

Agricultural Administration Unit
Occasional Paper 6

Sociology in Farming Systems Research

Alistair Sutherland



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Preface

This report owes much to contributions from both institutions and individuals over a number of years. In 1982, the Government of the Republic of Zambia in conjunction with the Overseas Development Institute, London, planned and provided for a two year study into the role of rural sociology within the Zambian farming systems research programme, the Adaptive Research Planning Team (ARPT). This study was facilitated through the Overseas Research Fellowship Scheme, which was funded by the Overseas Development Administration. I was fortunate to be selected for this study, and arrived in Zambia in early 1983. I was fortunate too that the study was extended for an extra year. These three years in Zambia provide the foundation for this report.

In November 1984, at the invitation of CIMMYT's East Africa Economics Programme, I had the opportunity to organise a regional workshop to discuss the role of sociology and anthropology in farming systems research and extension. Much of what was discussed and presented at this workshop has been incorporated into this report. I wish to express my gratitude for the contributions of colleagues in the region and further afield (cited in the text), and for the financial and logistical support provided by CIMMYT for the workshop. Duties in Zambia diverted me from the work of writing this report, but on my return to the UK in 1986, ODI was awarded a two month grant from the Overseas Development Administrations's ESCOR scheme to enable me to write the report on which this Occasional Paper is based.

I should like to record my appreciation for the support and encouragement from colleagues and administrative staff within the Research Branch in Zambia. They are too numerous to mention them all, but special thanks go to Charles Chileya (ARPT rural sociologist) and Richard Edwards (ARPT Agronomist). Individuals who assisted with valuable comments on earlier drafts include John Howell (ODI, London), Mike Collinson (CIMMYT, Nairobi) and Stuart Kean

(ARPT, National Coordinator). Finally, I must acknowledge the support and contribution of my wife Florence who helped with text editing, and an understanding attitude. Any remaining errors are my responsibility.

1

Farming Systems Research (FSR) and Sociological Factors

Introduction

This Paper represents part of a larger effort to increase the relevance of agricultural research and extension for the small-scale farmer in Southern and Eastern Africa. This larger effort, the Farming Systems Research (FSR) approach, emerged in the late 1970s as a response to the criticism that new agricultural technology was frequently irrelevant to small-scale farmers. FSR is a systematic attempt to involve small-scale farmers more actively in research and technology testing. Its foundation on interdisciplinary teamwork gives it a dynamic quality which allows relevant disciplines to be incorporated as the need arises. The purpose of this Paper is to argue the need for a systematic incorporation of a sociological perspective into FSR, and to offer some guidelines as to how this might be achieved.

The relevance of sociological variables has been recognised by the more pioneering of the agricultural economists for some time. Collinson, for example, notes that 'investigations must include sociological aspects to show the community obligations of the individual and their influence on limiting the control he has over the allocation of resources at his disposal' (1973:4). In spite of this quite early recognition, a more general recognition of the relevance of sociology has emerged *ex poste*. A major reason for this has been a lack of commitment from a sufficient number of anthropologists and sociologists to become actively involved themselves, or even to encourage their students to become involved, in applied social research.

Some countries outside Africa have recognised an institutionalised role for sociology in agriculture for some time. Perhaps more importantly sociologists working in these countries have taken the trouble to write about their work in professional journals. For example, discussing the role of sociologists in Israel's agricultural development during the 1960s, Weitz notes that 'the development of

agriculture is bound up with an intricate network of non-economic factors. Over and above its function as a means of livelihood, agriculture is also a way of life' (1967:221). This statement is even more relevant when applied to Southern and Eastern Africa. In a region where the majority of the rural population is engaged in subsistence and semi-subsistence farming, and where much is expected of this section of the population in terms of enhancing national and regional food security, a local approach which takes full account of non-economic factors is clearly necessary.

To date, however, the emphasis during the regional FSR training provided by the International Centre for Maize and Wheat Improvement (CIMMYT) has been on an input from agricultural economists and agronomists (Collinson, 1982). As a result, the importance of sociocultural factors in shaping and influencing local farming systems has not received sufficient attention. The intention here is not to propose an alternative to the CIMMYT approach to FSR, but to outline a strategy for strengthening this approach through the fuller integration of a sociological perspective into training materials and training on the job. The purpose is to better enable sociologists to work in farming systems research teams and agricultural research programmes alongside economists, agronomists, and other specialist disciplines.

Basic Questions on Sociological Inputs

There are four basic questions for discussion:

1. What is the role of sociologists in FSR at the national level?
2. What research methodologies are best suited for achieving this role?
3. What is the best way of institutionalising this role and fostering good interdisciplinary teamwork?
4. How will training in a relevant sociological perspective and methods be best achieved?

Unless these basic questions are addressed, the input of sociologists to FSR will remain both vague and variable over space and time. As a result, even the most capable and determined of sociologists in national programmes will face problems familiar elsewhere of establishing their credibility and usefulness (Brown, 1967). More importantly, not only will sociologists face difficulties, but the national programmes and their largest client group — the resource-poor farmers without a strong voice — will suffer. Without a clear institutional role being established, the danger at present is that on-

farm research priorities will be set without sufficient consideration being given to the values and reactions of resource-poor rural households; the familiar problems of non-adoption, neglect of the rural poor's needs, and wastage of time/money/resources on peripheral research may continue.

It has been noted that rural sociology has a 'low visibility' in Departments and Ministries of Agriculture in the region and elsewhere (Opio-Odongo, 1984). This has been attributed to a number of inter-related factors. One is the variable, often impermanent and ad hoc nature of sociological involvement, especially when sociologists are called in at a late stage of project planning or when implementation problems are being encountered as reported for Botswana (Merafe, 1984). Another factor is the unwillingness of sociologists (particularly anthropologists) to become involved in development, and their related preference for and pursuit of more academic and esoteric lines of study (Epstein, 1985). Sociology also has a problem in the way that its subject matter is perceived by others. Perhaps more than other disciplines, the issues and findings of sociology are perceived as 'common sense' by laymen and scientists alike. A further factor often cited is the immaturity of the discipline in terms of the development of relevant applied theory (Brown, 1967; Castillo, 1964; Newby, 1983 and Cernea, 1984). This immaturity of applied theory tends to be compensated for by a dependence on a qualitative approach and intuitive skills, such as those developed during anthropological fieldwork.

