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ABSTRACT

This study was an impact assessment of livestock farmer field schools (FFS) in smallholder dairy areas of Nakuru and Nyandarua Districts, Kenya. The study focussed on five main issues viz. effectiveness, sustainability, farmer preferences, and relationships and behaviour, and used a double-blind approach involving comparison of different sources of livestock information and learning, and in which neither the field researchers nor the informants were aware of the study objectives as they related specifically to FFS. By comparing FFS members (n=60) with both non-FFS participants (n=180) in close proximity to FFS and control farmers (n=180) in areas without FFS, the study also investigated the diffusion of FFS, particularly from the perspective of scaling-up the approach. A third aspect of the study involved comparison of cattle-owning households by wealth.

The types of information acquired, practices adopted and impact achieved were similar between control farmers, non-FFS participants and FFS members. In all three of these groups, animal health and fodder production were the most commonly-cited types of information used and applied by farmers. Whereas FFS members attributed this information and practice solely to FFS, non-FFS farmers and control farmers attributed information and practice to various other sources, of which private suppliers, neighbours, government and local faith-based and community-based organisations were most frequently cited. Although the study aimed to investigate farmer’s perceptions by wealth group, in general there were few significant differences between poor, medium and rich farmers with regards their use of, and preferences for, different sources of livestock information and learning.

Based on monitoring data provided by the FFS project, the study indicated that some FFS were still conducting activities more than 30 months after the graduation of FFS participants. These activities included acquisition of funding to continue or expand FFS.

The study found no evidence of diffusion of FFS-related information or practice to non-FFS participants. In a sub-location with 500 cattle-owning households the benefits of FFS were confined to the 25-30 households who participated in the FFS (5% to 6% of cattle-owning households). The study found no evidence of empowering, social network or information sharing benefits of FFS beyond FFS participants. Although a small number of non-FFS farmers and control farmers mentioned these benefits, the benefits were not attributed to FFS.

The weak diffusion of FFS was explained by reference to various research design and implementation issues, and limited technical assessment of different types of, and farmer’s preferences for, livestock-related information and learning in research areas at the start of the research project. Also, limited social analysis at the start of the research resulted in inappropriate restrictions of FFS in terms of the ethnic diversity of membership and benefits.

The research findings supported the recently-updated national extension policy in Kenya which recognizes the importance of pluralism in extension services, and expansion of the private sector with appropriate regulation and quality control. The policy regards FFS as a specialised, location-specific approach rather than an approach for nation-wide application.
1. INTRODUCTION

1.1 Approaches to agricultural extension in Kenya

Since the early 1900s, various agricultural extension approaches and methods have been used in Kenya. Initially, approaches such as individual farm visits, group methods, unified extension, farm management, integrated development and specialized commodity-extension programs were used (Gautam, 2000) and at times, traditional extension methods were very successful. For example, from 1965 a nationwide program of simple demonstration and field days led to the widespread adoption of hybrid maize technology; by 1977 50 per cent of smallholder farmers were growing hybrid maize (Johnson et al., 1980). In the 1970s approaches such as Farmer and Pastoralist Training Centres, and the Whole Farm Extension Approach were used, and between 1982 and 1998 the Training and Visit system was introduced and assessed through the First and Second National Extension Projects, funded primarily by the World Bank. The Training and Visit approach proved to be highly controversial, largely due to the high cost of the system and divergent views on its cost-effectiveness (Gautam, 2000).

In common with other public sector services, throughout the 1980s and 1990s government extension services in Kenya were affected by structural adjustment programmes and increasing government commitment to privatization of agricultural services and suppliers. By the late 1990s, a multitude of government, private sector and civil society actors were providing agricultural information to Kenyan farmers (Rees et al., 2000), and radio and print media, and low cost modern communication technology were being regarded as useful emerging approaches (Gautam, 2000). The declining public sector actors included the government extension service, veterinary services, parastatals and research institutes. In the private sector there was a wide range of individual traders and stockists, trading companies, seed and livestock suppliers, agrochemical and veterinary suppliers, transporters, providers of artificial insemination services and others. In addition, numerous and varied non governmental organizations (NGOs), faith-based groups and community-based organizations (CBOs) were involved in farmer education. The faith-based organisations and and CBOs were particularly numerous and included women’s groups, youth groups, dip committees, water committees, zero-grazing groups, commodity groups and farmer cooperatives. International NGOs such as Christian Aid and CAFOD provided support to faith-based organizations, whereas other international NGOs such as NOVIB and PACT provided capacity-building support to CBOs, focusing on organizational development.

1.2 Impact assessment of farmer field schools: defining the questions

The farmer field school (FFS) is a group-based approach to learning and problem solving. The FFS philosophy and methodology draws heavily on the principles of adult education (Friere, 1968), participatory research (Fernandes and Tandon, 1981) and agroecosystem analysis (Conroy, 1985) and consequently, FFS encourages local, experiential learning under the guidance of a trained facilitator.

The assessment of FFS might involve attention to two broad types of impact. First, FFS could be viewed from the perspective of production-related objectives and the need to enhance the well-being of farmers through higher and safer crop production, achieved through the application of new knowledge, skills or techniques. Within a livelihoods framework these benefits relate mainly to financial capital (e.g. cash income), human capital (e.g. improved human health) and natural capital (e.g. a safer environment). Second, impact can be viewed in terms of the learning process itself and the potential to improve farmer capacity to learn and draw on hitherto under-used sources of information and expertise. Within a livelihoods framework these elements of FFS relate to human and social capital. In line with the poverty reduction goals of aid donors, the livelihoods impact of FFS can also be viewed from the perspective of the impact on poor farmers. Here it is recognized that poor farmers may have priorities and capacities which differ from wealthier or commercially-orientated farmers.
While an understanding of livelihoods impact would be useful in FFS assessment, a second set of questions can be asked about sustainability and scaling-up. These questions recognize the wide range of extension, learning and information methods and sources which are available, actually or potentially, to farmers and the reality that each method has strengths and weaknesses. Within a complex set of informal and formal livestock information actors, the future and wide-scale application of FFS will partly depend on its appropriate positioning within a pluralistic learning and information market place. According to some workers, a particular issue facing FFS is its high cost and concerns that funding constraints will prevent scaling up (e.g. Feder et al., 2004; Tripp et al., 2005). In part, future donor or government financial support to FFS will depend on the diffusion of information and related benefits to non-FFS farmers through farmer-to-farmer contacts.

Sustainability and scaling-up issues can also be considered from a livelihoods perspective. Policy and institutional issues include the policies of the relevant technical ministries, the capacity of government to assist farmers to select appropriate sources of advice and information, and policy coherence between a wide range of governmental, non-governmental and private sector players. Important trends related to livestock information in rural Kenya include the ownership of mobile phones and televisions, the increasing number of FM radio stations broadcasting in local languages, and trends in internet access. Negative trends include the impact of HIV and its effect on agricultural labour, diminishing land holdings and climate change.

1.3 Approaches and methods to assess the impact of FFS

In general, impact assessment is one of the weakest aspects of aid projects and reflects “a growing gap between the rhetoric of agencies and what they actually achieve” (Roche, 1999). Either impact assessment is not conducted, or workers are constrained by a range of methodological and philosophical issues. Many development projects are designed without clear objectives or impact indicators, or an understanding of what “impact” might mean. Despite this situation new development approaches and methods are expanded, sometimes to such a large scale by international agencies, that objective assessment and critique is regarded almost as sacrilege. According to Tripp (2006), this process of uncritical scaling-up applies to small-scale agriculture projects. In comparison, research projects have the potential to generate quantitative data and objective analysis which is often lacking from development projects.

Although FFS have been around since the late 1980s the literature on FFS impact reflects diverse and often opposing opinions, related to an equally diverse set of impact assessment approaches and methods. In part, this situation seems to have arisen because lead actors and researchers in different areas and at different points in time have defined and prioritized the objectives of FFS in different ways. As indicated above, some workers prioritize the production-related aspects of FFS and therefore encourage assessment which focuses on financial assets. Other workers see FFS as an education and specifically, to enhance farmer’s ability to analyze and solve problems.

In common with the assessment of research and development in general, methods vary from simple field observation and review of project documents (usually by external consultants), to elaborate, randomized economic studies with non-FFS villages or areas used as controls. The choice of approach and methods partly depends on the end-users of the assessment, and the type of data and information which these various actors prefer and understand. For example, participatory impact assessment might be highly appropriate for community-based groups due to the use of locally-defined indicators, local verification of data, and analysis and presentation which everyone can follow. Participatory assessment is also relatively inexpensive and produces real-time information. However, the location-specific nature of this approach limits its value in terms of policy debate at national or higher levels. In contrast, highly quantitative approaches are often confined to a specialized technical or professional group who are able to follow the mathematical processes which produces the results. These methodological challenges are not new but in the case of controversial topics, mean that policy dialogue is often de-railed by endless critique of assessment methods.
Livelihoods analysis requires measurement of both qualitative and quantitative variables, and as such, is a useful framework for combining different types of data and information. When looking at the impact of an intervention on livelihoods, it follows that combined methodologies are required. Possible combinations and sequencing of soft/qualitative and hard/quantitative methods have been available for some time (Anon, 1998), and have been used in diverse contexts and sectors (e.g. Barahona and Levy, 2002; Rubyogo et al., 2005).

1.4 Impact assessment of livestock FFS supported by ILRI

1.4.1 The livestock FFS research

Initially running from April 2001 to March 2004, the DFID-funded livestock FFS research in ILRI aimed to establish and test eight FFS in Nyandarua and Nakuru Districts, Kenya (Anon, 2000). Focusing on smallholder dairy farmers, the research hypothesis was that FFS approaches and methods used previously in crop-based FFS could be successfully adapted to address animal health and production problems. The project memorandum proposal identified worm control, tick control and animal nutrition as areas of particular concern (Anon, 2000). In addition to improving the capacity of FFS graduates to make critical and informed decisions related to dairy production and cattle health, the research also aimed to “help farmers organize themselves and their communities, and create a strong working network with other farmers, extension workers and researchers” and suggested that “farmers of both genders directly involved with the project will benefit from better access to information and will transmit their knowledge within their communities and to neighbouring communities”. Assessment of the diffusion of FFS and the use of research findings to promote the wide-scale use of FFS were also considered to be important. For example, the project memorandum stated that the “Wider dissemination of information generated by FFS to other members of the community where FFS are based and the pathways of information exchange will be evaluated” and Output 4 of the project was “Establishment of a plan of action for the large-scale implementation (of FFS) including proposals for the Government of Kenya to seek funding” (Anon, 2000).

1.4.2 Research questions

Section 1.1 above outlines three main groups of questions concerning the impact of FFS: impact on assets; the sustainability and scaling-up of FFS; and the value of FFS as a poverty-focused intervention. In addition, section 1.2 indicates a need to explore methodological complementarity and test impact assessment design and methods which combine participatory and quantitative approaches. With these issues in mind, we worked with ILRI staff in March 2005 to identify six core questions for an impact assessment of the DFID-funded livestock FFS.

1. Compared with other extension approaches and with particular attention to the level of external inputs required, how effective is the livestock FFS at turning information into knowledge, and knowledge into practice among poor farmers?

2. Compared with other extension approaches, what is the actual or predicted longevity of the:
   - information acquired by farmers participating in the livestock FFS?
   - FFS as a functional entity?

3. How has the establishment of a FFS affected FFS and non-FFS participant’s relationships with the broad range of formal and informal extension actors, in terms of both the strength and the specific characteristics of these relationships?

4. Which formal and informal extension methods and information sources are preferred by FFS and non-FFS participants, how have these preferences changed over time and what is the reasoning behind these preferences?
5. What are the key behavioural changes among FFS and non-FFS participants and other actors which can be attributed to the livestock FFS, with particular reference to community-level capacity for innovation?

6. How useful is the applied impact assessment methodology for answering the above questions, and what methodological refinements are required in future assessments?
2. METHODS

2.1 Study areas: general district-level characteristics

The study was conducted in both districts, Nakuru and Nyandarua, covered by the DFID-funded livestock FFS research. These districts are part of the greater Nairobi milk-shed and support mixed farming systems which in terms of land use, can be classified as coffee/dairy, horticulture/dairy, tea/dairy, sheep/dairy and wheat/dairy (Baltenweck et al., 1998). Therefore smallholder dairy production is a component of all systems.

Within the smallholder dairy sector, production systems vary according to key resource constraints in different areas. Therefore, where limited availability of land is a key problem, zero grazing systems are used and dairy cattle are stall-fed using crop residues and cultivated fodder (especially Napier grass). In contrast, farmers with more land but less labour may opt for grazing systems or combined grazing/stall-fed systems (Staal et al., 2003). Mean land holdings range from around 1.4 hectares in zero-grazed dairy systems to around 4.9 hectares in more extensive systems. A general and important trend is greater intensification of dairy production, associated primarily with reduced land holdings (Staal et al., 2001).

