This in turn is adversely affecting our capacity to increase agricultural production and poverty alleviation. Continuous land degradation has adversely affected the supply of food fodder, timber and more importantly WATER. Currently Tanzania is experiencing a continuing decrease of water resources, despite the fact that there have been frequent seasonal floods in isolated areas. In essence fluctuation in hydraulic regimes consisting of severe droughts and floods are an indication of declining water retention capacities of catchment areas.

There is a need to balance concerns of soil conservation with those of water, particularly under rainfed agriculture systems, where the quantity of annual or seasonal rainfall is variable. There is an urgent need for improved agricultural technologies for better water use efficiency and assured sustainability under rainfed conditions, particularly in the semi-arid regions of Tanzania. Effective technologies need to be developed for enhancing land productivity, soil conservation and water use efficiency in all areas under rainfed agriculture. Land users have an influence on the surface and ground water. This is because every drop that falls has to pass through soil before it becomes ground water. The amount of ground water available is directly dependent on the ability of the land users to manage the land surface and soil profile characteristics, which are important in regulating the hydrological behaviour of the soil. Land users not only influence the quantity of ground water through their specific land use practices but also have influence on its

²⁵ delivered on his behalf

quality. Therefore, land users can be said to produce 'biomass on the surface and ground water beneath'.

The socio-economic and ecological consequences of soil degradation are far reaching. These consequences cut across all sectors of the economy and affect most geographical areas. The ones hardest hit by the problems associated with land degradation are the rural poor who rely heavily on the productivity of the land to meet their food and fuel needs and to support livestock grazing. This is the challenge before us. Farmers are owners of both problems and solutions associated with degradation of land resources. They should therefore not merely participate but also play a lead role in problem identification and in seeking solutions to environmental problems. It is true to say that farmers are well aware that the land is their only basis for livelihood. They often have abundant, under-exploited sound local wisdom and innovations related to management of land resources. For example, this include *ngitiri* which is an effective traditional grazing system in Mwanza, Shinyanga and Tabora regions. Likewise *Matengo pits* or *ngoro* and the *Ufipa mounds* have been used effectively in improving land productivity in Ruvuma and Rukwa regions respectively. We need to build trust and confidence for farmers to expose such type of knowledge to others by sharing the view that informative exchange adds value to their work.

While stressing local ownership of solutions to land use problems, it should also be understood that self help is limited to farmer's resources, organisations and knowledge systems which sometimes no longer function adequately under present circumstances. Therefore, external technical and materials assistance is sometimes needed. Linkages with external agencies cannot be totally ignored. They are important ways of supporting land users' initiatives in solving land use problems, meeting their priorities and taking advantage of their opportunities. Local initiatives and resources combined with modest external assistance, and management by grassroots institutions with committed leadership, can foster sustainable development.

Finally, I would like to express my heartfelt gratitude to the Royal Government of the Netherlands for funding this sub-programme through the Office to Combat Desertification and Drought (UNSO) of the United Nation Development Programme (UNDP). This financial assistance is of great value to Tanzania, and we are very grateful for the contribution. I would also like to express my appreciation and compliments to the organisations and institutions that are involved in this programme for their commendable efforts in its management and implementation.

2. Tijan Jallow (UNSO)

Mr. Jallow expressed his pleasure at being able to attend the workshop on behalf of UNSO. He gave an overview of the programme regarding involvement of farmers and local experts. PFI, funded by the Netherlands through UNSO, aims at enhancing food security, through networking and exchange of ideas. He noted that PFI has made a dynamic start in all three countries. He highlighted the linkages between poverty, land degradation and food security, and the role played by local innovation. He expressed gratitude for the Netherlands government's contribution and emphasised the strong partnership at the multilateral level: UNDP, Governments, NGOs, farmers, and research institution. He thanked the farmers for giving others the chance to learn from them. IFTz

was recognised for the logistical support that it provided for the workshop and for the way it is co-ordinating the programme in Tanzania.

3. Theo van Banning (Netherlands Embassy, Tanzania)

Mr. van Banning said that the Netherlands felt that global issues were their issues - and their issues were global issues. He stated the Embassy's interest in supporting indigenous people. He talked of the Netherlands' long involvement in Tanzania, and particularly in the agricultural field. Other specific points he made included the need to understand traditional irrigation practices and the importance of access to markets for farmers. He also reflected on the role of good governance and an enabling land law.