The dearth of relevant applied sociological theory may certainly be a reflection of the limited involvement of sociology in agricultural development in the region. However, it may be a mistake to presume that the level of theorising and hypothesis testing, together with a dependence on a deductive rather than inductive reasoning, characteristic of rural sociology in North America should be a target to aim for in the African situation. For one thing, the relevance of such an approach for developed countries has recently been critically questioned (Newby, 1983). For another, the experience of economics, particularly farm management economics, a social science which is generally more reliant on formal theory and model building, suggests a need to move towards a more qualitative and inductive approach in the African context. Therefore it is not a question of having more applied theory, (in the sense of rigorous formal hypothesis formulation in advance of data collection) and a programme of data collection in which precise measurement of variables in order to test predetermined

hypotheses is the main objective. Rather, it is a question of taking on the task of a more systematic and rigorous approach to applying intuitive skills and qualitative analysis.

This task represents a major challenge to sociologists in the region. In this context, it is important to recognise that a simple faith in, and dependence on, intuitive skills is perhaps the biggest handicap to clear role definition for sociologists (especially anthropologists) operating in the region. While it would be very difficult to imagine a good sociologist (or for that matter a good farming systems economist or agronomist) working in FSR who did not have intuitive skills, the need for the development of a more systematic and clearly formulated set of approaches and methods remains critical. While intuitive skills tend to provide critical insight, they are generally less easy to elaborate into a clearly defined role than the economist's use of models and the collection and manipulation of quantified data (Roling, 1966 and Newby, 1982). The use of resource flow charts, input/output concepts, hypothesis testing in formal survey work, together with the economic analysis of trials through the application of the CIMMYT procedures all serve to articulate a comparatively clear role for the farming systems economist, and one with which the natural scientist can more easily identify.

This comparison with economics raises a further relevant question. As FSR, particularly in Africa, has been pioneered by agricultural economists, how can the discipline of sociology complement that of economics in the FSR process? This question has received some attention at the theoretical level. In discussions of the complementarity of the two disciplines, it has been noted that sociology grew out of a 'critique of classical economics' (Newby, 1982:126) and has often contributed by explaining why behaviour does not always conform to economic models (Roling, 1966). Gasson reaches a similar conclusion, noting that the main contribution sociology can make to agricultural economics is by 'providing a more adequate and informed basis' for its 'simplifying assumptions' (1971:33). More recently, Newby's review of the state of the art of European rural sociology points to 'the absence of serious and sustained dialogue' with agricultural economics to the extent that 'it is detrimental to both disciplines' (1982:125). While the need for fuller dialogue is recognised in general terms, what remains is the task of sorting out a working relationship between the two disciplines at the applied level of FSR.

Sorting out a working relationship is not just a theoretical exercise.

There has been a proven value in simply having faith in sociologists by putting experienced people into FSR teams and projects and just letting them 'get on with the job'. Such cases have been documented for South America (Rhoades et al., 1983), Central America (Gladwin, 1982), South East Asia (Goodell et al., 1982) and West Africa (Okali and Milligan, 1982, and Curry, 1984). However, such a strategy may be dangerous for Southern and Eastern Africa for several reasons. Firstly, there is a strong commitment to the localisation of programmes in the region, and so training of nationals is equally if not more important than working out role definition by simply getting on with the job. Secondly, and relatedly, there is a shortage of experienced nationals in the region who are not otherwise employed, and so the possibilities for putting experienced people into teams and leaving them to work out their role is limited. Thirdly, most of the FSR programmes already have economists in them, and so this increases the need to provide a much clearer idea of what constitutes a sociological role and perspective as distinct from an economic one.

Unless clear guidelines are formulated, sociologists might be employed with little visible effect, especially if they are inexperienced and junior in age and qualifications compared to other scientists. Young graduates could become team 'jacks of all trades' doing a bit of everything, or becoming a general administrator. This has happened in Zambia, where young sociology graduates have been recruited to the Ministry of Agriculture and Water Development and posted to Provinces in order to give support to Integrated Rural Development Projects. Rather than carry duties relating to survey work, they have been absorbed into administrative work in a short period, giving less and less time for developing social research skills on the job. Perhaps the biggest danger is that a young and inexperienced sociologist joining an established team would lack confidence and direction and remain ineffective and marginal to the team. This is not just a risk for sociologists but also for economists. Thus in Zambia, one of the reasons for establishing a separate farming systems team apart from teams of commodity scientists, was to give young national economists time to develop confidence, credibility and professional capacity (Kean and Chibasa, 1983). Developing a clear professional identity also implies selecting and attaching a name or label to this identity. It is important to make clear why I have chosen talk about 'sociological' contributions and perspectives rather than 'anthropological' ones. 'anthropological' ones.

This choice does not reflect the historical contributions of the

different disciplines, but rather the need to institutionalise at the national level. From the historical point of view, most of the sociological contributions to FSR have come from expatriate anthropologists. Most of these have been trained in the US, where there is a strong tradition of applied anthropology. From the point of view of the expatriate anthropologist, it is therefore quite justifiable and historically accurate to speak of 'anthropological contributions to FSR'. However, if the aim is to institutionalise a sociological perspective within the region, this view is problematic. For one thing, few, if any, nationals have graduated in anthropology because the national universities do not provide degrees in the subject. In most cases anthropological literature is referred to in courses on rural sociology, social work, African history and rural development, but anthropology courses are not taught as such. Secondly, anthropology is regarded as an antiquated subject, perhaps interesting but not very useful for securing employment. Thirdly, anthropology often carries with it stigmas. There is a tendency among some marxist historians and political economists to regard anthropologists as instruments of colonialism whose studies are no longer relevant, while others may regard anthropology as a subject presenting the populations of developing nations as 'backward' by emphasising both the traditional and the exotic aspects of local culture.