2.2 Study design

2.2.1 Comparison of different sources of livestock information and learning

A double-blind study design was used in which neither the field researchers nor informants were aware of the study objectives as they related specifically to FFS. Given the lack of an absolute quantitative standard for the measurement of FFS impacts, we used a comparative approach which required informants to compare different sources of livestock information and learning. Therefore, both field researchers and informants were advised that the study objective was to understand the strengths and weaknesses of different types of livestock information and learning, rather than FFS per se.

Table 2.1 summarises the six sources of livestock information and learning which were compared with FFS. These sources were identified by the researchers by reference to the literature on agricultural knowledge and information systems in Kenya (e.g. Rees et al. 2000) and from personal field experience.

Table 2.1
Sources of livestock information and learning used in the comparative assessment of FFS

<table>
<thead>
<tr>
<th>Source</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government extension service</td>
<td>The range of extension services and programmes provided by government, including the National Agriculture and Livestock Extension Programme but excluding FFS.</td>
</tr>
<tr>
<td>Radio/media</td>
<td>General or agriculture/livestock specific radio programmes</td>
</tr>
<tr>
<td>Neighbours</td>
<td>Neighbours in the village or sub-location</td>
</tr>
<tr>
<td>Private sector suppliers</td>
<td>The range of private sector suppliers, including suppliers of dairy equipment, veterinary drugs or other agricultural supplies</td>
</tr>
<tr>
<td>Dairy companies</td>
<td>Private milk marketing companies</td>
</tr>
<tr>
<td>Other</td>
<td>To be specified by informants, but could include local church-based organisations</td>
</tr>
</tbody>
</table>
2.2.2 Impact of FFS on non-FFS participants

Discussions with ILRI staff indicated that catchment areas for each livestock FFS had not been defined for the research. Therefore, following discussion with ILRI staff we used sub-locations as appropriate administrative areas for which a reasonable level of diffusion of livestock FFS information and impact might be expected. This assumption was based on sub-location data provided by the Biometrics Department at ILRI which indicated that the average area of a sub-location in Nakuru and Nyandarua Districts is 46.2 square kilometres (equivalent to a circular area of radius 3.8 kilometres) and the number of households in a sub-location ranged from about 570 to 1700 households. Furthermore, using sub-location household numbers we calculated that on average, households were approximately 230 metres apart. In reality, many households were likely to be clustered in villages, with less distance between households. Given this level of proximity, we assumed that information flow would not be restricted by physical barriers between households.

To assess the impact of livestock FFS impact on non-FFS participants, we selected informants who were livestock FFS members and compared their responses with non-livestock FFS farmers. We further cross-checked the responses of non-livestock FFS farmers by comparison with farmers in control sub-locations. Control sub-locations were defined as sub-locations with the same poverty and agro-ecological characteristics as livestock FFS sub-locations, but without livestock FFS and physically separated from livestock FFS sub-locations by at least one other non-FFS sub-location.

2.2.3 FFS impact by wealth group

The DFID-funded livestock FFS research aimed to work with moderately poor farmers and focussed on smallholder dairy systems (Anon, 2000). Therefore, we compared responses from different wealth groups of cattle-owning households. The wealth groups were defined during preliminary visits to the study locations designed specifically for this purpose, and to pre-test the participatory methods used in the study (see section 2.4.3). Farmers were asked to describe and explain their perceptions of wealth, and identify distinctive wealth categories. Using this approach, it became evident that cattle ownership was a major determinant of local wealth categories as follows: farmers with up to two cattle were regarded as “low income”; farmers with three to five cattle were “middle income”; farmers with more than five cattle were “high income”. This apparently low wealth differential in these districts and the importance of cattle as a measure of wealth agreed with poverty assessments conducted in Kenya in the later 1990s (Ministry of Finance and Planning, 2000).

2.2.4 Comparative assessment of costs

Question 1 (section 1.3.2) specified a comparative assessment of FFS based on the external inputs required. Using data on the coverage of livestock FFS derived from the study, and by reference to the literature on other sources of information and learning, we estimated the cost of scaling-up FFS in a hypothetical rural district with similar smallholder dairy systems and human population to the study districts.

2.3 Sampling

2.3.1 Study locations

The livestock FFS research aimed to establish and test eight FFS (four FFS in Nakuru District and four FFS in Nyandarua District). From a list of all eight FFS, we randomly selected two FFS from each district and identified their corresponding sub-locations. To identify four control sub-locations (one for each FFS sub-location) we used maps produced by the Biometrics Department at ILRI which showed sub-locations, agro-ecological zones and poverty levels. For each of the FFS sub-locations, a control sub-location was identified with the same agro-ecological zone and the same poverty level as the corresponding FFS sub-location. In addition, the control sub-location was separated spatially from the FFS sub-location by at least one other non-FFS sub-location.
Characteristics of FFS and control sub-locations are shown in Table 2. For all four FFS in the FFS sub-locations, graduation occurred in March 2003 (30 months before the onset of the study).

<table>
<thead>
<tr>
<th>District</th>
<th>FFS sub-locations</th>
<th>Control sub-locations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sub-location</td>
<td>Poverty level (%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nakuru</td>
<td>Sirikwa</td>
<td>30-40</td>
</tr>
<tr>
<td></td>
<td>Kamungeti</td>
<td>30-40</td>
</tr>
<tr>
<td>Nyandarua</td>
<td>Mavingo</td>
<td>0-30</td>
</tr>
<tr>
<td></td>
<td>Tulaga</td>
<td>30-40</td>
</tr>
</tbody>
</table>

AEZ – agroecological zone; UH - Upper Highland; LH - Lower Highland. The ILRI Biometrics Department uses five categories of poverty, expressed as proportion of poor people viz. 0-30%, 30-40%, 40-45%, 45-50% and >50%.

2.3.2 Sample sizes

The total number of non-FFS informants to be sampled in an FFS sub-location was determined by assuming a 95% confidence level that at least one in 15 non-FFS cattle-owning households used at least one type of information or practice derived from FFS. We used the following formula to calculate sample size (Dohoo et al., 2003):

\[ n = \frac{1-(1-CL)^{1/D}}{N- (D-1/2)} \]

Where: 
N=average number of households in a sub-location, 
D=minimum number of non-FFS members using FFS information, 
n=sample size and 
CL=confidence level

This calculation indicated that 43 non-FFS households should be sampled in each FFS sub-location. We rounded this figure up to 45 households and matched this sample with an equal number of farmers in the control sub-locations. We chose not to apply this sample size to each wealth group because we did not have data on the number of households in each wealth group, the wealth differential was low (see section 2.2.3), and time and resource constraints prevented a study involving more than about 50 households per sub-location.

We then stratified the sample by three wealth groups, and aimed to sample approximately 15 households in each wealth group. To determine the sample size for FFS members, we assumed that an FFS produced 30 graduates and according to our judgement, aimed to sample 50% of all FFS members, equivalent to 15 FFS members per FFS sub-location. For sampling purposes, FFS member were not characterised by wealth. However, the wealth group of FFS members was recorded during the informant interviews.

At sub-location level lists of households were not available from ILRI or in the offices of local extension workers or government administrators. Initially, the field team tried to work with government extension officers to develop a sampling frame, but this proved to be difficult because these officers repeatedly wanted to direct the team to their contact farmers. The field team then approached local chiefs, who were able to name all the villages in a sub-location and in each village, suggest households represent of the three wealth groups described in section 2.2.3 above. Therefore, the team visited each village and selected households from the lists provided by the Chiefs.

For the selection of FFS members, the field team were provided with a list of all FFS members and asked to randomly select 15 members from the list. These lists did not specify that people were FFS members.
Table 2.3
Sample sizes by sub-location and informant type

<table>
<thead>
<tr>
<th>District</th>
<th>Sub-location (number of FFS graduates)</th>
<th>Number of informants</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>FFS non-members</td>
</tr>
<tr>
<td>Nakuru</td>
<td>Sirikwa (22)</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>Cheptagum (na)</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>Kamungei (25)</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>Sumeek (na)</td>
<td>45</td>
</tr>
<tr>
<td>Nyandarua</td>
<td>Mawingo (28)</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>Lesirko (na)</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>Tulaga (28)</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>Kiteri (na)</td>
<td>45</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>360</td>
</tr>
</tbody>
</table>

na – not applicable

2.4 Data collection methods

A semi-structured interview was used to collect information from individual informants. The interview was structured around two participatory methods viz. matrix scoring and radar diagrams.

2.4.1 Matrix scoring

The matrix scoring method was adapted from the method described by Admassu et al. (2004), which was designed for use with both literate and illiterate informants. The six control sources of livestock information and learning (Table 2.4) and FFS were represented on pieces of card using simple line drawings. The meaning of each picture was explained to the informants by the field researchers, and their understanding was cross-checked by asking them to explain these meanings back to the researchers; the cards were placed in a row on the ground.

The researchers identified 12 indicators for the assessment of the seven sources (Table 2.4). The indicators were also represented using simple line drawing on pieces of card, and the meaning of each indicator was explained to the informants.

The researchers selected one of the indicators and placed it adjacent to the row of sources. The informant was given a pile of 30 counters and requested to show the relationship between the indicator and the sources by dividing the stones. Informants were advised that the stronger the relationship between the indicator and a source, the more counters to be assigned to it. Informants were also advised to use all the counters. After an informant had scored the seven sources they were asked questions to check that they were content with their scores, and they were given an opportunity to change the scores if they wished. Using the same scoring procedure each indicator was added to the matrix and scored in turn, resulting in a matrix with seven sources along the top x-axis and 12 indicators down the left-hand y-axis.

The completed matrix was used as the basis for further discussion, prompted by open and probing questions. Informants were asked to explain the reasoning behind their scores, provide examples to illustrate the scores, and where relevant, provide quantitative information.

Data was analysed using the Statistical Package for the Social Sciences (SPSS) version 12 (SPSS, 2003). The data was tested for Normal distribution using plots of expected cumulative proportion against observed cumulative proportion (P-P Plots). Differences in scores by wealth group were assessed by
plotting mean scores and 95% confidence intervals (95% CI), and checking the plots for overlapping 95% CI between wealth groups.

It can be noted that the matrix scoring method produced two main types of data. First, the matrix scores represented the relative importance of each source for each indicator. This data was summarised as the mean score and 95% CI for each indicator by source. Second, specific examples of livestock-related information, practice or impact were provided by farmers and attributed to specific sources during follow-up questioning (see Table 2.4). By reference to figures on the number of households per sub-location (provided by ILRI) and by assuming that 40% of households owned cattle (Staal et al., 2001), this data was summarised as the proportion of cattle-owning households in all study locations citing a particular type of information, practice or impact by source.

<p>| Table 2.4 |</p>
<table>
<thead>
<tr>
<th>Indicator used in the matrix scoring method</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Indicator</strong></td>
</tr>
<tr>
<td>“This source gives me useful information which I can understand and remember”</td>
</tr>
<tr>
<td>“I’ve actually used the techniques suggested by this source”</td>
</tr>
<tr>
<td>“All of the farmers in the village are benefiting from this source”</td>
</tr>
<tr>
<td>“This source gives me confidence to seek advice from livestock experts”</td>
</tr>
<tr>
<td>“In the last five years this source has had a positive impact on my life”</td>
</tr>
<tr>
<td>“This source is near to me, here in the village or in my house”</td>
</tr>
<tr>
<td>“This source is always around and lasts a long time”</td>
</tr>
<tr>
<td>“This way of getting information is affordable for me”</td>
</tr>
<tr>
<td>“This source is acceptable to me”</td>
</tr>
<tr>
<td>“This source is available at a time which is convenient”</td>
</tr>
<tr>
<td>“I can only use this source if I belong to a group”</td>
</tr>
<tr>
<td>“This is my overall preference for the different sources”</td>
</tr>
</tbody>
</table>

2.4.2 Radar diagrams

The radar diagram method was used to explore relationships between informants and sources over time, and was adapted from the method described by Rifkin et al. (1988), and Kanji and Greenwood (2001). A diagram comprising seven spokes – one spoke for each source – was drawn on to a piece of card. Each spoke was divided into 10 equal but un-numbered graduations. Using bottle tops, informants were asked to position the bottle tops on each spoke (source) to depict the strength of
their relationship with each source at two points in time viz. “in 2001” and “now”. Informants were then asked to explain why relationships had changed over time, or why no change had taken place.

Data from the radar diagrams was handled in a similar way to that obtained from matrix scoring. The data was first tested for Normality using P-P plots in SPSS software and if judged to be normally distributed, was summarised using mean scores and 95% CI. Differences in scores between 2001 and 2005 for each source were assessed using the paired samples $t$-test in SPSS software. Differences in scores between sources were assessed using the $t$-test for independent samples in SPSS software.