4. Alex Odour: Regional Land Management Unit (RELMA)

RELMA has its roots in the Desertification Conference, held in Stockholm in 1974, when support was pledged to the Government of Kenya for soil conservation. The office of the Regional Soil Conservation Unit set up in Nairobi in 1982, and this became RELMA in 1998. The geographical focus areas are Kenya, Tanzania, Zambia and Ethiopia: later Uganda and Eritrea were added.

The RELMA mandate is: *to contribute towards improved livelihoods and enhanced food security in the region.*

The mode of operation is:

- regional networking with governments, non-governmental organisations, Swedish Embassies, farming communities, etc;
- sharing/exchange and dissemination of information through seminars, workshops, study tours;
- consultancies and fellowships;
- piloting activities – especially soil conservation projects - in specific countries; and
- publishing and distribution of publications.

RELMA's subject areas of interest are:

- soil & water conservation;
- water harvesting;
- agroforestry;
- livestock production;
- economy/marketing; and
- soil fertility.

There exists good collaboration between RELMA & CDCS/Vrije Universiteit Amsterdam (the backstopping agency to PFI), and it is hoped to build on this with a productive relationship between RELMA and PFI.

5. Yves Marché (Managing Director, INADES-FORMATION, Tanzania [IFTz])

As lead implementing agency of PFI, IFTz is pleased and honoured to welcome the participants of the PFI workshop to Dodoma. IFTz believes in building the capacity of farmers, in recognising and valuing their own knowledge, in farmer to farmer learning and in farmers' networking for empowerment. Therefore IFTz feels at home with the concept of the Promotion of Farmer Innovation programme. For them, this first year has been full of activities and experiments; they

have learnt from each other and drawn lessons from working with many PFI partners. In spite of the extra workload on IFTz's shoulders - especially on the national coordinator, Patrick Lameck – IFTz is ready to go ahead with the implementation of the project, as long as it is really geared towards the promotion of farmers, for their own benefit and development. It is hoped that farmer participants will feel at home in this workshop, not as good listeners only, but as real participants.

6. Closing Statement (Regional Administrative Secretary)

I wish first of all on behalf of the Government of the United Republic of Tanzania, Dodoma Regional Leadership to express my profound gratitude and appreciation in being invited to officiate the closing of the workshop. I would like to say a word of appreciation for the impressive work you have done in this conference hall and your field visit to some farmer innovators.

You have seen how dry Dodoma and central parts of the country are. You have also witnessed what innovative farmers are doing to combat this drought. Therefore PFI considers these efforts to be a corner stone for implementation of the programme. There are indications of success which we have witnessed by seeing that other farmers are adopting the farmer innovators' ideas. The challenge that remains with us now is to facilitate spread of the innovations to other farmers who have no access to them as yet.

There are many actors in the field of soil and water conservation, water harvesting and land management. However, the challenge to us is how to achieve an effective collaboration of all these partners for efficient promotion of farmer innovation. I am told that you have also worked out various strategies that might enable efficient partnership of all stakeholders, including government organisations, NGOs, external institutions, donors - as well as the main stakeholders who are farmers and farmers' organisations. The exchange of information and experience among land use and efficient partnership with clear vision and roles are the key means to achieve the programme objectives and develop an institutional approach at both national and international level to operationalise the programme. We need to build confidence and trust for farmers to expose such knowledge to others by sharing the view that information exchange adds value to their work.

I would like also to congratulate the farmer innovators from Uganda, Kenya and Tanzania for proving to us that they are the main actors of the programme and our role remains facilitation for improvement, dissemination and institutional support. While stressing local ownership of solutions to land use problems, it should also be understood that self-help is limited to farmers' resources, organisational knowledge and technical skills. Therefore, external technical and materials assistance is also needed. Linkages with external agencies therefore cannot be totally ignored. Local initiatives and resources combined with modest external assistance and management by grassroots institutions with committed leadership, can foster sustainable development. Recognising the contribution of external participation, PFI, executed by the Ministry of Agriculture, is making encouraging progress as expressed by the innovative farmers themselves.

Finally I would like to express my heart-felt gratitude to the Royal Government of Netherlands for funding this programme through UNSO. This financial assistance is of great value to Tanzania and we are very grateful for the contribution. Last of all, I would like to call upon all of you to go and implement all the useful resolutions of this workshop to promote farmer innovation.