Farming Systems Research in Southern and Eastern Africa

Apart from its name, FSR is not a completely new idea in Africa (Oasa, 1985). An awareness of the importance of understanding local farming systems as a prerequisite to improving them existed in the minds of colonial agriculturalists in Africa from 1930 onwards (Richards, 1985 and Hansen, 1984). For example, fifty years ago, the Director of Agricultural Services in Zambia (then Northern Rhodesia) wrote that, 'it behoves an agricultural department to investigate local practices with the utmost care before presuming to attempt to improve them' (Lewin, in Trapnell and Clothier, 1936, cited in Hansen, 1984). In 1945, a multidisciplinary team incorporating an anthropologist, an agriculturalist, an ecologist and a soil scientist, collaborated in a study of land tenure and land use in the southern province of Zambia, and came up with recommendations for smallholder research and development (Allan et al., 1948). It was an anthropologist who recalled this study as 'one of the all too few examples of happy and fruitful collaboration between practitioners of different disciplines' (Gluckman in Allan, 1965:vi) and went on to ensure that the findings

of this and other studies of indigenous African systems were written up and published (*ibid*).

In general, the post war generation of agriculturists in the colonial service in Africa did not build on such examples developed by their predecessors through field experience, but were influenced instead by the pressure to develop economic cash crops and also by an academic training which was influenced by trends in Western European agriculture towards increased mechanisation and specialisation. While the development of cash crops clearly played an important role in the further development of national economies in the region, an undesirable effect was that peasant agriculture and food crops in particular, were largely neglected. The major investments in research and development during the 1960s and early 1970s centring on cash cropping, purchased inputs, high management levels, and technology packages experienced generally low levels of adoption, and the adoption of only one or two of a range of new technologies (Mellor, 1970).

Research into more advanced technologies, suited mainly to large scale and commercial operations, was justified by the notion that the benefits would 'trickle down' from the larger farmers and organisations engaged in agriculture to the smaller farmer. As Richards (1985) has noted in the West African context, it was only after such an approach proved to be of limited relevance that the issue of how to do research appropriate to the needs of small farmers was more seriously reconsidered. Moreover, following the failure of large-scale state farming enterprises, the subsequent failure of the agricultural projects approach which attempted to improve small-scale agriculture through the introduction of intermediate technology which looked promising on paper, but failed in the field, further emphasised the need for more agricultural research appropriate to small-scale farmers' needs.

However, by the time intermediate technology arrived on the scene, conditions had become less favourable for close contact between small-scale farmers and research scientists in the region. Departments of Agriculture had increased in size, and along with this growth came a deterioration in communication between extension and research. In part, this communication problem worsened after independence because of the uneven localisation of posts. Research remained dominated by expatriate scientists who tended to form a social group apart from nationals in an extension service which became localised. The technical knowledge of the researchers tended to become the sole

source of agricultural wisdom, resulting in a one way flow of information from research 'down' to extension (Moris, 1983). Moreover, many local extension officers shared with research scientists and politicians the vision of an increase in small farmers' productivity through the introduction of tractor mechanisation along with high input, high management, technologies.

It was against this background of a widening gap between research and extension that an approach which brought researchers back in touch with farmers became so vital. A related and very important influence was the reported failure of donor-aided development projects with inadequate technology bases (Griffin, 1974 and Lele, 1975). Often the technologies introduced were incompatible with the social organisation and economic circumstances of African rural populations. The involvement of social scientists in project planning thus emerged as a neglected factor contributing to project failure. Agricultural economists had been incorporated into the structure of western research and extension organisations, in order to provide extra guidance for setting priorities and formulating policies (Gasson, 1971 and Newby, 1982). At this time, however, their methods and approach were poorly suited to provide a sensitive analysis of African farming systems. Significantly, it was a farm management economist who played a central role in formulating an approach from agricultural economics for bringing the region's policy makers and research scientists closer to the small farmers.

Collinson's involvement as a farm management economist with small-scale cotton growers in Tanzania during the early 1960s heightened his awareness of the need for a new approach to setting agricultural research and development priorities for small-scale farmers (Collinson, 1972, 1973, and 1977). He subsequently joined CIMMYT's economics programme and conducted a series of studies in Kenya, Tanzania and Zambia which demonstrated the value of 'applying a systems perspective by a low cost, almost anthropological, approach' (Collinson, 1981:434). These studies served as a base for institutionalising FSR in the region through the introduction of CIMMYT's East Africa Economics Training Programme. This has evolved over time. To begin with, training activities were based at Nairobi. After 1983, training programmes were organised 'in country' for countries such as Zambia and Malawi with large farming systems programmes. Subsequently, training activities for Southern countries were centralised at the University of Zimbabwe, but with a considerable ongoing input on a country basis within the region. By

1985, a farming systems approach along similar lines to that demonstrated by Collinson was recognised as a relevant approach by most countries in the region.

It is important to note that while Collinson's work in the region was inspired largely by a rejection of more formal farm management approaches in favour of a more intuitive and qualitative style, this shift of emphasis was not so clearly reflected in the primary training materials used by CIMMYT. The CIMMYT farming systems approach presented in its first training manual (CIMMYT, 1976) was grounded on the basic assumptions of farm management economics. The second training manual (CIMMYT, 1980) while incorporating a much more qualitative approach, was still heavily influenced by a farm management perspective which placed at the centre of the analysis the individual farmer, motivated by cash.

This resulted in a bias towards a western model of farmer decision making in which 'the economic analysis of farmer decision-making was implicitly based on the theory of the firm' (Behnke and Kerven, 1983). While partially relevant in areas where cash cropping was developed, this model was of questionable relevance in understanding the subsistence and semi-subsistence farming communities characteristic of large parts of the region. Even if the profit motive is substituted by a notion such as 'utility', this raises a whole series of questions relating to 'utility to whom' and 'for whom' which necessarily involve the adoption of more of a community focus taking into account different interests and values within households, and between different groups in the community. These questions need to be answered before a utility model can be applied.