2.4.3 Pre-testing

The matrix scoring and radar diagram methods were pre-tested over a two-week period in August 2005 during visits to Sirikwa, Kamungei, Lesirko, Mawingo and Njambini sub-locations. Twenty farmers were involved in the pre-testing. The pre-testing process focussed on the specificity of the six non-FFS sources of livestock information/learning used in the matrix scoring and radar diagrams (Table 2.1), and involved discussions with farmers to clarify the descriptions of these sources. In some cases, and particularly for the source “government”, clarification of the sources involved identification of the various programmes implemented by government services (extension services and other government departments).

2.5 Triangulation

In participatory impact assessment “triangulation” is the process of cross-checking local perceptions using secondary data and/or conventional research methods. In many rural development projects, the most readily available and relevant secondary data is the project’s own monitoring data, which records project activities and systematically measures impact on project beneficiaries over time. When viewed from a research perspective, this kind of monitoring has similarities with a longitudinal study.

In the methodology for the FFS study, triangulation using research s monitoring data was considered to be an important component of the assessment methodology. It was anticipated that the double-blind study design would limit the capacity of the researchers in the field to conduct a detailed examination of each FFS because the researchers were not aware of the specific objectives of the study. Nor were they aware that a particular informant was an FFS member unless the informant volunteered this information. Therefore, it was recognised that the researchers would not seek information on FFS in any greater detail than any of the other sources of livestock learning and information used in the study.

For these reasons, we intended to use research monitoring data to examine the activities of FFS members and the types of information or practice they were using as a result of FFS; this need related primarily to question 1 and was an opportunity for partial cross-checking of results produced by matrix scoring. We also assumed that research monitoring data might provide insights into behavioural change of FFS members; this relates to question 5. Considering the need to examine impact issues from a livelihoods perspective, we were particularly interested in the activities of individual FFS members.

The use of research monitoring data for triangulation is summarised in Table 2.5, together with an overview of the use if specific methods and indicators to address specific study questions.
### Table 2.5
Summary of methodology and triangulation for study question

<table>
<thead>
<tr>
<th>Question</th>
<th>Methods and triangulation</th>
</tr>
</thead>
</table>
| 1. Compared with other extension approaches and with particular attention to the level of external inputs required, how effective is the livestock FFS at turning information into knowledge, and knowledge into practice among poor farmers? | Matrix scoring and follow-up questioning of the following indicators:  
 "This source gives me useful information which I can understand and remember"  
 "I’ve actually used the techniques suggested by this source"  
 Results to be triangulated with ILRI FFS monitoring data on activities of individual FFS members for the four FFS in the study.  
 To assess affect of FFS on non-FFS members, the following indicator was used:  
 "All of the farmers in the village are benefiting from this source"  
 To assess external inputs, cost estimates for different types of extension method were compared. |
| 2. Compared with other extension approaches, what is the actual or predicted longevity of the information acquired by farmers participating in the livestock FFS and FFS as a functional entity? | Longevity relates to indicators of sustainability and therefore the following matrix scoring indicators were used:  
 "This source is near to me, here in the village or in my house"  
 "This source is always around and lasts a long time"  
 "This way of getting information is affordable for me"  
 "This source is acceptable to me"  
 "This source is available at a time which is convenient"  
 It was also assumed that longevity/sustainability also depends on perceptions of impact, and that a high impact source is likely to last longer than a low impact source. Therefore, the following matrix scoring indicators was used:  
 "In the last five years this source has had a positive impact on my life"  
 Results to be triangulated with ILRI FFS monitoring data on activities of individual FFS members for the four FFS in the study. |
| 3. How has the establishment of a FFS affected FFS and non-FFS participant’s relationships with the broad range of formal and informal extension actors, in terms of both the strength and the specific characteristics of these relationships? | For FFS members, use of radar diagrams to assess changing relationships over time; results to be triangulated with ILRI FFS monitoring data on activities of individual FFS members for the four FFS in the study.  
 For non-FFS participants, comparison of matrix scoring and radar diagrams results from control farmers and non-FFS participants; assume that if FFS has no impact on non-FFS participants, results of control farmers and non-FFS participants will not be statistically different. |
| 4. Which formal and informal extension methods and information sources are preferred by FFS and non-FFS participants, how have these preferences changed over time and what is the reasoning behind these preferences? | The following matrix scoring indicator was used:  
 "This is my overall preference for the different sources"  
 The results were compared with the results from question 1, 2 and 3 to explain the reasoning behind the preferences, and with the results of radar diagrams. |
| 5. What are the key behavioural changes among FFS and non-FFS participants and other actors which can be attributed to the livestock FFS, with particular reference to community-level capacity for innovation? | The following matrix scoring indicator was used:  
 "This source gives me confidence to seek advice from livestock experts"  
 Results were compared with radar diagrams for both FFS and non-FFS participants.  
 For FFS participants, results to be triangulated with ILRI FFS monitoring data on activities of individual FFS members for the four FFS in the study. |
3. RESULTS

The initial analyses focussed on exploration of the data from matrix scoring and radar diagrams in terms of differences by wealth group. In general, very few significant differences were detected and therefore most of the results presented in this section are the combined results from all three wealth groups. Significant differences between wealth groups are also presented in the relevant subsections.

3.1 Information dissemination, uptake of practices and cost

This section relates primarily to question 1 of the study.

3.1.1 FFS as a source of information compared with non-FFS sources

Farmer’s perceptions of the value of livestock-related information from different sources are shown in Figure 3.1. There were no significant differences between control farmers and non-FFS farmers for any source apart from radio/media, which was scored significantly higher by control farmers.

Figure 3.1
Farmer’s assessment of different sources of livestock information/learning using the indicator “This source gives me useful information which I can understand and remember”

![Diagram showing mean score and 95% confidence interval for different sources of information, with FFS members scoring significantly lower than control farmers and non-FFS members.]

Notes for Figure 3.1
Data derived from double-blind matrix scoring of seven sources of livestock information, including FFS. Control farmers n=180, non-FFS members n=180, FFS members n=60. “Other” sources were primarily local faith-based organisations, local NGOs and “merry-go-round” schemes.

Private suppliers and neighbours received the highest scores from these informant groups, and FFS received the lowest scores.

Among FFS farmers, FFS was scored significantly higher than any other source of information and exceeded the scores for any source from control farmers and non-FFS members. FFS farmers scored dairy companies, radio/media, government, neighbours, private suppliers and other sources significantly lower than either non-FFS members or control farmers.
Specific types of information mentioned by informants during the follow-up questioning after matrix scoring are shown in Table 3.1. The most commonly-cited types of information related to fodder production, the diagnosis and treatment of disease, and calf feeding and rearing.

Table 3.1
Types of information cited by farmers

<table>
<thead>
<tr>
<th>Type of information</th>
<th>Number (proportion) of informants</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>FFS (n=60)</td>
</tr>
<tr>
<td>Better production techniques</td>
<td>8 (13.3%)</td>
</tr>
<tr>
<td>Breed upgrading through AI services</td>
<td>5 (8.3%)</td>
</tr>
<tr>
<td>Free-range grazing can lead to disease</td>
<td>1 (1.7%)</td>
</tr>
<tr>
<td>Group formation and management</td>
<td>1 (1.7%)</td>
</tr>
<tr>
<td>How to grow and store fodder</td>
<td>30 (50.0%)</td>
</tr>
<tr>
<td>I learned calf feeding and rearing</td>
<td>13 (21.7%)</td>
</tr>
<tr>
<td>How to diagnose/treat disease</td>
<td>21 (35.0%)</td>
</tr>
<tr>
<td>I learned how to feed my animals</td>
<td>8 (13.3%)</td>
</tr>
<tr>
<td>I learned how to wash animals</td>
<td>3 (5.0%)</td>
</tr>
<tr>
<td>I learned tick control techniques</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>Learned better animal health skills</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>Marketing and pricing of milk and animals</td>
<td>1 (1.7%)</td>
</tr>
<tr>
<td>Worm control</td>
<td>0 (0.0%)</td>
</tr>
</tbody>
</table>

Notes for Table 3.1
Specific types of information were cited by informants following matrix scoring of the indicator “This source gives me useful information which I can understand and remember” and attributed to specific sources. FFS members attributed types of information only to FFS. Non-FFS members and control farmers attributed types of information to all sources other than FFS.

3.1.2 FFS and farmer practices compared with non-FFS sources

Farmer’s perceptions of the value of different sources for encouraging livestock-related practice are shown in Figure 3.2.

Figure 3.2
Farmer’s assessment of different sources of livestock information/learning using the indicator “I’ve actually used the techniques suggested by this source”
Notes for Figure 3.2
Data derived from double-blind matrix scoring of seven sources of livestock information, including FFS. Control farmers n=180, non-FFS members n=180, FFS members n=60. “Other” sources were primarily local faith-based organisations, local NGOs and “merry-go-round” schemes.

There were no significant differences between control farmers and non-FFS farmers for FFS, dairy companies, government or private suppliers. Control farmers scored neighbours significantly higher than non-FFS members, whereas non-FFS members scored other sources significantly higher than control farmers. For both informant groups, neighbours and private suppliers received the highest scores.

Among FFS farmers, FFS was scored significantly higher than any other source with regards practice, and exceeded the scores for any source from control farmers and non-FFS members. FFS farmers scored radio/media, neighbours and private suppliers significantly lower than either non-FFS members or control farmers.

Specific types of practice mentioned informants are shown in Table 3.2. The most commonly-cited types of practice were use of fodder production, and the diagnosis and treatment of disease.

Table 3.2
Types of practice cited by informants

<table>
<thead>
<tr>
<th>Type of practice</th>
<th>FFS members (n=60)</th>
<th>Non-FFS members (n=180)</th>
<th>Control farmers (n=180)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I have improved milk production using new skills</td>
<td>3 (5.0%)</td>
<td>22 (12.2%)</td>
<td>21 (11.7%)</td>
</tr>
<tr>
<td>I made a zero-grazing unit</td>
<td>1 (1.7%)</td>
<td>5 (2.8%)</td>
<td>7 (3.9%)</td>
</tr>
<tr>
<td>I started keeping records of production</td>
<td>4 (6.7%)</td>
<td>11 (6.1%)</td>
<td>12 (6.7%)</td>
</tr>
<tr>
<td>I trimmed the hooves of my cow.</td>
<td>7 (11.7%)</td>
<td>10 (5.6%)</td>
<td>5 (2.8%)</td>
</tr>
<tr>
<td>I use method of calf delivery and rearing</td>
<td>4 (6.7%)</td>
<td>3 (1.7%)</td>
<td>7 (3.9%)</td>
</tr>
<tr>
<td>I use new ways for marketing milk and animals</td>
<td>1 (1.7%)</td>
<td>6 (3.3%)</td>
<td>10 (5.6%)</td>
</tr>
<tr>
<td>I used AI services</td>
<td>3 (5.0%)</td>
<td>42 (23.3%)</td>
<td>35 (19.4%)</td>
</tr>
<tr>
<td>I used new foder preparation methods for my animals</td>
<td>39 (65.0%)</td>
<td>90 (50%)</td>
<td>69 (38.3%)</td>
</tr>
<tr>
<td>I used new skills on diagnosis and treatment of disease</td>
<td>30 (50.0%)</td>
<td>116 (64.4%)</td>
<td>85 (47.2%)</td>
</tr>
<tr>
<td>I used skills of control of mastitis</td>
<td>2 (3.3%)</td>
<td>10 (5.6%)</td>
<td>9 (5.0%)</td>
</tr>
<tr>
<td>I use dung to make manure</td>
<td>0 (0.0%)</td>
<td>5 (2.8%)</td>
<td>1 (0.6%)</td>
</tr>
</tbody>
</table>

Notes for Table 3.2
Specific types of practice were cited by informants following matrix scoring of the indicator “I’ve actually used the techniques suggested by this source” and attributed to specific sources. FFS members attributed types of practice to FFS. Non-FFS members and control farmers attributed types of practice to all sources other than FFS.

3.1.3 The diffusion of FFS compared with non-FFS sources

Farmer’s perceptions of the diffusion of FFS are illustrated in Figure 3.3. There were no significant differences between control farmers and non-FFS farmers for any source apart from radio, which was scored significantly higher by control farmers. Neighbours and private suppliers received the highest scores, and FFS was received the lowest scores. Among FFS members, FFS received the lowest score for the diffusion indicator and FFS was scored significantly lower than government, neighbours or private suppliers.
Notes for Figure 3.3
Data derived from double-blind matrix scoring of seven sources of livestock information, including FFS. Control farmers n=180, non-FFS members n=180, FFS members n=60. “Other” sources were primarily local faith-based organisations, local NGOs and “merry-go-round” schemes.

