

RURAL ECONOMY

**Farmer Group Development in Kenya:
Issues and Recommendations for Service Providers**

John R. Parkins and Dhara S. Gill

Staff Paper 97-05

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1. Introduction

For decades now, there have been grave warnings about the alarming rates of tree and shrub destruction in the tropics. These warnings stressed the disastrous consequences of deforestation and predicted imminent fuelwood deficits across the African continent. However, the reality has been somewhat different from the worst-case scenario promoted by these doom-sayers. In fact, scientists looking at issues of land degradation, deforestation and population dynamics in Africa are now realizing that these alarmist statements were remiss by not taking into account the value and effort that farmers on the continent have put into long-term land care and regeneration. A study published in 1994 reveals that, contrary to popular belief, Kenyan land covered by trees and shrubs increased 4.2% annually from 1986 to 1992 (Holmgren, Masakha, & Sjöholm, 1994).

The present study¹ supports these national-level findings at the local level in Mbeere District, Kenya. Amid dramatic changes in land use, this study found that farmer-initiated, small-scale tree nurseries are at the heart of local efforts in reforestation, right on the farms themselves. To the extent that these nurseries represent farmers' efforts to integrate trees on their farmland, they are fundamentally important to the long-term development of farm forestry² in the region.

2. The Problem of Shifting Emphasis

For many readers of agricultural research, the notion of technology adoption introduces issues of extension education, appropriate technology, and agricultural innovation whereby assistance in terms of materials and information is introduced to users. By definition, "agroforestry extension is the process of promoting ideas and information exchange between the scientific or technical and the farming community about how trees can be more effectively integrated into existing farming systems to make them more productive over the long term" (Pawlick, 1989, p. 2). This definition underscores the more conventional understanding of technology transfer where information is exchanged between scientists or technical people and farmers. Although the idea of exchange does infer two-way communication, by and large, the formal mechanisms for promoting ideas have been, and continue to be, administered in a top-down fashion.

¹ This paper is based on a MSc degree thesis (Parkins, 1997) prepared after four months of research in Mbeere District, Kenya. The main purpose in writing this paper is to make study findings and recommendations available to those individuals and organizations directly involved in agroforestry development initiatives. If readers are interested in a more detailed description of the research undertaken to produce these findings and recommendations, thesis copies are available at the Kenya Agricultural Research Institute (KARI) station library in Embu, the International Centre for Research in Agroforestry (ICRAF) library in Nairobi, and the Department of Rural Economy library, University of Alberta.

² Farm forestry is considered to be a development concept subsumed by the broader definition of agroforestry but more accurately describing the agroforestry activities of farmers in Mbeere, Kenya.

Consistent with this top-down orientation is the idea that for development of any kind to take place, something must be introduced from outside (externally) to provide the impetus for change and growth. Whether it's a new road system or an improved plow for cultivating fields, the idea of *pushing* technologies on to situations through intervention projects is deeply ingrained within the collective psyche of the international development community.

Within the East African context, the era of structural adjustment, debt reduction and government downsizing has, in itself, accelerated the introduction of new ways of doing things and a general impetus for change. As public sector downsizing continues to restrict traditional agents of change (extension departments, and agricultural service outlets such as centralized nurseries) from fulfilling their role, a vacuum is created. To fill the vacuum, private sector, self-help, and non-governmental organizations (NGOs) are encouraged and sometimes mandated to take up new responsibilities. In addition, with strong support from the Bretton Woods Institutions and the United Nations, self-help, self-sufficiency, community participation, capacity building, and sustainable development have become influential development concepts. The net effect from these larger international forces is a greater role for private, informal, and NGO sectors of society (Smillie, 1995; Sachs, 1993).

This general shift in service providers is observable within the agricultural sector and more specifically, agroforestry development. Extension agents continue to provide an essential aspect of agroforestry promotion, but perhaps more than ever, other non-traditional agencies are directly involved with farmers in promoting long-term land care and regeneration. In Mbeere, there are a range of individuals and organizations with varied farmer contact and influence. For example, extension agencies represent the formal or traditional agencies involved with farmers, whereas farmer groups and NGOs represent the informal or non-traditional actors. Some of these agencies coordinate with one another and capitalize on each others' resources, while others act independently. Communication takes place within well organized groups of farmers as well as informal face-to-face encounters. The resulting network of communication is not formalized or coordinated in any respect, nor does it influence farmers consistently across the region. Some farmers -- by nature of their position in society, their personal preferences, and their proximity to the network of organizations and individuals -- are more exposed to the informal communication network than others. In this study, this collection of actors within the theatre of agroforestry development is referred to as the informal agroforestry communication network (IACN).

Figure 1 conceptualizes the communication network specifically related to agroforestry communication at the farmer level. The concept is based on the *networking for innovation* tradition and popularized in agricultural research by Roling and Engel (1992). In this tradition, agricultural

innovation is theorized in a much less top-down orientation, and instead, considered to emerge from the interplay between a wide variety of social actors.