By accepting FSR, countries in the region have accepted the principle of an essentially qualitative and 'bottom up' approach to developing research priorities and testing technologies. But very few countries in the region have made the commitment to involve sociologists fully in FSR programmes (Table 1). Instead, most have engaged agricultural economists, or redeployed existing ones (e.g. Okech, 1985), with a basic training and orientation in the kind of methods which Collinson had rejected in favour of a more qualitative approach. Thus using the CIMMYT training materials, particularly the manual relating to the analysis of on-farm trials (CIMMYT, 1976), has served to reinforce an economic approach to analysing small farmer behaviour and prescreening technologies; the socio-cultural parameters which have a critical influence on small farmer decision making are still largely neglected.

Table 1: The Socio-economic Input and Institutional Status of FSR Programmes in Southern and Eastern Africa (1986)

Country	Institutional Status		Social Scientist Positions			
	FSR within Dept of Agriculture	FSR Project or in University	Economist	Sociologist	Socio-Economist	Total
Botswana	Planned	Yes 3 Teams	3	1*	—	4
Ethiopia	Yes	N.I.	some	—	—	—
Kenya	Yes	—	6	0	0	6
Lesotho	—	Yes	1	1	0	2
Malawi	Yes	—	—	—	4	4
Swaziland	—	—	0	1	1	2
Tanzania	Yes	Yes	2	0	0	2
Uganda	Planned	—	—	—	—	—
Zambia	Yes	Yes	9	4	—	13
Zimbabwe	Yes	Yes	1	1*	—	2
TOTAL	6	5	22	8	5	35

*Part-time only.

N.I. = No information.

Sociology in the IARCs

Before proceeding to look in detail at the potential role of sociology in the region's FSR programmes, it is instructive to look at this role in the International Agricultural Research Centres (IARCs).

The contribution of sociology in assisting to establish and evaluate agricultural research priorities, including FSR activities, has been recognised to some extent in the staffing of the IARCs. While all the IARCs have some kind of social science research input, and most have engaged sociologists and/or anthropologists at different times, it should be noted that the proportion of social to technical scientists remains at a very low ratio. From the late 1970s onwards, all the IARCs have used sociologists in their research activities, but in varying degrees. Some of the centres have had full-time sociologists on their staff for a considerable period of time. Among IARCs with a record of commitment to engaging full-time sociologists are the International Potato Centre (CIP) (Sawyer, 1985) the International Centre for Tropical Agriculture (CIAT) (Ashby, 1985), the International Institute of Tropical Agriculture (IITA) (Hahn, 1985) and the International Council for Agroforestry Research (ICRAF) (Raintree, 1984). Other centres, while not creating posts explicitly for sociologists, have provided this input indirectly. CIMMYT, for example, has recruited anthropologists to its agricultural economics programme, while the International Livestock Centre for Africa (ILCA) has engaged sociologists as 'socio-economists' and also as post-doctoral research fellows. Other centres have used different options for involving sociologists in their programmes.

The International Food Policy Research Institute (IFPRI) and the International Laboratory for Research on Animal Diseases (ILRAD) have engaged sociologists to carry out in-depth household studies (Kumar, 1985 and Mukhebi and Reynolds, 1985). The International Centre for Agricultural Research in the Dry Areas (ICARDA) reports using sociologists in their research teams (Nour, 1985). There is a history of sociological involvement at the International Rice Research Institute, (IRRI), and the International Service for National Agricultural Research (ISNAR), the most recently formed of the centres, has also engaged sociologists for specific studies.

The use of sociologists in FSR-related work at the IARCs derives from a recognition of their proven contribution to the development and targeting of research programmes. This use also rests on a belief that sociocultural factors are 'important parts of the farming system; thus an understanding of these factors is necessary if effective

improvement of the system is to occur' (De Walt, 1985:206). In particular, the IARCs have been able to use sociologists to enhance their 'user focus'; to help ensure that the research scientists producing new technologies are more fully informed of the needs and priorities of small farmer target group.

In practice the role of the sociologist in the IARCs has varied according to the policy and design of the centre in question. Centres which conduct almost exclusively on-station research have tended to use sociologists to carry out surveys either to identify farmers' problems and priorities relating to the crop in question, or to look at adoption of new technologies. Those with a larger on-farm research programme, such as CIP, have involved anthropologists closely in the experimentation programme, in addition to the survey work. CIMMYT, while having a relatively small on-farm programme, has used anthropologists as part of its major effort in training nationals in Central America, but not in Africa. The detail of the survey work and the methodologies used have also varied according to the background training of the sociologist. Those with anthropological training, the majority, have tended to adopt a more intuitive and qualitative approach (e.g. Rhoades, 1982 and 1984b and Tripp, 1985). The fewer, with a rural sociology background, have relied more on formal surveys (e.g. Ashby, 1985 and examples in Nour, 1985). However, in spite of this difference, there has generally been some pressure from technical scientists and policy makers to use methods which bring quantified results in order to present data which has a bearing on research policy and priorities in a convincing way. In this respect, a qualitative approach has proved particularly successful where it has been possible to get technical scientists involved in technology design into the field (e.g. Rhoades and Booth, 1982).

A further point is that while sociologists in the IARCs have begun the task of developing an applied sociology within agricultural research, the centres have concentrated more on broad socio-economic issues in general than on specifically sociological ones. Discussions have taken place and achievements reported in this field. For example in 1980, a seminar at the International Rice Research Institute discussed 'the role of anthropologists and other social sciences in interdisciplinary teams developing improved food production technology' (IRRI, 1982). In 1981, the International Service for National Agricultural Research held a workshop to discuss 'Strategies to meet Demands for Rural Social Scientists in Africa' (ISNAR, 1982). More recently, the importance of social scientists in

providing the 'user focus' at these centres was implicitly recognised at the Consultative Group on International Agricultural Research's (CGIAR) 1984 seminar on 'Women and Technology: Relevance for Research' (The Rockefeller Foundation and ISNAR, 1985). All the IARCs gathered at this seminar mentioned the use of sociologists in studies relating to the implications of gender differences and rural poverty for establishing and evaluating their research priorities.