Follow-up questioning after matrix scoring encouraged farmers to attribute information, practice and impact to specific sources. The proportions of cattle-owning households attributing information, practice and impact to different sources are shown in Table 3.3.

In both control sub-locations and FFS sub-locations, attribution of information and practice was significantly higher than FFS for radio/media, government, neighbours, private suppliers and other sources (Chi-square p<0.001 for information and practice, for each source). Compared with FFS, impact attributable to government, neighbours, private suppliers and other sources was significantly higher in both control and FFS sub-locations (Chi-square p<0.001 for impact for each source). In FFS sub-locations, only FFS participants attributed information, practice or impact to FFS.

In control sub-locations, neighbours were considered to be a significantly better source of information and practice than in FFS sub-locations (Chi-square p<0.001), although there was no significant difference in the attribution of impact from neighbours in control and FFS sub-locations.

A high proportion of farmers (35.6%) attributed impact to dairy companies in FFS sub-locations, and this attribution was significantly higher than control sub-locations (Chi-square p<0.001).
Table 3.3
Farmer’s attribution of information, practice and impact to different sources of livestock information and learning

<table>
<thead>
<tr>
<th>Source and indicator</th>
<th>Proportion (%) of cattle-owning households</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Control sub-locations</td>
</tr>
<tr>
<td>Livestock FFS</td>
<td></td>
</tr>
<tr>
<td>- information</td>
<td>0.0</td>
</tr>
<tr>
<td>- practice</td>
<td>0.0</td>
</tr>
<tr>
<td>- impact</td>
<td>0.0</td>
</tr>
<tr>
<td>Dairy companies</td>
<td></td>
</tr>
<tr>
<td>- information</td>
<td>2.8</td>
</tr>
<tr>
<td>- practice</td>
<td>3.3</td>
</tr>
<tr>
<td>- impact</td>
<td>2.2</td>
</tr>
<tr>
<td>Radio/media</td>
<td></td>
</tr>
<tr>
<td>- information</td>
<td>17.3</td>
</tr>
<tr>
<td>- practice</td>
<td>12.2</td>
</tr>
<tr>
<td>- impact</td>
<td>2.8</td>
</tr>
<tr>
<td>Government</td>
<td></td>
</tr>
<tr>
<td>- information</td>
<td>17.2</td>
</tr>
<tr>
<td>- practice</td>
<td>31.7</td>
</tr>
<tr>
<td>- impact</td>
<td>33.9</td>
</tr>
<tr>
<td>Neighbours</td>
<td></td>
</tr>
<tr>
<td>- information</td>
<td>37.8</td>
</tr>
<tr>
<td>- practice</td>
<td>45.0</td>
</tr>
<tr>
<td>- impact</td>
<td>21.1</td>
</tr>
<tr>
<td>Private suppliers</td>
<td></td>
</tr>
<tr>
<td>- information</td>
<td>48.3</td>
</tr>
<tr>
<td>- practice</td>
<td>40.0</td>
</tr>
<tr>
<td>- impact</td>
<td>36.1</td>
</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
<tr>
<td>- information</td>
<td>14.5</td>
</tr>
<tr>
<td>- practice</td>
<td>12.8</td>
</tr>
<tr>
<td>- impact</td>
<td>47.8</td>
</tr>
</tbody>
</table>

* These figures were derived only from FFS members; non-FFS participants did not attribute any information, practice or impact to FFS. Similarly, FFS members did not attribute information, practice or impact to non-FFS sources.

Figure 3.4 and 3.5 illustrate livestock FFS diffusion in terms of the specific types of useful, memorable information (matrix scoring indicator 1) and practice (matrix scoring indicator 2) respectively.
Figure 3.4  
Attribution of different types of information to FFS and non-FFS sources

Notes for Figure 3.4
Data derived from asking farmers to name specific types of information after conducting double-blind matrix scoring using the indicator “This source gives me useful information which I can understand and remember”. The types of information are as cited by farmers, and translated as literally as possible. Consequently, there are some overlaps e.g. worm control could be categorised with better animal health skills or learning about disease diagnosis or treatment.
Figure 3.5
Attribution of different types of practice to FFS and non-FFS sources

Notes for Figure 3.5
Data derived from double-blind matrix scoring of seven sources of livestock information/learning, including FFS. After scoring the indicator “I’ve actually used the techniques suggested by this source”, farmers were asked to provide specific examples of practice to illustrate their scores. The types of practice are as cited by farmers, and translated as literally as possible. Consequently, there are some overlaps e.g. mastitis control could be categorised as new skills on diagnosis/treatment.
### 3.1.4 Differences in information, practice and diffusion by wealth group

The matrix scoring results presented in sections 3.1.1 to 3.1.3 were derived from three indicators (Table 2.4). If differences between three wealth groups by source and informant type are calculated, 189 differences are possible. However, significant differences by wealth group were detected only four times. These differences are shown in Table 3.4.

**Table 3.4** Differences in scores by wealth group for impact and coverage indicators

<table>
<thead>
<tr>
<th>Informant type</th>
<th>Source</th>
<th>Indicator</th>
<th>Wealth groups</th>
<th>Difference in mean scores (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-FFS farmers</td>
<td>Government</td>
<td>Information</td>
<td>High vs. low</td>
<td>5.55 (1.77, 5.34)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Practice</td>
<td>High vs. low</td>
<td>4.15 (2.03, 6.27)</td>
</tr>
<tr>
<td>FFS farmers</td>
<td>Other*</td>
<td>Coverage</td>
<td>Low vs. high</td>
<td>5.81 (1.37, 6.26)</td>
</tr>
<tr>
<td></td>
<td>Radio</td>
<td>Information</td>
<td>Low vs. medium</td>
<td>2.52 (0.85, 4.19)</td>
</tr>
</tbody>
</table>

* *Other* sources were primarily local faith-based organisations, local NGOs and “merry-go-round” schemes.

### 3.1.5 External inputs required for FFS compared with other sources

This section relates specifically to question 1 and the issue of external inputs. Using a hypothetical district comprising sub-locations with similar agro-ecological and socio-economic conditions to the study sub-locations, we compared the external costs of delivering cattle-related information using different methods. Our assumptions for the district were as follows:

- the district had 100,000 households and 40% of households owned cattle (from Staal et al., 2001);
- there were 120 sub-locations in the district;
- four topics were to be covered (based on data from this study in which no FFS member cited more than four types of information derived from FFS);
- the delivery target was 50% of cattle-owning households.

The aim of the cost comparison was to produce an order-of-magnitude comparison rather than precise costs. Information was drawn from the current study and three DFID-funded projects on radio programmes, the use of diagrammatic handouts, and the use of community-based animal health workers (CAHWs). Results are presented in Table 3.5.
Table 3.5
Cost comparisons for different sources of information and learning on livestock

<table>
<thead>
<tr>
<th>Source of information or learning</th>
<th>Assumptions</th>
<th>Cost($) /district</th>
</tr>
</thead>
</table>
| Livestock FFS                    | • The cost varies from $30 to $50 per farmer (Braun et al., 2005)
• An FFS covers up to four topics (this study)
• Diffusion between FFS members and non-FFS farmers does not occur (this study) | $0.6 million to $1 million |
| Radio programs                   | • Current proportion of ~18% of farmers valuing radio information (this study, Figure 3.3) can be increased to 50% of farmers by improvements in radio program content, design, timing and use of local languages.
• Each topic requires four 15-minute programs dedicated entirely to that topic; a total of 16 15-minute programs are needed
• The programs are broadcast on prime-time KBC, costing $1400 per 15 minutes (Lloyd-Morgan, personal communication)
• Each program costs $700 to produce (Lloyd-Morgan, personal communication) | $33,600\(a\) |
| Diagrammatic handouts            | • One handout is required for each of the four topics.
• A handout consists of three double-sided A4 size sheets with text and black-and-white illustrations (Bell et al., 2005)
• 20,000 copies of each handout are photocopied, costing $0.35 per handout
• Delivery costs to local organisations in each sub-location costs $500; dissemination within a sub-location involves no cost | $31,000 |
| Community-based animal health workers | • One CAHW is needed to cover a sub-location and the extension activities of CAHWs are as defined by the Ministry of Livestock and Fisheries Development (2005).
• 50% of cattle-owners use CAHWs; other cattle owners use other animal health service providers
• Each CAHW costs $300 to train and equip with an initial kit of veterinary drugs and basic equipment (Catley et al., 2005); thereafter, CAHWs are self-sustaining (Rubyogo et al., 2002)
• The CAHWs are trained according to the guidelines of the Kenya Veterinary Board | $36,000\(b\) |

\(a\) This is an over-estimate because the radio programs would also reach many other districts
\(b\) This is an over-estimate because CAHWs could provide information on more than four topics. However, this intervention is theoretical because government policy limits CAHW activities in high-potential areas.

3.2 Sustainability of FFS compared with non-FFS sources

This section relates primarily to question 2 of the study.

3.2.1 Assessment of service indicators

The matrix scoring results for the five indicators of service provision are shown in Figures 3.6 to 3.8.
Figure 3.6
Service indicators for sources of livestock information and learning as perceived by FFS members (n=60)

Notes for Figure 3.6
Data derived from double-blind matrix scoring of seven sources of livestock information, including FFS. “Other” sources were primarily local faith-based organisations, local NGOs and “merry-go-round” schemes.

For FFS farmers (Figure 3.6), relatively high scores were assigned to FFS for all five service indicators. There was no significance difference between FFS and neighbours in terms of accessibility, affordability and convenience, and neighbours were significantly more available. Despite this, neighbours were significantly less acceptable to FFS members. Government received relatively high scores for availability and acceptance, whereas private suppliers received relatively high scores for accessibility, availability and convenience.

The scoring of service indicators was similar for non-FFS farmers and control farmers (Figures 3.7 and 3.8). Overall, neighbours received the highest set of scores, followed by private suppliers and government. Private suppliers were accessible and convenient, but not very affordable or acceptable. In contrast, government was very acceptable, but not very accessible, affordable or convenient.
Figure 3.7
Service indicators for sources of livestock information and learning as perceived by non-FFS members (n=180)

Notes for Figure 3.7
Data derived from double-blind matrix scoring of seven sources of livestock information, including FFS. “Other” sources were primarily local faith-based organisations, local NGOs and “merry-go-round” schemes.

Figure 3.8
Service indicators for sources of livestock information and learning as perceived by farmers in control sub-locations (n=180)

Notes for Figure 3.8
Data derived from double-blind matrix scoring of seven sources of livestock information, including FFS. “Other” sources were primarily local faith-based organisations, local NGOs and “merry-go-round” schemes.
3.3.2 Differences in service indicators by wealth group

The scoring of five service indicators by seven sources, three wealth groups and three types of informant leads to a possible 315 wealth group differences. However, significant differences between wealth groups were detected only six times, as shown in Table 3.6.

Table 3.6
Differences in scores by wealth group for service indicators

<table>
<thead>
<tr>
<th>Informant type</th>
<th>Source</th>
<th>Indicator</th>
<th>Wealth groups</th>
<th>Difference in mean scores (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-FFS farmers</td>
<td>Government</td>
<td>Accessibility</td>
<td>Low vs. high</td>
<td>2.25 (1.07, 3.44)</td>
</tr>
<tr>
<td>FFS farmers</td>
<td>Neighbours</td>
<td>Accessibility</td>
<td>Low vs. high</td>
<td>3.02 (1.43, 4.60)</td>
</tr>
<tr>
<td>Control farmers</td>
<td>Private suppliers</td>
<td>Accessibility</td>
<td>Low vs. medium</td>
<td>2.47 (1.14, 3.79)</td>
</tr>
</tbody>
</table>

3.3.3 FFS and impact compared with non-FFS sources

Farmer’s perceptions of livestock-related impact from different sources are shown in Figure 3.9.

Figure 3.9
Farmer’s assessment of different sources of livestock information/learning using the indicator “In the last five years this source has had a positive impact on my life”

Notes for Figure 3.9
Data derived from double-blind matrix scoring of seven sources of livestock information, including FFS. Control farmers n=180, non-FFS members n=180, FFS members n=60. “Other” sources were primarily local faith-based organisations, local NGOs and “merry-go-round” schemes.

There were no significant differences between control farmers and non-FFS farmers for FFS, radio/media, government, neighbours, private suppliers or other sources. Non-FFS members scored dairy companies significantly higher than control farmers. For both informant groups, government, neighbours, private suppliers and other sources received the highest scores, and there were no
significant differences between these scores. Among FFS farmers, FFS was scored significantly higher than any other source for the impact indicator, and exceeded the scores for any source from control farmers and non-FFS members. FFS farmers scored radio/media, government and private suppliers significantly lower than either non-FFS members or control farmers.