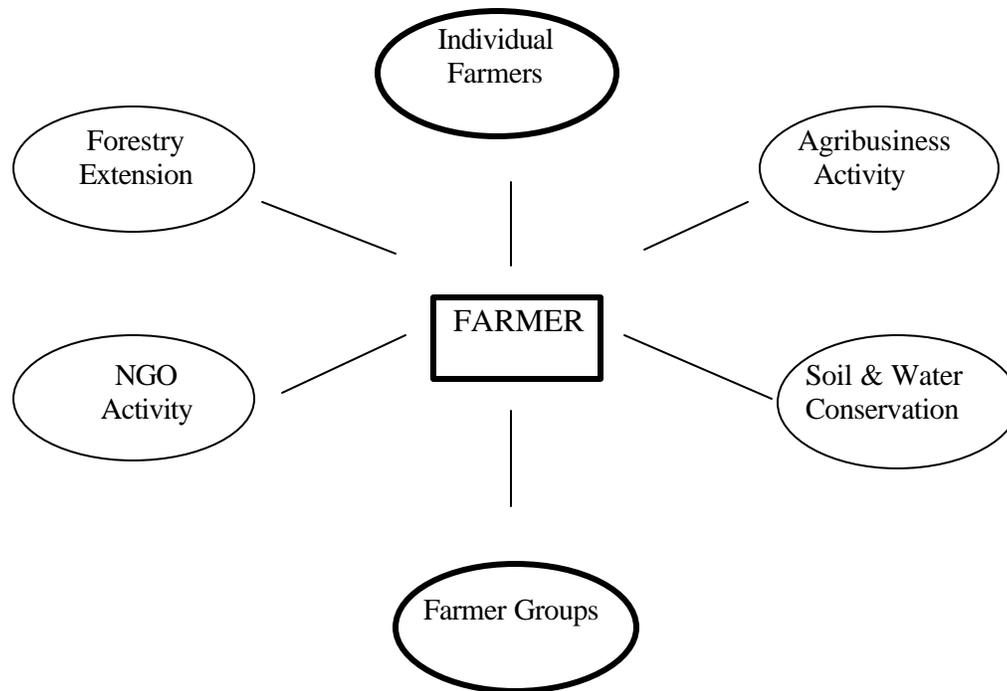


Figure 1. Informal agroforestry communication network (IACN).

The diagram places farmers at the centre of the agroforestry network. Within a time continuum, every farmer is communicating agroforestry information on an informal basis with any number of social actors. The thick circles on Figure 1 also make the assumption that, when it comes to agricultural innovation, farmers in Mbeere are most influenced by specific farmers and farmer groups³.

Having noted a general shift in the way development activities are organized and promoted by international organizations and local governments, and how non-governmental organizations, community groups, and individuals are responding to these changes, it is observable that a new group of social arrangements are emerging — a group of relationships that are, for the most part, less formal in nature, less coordinated, less centralized, and perhaps less studied and understood than previous social relationships based on formal institutional communication and technology transfer models. For these reasons, this communication network (IACN), concerned with farm forestry

development, deserves attentions on a number of levels. What are the strengths and weaknesses of this emerging network? Who is involved and who is being left out of the network? What issues can be addressed to strengthen development efforts and provide for greater farm forestry activity in the long term under these modern social arrangements? These are some of the questions that define the problem under investigation in this paper.

3. Study Objectives

Flowing out of the problem as defined above, the objectives of this study are three fold:

- (1) To assess the impact of the informal agroforestry communication network (IACN) on tree planting practices (agroforestry) in Mbeere.
- (2) To build a profile of farmers who are involved in the IACN and, perhaps more importantly, those farmers who are not.
- (3) To explain the mechanisms by which farmers are transferring agroforestry knowledge and materials between themselves.

4. Research Methods

To achieve the stated objectives, a mixed research method of structured, semi-structured, and informal interviews was employed (see Figure 2). Generally speaking, research began with informal interviews with key informants from specific Kenya Government ministry officials, non-governmental organization representatives, agricultural experts working in the area, individual farmers, and farm groups.

Week 1	Week 2	Week 3 - 4	Week 5 - 6	Week 7	Week 8	Week 9 - 12
Literature Review & Research Orientation	Grand Tour of Embu and Mbeere Districts	Key Informant Interviews	Farmer-Group Interviews	Site Selection & Farmer Interviews	Sampling & Site Preparation	Survey of 100 Farmers

Figure 2. Summary of research activities in Mbeere District, Kenya.

After six weeks of informal interviews, a formal survey was launched with the assistance of two enumerators. Using a structured interview schedule, enumerators interviewed 100 randomly sampled farmers from four sublocations⁴ in Mbeere District. Survey data, used to test specific

³ This assumption is supported by work completed by den Biggelaar (1996) on regional knowledge information flows in Mbeere.

⁴ The survey was conducted in the following sublocations: Mbita, Gachoka, Gitibori, and Kiamuringa.

hypotheses, along with supporting narrative data comprise the majority of information in support of stated findings and recommendations.

5. Farmer Group Development

In sections 5 and 6, descriptive information is presented on the development of farmer groups and small-scale tree nurseries in Mbeere. These sections illustrate the dramatic growth of local organizations in the past decade and provide the relevant background for findings and recommendations discussed later in this paper.