Annex Two: The PTD Framework (adapted from van Veldhuizen *et al*, 1997b)

Cluster	Rationale	Elements	Expected Outcome
Getting started	Taking a participatory approach does not mean starting PTD initiatives unprepared: several important issues need to be addressed before intensive interaction with farmers can begin	receiving a request or selecting communities gathering and analysing existing 2° data making an inventory of existing organisations clarifying one's own agenda building a relationship with local people and coming to agreement on future collaboration	clear perspective and protocols for collaboration a preliminary understanding of the socio-cultural and agro-ecological situation of the community or communities a core network of individuals and organisations that could play an important role in future PTD work
Understanding problems and opportunities	<p>The strongest driving force of a participatory programme is the farmers' realisation that it really addresses their particular concerns</p> <p>A joint understanding of these concerns must be developed. At the same time, ideas for innovation already present among the farmers may provide good opportunities for commencing PTD</p>	<p>sharing impressions of problems in local farming supporting farmers in identifying and analysing their problems and the cause-effect relationships involved clarifying whose problems have been identified discussing the context of the problems (e.g. wider agro-ecological and socio-political changes) and analysing driving/restraining forces making and inventory of opportunities and potential resources and good ideas The PRA toolbox is an important source of methods and techniques for these activities</p>	<p>shared insight into local agricultural potentials and constraints improved skills of farmers to diagnose and analyse problems increased self-confidence and a better organisational basis for systematic experimentation by farmers</p>
Looking for things to try	Research and extension agencies are not the sole source of innovations to solve the problems or tap the opportunities identified. Farmers and artisans can also provide interesting ideas to follow up. The various ideas are screened by the farmers and PTD facilitators and a joint agenda for experimentation is developed	<p>gathering information for detailed analysis of the identified concerns and priority problems identifying promising solutions from local experience, farmer experts and sources outside the community making a critical review of the options by establishing criteria for selecting initial activities and assessing advantages and disadvantages clarifying expected effects of the options on different sub-groups within the community developing an understanding of the need to experiment with the options selected</p>	<p>overview of possibly relevant technology agreement on the most interesting options to be tried out improved linkages between farmers and sources of innovations</p>

Experimentation	<p>The focus is on experiments that farmers can manage and evaluate themselves and that give results on which farmers can base sound decisions. Through involvement in these activities, farmers improve their capacity to adapt their agricultural practices. This is achieved through skill development, group building and strengthening exchange and supportive linkages with other communities and organisations.</p>	<p>agreeing on what exactly is to be found out by doing the experiment</p> <p>reviewing farmer's existing experimental practices designing selected experiments defining evaluation criteria and choosing monitoring and evaluation tools training farmer-experimenters establishing and managing the experiments monitoring by the farmer-experimenters supported by the PTD facilitators evaluating the results, both during the course and at the end of the experiments to decide if the option is suitable locally, to develop possible technical guidelines for applying it and/or to identify any need for further experiments reviewing the experience of collaboration and experimentation with a view to improving the PTD process</p>	<p>insight into the functioning and value of innovations, gained through experiments planned, implemented and assessed by farmers development of technology adaptations that are relevant locally improved capacity and skills of farmers in experimentation increased understanding of PTD processes</p>
Sharing the results: farmer based extension	<p>Many of the above activities involve farmers learning from other farmers. PTD also encourages wider sharing of results among other farmers using the networks developed during earlier PTD activities. Not only are locally developed technologies disseminated, but attention is also given to sharing the methodological aspects of learning through experiences of farmer organisation &</p>	<p>studying the existing patterns and channels of farmer to farmer (f-f) exchange and learning strengthening farmer to farmer exchange; visits, f-f training through learning by doing; developing manuals and audiovisuals training farmers as grassroots extensionists/ promoters</p>	<p>enhanced f-f diffusion of ideas and technologies building up an inter-community PTD network involvement of an increasing number of communities in systematic technology development establishing a farmer-managed system of inter-community training and communication</p>
Sustaining the PTD process		<p>stimulating group development and linking groups with farmers' organisations providing training in fields related to management strengthening linkages between farmers and service orgs. consolidating institutional and policy support to PTD documenting the process and methods of experimentation and</p>	<p>consolidated community networks or organisations for agricultural self-management a more supportive institutional environment documented and operationalised PTD approach and resource materials relevant services and input</p>

	<p>experimentation</p> <p>The ultimate aim is to leave communities with the capacity to implement an effective process of change. PTD programmes are therefore concerned with organisational development and the creation of favourable conditions for ongoing experimentation and development of sustainable agro-ecological systems. The role of outside PTD facilitators gradually changes: their attention shifts to other communities and in order to promote PTD on a wider scale</p>	<p>diffusion</p> <p>supporting evaluation of the impacts of technologies and the PTD process on the livelihood system</p>	<p>supply</p>
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Annex Three

Monitoring and Evaluation

of

Farmer Innovator Programmes

suggested priority procedures and formats

note: see chapter 5.4 for explanatory comments