Specific types of impact cited by FFS members and attributable to FFS are shown in Table 3.7. The most commonly-cited types of impact were use of extra income to pay school fees and family expenses, increased milk output, improved animal health, and the acquisition of livestock production skills.

Table 3.7
Type of impact cited by informants

<table>
<thead>
<tr>
<th>Type of impact</th>
<th>FFS members (n=60)</th>
<th>Non-FFS members (n=180)</th>
<th>Control farmers (n=180)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved animal health</td>
<td>12 (20.0%)</td>
<td>41 (22.8%)</td>
<td>27 (15.0%)</td>
</tr>
<tr>
<td>Improved breed and quality of animals</td>
<td>2 (3.3%)</td>
<td>3 (1.7%)</td>
<td>7 (3.9%)</td>
</tr>
<tr>
<td>Improved nutrition and health for me and family</td>
<td>7 (11.7%)</td>
<td>6 (3.3%)</td>
<td>2 (1.1%)</td>
</tr>
<tr>
<td>Increased milk output</td>
<td>18 (30.0%)</td>
<td>33 (18.3%)</td>
<td>21 (11.7%)</td>
</tr>
<tr>
<td>Re-investment in farming</td>
<td>4 (6.7%)</td>
<td>25 (13.8%)</td>
<td>12 (6.7%)</td>
</tr>
<tr>
<td>Renting or buying land for more production</td>
<td>1 (1.7%)</td>
<td>7 (3.9%)</td>
<td>4 (2.2%)</td>
</tr>
<tr>
<td>Sold animals to repay loan on land</td>
<td>1 (1.7%)</td>
<td>4 (2.2%)</td>
<td>6 (3.3%)</td>
</tr>
<tr>
<td>Started a business</td>
<td>2 (3.3%)</td>
<td>5 (2.8%)</td>
<td>2 (1.1%)</td>
</tr>
<tr>
<td>Used new skills to reduce production costs</td>
<td>1 (1.7%)</td>
<td>10 (5.6%)</td>
<td>7 (3.9%)</td>
</tr>
<tr>
<td>Used extra income on family expenses</td>
<td>15 (25.0%)</td>
<td>39 (21.7%)</td>
<td>26 (14.4%)</td>
</tr>
<tr>
<td>Used extra income to pay school fees</td>
<td>19 (31.7%)</td>
<td>38 (21.1%)</td>
<td>32 (17.8%)</td>
</tr>
<tr>
<td>Acquired useful skills in livestock production</td>
<td>12 (20.0%)</td>
<td>32 (17.8%)</td>
<td>60 (33.3%)</td>
</tr>
<tr>
<td>Bought more livestock</td>
<td>0 (0.0%)</td>
<td>5 (2.8%)</td>
<td>5 (2.8%)</td>
</tr>
<tr>
<td>Provided credit line</td>
<td>0 (0.0%)</td>
<td>25 (13.9%)</td>
<td>21 (11.7%)</td>
</tr>
<tr>
<td>Social support and empowerment</td>
<td>0 (0.0%)</td>
<td>18 (10.0%)</td>
<td>4 (2.2%)</td>
</tr>
<tr>
<td>Information sharing</td>
<td>0 (0.0%)</td>
<td>0 (0.0%)</td>
<td>4 (2.2%)</td>
</tr>
<tr>
<td>Improved milk markets</td>
<td>0 (0.0%)</td>
<td>2 (1.1%)</td>
<td>26 (14.4%)</td>
</tr>
</tbody>
</table>

Notes for Table 3.7
Specific types of practice were cited by informants following matrix scoring of the indicator “In the last five years this source has had a positive impact on my life” and attributed to specific sources. FFS members attributed types of impact to FFS. Non-FFS members and control farmers attributed types of impact to all sources other than FFS.

Regarding information sharing, social support and empowerment 2.2% of control farmers and 10.0% of non-FFS farmers attributed “Social support and empowerment” to specific non-FFS sources. In addition, 2.2% of control farmers attributed “Information sharing” to non-FFS sources. No FFS member attributed these types of impact to FFS or to other any other source.

An assessment of area-wide impact was possible by calculating the proportion of cattle-owning households attributing impact to FFS and non-FFS sources. Results are shown in Figure 3.10.
Figure 3.10
Attribution of different types of impact to FFS and non-FFS sources

Notes for Figure 3.10
Data derived from double-blind matrix scoring of seven sources of livestock information/learning, including FFS. After scoring the indicator “In the last five years this source has had a positive impact on my life”, farmers were asked to provide specific examples of impact to illustrate their scores. The types of impact are as cited by farmers, and translated as literally as possible. Consequently, there are some overlaps.
3.3 Temporal relationships between farmers and sources of livestock information and learning

This section relates primarily to question 3 of the study.

3.3.1 General trends by source and informant type

Figure 3.11 overleaf illustrates the relationships between farmers and sources of livestock information or learning over time; differences in the mean scores between 2000 and 2005 are also shown in Table 3.8.

By 2005, among FFS members there were increasingly strong relationships with all sources of information or learning. However, in control sub-locations farmers also moved closer to radio, government, private suppliers, dairy companies and other sources, and for four of these sources these changes were significant. The changes evident among control farmers were also similar to non-FFS farmers, although the latter moved closer to government than control farmers.

Table 3.8
Changing relationships over time by source and informant type

<table>
<thead>
<tr>
<th>Source</th>
<th>Difference in mean scores, 2001 and 2005 (95% confidence interval)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Control (n=180)</td>
<td>Non-FFS (n=180)</td>
</tr>
<tr>
<td>Government</td>
<td>0.51 (-0.007, 1.029)</td>
<td>1.31 (0.805, 1.817)*</td>
</tr>
<tr>
<td>Neighbours</td>
<td>0.06 (-0.138,0.249)</td>
<td>0.17 (-0.035, 0.382)</td>
</tr>
<tr>
<td>Radio/media</td>
<td>3.19 (2.737, 3.651)*</td>
<td>3.51 (3.049, 3.962)*</td>
</tr>
<tr>
<td>Dairy companies</td>
<td>2.51 (1.969, 3.041)*</td>
<td>3.47 (2.978, 3.966)*</td>
</tr>
<tr>
<td>Private suppliers</td>
<td>1.21 (0.767, 1.655)*</td>
<td>1.44 (1.012, 1.866)*</td>
</tr>
<tr>
<td>FFS</td>
<td>na</td>
<td>0.04 (-0.108, 0.192)</td>
</tr>
<tr>
<td>Other*</td>
<td>2.59 (1.949, 3.246)*</td>
<td>1.14 (0.508, 1.778)*</td>
</tr>
</tbody>
</table>

* Significant difference at the 95% confidence level
na – not applicable
*"Other" sources were primarily local faith-based organisations, local NGOs and “merry-go-round” schemes.

In sub-locations with an FFS, it might be assumed that the presence of FFS had some impact on the relationships of non-FFS farmers. However, before the advent of FFS in 2001 non-FFS farmers were already significantly closer to government, radio and dairy companies (95% confidence level) compared with farmers who later joined an FFS. Furthermore, there was no significant change in the relationship between non-FFS farmers and their neighbours between 2001 and 2005.
Figure 3.11
Changing relationships between farmers and sources of livestock information and learning, 2001 to 2005

Notes for Figure 3.11
Farmers should be visualised at the centre of the radar. The further from the centre a source is positioned, the weaker the relationship with farmers. The “before” situation was 2001, the “after” situation was 2005.
3.3.2 Changing relationships by wealth group

Analysis of radar diagram data by wealth group indicated no significant differences apart from among non-FFS farmers and their relationship with government. Significant changes are shown in Table 3.9, and compared with control farmers. In control sub-locations poorer farmers moved closer to government compared with richer farmers, with the latter moving further from government. Among non-FFS farmers, both poor and rich farmers moved toward government but by 2005, richer farmers were significantly closer.

Table 3.9
Changing relationships with government among low-income and high-income farmers

<table>
<thead>
<tr>
<th>Informant type</th>
<th>Mean score**</th>
<th>Difference in the mean score (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low wealth group</td>
<td>High wealth group</td>
</tr>
<tr>
<td>Non-FFS farmers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2001</td>
<td>8.20</td>
<td>7.30</td>
</tr>
<tr>
<td>2005</td>
<td>6.81</td>
<td>5.63</td>
</tr>
<tr>
<td>Control farmers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2001</td>
<td>8.27</td>
<td>7.20</td>
</tr>
<tr>
<td>2005</td>
<td>7.32</td>
<td>8.10</td>
</tr>
</tbody>
</table>

* The lower the score, the stronger the relationship
* Significant difference at the 95% confidence level

3.4 Preferences for different sources of livestock-related information and learning

This section relates to question 4 of the study. Farmer’s preferences by source and informant type are shown in Figure 3.12.

Figure 3.12
Matrix scoring of the indicator “this is my overall preference for the different sources”

Notes for Figure 3.12
Data derived from double-blind matrix scoring of seven sources of livestock information, including FFS. Control farmers n=180, non-FFS members n=180, FFS members n=60. “Other” sources were primarily local faith-based organisations, local NGOs and “merry-go-round” schemes.
When the overall preference scores were examined for possible difference by wealth group, no significant differences were detected.

Table 3.10 shows correlation between the overall preference scores and each of the other indicators used in the matrix scoring. For most indicators there was a positive and statistically significant correlation with overall preference. Accessibility did not correlate with overall preference when scored by non-FFS members and control farmers.

For the diffusion indicator, there was a positive and statistically significant correlation with overall preference for non-FFS members and control farmers, but a negative and statistically significant correlation for FFS members.

Table 3.10
Correlation coefficient for “This is my overall preference” versus other indicators

<table>
<thead>
<tr>
<th>Matrix scoring indicator</th>
<th>FFS (n=60)</th>
<th>Non-FFS (n=180)</th>
<th>Control (n=180)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information: “This source gives me useful information which I can understand and remember”</td>
<td>0.562***</td>
<td>0.145***</td>
<td>0.152***</td>
</tr>
<tr>
<td>Practice: “I’ve actually used the techniques suggested by this source”</td>
<td>0.549***</td>
<td>0.277***</td>
<td>0.229***</td>
</tr>
<tr>
<td>Accessibility: “This source is near to me, here in the village or in my house”</td>
<td>0.263***</td>
<td>0.039***</td>
<td>0.012***</td>
</tr>
<tr>
<td>Affordability: “This way of getting information is affordable for me”</td>
<td>0.344***</td>
<td>0.140***</td>
<td>0.271***</td>
</tr>
<tr>
<td>Availability: “This source is always around and lasts a long time”</td>
<td>0.130**</td>
<td>0.298***</td>
<td>0.190***</td>
</tr>
<tr>
<td>Confidence: “This source gives me confidence to seek advice from livestock experts”</td>
<td>0.656***</td>
<td>0.274***</td>
<td>0.260***</td>
</tr>
<tr>
<td>Acceptable: “This source is acceptable to me”</td>
<td>0.688***</td>
<td>0.566***</td>
<td>0.560***</td>
</tr>
<tr>
<td>Impact: “In the last five years this source has had a positive impact on my life”</td>
<td>0.613***</td>
<td>0.292***</td>
<td>0.538***</td>
</tr>
<tr>
<td>Convenience: “This source is available at a time which is convenient”</td>
<td>0.514***</td>
<td>0.163***</td>
<td>0.283***</td>
</tr>
<tr>
<td>Diffusion: “All of the farmers in the village are benefitting from this source”</td>
<td>-0.198***</td>
<td>0.063*</td>
<td>0.157***</td>
</tr>
</tbody>
</table>

ns – not significant; *p<0.05; **p<0.01; ***p<0.001

3.5 Behavioural changes attributable to livestock FFS

This section relates primarily to question 5 of the study. Matrix scoring results related to the confidence of farmers to seek advice on livestock issues are shown in Figure 3.13.

There were no significant differences between control farmers and non-FFS members for any source other than neighbours, which were scored significantly higher by control farmers. For both types of informant, government, neighbours and private suppliers were considered to be the most useful sources with regards encouraging farmers to seek advice, and FFS was perceived to be the least useful source.

For FFS farmers, FFS was considered to be the most valuable source for encouraging linkages with livestock experts and FFS members’ scores far exceeded any other source, or the scores provided by non-FFS members and control farmers. FFS members scored radio/media, neighbours and private suppliers significantly lower than control farmers and non-FFS members.
Figure 3.13
Farmer’s scoring of the indicator “This source gives me confidence to seek advice from livestock experts”

Notes for Figure 3.13
Data derived from double-blind matrix scoring of seven sources of livestock information, including FFS. Control farmers n=180, non-FFS members n=180, FFS members n=60. “Other” sources were primarily local faith-based organisations, local NGOs and “merry-go-round” schemes.
4. **DISCUSSION**

4.1 **The impact assessment process**

During that last ten years or so there has been increasing interest in impact assessment within research institutions (TAC Secretariat, 2000), and development and humanitarian agencies (Roche, 1999; ALNAP, 2003). Driven by factors such as donor pressure and in some agencies, internal recognition of the need for greater accountability, the literature on impact assessment has expanded rapidly. However, there is little doubt that impact assessment means different things to different people and consequently, different actors tend to identify and prioritize different questions when trying to understand impact. As implied in section 1, impact assessment can embrace economic, social, environmental, and policy and institutional impacts, and can measure these impacts using a diverse set of professional perspectives and skills, and associated methodologies.