While these meetings discussed topics relevant to the issue of a specific role for sociology, the detailed elaboration of this role was left for future discussion. Thus discussion at the IRRI workshop did not clearly differentiate between different kinds of social science input, concentrating instead on the relationship between social and technical scientists. The ISNAR workshop was comprised largely of senior administrators and economists, and so had a very limited sociological input. The CGIAR seminar raised the issue of the role of the social scientist, but was unable to explore it in detail (Murphy, 1985a). This may have been due to its focus on gender issues specifically, rather than on the broader social and cultural context in which these issues are situated.

While the issue of a specifically sociological role has not been tackled by the IARCs, individuals working within them have written more explicitly about the role of sociology, usually as anthropology. Rhoades has discussed a number of issues including: the use of anthropological methods in informal surveys (1982, and 1985); communication between different kinds of scientists and between scientists and farmers (1984a); interdisciplinary relations and teamwork (Rhoades et al., 1982) and the role of anthropology in agricultural research (1984b). Tripp, while not wishing to differentiate between the theoretical contributions of sociology and economics, has discussed the use of an 'anthropological approach' in making FSR a properly 'iterative process' (Tripp, 1985). Doherty et al. (1982) and Goodell et al. (1982) have discussed the contribution of anthropology to assessing the principles of group formation relevant to technology involving co-operation between farmers. The use of sociological methods for identifying target groups for FSR research has also received attention (Grandin, 1984).

These examples show that individuals in the IARCs are contributing to the build up of a useful body of literature on applied social research relevant to FSR. However, given the differences between the centres, both in terms of overall organisation and objectives, and in the ways they have utilised social scientists, it is perhaps unrealistic (and

probably also unwise) to expect a standardised role for sociologists to emerge from the collective experience of sociologists in the centres. Moreover, while valuable lessons can be learned from the work of sociologists in the IARCs, sociologists working in national research programmes need to develop their role in relation to national (and perhaps regional) interests, rather than international ones.

2

Guidelines for a Sociological Input: the CIMMYT FSR Sequence

The guidelines below are derived largely from the recorded experience of sociologists working in FSR and related agricultural development programmes, both in the region and further afield. The main source is the proceedings of a CIMMYT regional workshop on 'The role of rural sociology (and anthropology) in farming systems research and extension', held in November, 1984 in Lusaka. The workshop attracted sociologists and anthropologists operating in all countries in Southern and Eastern Africa (except Angola, Lesotho and Mozambique). Another valuable source is the writings of applied sociologists, especially those involved in the IARCs cited above who have published their findings and suggestions in journals and reports (see bibliography). Additional published sources are the proceedings of three other workshops discussing related issues (IRRI, 1982; ISNAR, 1982 and The Rockefeller Foundation and ISNAR, 1985).

The CIMMYT sequence

These guidelines are framed in relation to the CIMMYT sequence of FSR.

Considering the sociological input in relation to a sequence enables a step by step approach. While CIMMYT training materials refer to 'concepts and procedures', rather than a sequence, a sequence of activities is implicit in the procedures. This sequence is followed in CIMMYT regional training programmes, but it is recognised that in practice activities do not always follow a strict order; some stages of the sequence being omitted and others being undertaken simultaneously. In outlining suggestions for a sociological input in relation to the CIMMYT methodology, the sequence presented by Collinson (1984) provides a useful and a regionally specific reference point. Collinson outlines four main activities or stages in the sequence; diagnosis, planning, experimentation and testing, and recommendation and extension. The sociological input in relation to each of these four main

stages of FSR is detailed below. Each section begins with a short description of the stage taken from Collinson's paper.

Diagnosis

Diagnosis, according to Collinson, is the first step of 'a four stage sequence of activities...It aims to understand farm family priorities in operating their farming systems and how they decide to allocate their resources to manage the natural and economic circumstances surrounding them. From such an understanding, diagnosis identifies major problems impeding expansion of farming activities. The primary interest is in problems which can be resolved by agricultural research' (Collinson, 1984:103). Diagnosis consists of four separate activities: identifying target groups of farmers; describing and understanding the circumstances managed by target groups; informal survey, and formal survey. The following guidelines relate to a sociologist's input into these activities.

Identifying target groups of farmers: 'a stratification of the rural population aiming to identify groups of farmers operating the same system for which the same research is likely to be relevant'(idem.).

1. Secondary social research literature, especially anthropological monographs, is a valuable source of data for target grouping which is often underutilised. Sociologists should encourage its use by FSR teams for deriving initial descriptions of farming systems. (Hansen, 1984, and Kerven, 1984).
2. Sociologists should help to identify key informants in the study area in a way that avoids obvious biases. Agricultural extension staff and local political figures should never be the only, nor even perhaps the main, informants for target grouping and system description (Sutherland, 1986b). The local knowledge and perceptions of farmers and community leaders can be more fully used for deriving farmer classifications (Kabagambe, 1984) and for obtaining descriptions and explanations of differences in local farming systems (Sharpe, 1984, and Kerven, 1984).
3. During target grouping, the sociologist can assist by ensuring that both the existence and interests of disadvantaged groups are recognised, especially women and poorer households (Hansen, 1986; Grandin, 1984 and Sutherland, 1986a and 1986b). It should be clearly established whether their numbers are sufficient to justify treatment as a separate target group.
4. In areas where ethnic or religious differences are important, in

order to avoid inadvertently favouring one group at the expense of another, the sociologist should ensure that these differences are brought to the attention of other team members and are properly considered during target grouping (Sharpe, 1984).

5. In order to better focus target groups in relation to equity, attempts should be made to use methods of target grouping based on farmer classifications of wealth differences in use for adaptive livestock research for on-farm crop research also, such as the 'informant wealth ranking method' (Grandin, 1984).

Describing and understanding the circumstances to be managed by target group farmers: 'the use of secondary information and discussion with local traders and officials, to understand the management opportunities offered and the uncertainties posed by the local environment'. This 'provides an initial basis for understanding what the OFR team subsequently see on farms and what they hear farmers say' (Collinson, 1984:104). This stage normally follows completion of the target grouping survey after a particular target group has been identified for further study.