There are essentially two types of farmer groups in Mbeere. It is perhaps useful to consider these types as some kind of *ideal type* realizing that there is never a perfect match between the ideal and reality. One type is more historical and originally referred to as a *work party*. This group is organized around specific tasks such as cultivating a field or building a house and when the work is completed, the group disbands. At a time of need, farmers re-organize themselves with the same or different members and accomplish new short-term objectives. The second type of group is usually referred to as a *modern group*. This modern group is similar to the traditional work party in that it organizes around common objectives but instead of disbanding and reorganizing periodically, it formalizes group organization. Modern groups have committees, membership fees, a statement of objectives, and they register with the Department of Social Services. Registration provides them with the benefit of technical assistance from various government departments, encouragement and visibility within the community. On rare occasions some resources, such as polythene bags, are provided to registered groups with nursery operations.

In the modern type of group, there are four categories: women, self-help, youth, and men. Again, these are distinctions made by the Department of Social Services but in reality, men belong to women's groups, some youth groups call themselves self-help groups, and men's groups are often scarce. Ten years ago, the Department of Social Services registered approximately 500 groups in Mbeere. Today the figure is close to 1,500. The average size of a farmer group is 25 to 35 members. Their activities include: sharing money, cultivating, poultry keeping, home improvement, small-scale business, sand collection, sports, flour mill, soil conservation, and nursery operations. There are a few intergroup cooperatives called *unions*, which are highly organized and manage more capital intensive operations such as flour mills or even housing projects, but by and large, groups function independently from one another with few opportunities for regular contact, shared experiences, ideas, or resources.

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When farmers are asked why groups are developing at such a rapid pace, a common response is that farmers are *enlightened* about the benefits of group activity and shared responsibility. This idea of enlightenment comes from the promotional efforts of the Government of Kenya extension services -- included in the Departments of Agriculture, Social Services, Forestry, Soil and Water Conservation, and Home Economics -- who use this language in their campaigns. Aside from a general enlightenment, an overwhelming number of farmers, government officers, and NGO representatives, attribute group development to: (1) increased population density in Mbeere and, (2) the impact of NGO interventions where group activity is encouraged or sometimes required as a precondition for assistance. The combined effect on group development by these two forces, as the numbers indicate, is quite dramatic.

6. Small-Scale Tree Nurseries

Of the 1,500 groups registered with the Department of Social Services in Mbeere, 250-300 groups have registered a tree nursery operation as a stated objective. To the extent that they represent farmers' efforts to integrate trees on their farmland, small-scale tree nurseries are of central interest to agencies concerned with agroforestry development. For most groups, a tree nursery operation is one activity among several a group will coordinate. Farmer groups typically agree on the kinds of trees they want to grow and then find a location to start a nursery. This location is on property owned by one member of the group and is situated close to a water source such as a small stream, spring, or borehole. If the site is located by a prominent and reliable source of water, it is common to see two or three small-scale nurseries in the same area.

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Farmer groups identify common constraints when it comes to nursery development. Because of the semi-arid environment, group members cite drought as a major constraining factor. Most nurseries suffer from drought and many nurseries are completely devastated on a seasonal basis. As farm families begin to prioritize water consumption, it is not surprising that the needs of seedlings become of little significance to personal consumption needs. When the local borehole or stream dries, unless it rains, there is little hope of seedling survival. Depending on the resilience of a group, some nursery operations will recover from a prolonged drought and others will not.

Other constraints identified by groups are largely capital related. Groups lack basic tools such as watering cans, hoes, fencing material, and plastic tubes for planting seedlings. Some organizations have tried to introduce alternative seed planting technology to replace the expensive and locally unavailable plastic tubes with more *appropriate* technology such as *swaziland beds*, but

farmers have resisted these innovations for a variety of reasons. In the final analysis, farmers like the plastic tubes. They believe seedlings have a higher survival rate and are more easily transportable than with other methods. Some groups also identify constraints such as a lack of market to sell their products, a lack of transportation, and a lack of education to organize and manage themselves more effectively.

7. Incentive Systems

Before proceeding with the findings of this study, it is important to briefly discuss one theoretical concept - incentive systems. In the words of one development specialist, Denis Goulet (1989, p. 3), "Incentives are the key to development. An optimal blend of material and moral incentives is the main policy instrument to be used in achieving equitable development." To some readers, this statement may sound somewhat simplistic or even absurd, but to the extent that this comment appears incorrect, it speaks to the failure of social scientists to articulate the centrality of *incentive systems* in the larger development debate. One reason that *incentive packages* have not enjoyed the kind of prominence Goulet calls for is arguably due to a single-minded and hegemonic economic development perspective. By nature of the discipline, economists narrowly define the idea of incentives so if someone were to ask the question, "What is your definition of an incentive?", the common response will focus on the primacy of financial or material incentives and sideline, if not completely neglect, other aspects of a broad definition. The discussion to follow purposes to frame this larger debate on incentives and, in doing so, attempt to move the issue of incentives toward the centre of the general development discourse.