One approach to impact assessment attempts to measure the full range of sector-specific impacts, and also measure impact at different levels, say from micro- to macro-level. Typically, this approach uses a mix of quantitative and qualitative methods, ranging from conventional economic analyses to case studies of project beneficiaries. It can also include both longitudinal and cross-sectional surveys and studies. For research institutions this approach is appealing because a wide range of questions can be asked and the full battery of research methods can be applied. For development agencies and donors the approach is less appealing due to the relatively high resource investments required (both time and money), and the possibility that sector specialists do not reach consensus on the main findings.

A second, less academic approach to impact assessment is based on the identification of key questions which need to be answered in order to move forwards, refine or discontinue a particular intervention. Rather than asking every possible question about the intervention, the core issues are identified; this is similar to the concept of “optimal ignorance” in participatory inquiry. When using this approach, a crucial stage is identifying the questions which need to be answered and ideally, involving multiple actors with different views in this process. In the event that key actors are excluded or disagree with the assessment questions or methods, there is a risk that they will not accept the assessment findings later on in the process.

4.1.1 **Impact assessment questions**

In the impact assessment of livestock FFS described in this report, we approached the assessment according to our experience as livestock and rural development practitioners, and with particular knowledge of the evaluation and impact assessment methods used by donors and NGOs. We had also been involved in policy reform processes, and designed and managed applied research to address specific issues pertinent to policy change. The impact assessment time period was less than six months and the available budget was in the order of $50,000 (about 6.5% of the project cost).

When initially approached by ILRI to draft terms of reference for the assessment, the lead researcher talked to agricultural extension experts and reviewed the literature on FFS. This process indicated that although FFS was increasingly being promoted as a methodology to enhance farmer’s analytical and problem-solving skills, the key issues around FFS did not relate to the effectiveness of the participatory or group-learning methods used with FFS participants. In common with many other participatory and community-based development and research interventions, the main issue affecting FFS was its impact beyond the immediate and relatively small number of participants, and the extent to which the approach might be scaled-up within resource limitations and with appropriate quality control. An integral part of this question was “diffusion” of FFS information and skills to non-FFS members.

The FFS literature indicated that influential academic and development communities were deeply divided on the scaling-up and diffusion issues, with organisations such as the World Bank (e.g. Feder et al., 2004), and the Overseas Development Institute (e.g. Tripp et al., 2005) advocating
caution, and offering a contrasting view to the optimism of organisations such as FAO (e.g. Pontius et al., 2002) and groups at Wageningen University (e.g. Braun et al., 2005). In common with the debates about the Training and Visit system in Kenya the 1980s and 1990s (Gautam, 2000), emotions were clearly running high and every review, evaluation report and journal paper was dissected and critiqued in considerable detail by opposing camps.

In ILRI, the importance of FFS diffusion and scaling-up issues was captured in their DFID project memorandum which stated that the “Wider dissemination of information generated by FFS to other members of the community where FFS are based and the pathways of information exchange will be evaluated”. Furthermore, Output 4 of the research was “Establishment of a plan of action for the large-scale implementation (of FFS) including proposals for the Government of Kenya to seek funding”.

4.1.2 Impact assessment design and methods

With the above issues in mind, we drafted five core questions with ILRI researchers to assess the impact of livestock FFS (section 1.3.2). For each of these questions, we used two levels of control which would enable us to compare FFS members and non-members within small, densely populated geographical areas (sub-locations) with an FFS, and also compare FFS non-members with control farmers in areas without an FFS. Therefore, for each question we expected to make comparisons between different groups and by so doing, assess FFS diffusion.

The sixth question of the impact assessment was about the value of the assessment design and methods, and possible improvements in future work. Therefore, this sub-section presents some strengths and weaknesses of the study design and methods which should be considered when assessing the results and the extent to which the other five research questions were answered.

a. Limitations with retrospective assessment

Although defined as research, the ILRI FFS project was testing a development intervention which was implemented by ILRI. Ideally, the initial stage of the research would have included a baseline survey and the collection of information on the pre-existing sources of livestock-related information and learning in the project areas, farmer’s preferences for different information sources, and the reasons behind their preferences. Such a survey could have followed a similar methodology to that used by Rees et al. (2000) in other areas of Kenya. Given the initial focus on fodder production, worm control and tick control, the baseline might also have included information on farmer’s understanding and application of these practices, and identified possible weaknesses and misperceptions. A participatory assessment or a conventional knowledge, attitudes and practice survey could have been used. The absence of baseline data meant that a retrospective study had to be designed “from scratch”.

As we began to design the impact assessment we sought information on the catchment area for each FFS, with a view to refining the sample sizes and identifying appropriate control areas. The project memorandum (Anon, 2000) did not specify FFS catchment areas, nor the number (or proportion) of non-FFS community members who might benefit from FFS. For the latter, neighbours were not defined e.g. in terms of their physical proximity to FFS members. These details were also absent from the project in mid-2005. Therefore, we defined the study locations as explained in section 2.2.2; control areas were selected with the same poverty levels and agro-ecological conditions as FFS sub-locations. Although these aspects of the study design are open to criticism, we suggest that they represent a substantial improvement over the research design used by the FFS project up to the point of the impact assessment.

As outlined in section 1.1, Kenyan farmers have been exposed to various extension programmes and methods since the early 1900s and by the late 1990s, a complex set of information and learning options were available and being used. In this situation, a systematic baseline survey and longitudinal study would have greatly assisted ILRI to understand the impact of FFS over time. Inevitably, a retrospective study on such a complex set of actors and influences will miss important
issues. We felt that this was a particular problem when examining some of the more abstract issues in the study, such as relationships and changes of behaviour over time. When combined with the limitations of the double-blind approach (see below), any attempt to produce a retrospective baseline for 2000 was likely to be affected by recall bias.

b. The double-blind approach, triangulation and research monitoring

An important feature of the impact assessment design was the double-blind approach in which neither the field researchers nor informants were aware of the FFS-specific objectives of the study. In part, this approach was used because prior to the study most of the information on livestock FFS produced by ILRI was in the form of qualitative essay-style papers (e.g. Minjauw et al., 2003) and a single participatory self-evaluation (Mango et al., 2003), and ILRI felt that a more objective assessment of FFS was required. The value of the double-blind approach was that farmers provided information on various sources of livestock information and learning with limited risk of project bias or polite bias in favour of FFS. Such bias would only have been possible if FFS members or other farmers had received prior notice of the assessment and were aware of the objectives.

Despite the value of the double-blind approach in terms of objectivity, there were also two important disadvantages. First, in follow-up questioning after the use of matrix scoring or radar diagrams the researchers did not focus their questions on FFS, thereby limiting the depth of information obtained. This was particularly noticeable for issues such as the longevity of FFS (question 2) and behavioural changes and community-level innovation (question 5). Given these limitations, the study depended on secondary data to cross-check informant responses, and to provide information relevant to the behaviour of FFS members. This need for triangulation proved to be the second main problem with the double-blind approach, because the information was not available in the project.

c. Source specificity

Both the matrix-scoring and radar diagrams required informants to score different sources of livestock information and learning. The value of these methods partly depends on the specificity of each source in the mind of the informant, and therefore during the pre-testing of the methods (section 2.3.4), the researchers worked with farmers to define the sources in such a way that they would be clear and specific for other farmers.

Despite the pre-testing, some reviewers of the draft report have suggested that because the FFS methodology involves exposing farmers to numerous other sources of information as a “package”, informants would either associate some other sources with FFS and therefore score them as FFS, or in contrast, ignore the role of FFS in the process and under-score FFS. Although both under-scoring and over-scoring of FFS might have occurred, the results do not support this view. For example, in general the scores of non-FFS members and control farmers are similar throughout the study. This finding indicates that if under-scoring or over-scoring occurred, it was restricted to FFS members (because control farmers were not exposed to the FFS “package”). For FFS members, they were already using private suppliers, government, dairy companies, radio and neighbours in 2001, before the onset of FFS (Figure 3.11). It seems unlikely that following the creation of FFS, these farmers only accessed these other sources through FFS and not by any other means.

Reviewers also raised concerns about the role of neighbours in the study and the possibility that FFS members were not regarded as such by other farmers and instead, simply perceived as neighbours. If this was the case, non-FFS members might have attributed the benefits of FFS to neighbours rather than FFS, thereby hiding the benefits of FFS in the assessment. Several sets of results indicate that this was not an important constraint in the methodology. For example, if FFS members were perceived as neighbours and they provided significant information or other benefits to non-FFS members, it is likely that non-FFS members would have scored neighbours higher than control farmers. For the indicators information, diffusion, accessibility, availability, affordability, acceptance, convenience and impact there was no significant difference between the scoring of neighbours by non-FFS members and control farmers (Figures 3.1, 3.5, 3.7, 3.8 and 3.9). For the indicators practice, confidence and overall preference, control farmers scored neighbours
significantly higher than non-FFS members (Figures 3.3, 3.12 and 3.13). Also, when describing specific types of information and practice, a significantly higher proportion of control farmers attributed information and practice to neighbours, compared with non-FFS members (Table 3.3). When considering changing relationship over time, if FFS members were perceived as neighbours and provided new benefits, one would expect non-FFS farmers to describe a growing and stronger relationship with neighbours during the FFS research. However, Table 3.8 shows that non-FFS members moved significantly closer to all sources apart from neighbours and FFS.

Monitoring reports from the ILRI FFS research included some information on contact between FFS and other sources, but these reports were incomplete and often, did not provide information on individual FFS member contacts.

d. Future methodology development for impact assessment

Our experience with evaluating development projects in various sectors indicates that a common constraint is poorly-defined project objectives and consequently, differing views on what a particular project is supposed to achieve. Spatial and temporal boundaries of projects are often vague, and indicators are not quantified. These problems are exacerbated when the emphasis of a project shifts during implementation, but these changes are not documented or supported by monitoring data or mid-term reviews. Many projects suffer from limited baseline data and weak monitoring systems. All of these problems hinder impact assessment in terms of both identifying the questions and selection of methods. Although defined as research, in our view the ILRI FFS project exhibited many of the common weaknesses of rural development projects in terms of weak project design, baseline assessment and project monitoring. Therefore, future impact assessment would be greatly assisted if these weaknesses were overcome. One approach would be for ILRI to improve internal review of projects at the design stage, and ensure that mid-term assessments are conducted to identify possible areas of concern promptly, thereby allowing changes to be made before the end of the project. Good monitoring is also required. For impact assessment, these kinds of management changes are probably more important than specific adaptations of participatory methods. An alternative approach would to recognize that the implementation of rural development interventions could be assigned to experienced NGOs or other partners, and as a research institution, ILRI’s role could then focus on independent assessment. This approach helps to overcome the challenge of maintaining objectivity when an agency is both implementer and assessor.

Issues of project/research design, baselines and monitoring are particularly relevant to participatory approaches to impact assessment. Such assessment focuses on the perceptions of community members and as such, can be easily disregarded by scientists who are sceptical of participatory approaches. A useful way of strengthening participatory assessment is triangulation of community-level results with project monitoring data. When viewed from the perspective of scientific inference, this enables researchers to support the participatory data with monitoring data on research activities and benefits, and so develop adequacy and plausibility statements (e.g. Victora et al., 2004).

In future assessments, the limitations of the double-blind approach might be overcome using a two-stage methodology. The first stage could use a double-blind approach similar to that used in this study. At the end of this stage, the field researchers could then be informed about the specific objectives of the study and instructed to conduct second stage interviews with FFS facilitators and a small sample of FFS members. These second stage interviews could probe specific aspects of FFS and verify findings from the first stage of the research.
4.2 The five FFS assessment questions

4.2.1 Effectiveness of FFS for providing information and ensuring practice in relation to external inputs (question 1)

The study indicated that some FFS farmers clearly valued FFS as a source of information and that new ideas and skills learnt during FFS meetings were put into practice (Figures 3.1 and 3.2; Tables 3.1 and 3.2). Fodder production and veterinary care were the most commonly-cited types of information and practice used by FFS members, and attributed to FFS. Having reviewed project documents, we were unable to identify specific targets for each FFS in terms of the number (or proportion) of FFS members who should value or use a particular type of information after participating in FFS. For example, if farmers within a given FFS decided to examine options for improving fodder production, what proportion of them might be expected to value and adopt the new approaches after testing? We felt that this was an important point considering that for most types of information and practice attributed to FFS, less than 15% of FFS members valued or used the information (Tables 3.1 and 3.2), and FFS was a relatively time consuming approach.