1. The sociologist should be able to provide a sociological profile of the target group selected for on-farm research. This should contain a description of the settlement pattern, ethnic composition, kinship and productive groupings, local political institutions, and arrangements for the administration of land tenure (Kishindo, 1984; Sutherland, 1984 and Whalen, 1984). This description should include a description of variations within the target group in relation to the above variables, and also a preliminary explanation of this variation in order to advance the understanding of causal and functional relationships between different variables in the system.
2. In discussions of opportunities and uncertainties, the sociologist should point out ways in which farmers might respond to opportunities and risk by making adjustments in their social relations, particularly through increasing or decreasing dependency on kin relations (Chilivumbo, 1984). The purpose is to complement preliminary analysis and discussion of uncertainty and risk in the system based on agroecological and economic variables.

Informal Survey: 'visit farmer of the target group...use guidelines to prompt team members...on facets they need to discuss with farmers to understand their system and to identify problem areas and assess those

problem areas in some detail. Although not the final stage in the diagnostic sequence, the informal survey is the bridge between diagnosis and planning and may also be seen as the first step in planning' (Collinson, 1984:104)).

1. Sampling for surveys is an important task in need of attention from sociologists, especially in the selection of a representative 'target area' for survey, by checking that recommendation domains and disadvantaged groups identified during target grouping are properly represented during survey work, and that areas selected for survey are representative of the recommendation domain in terms of community structure, ethnic/religious differences and geographical location (Rhoades, 1985). Guidance should be given to identify strategies for managing biases from extension workers, local leaders, and team members in selecting farmers for interview (Sutherland, 1986b).
2. The unit of data collection should be defined, using knowledge of the local culture/social structure, to establish whether or not the household, defined as a unit of decision making relating to production, can be regarded as the fundamental unit of data collection and analysis (GRZ/CIMMYT, 1984:31-34; Simelane, 1984; Behnke and Kerven 1983, and Baker and Lesothlo, 1984).
3. Sociologists should provide an input during the course of the survey which brings out significant gender, rank and age differences and important linkages between households and other important groupings within a community. Involvement should extend to giving on the spot guidance as to how to identify and analyse situations in which important farming decisions are made at different levels within the local social structure — intra- household, household, homestead, ethnic group etc. (GRZ/CIMMYT, 1984:33-35).
4. Sociologists should also guide and encourage team members to access indigenous technical knowledge and to record local taxonomies for soils, weeds, varieties, pests, diseases, tillage practices etc. which can be used to increase understanding of the farming system and for framing questions during the formal survey (Altieri, 1985; Gladwin, 1983 and Warren, 1984).
5. An involvement in the analysis of survey results is required because interpretation of survey results depends on a prior understanding of the local social structure (GRZ/CIMMYT 1984:34-35, and Russell, 1984).

6. In using existing secondary survey data to analyse trends over time and variation within a target group, care should be taken to establish how households were defined in these studies before attempting to make comparisons and draw conclusions relating to resource base (land area, labour, equipment, cash income etc.).

Formal Verification Survey: 'the final step in diagnosis, or the second step in planning — a random sample of target group farmers is administered a questionnaire ...to verify hypotheses set up in the informal survey ... verify the relevance of potential technical solutions and collect information to allow proper location and effective detailed planning of experiments' (Collinson, 1984:104).

1. The sociologist should make sure that the questionnaire is designed so that women, both as household heads and wives, are interviewed regarding operations in which their labour and decision making is involved.
2. The sociologist should assist with sampling farming households so as to reduce logistical constraints and provide a community perspective incorporating inter-household and inter-group linkages (Sutherland, 1984, 1986b and 1987a).
3. A sociologist should assist with the design and interpretation of survey results, noting when questions may have received ambiguous or misleading responses (GRZ/CIMMYT, 1984:34-39). Attention should be given to social factors lying behind technical and management problems identified. In addition, social factors such as ethnic group or gender of household head which may suggest need for a modification in target grouping should be assessed (Hudgens, 1986).

Planning: 'identify new materials and techniques which appear potentially relevant to the solution of system problems...The cause of the problem is specified...relevant technical solutions are identified from past technical research or from farmer practices elsewhere...potential solutions are pre-screened technically and economically' (Collinson, 1984:105).

In relation to the planning of an on-farm experimental programme, the following sociological input is suggested:

1. Emphasise the importance of incorporating farmers more fully into technical pre-screening and suggest methods for achieving this

- (Rhoades and Booth, 1982 and Rocheleau, 1984).
2. In discussions of the causes of farmers' problems, ensure that social factors identified in the previous stages are fully considered and understood by team members. For example, poor crop management needs to be explained in relation to social as well as technical and economic variables (N'diaye, 1985).
 3. In discussions of technical solutions, ensure that the whole range of household activities are considered, in addition to crop production activities. Solutions might include technology related to household work which enables a management adjustment of crops with the existing technology, or permits the introduction of a new technology (Tripp, 1982a and 1985).
 4. Help to assess a potential technical solution's compatibility with the social and cultural behaviour and obligations of the target group under consideration (Okali and Milligan, 1982 and Doherty et al., 1982). This is particularly important for technology requiring an investment of labour or cash giving returns over several seasons and involving group co-operation such as land use, livestock, irrigation and agroforestry improvements (Rocheleau, 1984; Curry, 1984 and Sutherland 1987b).

Experimentation and Assessment: 'experimental work is done under farmers' conditions with farmers' participation... representative farmers from target groups are exposed to ideas for solution... CIMMYT procedures advocate formal statistical, agronomic and economic assessment of the trial results, but emphasise that these must be paralleled by monitoring farmers' assessment of the performance of solutions' (Collinson, 1984:105-106).