According to Goulet (1989), incentives refer to "a full array of rewards and deterrents held out to induce or dissuade some behaviour judged desirable or reprehensible by those holding out the rewards. Incentive systems refer to the "array" or "package" composed of both moral and material incentives in their positive and negative forms. A *moral incentive* refers to when inducements or rewards -- positive or negative -- are non-material or intangible in character. Prestige, patriotism, compassionate acts, unpaid investments of time and energy stem from the moral array of positive incentives. On the negative side, denunciation, ostracism, and deprivation are moral incentives held by those individuals or organization who use their incentives to threaten or discourage a particular agenda.

The second type of incentive is the more prevalent *material incentive* where objective inducements or penalties comprise material goods or benefits such as cash bonuses, housing or, negatively speaking, the threat of prison. Intuitively, one can concur that the sustainability of a positive mixture of both moral and material incentives will affect the sustainability of a desired

social action. Moreover, the absence of incentives, or a mixture of negative incentives, will propel desired collective action into collective in-action. In brief, every development project is founded on a mixture of incentives. No matter how intentional or unintentional these incentives may be, they encourage (or discourage) participation, and in turn, they provide the foundation for sustained change. (Cohen & Uphoff, 1980; Olujimi and Egunjobi, 1991; Finsterbusch & Van Wicklin, 1987). The logical flow is represented in Figure 3.

INCENTIVES > (cause) > PARTICIPATION > (cause) > SUSTAINED CHANGE

Figure 3. The logic of incentives in sustainable development.

Although this logic is highly intuitive, in many development initiatives, an observable mismatch exists between incentive packages designed to encourage participation and the perceptions of participants' needs (Green, 1983; Carens, 1981; Goulet, 1989). This mismatch often leads to inefficiency and an eventual failure of development aims and initiatives. As an example of this mismatch, it is commonly assumed that farm households function as a single economic unit, whereas recent research has revealed an often competing economic environment within the household itself (Saito & Spurling, 1992). For this reason, and to the extent that projects are designed to include women farmers as participants, incentive packages should be creatively developed to encourage ongoing interest in project participation specifically tailored to the divergent interests of beneficiaries.

8. Summary of Relevant Findings

The statements made in this section are based on information collected from 100 randomly sampled farmers. Each statement is the result of a tested hypothesis and a statistically significant finding. These findings inform the next section of this paper where separate findings and supporting narratives are brought together into emerging themes.

1. Farmers who are members of groups plant an average of 25 more trees per year than non-members.
2. The poorer strata of smallholder farmers are not participating in group activities as much as middle class or wealthy farmers.
3. Both men and women are equally involved in IACN activities but women are significantly more involved in farmer group activities (one dimension of the IACN) than men.

4. Farmers with higher on-farm labour resources are more involved in the IACN.
5. Recent migrant farmers are less involved in the IACN than more established residents.
6. Farmers identify termites and water as major constraints to farm forestry development.
7. Farmers identify boundary planting and soil and water conservation as important incentives for farm forestry development.

9. Emerging Themes

9.1. Formal and Informal Communication Channels

Up to this point, we have referred to the unorganized collection of information channels available to farmers as the Informal Agroforestry Communication Network (IACN), but now it becomes more useful to collapse some categories and construct two distinct types of information sources. In terms of broadly defined categories, these types will be referred to as *formal* and *informal sources* of information (see Figure 4). Formal sources of information are provided by officially organized institutional channels such as extension departments, village chief meetings (*baraza*), agribusiness services such as tobacco company tree nurseries, and the occasional national mass media campaign. These channels are the official avenues for dissemination and are recognized for the role they play in providing new ideas to farmers.

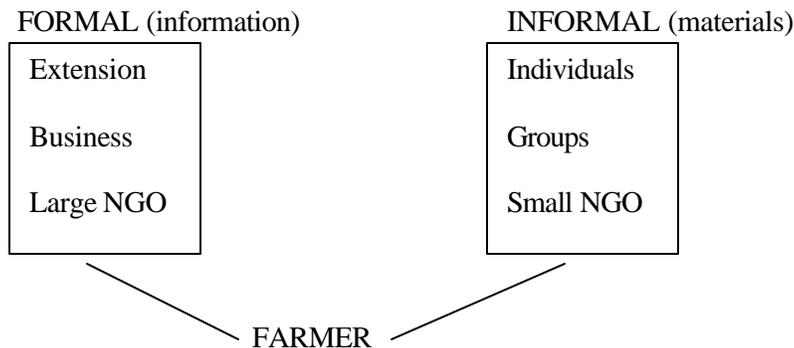


Figure 4. Formal and Informal categories of communication.

Informal sources can be defined as those that have not been institutionalized or officially structured such as individual farmer contacts, farmer group activities, and even some types of NGO activity. NGOs fall into either type depending on their level of involvement with formal communication channels. A small national NGO may operate independent of other channels and may therefore be classified in the informal category, whereas an international NGO such as *Plan*

International is closely tied to formal channels of communication and can be classified as such. Informal mechanisms have not enjoyed the same degree of recognition but as this study demonstrates, they provide an equal if not greater contribution to local farm forestry development initiatives.