Farmers in control areas and non-FFS farmers cited similar types of information and practice from non-FFS sources, and accessed a more diverse range of information and sources compared with FFS members (Tables 3.1 and 3.2). Although we did not directly examine the quality of learning associated with these different sources, Figure 3.11 and Table 3.8 indicated that control farmers and non-FFS farmers were moving closer to various sources relative to their relationships in 2001. It seems unlikely that given the choice of options available, farmers would move closer to these sources unless they were considered to be useful. Also, some of the indicators used during matrix scoring reflected learning quality. For example, farmers were asked to score sources against information which they perceived to be useful, which they could understand and remember, or which resulted in practice, confidence or impact (Table 2.4).

Given the relatively elaborate design and time-intensive nature of livestock FFS, it is appropriate to revisit the types of problem for which FFS was originally conceived. In its early days FFS was a response to pesticide-dependent irrigated rice production systems in south-east Asia and specifically, the need to promote integrated pest management (IPM) involving less use of pesticides. An important underlying assumption was that farmers would only reduce their pesticide use if they understood the agro-ecological basis for combined biological and chemical control methods, and if they had confidence that reduced pesticide application would not lower their production (Tripp et al., 2005). Due to the history of pesticide use in the region and the complexity of the new message, a participatory and adult learning approach, with scope for local trials and farmer assessment of results, was thought to be appropriate.

In comparison, at the onset of livestock FFS in Kenya there appears to be limited evidence of excessive or inappropriate use of veterinary products or agricultural chemicals by smallholder dairy farmers in the two districts where FFS was tested. Therefore, the need for the wider use of integrated parasite or disease control was an assumption which lacked objective assessment. Given that it is the apparent need for wider use of complex integrated farming methods which warrants the use of FFS, a dichotomy between need and method is evident in the livestock FFS research. Even if integrated worm and tick control is a desirable objective in smallholder dairy systems in rural Kenya, it seems highly unlikely that experienced farmers can only grasp the concept of integrated approaches by attending FFS.

Looking specifically at the use of veterinary drugs, effective adult learning techniques to enable farmers to use drugs correctly (in terms of both administration and timing) have been available for many years. In addition, the trend towards zero-grazing systems in some areas indicates limited need for integrated worm or tick control. The other key topic covered in livestock FFS was fodder production. Again, it is questionable whether farmers need to understand the agro-ecological basis for growing fodder and witness its growth, in order to grow fodder (farmers grow crops all the time). As Table 3.2 and Figure 3.5 show, non-FFS farmers and control farmers were growing fodder
and they attributed this practice to non-FFS sources of information and learning. While the feasibility of growing new types of fodder may require assessment of soil, water and other local conditions, this is a fairly straightforward task.

Regarding the assessment of external inputs, the results presented in Table 3.5 prompted more response from the reviewers of our draft report than any other aspect of the assessment. Two main concerns were raised. First, the assessment examined only costs and not benefits i.e. a cost-benefit analysis was not conducted. However, the feasibility of cost-benefit analysis was discussed with ILRI during the formulation of the study questions, and due to the difficulty of quantifying benefits, it was agreed to limit the assessment to the analysis of inputs (hence the specific wording of question 1). Second, reviewers suggested that because FFS was a group learning approach aimed primarily to enhance farmer's learning capacity, the comparison of FFS with the other methods listed in Table 3.5 was not a like-for-like comparison. In order to address this constraint, we could have looked at comparable capacity-building interventions, such as the numerous NGO projects designed to strengthen CBOs and which involve farmer education using group-based, participatory approaches. International NGOs such as NOVIB and PACT have been supporting such initiatives in Kenya for many years. However, this would this have required us to access financial information from these NGOs and examine their interventions in detail. Such an approach was not included in the study methodology or budget.

Regardless of methodological issues, the facts are as follows. The livestock FFS research cost approximately $763,000 and in addition to the eight FFS established by the project, a further 12 livestock FFS used materials and training approaches developed by it. Given the limited diffusion of FFS found in this study (see section 4.3), this suggests an impact of the research on approximately 553 farmers. Using cost-estimates for FFS in a development rather than a research context, Table 3.5 shows that in the absence of significant diffusion, livestock FFS costs approximately 16.5 times the next most expensive option. We realise that this is a controversial issue, but aimed to provide a rough order-of-magnitude comparison rather than precise costs for each method. Although some of the costs are theoretical, such as the use of CAHWs in high potential areas, we felt that the dramatically high cost of FFS per farmer warrants attention. Furthermore, in 2000 the World Bank’s review of the Training and Visit system in Kenya (tested over 15 years) concluded that the high cost of the system, at around $15 per farmer by 1997, was the main reason for its limited financial sustainability (Gautam, 2000). Given inflationary trends, the suggested current cost of FFS per farmer of between $30 and $50 is in the same order of magnitude as the old Training and Visit system.

The issue of cost and scaling-up has attracted much attention in the literature on FFS, with numerous workers suggesting that the combination of high cost and low diffusion will restrict wide-scale application (e.g. Tripp et al., 2005). Our results, although superficial, support this view. In addition, we suggest that pre-existing or alternative methods can achieve greater coverage than FFS at far less cost. Non-FFS and control farmers attributed most impact to neighbours, private suppliers, government and other sources (Table 3.3, Figure 3.10). Neighbours, private suppliers and other sources (such as local faith-based organisations) are already self-sustaining sources through which future information might be channelled.

In response to the high cost of FFS, self-financing FFS have been proposed and tested on a small scale (e.g. Okoth et al., 2003). More recent self-financing ideas are based on groups of farmers applying for credit from a government-managed revolving fund. These loans are to be repaid using additional income/production acquired from the application of FFS-derived information or techniques. Unfortunately, such proposals overlook decades of experience with government-managed credit programs and in particular, the persistent mismanagement of revolving funds. Furthermore, as privatisation of extension services progresses the role of government as a credit provider should become obsolete. As the private sector grows, it seems likely that individual farmers will simply seek advice from private suppliers (as they are already doing) or seek credit on an individual basis from private micro-finance services. As discussed later, the Kenyan government’s extension policy highlights pluralistic approaches to extension and enhanced private sector involvement (Republic of Kenya, 2005).
Given the increasing diversity of extension actors, it seems unlikely that livestock FFS member would become effective disseminators of information unless they received incentives and were able to offer a service which could compete with existing extension providers. This suggestion is based on many years experience of volunteer workers in a range of sectors, and the limited sustainability of these workers unless incentives are well-defined. In this regard, an important finding of the research was that farmers valued advice which was clearly linked to the provision of hard inputs such as veterinary medicines or agricultural supplies. In part this explains the importance of private suppliers compared with radio or other forms of media. Whereas the private suppliers gave advice in relation to specific products which were delivered at the same time, radio did not. It follows that farmers are unlikely to pay for advice per se.

The study authors were not involved in the development of extension policy in Kenya. The recently-revised national extension policy prioritises the need for regulation of extension service providers (Government of Kenya, 2005). If we assume that FFS members will only disseminate information if they receive incentives, a range of legal issues will emerge such as the official recognition of FFS members and quality control. In some sector in Kenya (e.g. animal health), payment for services is illegal unless the service provider is officially sanctioned. Potential competitors of FFS who are already legalised will be aware of these issues and will most likely lobby against legal recognition of FFS members.

4.2.2 The longevity of FFS-derived information and the sustainability of FFS (question 2)

The longevity of information can partly be explained in terms of the value of specific types of information to farmers over time. As noted in section 2.1, smallholder dairy systems in Kenya are in transition and becoming more intensive as landholding decrease (Staal et al., 2001). In addition to trends in population growth, the availability of labour, climatic conditions, information technology and communications will all affect farming systems, and the type and speed of information delivery.

Livestock FFS aims to strengthen farmer capacity to analyse and solve problems. As such, it could be assumed that FFS participants would be better able to access and use new types of information in an ever-changing economic and social environment. However, the study was not able to examine this theory in any detail because the FFS research lacked baseline data on farmer’s analytical or problem-solving capacity at the start of the project. Although we might have attempted a retrospective measurement of changes in farmer capacity, such assessment would have to recognise that FFS participants were exposed to wide range of programmes and influences, both agricultural and non-agricultural, during the research.

Perhaps the most useful insights on farmer capacity to access information are provided by control farmers, who moved significantly closer to radio, dairy companies, private suppliers and community-based organisations between 2001 and 2005, and in the absence of FFS (Table 3.8); similar changes were evident among non-FFS participants. For FFS members, one question is that in the event that new information on smallholder dairying topics becomes available from non-FFS sources, will FFS members only access this information as a result of their past or continuing involvement in FFS? We propose that this scenario is unlikely, although FFS may enable farmers to interpret new information in a more critical frame of mind.

In terms of the sustainability of FFS as a functional entity, the FFS members in the study clearly considered themselves to still be members of FFS some 30 months after graduation. Monitoring data provided by ILRI also indicated that post-graduation, spin-off activities were cooperative formation; communal dip management; AI service delivery; collective marketing of milk; further training to access markets; entrepreneurial skills development; group adoption of housing technology; linkages with the Kenya Agricultural Research Institute, and saving schemes. Not all FFS engaged in all activities, and information on the number of FFS members benefiting from these activities has not been made available. Some livestock FFS were also maintained and expanded through farmer-led FFS and FFS sponsored by NGOs or government. Farmers continuing interest in FFS showed by this monitoring data agreed with FFS member’s assessment of FFS in the study
in terms of accessibility, availability, affordability, convenience and acceptance (Figure 3.6), impact (Figure 3.9) and overall preference (Figure 3.12).

There were no significant differences between the views of non-FFS members and control farmers on the accessibility, affordability, availability, acceptance or convenience of the seven sources and for both groups, there were important and contrasting qualities of two main sources viz. government and private suppliers (Figures 3.7 and 3.8). Although government was not very accessible or convenient, it was thought to be highly acceptable. These results reflect the low coverage and capacity of government extension services, but the relatively strong trust which farmers place in government officers and the technical ability of these officers. Here the message from farmers was “The government doesn’t come very often, but when it does come their people do a good job”. In contrast, private suppliers scored well for accessibility and convenience, but other than FFS, they were the least acceptable source. These results indicate that although farmers appreciate the increasing presence of the private sector in terms of access, there is still some mistrust of private operators. It should also be noted that in reality, this simple division between public and private sectors doesn’t exist because some government officers also work privately. The results indicated that better regulation of the private sector would improve its acceptance by farmers – an issue already recognised as important by the Kenyan government (Republic of Kenya, 2005). In terms of information, practice and impact acquired from non-FFS sources, control and non-FFS farmers acquired a slightly wider range of information, practice and impact than FFS farmers (Tables 3.1, 3.2, 3.3, 3.7; Figures 3.4, 3.5, 3.10).

4.2.3 Relationships with other actors (question 3)

Between 2001 and 2005 control farmers in the study described significantly stronger relationships with radio, dairy companies, private suppliers and community-based organisations (Table 3.8). The relationships of non-FFS members followed a similar pattern, although non-FFS members also moved significantly closer to government relative to control farmers. As mentioned in section 4.1.2c, non-FFS members did not move closer to either their neighbours or FFS.

When examining these results by wealth group, among FFS members and non-FFS farmers there was an increasingly strong relationship with government compared with control farmers (Table 3.8). Among non-FFS farmers both low and high wealth groups exhibited this trend, but it was significantly stronger among wealthier farmers (Table 3.9). As the field team were not aware of the FFS-related objectives of the study at the time of data collection, this trend was not probed in any detail. However, with hindsight they proposed that FFS was bringing government extension workers to FFS sub-locations and in addition to facilitating FFS, these workers were using the opportunity of access to conduct other work. Assuming such work involved financial incentives, it is plausible that it was done mainly with wealthier farmers.

Looking specifically at the relationships between FFS members and other sources of livestock information, Table 3.8 shows a significantly stronger relationship with all other sources over time. However, these results have to be interpreted with caution. Although radar diagram results indicated that FFS members were moving closer to a range of information sources (Figure 3.11, Table 3.8), FFS members failed to attribute specific types of information, practice or impact to these other sources (Tables 3.1, 3.2, 3.3). The researchers did not probe this dichotomy because they were not aware of the study objectives related specifically to FFS.