My own observation, shared by others (e.g. Tripp, 1985), has been that FSR teams attach considerable importance to involving the target group farmer during diagnosis, but have a tendency to neglect this involvement during later stages, using the farmer's field (and even labour) rather like an experiment station resource, and paying minimal attention to sustaining a dialogue with the farmer. Moreover, while care may have been taken with sampling during survey work, often co-operating farmers are selected who are not representative of the target group (Sutherland and Warren, 1985). While all team members must be involved, the sociologist can help to improve such a situation by assisting with the selection of a representative target area, suitable typical co-operating farmers to host experiments (Sutherland, 1986b) and devising methods for maximising farmer participation in

on-farm trials, (Raintree, 1984; Rhoades, 1984a and Rocheleau, 1984). This is very important as the extent to which farmers' reactions to new technologies can be predicted in advance is questionable, while continuous dialogue with farmers in the field is probably the most effective way of predicting future behaviour (GRZ/CIMMYT, 1984:45-46, and Mukhebi and Reynolds, 1985). The sociologist should also encourage observations relating to farmers' own methods of experimentation with new crops, varieties, landuse, tillage etc., and if possible initiate specific studies into this (Richards, 1985).

Recommendation and Extension: 'It is felt that it is important that recommendations are decentralised ... and that decisions on supplies and services needed to implement the solution can be taken locally. Extension staff should be the partners in the administration of on-farm experiments' (Collinson, 1984:106).

This is an area of FSR which has received the least amount of attention in the literature, the CIMMYT training manuals included. However, the need for guidance is increasing as programmes which began in the early 1980s are beginning to come up with solutions for testing and recommendation. A sociologist might contribute at this stage through using an understanding of the local social structure and culture, to assist with the identification of local leaders and communication channels for extension advice.

The sociologist can also assist the responsible officer to plan and write new technical extension messages for dissemination throughout a recommendation domain. In doing this, help should be given to harness indigenous knowledge by ensuring local units of measurement relating to volume, space, and time are incorporated into the formulation of technical messages arising from adaptive research trials.

Assistance can also be given with close monitoring of adoption during the late stages of on-farm testing and early stages of recommendation release. This will assist greatly with the evaluation of adaptive research efforts and appropriate extension methods to complement farming systems programmes (Sutherland, 1987c).

3

Sociological Contributions Outside the CIMMYT Sequence

The guidelines and suggestions below relate mainly to contributions of sociology outside, or in addition to, the sequence of activities set out above. These are subdivided into two types; contributions relating to factors which are 'internal' to the local farming system and contributions relating to factors which are 'external'.

It is important to note that this distinction between internal and external factors differs from that used in the CIMMYT training manual (CIMMYT, 1980:8). The CIMMYT manual takes the individual farmer as the primary unit of analysis in relation to decision making, thus internal factors are those directly under his control, while external ones are those beyond his control. Such a model may have some validity in small-scale cash cropping systems, in which men are responsible for cash crops and can control family labour. However, it is quite unrealistic for the majority of subsistence and semi-subsistence farming systems in the region.

In these systems decisions relating to cropping are rarely made by individuals/male family heads alone; women within households, along with associations of kin, neighbours and friends, usually exert considerable influence on decisions relating to agriculture (Behnke and Kerven, 1983 and Due, 1986). Incorporating a sociological perspective thus involves bringing a local community perspective to bear by expanding the analysis of decision making to include, at the minimum, adult members of the household, and to also include other parts of the local social structure which exert a regular and significant influence on decision making in the local farming system (Baker and Lesothlo, 1984).

Such factors are regarded here as 'internal' to the local farming system, because they represent both the individual and collective decisions taken at the local level. Moreover, these influences are not fixed or stable parameters which merely constrain or restrict options. Usually community relations, while certainly constraining individual

behaviour, are dynamic and open to adjustment almost as much as the resources of the CIMMYT ideal type 'farmer' are. This may imply that a minor adjustment of local social arrangements should be included, wherever feasible, as a management option for improving the system (Cernea, 1984).

External factors discussed here are those which are external to the local farming system; beyond the influence of decision making in local communities, but exerting an influence on this decision making in relation to agricultural activities. This includes such factors as agricultural service and input agencies, agricultural policies, settlement schemes, land reform, links with the larger economy, and migration to and from urban areas. While most of these factors are mentioned in the 1980 CIMMYT training manual and represented in a flow chart (p.9), the manual does not provide detail on how they should be handled and who within the team should be responsible.

While many of the factors discussed below may be incorporated into activities undertaken as part of the CIMMYT sequence — with the addition of a sociological perspective — others are difficult to incorporate. Adequate data on these can often only be effectively collected by using more intensive and longer term methods than those of rapid rural appraisal (Cernea, 1984). FSR teams will need to decide for themselves whether these topics are sufficiently important in their areas to merit extra attention, and if so whether they have the manpower and other resources necessary for more intensive investigations.

Internal Factors

Collection and analysis of labour data

'Labour constraint' is perhaps the most common explanation given in FSR surveys for less than optimal crop management. The CIMMYT manual makes an over-simplified distinction between 'family labour' and hired labour (CIMMYT, 1980:16).

In systems where labour is identified as the main constraint, FSR teams need to bring a sociological perspective to bear in accounting for the way labour is regulated by local norms such as those relating to gender, age, marital status, education, and rank. It is important to differentiate between farming operations normally performed by individuals, as distinct from those involving different forms of co-operation such as co-operative labour, exchange labour, piece work, labour for goods, daily labour and any other forms which may be

important. This requires a combination of methods and a number of points need to be borne in mind.