Figure 5 shows the level of importance farmers place on various sources of agroforestry-related information. Results from this survey show that, when it comes to *information*, formal extension channels (extension officers & Chief’s barazas) are the most important facilitators. Within Mbeere, large NGOs participate with and facilitate formal channels and, to a large degree, can be classified as a formal source of information. The informal mechanisms, such as groups and neighbours, do not figure so highly in terms of knowledge sources. It is also interesting to note that tobacco company impact barely registers on this graph. Even within Gitibori sublocation, where tobacco farming is predominant, farmers do not place a high degree of importance on this source farm forestry information.

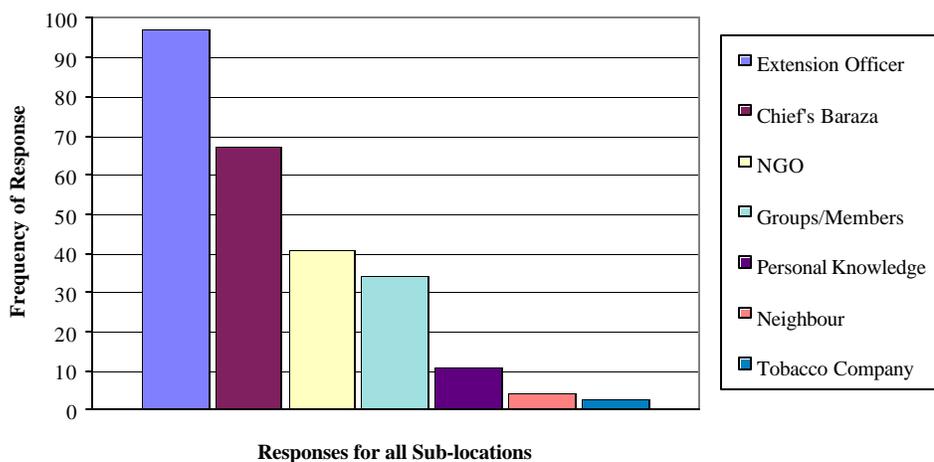


Figure 5. Sources of tree planting **information** as indicated by farmers.

In contrast to Figure 5, Figure 6 reveals an almost complete reversal of prominence regarding informal and formal sources. When it comes to obtaining *materials* (as opposed to information) for farm forestry development, informal sources are very important to farmers. Wild seedling collection and group nurseries rank much higher than markets, extension offices, or tobacco companies. Even in the tobacco growing zone, tobacco companies do not rank highly for sources of seedlings. On a whole, the results suggest that farmers heavily rely upon formal mechanisms for information. On the other hand, when it comes to materials, the pendulum swings to a reliance on

local and informal sources. This finding is supported by discussions with local extension officers who acknowledge a general movement away from production to facilitation. In the words of one District Forest Officer: “We used to be involved in production but now we are moving to a facilitation role - we are assisting farmers to produce for themselves.” However innovative and forward thinking this statement may sound, extension services have not freely chosen this change as a result of some philosophical shift in thinking. On the contrary, reductions in services are made necessary by a chronic lack of financial resources and the subsequent downscaling or discontinuance of production facilities.

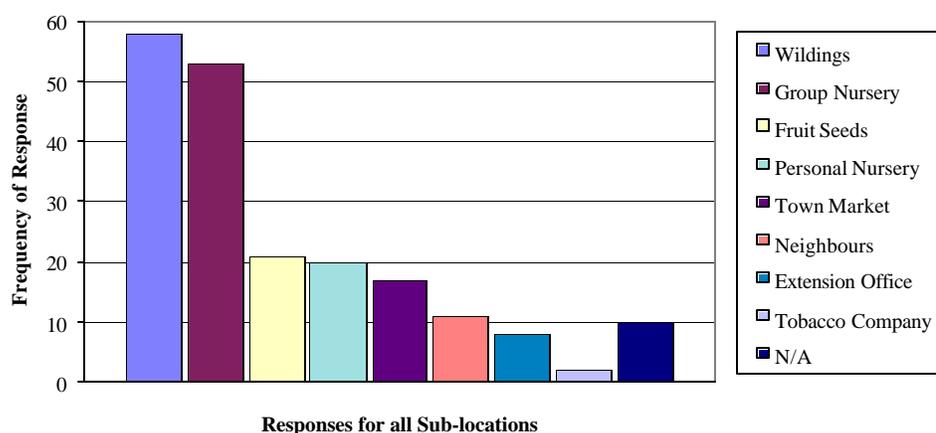


Figure 6. Sources of tree planting materials as indicated by farmers.

As for survey information directly related to farmer-to-farmer knowledge transfer, Tables 1 and 2 provide insight into the functioning of this communication mechanism. Clearly farmers do believe there are local *expert* foresters and almost half of these farmers are approached by their neighbours for information or materials on an individual (one-to-one) basis.

Table 1. Response to whether some farmers are more successful at tree planting than others.

Response	Subpopulation				Female	Male	Total
	Mbita	Gachoka	Gitibori	Kiamuringa			
Yes	24	24	25	25	52	46	98
No	1	1	0	0	1	1	2

Table 2. Response to whether farmers prefer contacting successful tree planters.