Regarding relationships with research institutions, the radar diagram method replicated the sources of livestock information used in the matrix scoring methods and as such, research institutions were not mentioned by the researchers. However, in discussions after completing the radar diagrams, farmers were free to volunteer information on additional relationships. Although both Sumeek and Kamungei FFS sub-locations lay within the catchment area of Egerton University, FFS members and non-FFS members rarely mentioned this institution when describing their relationships with livestock-related actors. As mentioned in section 4.2.2, according to ILRI monitoring reports at least one FFS developed linkages with the Kenya Agricultural Research Institute.
4.2.4 Farmer preferences for different sources of livestock information and learning (question 4)

The final indicator in the matrix scoring method was intended to allow informants to give an overall preference score for the different sources (Figure 3.12). The results showed that among control farmers and non-FFS members there were no significant differences in preferences apart from neighbours, which were scored significantly higher by control farmers. For both groups of informants, government and “other” sources were scored significantly higher than radio, dairy companies, private supplier, neighbours or FFS. In contrast, FFS member preferred FFS followed by government, and did rate “other” sources as particularly important.

The correlation of the preference indicator with ten other indicators provides some explanation of farmer’s preferences. For eight out of ten indicators there was a significant and positive correlation with preference, indicating that farmers were valuing the different sources using these indicators. However, there were also two unexpected results. First, neither control farmers nor non-FFS member regarded accessibility as an important factor in determining preference – at least in terms of the presence of the source “here in the village or in my house”. This finding indicates that control farmers and non-FFS members were willing to travel outside their villages to access information. Second, among FFS members there was a significant but negative correlation between preference and diffusion, indicating that FFS member preferred sources which did not meet the criteria “All of the farmers in the village are benefiting from this source”. We explain this result in sections 4.2.5 and 4.3.

4.2.5 Behavioural changes and community-level innovation attributable to FFS (question 5)

Figure 3.11 and Table 3.8 show changing relationships between farmers and sources of livestock information and learning over time, and to some extent, reflect behavioural change among farmers. As explained in section 4.2.3, the general trend was towards stronger relationships with radio, dairy companies, private suppliers and “other” sources; these trends were apparent in control farmers, non-FFS farmers and FFS members.

In addition to these changing relationships, a confidence indicator was used to compare different sources in terms of their value for encouraging farmers to seek advice from livestock experts (Figure 3.13). As previously mentioned, there were few differences between control farmers and non-FFS members, other than a significantly higher scored assigned to neighbours by control farmers. Among FFS members, FFS received a far higher score for confidence than any other source, and all other sources received low scores relative to control farmers and non-FFS members. In the case of radio, neighbours and private suppliers, these scores were significantly lower. Although FFS members clearly regarded FFS as a very useful method with regards confidence-building and seeking advice from livestock experts, other results indicated that FFS members did not actually make much use of others sources, even those with recognised livestock expertise. For example, FFS members did not seem to value dairy companies, government or private suppliers as useful sources of information (Tables 3.1, 3.2, 3.3) although these sources all employed livestock professionals. Similarly, FFS members assigned low scores to dairy companies, government and private suppliers for the indicator “In the last five years this source has had a positive impact on my life” (Figure 3.9), and they did not attribute any types of impact to sources other than FFS (Figure 3.10). It seems that although FFS members may have acquired confidence to seek advice from experts, either they did not actually contact these experts or if they did, they chose not to assign any related information or other benefits to them.

In terms of the potential for FFS to empower farmers, no FFS member attributed this type of impact to FFS (or any other source). In contrast, 2.2% of control farmers and 10.0% of non-FFS members attributed “social support and empowerment” to specific non-FFS sources (Table 3.7).

Regarding community-level innovation as a result of FFS, the types of practice and impact assigned to FFS by FFS members were similar to the types of practice and impact assigned to non-FFS
sources by control farmers (Tables 3.2 and 3.7). In other words, FFS members did not mention any type of practice or impact which was not also mentioned in control areas.

Bearing in the mind that neither the field researchers nor informants were aware of the FFS objectives of the study, two issues were volunteered by informants that with hindsight, we felt were important with regards relationships and behaviour at community level. First, the researchers were repeatedly informed that FFS had been established with very limited community-wide discussion or understanding of the general approach or criteria for membership. Clearly, there was resentment among non-FFS farmers and their descriptions of FFS indicated a clique rather than a resource of wide-reaching benefit. Some farmers complained that FFS members actually boasted about their status as “special farmers whose names are even known in Nairobi”. Among FFS members, the negative and significant correlation between their overall preferences for sources and the diffusion/coverage indicator suggest that FFS members did not value sources with wide coverage (Table 3.10).

Given this situation, it is possible that FFS resulted in suspicion and mistrust at community-level. In the ILRI research it appears that the methods for both informing communities about FFS and selecting of FFS members were left to the discretion of government extension workers (the FFS facilitators). There was only limited supervision of this process. In this situation, one might expect the facilitators to first approach farmers with whom they were already familiar, perhaps through pre-existing social ties or other reasons. As noted by Tripp et al. (2005), cronyism is not unknown in the selection of FFS members.

The second important behavioural and relationship issue concerns the equity of FFS membership in terms of ethnic composition. The ethnic composition was mixed in two out of four FFS sublocations, with mainly Kikuyu and Kalenjin communities in Sirikwa and Kamungei sub-locations, plus a relatively small numbers of Kisii in Sirikwa. Although residing in the same sub-location, different ethnic groups did not mix freely in terms of social or economic interactions. It is well-known that the Rift Valley area of Kenya is characterised by ethnic tensions and it follows that any development intervention should take account of local sensitivities, and ensure that new resources are introduced transparently and equitably. The FFS research seems to have overlooked these needs. Not only was no social analysis conducted during the design of the research, FFS facilitators were allowed to select FFS members without much guidance or supervision. Non-FFS members, particularly those who were not Kikuyu, were quick to point out these limitations of FFS.

Considering the way in which FFS was introduced into areas and the limited attention to ethnic relationships, it is possible that while FFS improved the human capital of FFS members it reduced the social capital in sub-locations as a whole.

4.3 Diffusion issues

When reviewing FFS experiences in IPM it has been suggested that "FFS alumni are able to not only apply IPM principles in their fields, but also to master a process enabling them to help others learn and apply IPM principles, and organise collaborative activities in their communities to institutionalise IPM principles. A good field school process ensures these outcomes'’ (Braun et al., 2005). The livestock FFS aimed to achieve similar results by “improving the capacity of FFS graduates to make critical and informed decisions related to dairy production and cattle health” and “help farmers organize themselves and their communities, and create a strong working network with other farmers, extension workers and researchers” (Anon, 2000). However, in terms of diffusion, organization of the wider community and creation of networks, the performance of livestock FFS was very poor. The information, practice and impact derived from FFS was confined to FFS members (Tables 3.1, 3.2, 3.3, 3.7; Figures 3.4, 3.5, 3.10), and FFS members seemed not to value methods with wide coverage (Table 3.10). When asked for specific examples of information, practice or impact attributable to FFS, none of the control farmers or non FFS members responded positively (Tables 3.1, 3.2, 3.3, 3.7). As mentioned in section 4.1.2c, in general there were few significant differences between control farmers and non-FFS members in the results of matrix scoring and radar diagrams. In a sub-location with 500 cattle-owning households the benefits of FFS were confined to the 25–30 households who participated in the FFS (5% to 6% of cattle-owning households).
In section 4.2.5 we have described two possible reasons for the limited diffusion of FFS viz. inappropriate introduction of the approach at community level, and limited social analysis leading to uneven ethnic distribution of FFS membership. In addition to these features of FFS, various other factors may have hindered diffusion. For example, results from control areas showed that in the absence of FFS farmers were sourcing the same types of information, using the same types of practice and achieving the same type of impact as FFS members. In addition, results from non-FFS members were similar to those of control farmers, indicating that in FFS areas farmers did not actually need FFS in order to achieve the impacts they wanted. In section 4.2.1 we suggest that the FFS methodology is best-suited to particular types of problem and note the possibility that these types of problem were not priorities in FFS areas.

Limited diffusion can also be explained by considering the livestock FFS curriculum and the incentives for FFS members to transfer information to their neighbours. Regarding the livestock FFS curriculum, the emphasis was on building the capacity of FFS members to learn, analyse problems and test solutions, rather than ensuring that FFS members shared information with others. Therefore, although FFS members experienced a range of participatory learning techniques, this does mean that they were equipped or motivated to transfer information to other farmers. In some FFS in other countries, farmers were selected according to their ability to communicate with other farmers. This seems not to have been the case with livestock FFS. In terms of incentives, the flow of information from FFS to non FFS farmers depends on a complex set of social relationships and the economic benefits derived from sharing or not sharing specific types of advice. If farming communities are viewed as a set of competing individuals, information flow partly depends on the public versus private nature of the information in question. These issues affecting the limited diffusion of FFS have been reported by other workers (Rola et al., 2002; van den Berg et al., 2002; Feder et al., 2004; Tripp et al., 2005).

4.4 Livestock FFS and poverty focus

The livestock FFS aimed to target moderately poor smallholder dairy farmers and poor rural households (Anon, 2000). Given the focus of FFS on dairy systems, we assumed that poor rural households owned cattle and as such, they were represented in the low wealth group in the study. In general, very few significant differences were found between cattle-owning households by wealth, indicating that households with different cattle holdings perceived and used different sources of livestock information in very similar ways. In FFS sub-locations wealthier farmers had a stronger relationship with government, and we suggest a reason for this trend in section 4.1.2.

In terms of a broader assessment of the relevance of the research to poor livestock keepers, the FFS were tested in two relatively wealthy districts in Kenya. In terms of absolute poverty levels, Nyandarua was the second most-wealthy and Nakuru was the 13th most-wealthy district out of 41 districts surveyed in Kenya in 1997 (Ministry of Finance and Planning, 2000a). Of the four FFS sub-locations in our study, Sumeek and Kamungei in Nakuru District were relatively accessible being located on main highways, and in terms of land holdings both Mawingo and Tulaga sub-locations in Nyandarua District were judged to be relatively wealthy. In terms of the ILRI poverty index, three FFS sub-locations and the corresponding control sub-locations in the study were in the second most-wealthy category, and one FFS sub-location and its corresponding control sub-location were in the most wealthy category.

Despite the relative wealth and accessibility of these sub-locations, livestock FFS did not perform as well as anticipated in terms of diffusion. Given that many other areas of Kenya have far greater operational and socio-economic constraints, the limited success of the approach in Nakuru and Nyandarua indicates that further testing in other areas is not a priority.
4.5 Policy and institutional issues

In terms of the recently updated national policy on extension (Republic of Kenya 2005), the research findings support the policy in at least three key areas. First, the research confirms the presence of multiple formal and informal extension actors who deliver a range of information; the policy supports a pluralistic approach. Second, the policy emphasises the role of the private sector and the need for government to improve regulation of extension providers; the research indicates the need for government to improve trust in the private sector. Third, the policy does not mention FFS other than as one of many area-specific approaches; it does not advocate wide-scale application of FFS and therefore, agrees with the findings of this study.

4.6 Future needs and opportunities

In terms of improving impact assessment of FFS, we felt that the main opportunities for improvement related more to research feasibility, design and monitoring rather than impact assessment methodologies. Well-designed research based on both technical and social analysis, and with clear objectives, some quantifiable indicators, and a good monitoring system is relatively easy to assess. In the case of FFS, a well-designed initial participatory assessment would have revealed the mix of livestock information sources and farmer preferences, and the social issues likely to affect the design of the research. Although FFS uses participatory learning approaches, FFS was not introduced into communities as a result of participatory analysis of learning options with farmers. The main methodological adaptation we propose is the two-stage approach described in section 4.1.2d. In summary, this involves an initial double-blind study followed by an in-depth assessment of the intervention in question. The same researchers are used in both stages.

In terms of future research on livestock extension in Kenya, the opportunities include efforts to improve understanding of the diversity of the extension market place, and how pre-existing and self-sustaining service providers might be better used as channels for livestock information. Although this study examined six sources of information other than FFS, there are other types of information dissemination such as demonstrations, field days and “road-shows” which warrant further attention, particularly if they can be linked to private sector investment. In addition, TV ownership in rural Kenya is now approaching 50% of households due to the availability of low-cost Chinese-made black and white TVs. Clearly, there is potential here to improve dissemination of livestock information at relatively low cost and high coverage.

Regarding this study, we have focussed on FFS in relation to other sources of information and learning. We have not yet analysed the data on these other sources in detail, for example, by exploring preferences by age, gender or level of education. Such analysis might provide further insights into farmer’s preferences. Also, we feel that it would be useful to take our results back to the farmers who participated in the study and seek their verification of the findings and ideas for further research. Given the cattle-focus of the study, we should also look specifically at the needs and preferences of poorer households who do not keep cattle, but may keep poultry, sheep and goats, or other livestock (including pack animals). We also suggest that dialogue with the private sector, both suppliers and marketing companies – is important to understand their incentives for disseminating different types of information. In view of the government policy and challenge of enabling regulation, research on regulatory mechanisms for extension in other countries would also be beneficial.
References