Response	Subpopulation						Total
	Mbita	Gachoka	Gitibori	Kiamuringa	Female	Male	
Yes	11	14	15	5	14	31	45
No	14	10	10	20	38	16	54

This analysis, suggests a significant role for farmer-to-farmer communication and the overall prominence of farmer-to-farmer diffusion of innovation in the large dissemination theatre. To be more precise, when it comes to information flows, dissemination is largely organized along formal lines of traditional village structures and extension systems. When it comes to material flows (the actual materials used in farm forestry), dissemination is organized around informal local production such as farmer groups and individual nurseries. Within the domain of informal diffusion mechanisms, farmers also prefer to approach farmer groups as opposed to individual experts.

9.2. Gender and Farm Forestry

It is evident from the data collected in this study that, when it comes to exposure to the entire network of actors involved in farm forestry development (referred to in this study as the IACN), major gender differences do not exist. It is also evident, however, that women are significantly more involved in one dimension of the IACN than men - namely the informal dimension, or the dimension involving farmer group activity. Given what we know about the lives of rural women in sub-Saharan African, it is not surprising that this is so. Women are commonly responsible for providing household consumption needs (Saito & Weidemann, 1990). Because of distinct labour divisions, women traditionally work together to meet family needs and share farming and food preparation chores. In the words of one NGO representative:

...it is the woman who feels the pinch. Things like fuelwood for instance, the woman would rather go work in that nursery to get seedlings to plant trees. I know in most cases that they go and plant a tree and then the man wants to use that tree as a pole, I know these things. But women usually are able to work together.

Eckman (1992) supports these comments in saying that, “by forming groups, women are better able to gain access to extension, credit and other inputs, acquire land and tree rights, gain control of the fruits of their labours and better ensure their family’s survival.” To the extent that men and women receive and share information differently, the realities of these gender differences permeate the way in which agroforestry development is undertaken. To use the words quoted above, “...women usually are able to work together” and therefore, are better organized to benefit from informal mechanisms of communication. For instance, men are in a position to receive farm forestry information through channels involving organized local services such as local political or extension officer meetings.

They are not so often in a position to receive information or materials disseminating from involvement in local farmer groups.

At this point, readers might ask the question, “So what?” What does it matter that women are benefiting from one aspect of the IACN while men are benefiting from another? The answer to this question directly relates to the general development philosophy guiding many agency initiatives within Mbeere and sub-Saharan Africa as a whole. As responsibility for community needs continue to be pushed on to the private or informal sectors of society (under the guise of *self-help*, *structural adjustment*, and *community participation*), traditional organizations mandated to provide extension services, from health care to agriculture, are replaced by local informal organizations. As an example, within the relatively small forestry sector, governments and agribusiness agencies *officially* provide farmers with seedlings and information from centralized nurseries and offices. They disseminate information through local community or school meetings sponsored by the village chief, extension officer, or other political officials. Now the pendulum has shifted to informal mechanisms oriented around farmer groups, often supported by NGOs.

If informal local structures are the primary focus of contemporary development initiatives, how are men affected by this change as different than women? We will argue that, even more than ever, men are left out of this new orientation. This is not to say that women do not need or deserve more assistance than they already receive. Our point is not a question of rights. It is more a question of perpetuating and even exacerbating the already unequal distribution of labour within the rural context. In other words, under

...if popular development wisdom mandates working more closely with these local organizations, then one can expect the overall responsibilities of women to increase.

contemporary development initiatives, women are likely to be doing more work; more tree planting, more food production, more marketing of agricultural products, more primary health care, and so on. With regard to farm forestry, if women are in fact more actively involved in the informal aspects of farm forestry development, and if popular development wisdom mandates working more closely with local organizations, then one can expect the overall responsibilities of women to increase. Here in lies the dilemma.

With some clarity, one farmer comments on these issues by saying:

The incentive for active involvement in groups is very strong. Those who participate receive outside assistance. Those who do not will not have access to aid...Some farmers are so active in groups that they neglect their own farm obligations such as food production...This problem mostly affects farmers with limited labour resources.

In her article titled, *The real rural energy crisis: women's time*, Irene Tinker (1984) speaks to this same issue by saying that the real energy issue is not fuelwood or any other shortage, but more so the *inelasticity* of women's time to contribute more labour toward new development initiatives.

At risk of belabouring the point, the basic argument here is that participation or collective action can be a double-edged sword, especially as it relates to off-loading larger societal responsibilities on to the already overworked rural poor. Gender differences related to the IACN provide a case in point. There are trends here suggesting that women will continue to be squeezed for increasing levels of involvement while men become more marginalized than they already are.

At one level, movements toward more local responsibility appear exemplary by building on local capacity and initiative. This of course, is the contemporary development rhetoric. But the question still remains. When communities rely so heavily upon NGO intervention, how much more sustainable are these new dissemination and development relationships than the old ones? And furthermore, to what extent are these new relationships placing added burdens on rural women while inadvertently excluding men from development initiatives? In the words of one primary school principal: *"I can't hold a meeting with my parents unless they know an NGO representative will be there. If I try to have a meeting with parents independently, no one will show up."* Perhaps part of the response to this dilemma lies in the character of development assistance provided to communities. This issue will be dealt with in the following section.

9.3. Incentives and Dependency

One specific farmer interview stands out as an example of how incentives affect agroforestry development. There are many locations across Mbeere where *modern* small-scale nurseries have thrived for five to ten years and more. The members of these groups organize themselves around common objectives and contribute personal resources to get things going. The sale of seedlings on a seasonal basis provides some income to the group and allows them to purchase supplies such as polythene tubes. To say that these groups are internally motivated and self-sustaining is, or was, an accurate reflection of their initiative.

While talking to a member of one of these well-established nurseries, he was asked why groups are developing so rapidly at this point in time. He mentioned that a few years ago, they received a large sum of money (approximately 8,000 Kenya Shillings) from an NGO to help them with a watering system and fencing material. The people in the community, who are not members of the group, observed this event with predictable interest and became convinced that if they organized themselves into producer-groups, they would attract outside monetary assistance. As a result,

farmers became interested in formal group activity not so much to enjoy the economic or social benefits of group production, but to attract external assistance.

This salient story reveals a fairly direct causal link between external material incentives and participation in farmer groups. From numerous conversations with farmers, extension officers, and NGO representatives, there is little doubt that the current incentive environment has become skewed toward external material incentives.

There is little doubt that the current incentive environment has become skewed toward external material incentives.

Instead of focusing on what is wrong with the current condition any more than we already have, we will use the remainder of this section to suggest an alternative, and hopefully more balanced, course of action regarding incentives for participation and collective action. Every local context and development initiative will require a unique and creative package of incentives, so the specifics in this text relate directly to the situation in Mbeere, whereas the principles can be more generally applied across different contexts.

Earlier we put forward Goulet's holistic definition of incentives incorporating both material and moral elements. Other authors use words such as material and non-material, market and non-market, or financial, service, and social incentives (Camino, 1988; Gregerson, Draper, & Elz, 1989; Cernea, 1989). Essentially, all of these authors argue that there is more to incentives than simple cash flows. In fact, the Economic Development Institute of the World Bank reports that:

The most successful cases of tree planting by small-scale farmers were characterized by low material incentives. Excessively generous subsidies tended to be abused or deviated projects toward beneficiaries who were not likely to continue planting after the subsidies ended. Judicious, sparing, and flexible use of subsidies, especially if only temporary for one to three years, helped accelerate planting (Gregerson, Draper, & Elz, 1989, p. 132).

If judicious, sparing, and flexible material inputs are recommended, then what other incentives should service providers invest their resources in? The survey in this study attempts to understand more fully the different incentive and constraint components for tree planting, and provide information to assist agencies in creating an alternative incentive package. Knowing that farmers find boundary planting an incentive for farm forestry, there is an opportunity here to develop a specific incentive around a specific farm forestry activity - boundary planting. Although land adjudication has been carried out in Mbeere for decades, almost one third of the farmers surveyed in this study still do not have title deeds. Most of these farmers reside in Mbita sublocation. Since title deeds are important to farmers, the process of granting them can be turned into a incentive for increased farm forestry activity (Chambers & Leach, 1989). In other words, asking farmers to plant

trees along the boundary of their land as a part of the title-receiving process can become a potentially powerful non-market incentive.

Findings from this study also suggest that fodder needs are not a major incentive for planting trees. In saying this, we do not mean that fodder trees are not, or will not be, an important part of farming systems in this area. The findings merely suggest that farmers currently do not find the need for fodder an incentive for planting more trees. As trees and shrubs are cleared from the land in preparation for cultivation and food-crop production, replanting preferred fodder trees may become a priority. At this time, because of the abundance of shrubs on the landscape, farmers do not consider the need for fodder to be an important incentive for farm forestry. Therefore, education regarding the potential future need for fodder trees, may be the first step toward greater local fodder tree production in small-scale tree nurseries. As stated earlier, the current package of incentives is skewed toward external material incentives. This is one example of providing an external but non-material incentive that can, in the long-term, translate into local incentives through a local nursery enterprise.

A number of agencies are also involved in tree product development with an emphasis on marketing cooperatives. Efforts currently focus on fruit-tree markets with the introduction of improved varieties suitable for export along with more regional market networking initiatives (connecting producers in one region with consumers in another). These efforts are well placed given that farmers currently find the incentives for selling tree products to be low.

These are just a few examples of how incentive systems accompany all interventions and affect long-term sustainability. As a matter of principle, the aim of all programs should be to influence internal incentive systems to a point where they support local initiatives and lead to sustainable development and improvements in welfare (Gregerson, Draper, & Elz, 1989). Unfortunately, many incentive systems have the exact opposite effect than is intended. Emerging relationships between farming communities and service providers in Mbeere exhibit some of these tendencies and the following scenario is not uncommon. As development agencies realize a need to orchestrate collective action and stimulate peoples' participation for a specific development initiative, they introduce a stream of incentives designed for such a purpose. Internal incentives are perceived to be limited and market incentives are mostly non-existent, so agencies rationally turn to their own resources and stimulate community participation with a flow of external incentives such as free houses and water conservation systems. As a result of this flow, internal incentives are overshadowed, underemphasized, and subsequently underdeveloped. Even when farmers have spent decades producing for themselves and cultivated market relationships within localized regions, they begin to think that without external assistance, their efforts will leave them behind the development

of others in the community. Not willing to risk this fate, efforts turn from farm production objectives to the sole objective of attracting outside assistance. After receiving sizable contributions from external sources over an extended period of time, a culture of dependency is cultivated.

In the words of Eckman (1992), “much development aid which is in the form of project interventions defined by “outsiders”...undermines them [groups], thus often seriously affecting survival strategies and resulting in increased vulnerability.” Starting with Cernea’s concept of collective action and Goulet’s definition of incentives systems as a launch point, perhaps the first step toward decreasing farmer and farmer group vulnerability is to develop a more balanced, flexible, and creative incentive package. Toward this end, giving farmers the opportunity to influence and contribute to this package seems essential. In other words, work with farmers to discover what internal market and non-market incentives are possible in a particular environment and then go about working with local people on ways to build upon local initiatives and market developments. Such creativity and forward thinking will go a long way toward heading off the debilitating effects of dependency before it is given the opportunity to evolve.

10. Recommendations

10.1. To Current Service Providers

1. Study results suggest that farmers are predictably reacting positively to external material incentives, but *when* this flow of incentives is discontinued, it is unclear whether the initiatives launched with these external incentives will be replaced by a set of sustainable internal incentives. By internal, we mean non-material and material incentives originating from within Mbeere, the regional economy, or even East Africa as a whole. There are some findings from this study suggesting that a self-sustaining internal set of incentives is underemphasized and therefore, underdeveloped. In response, a more balanced incentive package emphasizing non-material and internal incentives will provide for the increased possibility of long-term and self-sustaining development. Focusing on education, local income generation, and a generally “judicious, sparing, and flexible use of [material] incentives” (Gregerson, Draper, & Elz, 1989, p. 32) can contribute to this balance.

2. Distinctive gender responses to intervention initiatives are an important finding in this study. In the previous pages we suggest that because of the contemporary development focus on local social units as producers and service providers, women are at risk of becoming even more burdened with responsibility than is already the case. At the same time men are frequently left out of contemporary development initiatives, making the already skewed gender divisions of labour even more problematic. Development agencies must be aware of these polarizing influences and realize

the unmanageable burden placed on people, especially those with limited labour resources, when more and more is asked of them. As a larger issue, the development discourse in Men and Development (MAD), as opposed to Women and Development (WAD) requires more attention as a theoretical avenue to focus in on some of these issues.

3. Extension officers and NGOs can acknowledge and generally enrich their current fields of influence where *formal* actors are providing information and *informal* actors the materials for farm forestry development. We can echo some of den Biggelaar's (1996) recommendations here in saying that links should be created between groups within and between sublocations. These links are crucial to knowledge sharing and the creation of new ideas.

10.2. To Future Service Providers

The second group of people in a position to benefit from these findings are those interested in starting new agroforestry dissemination initiatives across East and Central Africa, namely the *Agroforestry Research Network for East and Central Africa* (AFRENA). There is a movement within AFRENA to make technology transfer programs a part of research activities in every location by providing a "basket" of "technology choices" to farmers (AFRENA, 1996). In terms of farm forestry, this study provides base-line information relevant to activities in Mbeere and the recommendations below suggest possible avenues of future involvement.

1. Generally speaking, by integrating functions and adding expertise, AFRENA can support and strengthen the already existing multi-actor network of agroforestry communication. An acute awareness of what is currently in place, and how farmers are functioning within the network will allow for improved strategic placement to enhance and expand the dissemination of technology alternatives.

2. By providing a basket of technology choices, a major challenge for AFRENA will be to develop, with the involvement of beneficiaries, a creative package of material and non-material, internal and external incentives to support the goal of sustainable agroforestry development. As discussed earlier, those involved in incentive system development will need to address the issue of male and female involvement and what it means to foster a balanced gender approach to agroforestry development. In addition, selected groups that do benefit from some kind of intervention, should not be placed in a position to artificially distort the local seedling economy and restrict the ability of independent nurseries to benefit from the market.

3. AFRENA calls for a strengthening of research - extension linkages and affirmative action (1996, p. 94). From the information provided in this study, we recommend that AFRENA not only focus on research - extension linkages but also focus on strengthening farmer-initiated dissemination

activities especially as it relates to information sharing between farmers. It is clear from this study that, as of now, farmers do not consider other farmers essential actors in the acquisition of new ideas. Yet, when it comes to materials, farmers take care of their own needs. Part of any sustainability objective must include the fostering of social units designed to share information locally, regionally, and perhaps even internationally.

11. Concluding Statement

Before interviewing every farmer, enumerators explained that information collected from them would be used in a report given to organizations in a position to use the information and therefore, eventually, meet farmers' needs more effectively. To the extent that this report informs people about what is happening in Mbeere, and provides avenues to better serve farmers over the long term, we believe this commitment to farmers will be kept. Farmers obviously value trees and are working together to produce them. Intervention of any kind must find ways of facilitating these producers, while at the same time, allowing them to continue to develop what is their own initiative. To confront some of the issues arising from this study will, we hope, bring us closer to understanding how this can be accomplished.

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