1. The collection of labour data in subsistence-oriented farming systems is a difficult and demanding task. Methods which give accurate results are very time consuming and expensive. Only a combination of methods including participant observation, daily reporting, weekly/monthly recall visits, and task focussed surveys will provide a relatively complete picture (Wollenberg, 1986).
2. In-depth research into labour using daily reporting and/or participant observation is usually justified in systems where labour is identified as the major constraint to increased production (GRZ/CIMMYT, 1984:53).
3. While such in-depth studies are costly, findings can usually be generalised over a wider area, thus lowering the cost overall (*ibid.*).
4. When conducting in-depth research, particularly using daily reporting, it is important to avoid 'econometric' models of labour allocation because these often fail to incorporate local values (Russell, 1984). For example, studies carried out in Zambia have shown large differences between households with a similar resource base questioning the validity of using an economic model based on income maximisation only when assessing the benefits of new technology and the likely response of farmers (Francis, 1984). The same study showed some households to be more prepared than others to increase their labour input to increase production. In order for FSR programmes to make better use of labour data from such studies in the planning of research programmes, there is a need to adopt a more qualitative approach to the analysis and collection of labour data: to look at labour less as a commodity with unit value, and more in relation to the cultural context in which it takes place and the goals of individual farmers. Experience from other parts of Africa, such as Mali, has shown that a qualitative approach based on participant observation can be more cost effective than using methods such as the 'cost route method' based on daily reporting (Curry, 1984).
5. Informants often have difficulty in quantifying (in time) their labour input and putting a cash value on it. Very often this is culturally inappropriate because most labour is provided as one of a set of obligations relating to a particular social relationship (e.g. Richards, 1939). In such cases conventional measures of labour such as 'hours per day' or 'days per month' may need to be

supplemented or even substituted by measures of work and time used by the local people.

6. There is probably an over use by farming systems teams of 'labour constraints' as an explanation of the poor timing of key agricultural operations. Further in-depth studies may be required to determine the usefulness of the labour constraint concept for FSR. When sociologists are involved in such studies they need to focus on the local institutional mechanisms regulating labour, particularly obligations relating to gender, kinship, marriage and co-residence. In addition, children's labour is an important but under-researched area which is particularly amenable to study using anthropological methods. Anthropological monographs are an important source of data on child labour for FSR teams (Reynolds, 1984).

Land Tenure

The CIMMYT training manual makes reference to the importance of 'land tenure' (1980:8), but gives little direction as to how this factor should be handled in FSR programmes. One reason for this lack of direction may be that the manual is oriented towards technologies, such as new varieties or fertiliser use, which require only seasonal investment, and so the terms of access to land are not a problematic issue. However, technical improvement may also involve innovations which require longer than seasonal investment such as irrigation, agroforestry, crop rotation, erosion control, mechanisation and oxenisation. The following points offer preliminary guidelines on an issue that is likely to be of increasing importance as population, the level of technology, and agricultural intensification all increase in the region.

1. Land tenure is best dealt with by in-depth studies using classical anthropological methods and an experienced researcher. In the region, land tenure is closely tied in with social status and the local kinship and community organisation (Gluckman, 1969). It is a flexible and dynamic system of relationships of a complex nature which cannot easily be investigated by means of formal survey methods, rapid appraisal techniques, or a western legalistic approach (Bohannon, 1967).
2. When technologies requiring longer than seasonal investments are being introduced, land tenure is a very important factor to consider because adoption may depend on security of tenure which may in turn depend on the local kinship system, as reported in Malawi

(Kishindo, 1984). If an FSR programme plans to undertake or test such interventions it should involve a sociologist with a good knowledge of land tenure issues at the planning stage (Sutherland, 1981).

3. Technologies involving co-operation within a community which involve changing land-use patterns require a similar involvement, such as irrigation (Doherty et al., 1982), crop pasture rotations (Okali and Milligan, 1982), and erosion control and agroforestry (Rocheleau, 1984).
4. Because land tenure at the national level is both a legal and a political issue, it needs to be analysed in relation to both national legal frameworks and national policies and political ideologies relating to land (Werbner, 1982). FSR programmes need to take account of these national level factors, in addition to local customary practices when considering technologies which may affect land-use and land tenure. For example, socialist reform in Ethiopia has resulted in a new system of land tenure which has implications for investment in new technologies being tested by ILCA in the highland areas (Whalen, 1984).

Local level ethnic and religious differences

In some areas, ethnic diversity, or religious differences, may exert a considerable influence on local farming systems (Sharpe, 1984 and Sutherland, 1984). Indeed there is a clearly established relationship between ethnic group boundaries and both ecological variation and productive specialisation (Barth, 1969). If this is the case in the system under study, the sociologist needs to describe the relationships between groups, especially relationships of reciprocal dependence, in order to assess if these have been taken into account in the planning of on-farm research. This will avoid the possibility of a programme being accused of favouring the priorities of one group at the expense of another.

Equity

Often national governments (and donors) are concerned with the possible impact of the FSR programme on the problem of rural poverty, particularly increasing differentiation within a community and its potential for accelerating the drift of the rural poor to urban areas (Chambers, 1983). Team sociologists should be equipped to handle these concerns through an understanding of the distribution of

key resources land, labour, draught power, cash for investment, agricultural credit — within the community in relation to gender, household type, and other important subgroups. In this task the definition of the household may be crucial (GRZ/CIMMYT, 1986, Behnke and Kerven, 1983 and Simelane, 1984). Attention should be paid to equality of access and ownership and the ways in which inequalities are mediated by local exchange relationships (Okali and Milligan, 1982; and Sutherland, 1984).

Non-economic aspects of risk

Farmers' risk is discussed in the CIMMYT training materials, but mainly in relation to uncertainties arising from 'the natural and economic circumstances of farmers' (CIMMYT, 1980:17). Sociologists can assist with a description of the non-economic aspects of risk aversion strategies within the existing farming system. This should be done with special emphasis on assessing the significance of kinship, community and local level politics in influencing rewards to, and sanctions against, both risk-taking and local innovation (Chilivumbo, 1984 and Russell, 1984).

Local cash flows and investment

Sociologists can assist in assessing the level and distribution of cash in the system and the extent to which this is regulated by kinship relations and local exchange relations. This should include an assesment of the seasonal availability of cash in the system and the existing level of investment in agriculture. This information is important when innovations requiring investments of cash are being considered, especially if agricultural credit is unlikely to be available for the target group under consideration. Sociological skills are required because accurate details of income, cash investment and ownership are notoriously difficult to obtain using rapid appraisal techniques or formal survey methods, and require the use of anthropological techniques (Grandin, 1984 and Curry, 1984).

The social context of food processing and storage

Sociologists can assist by encouraging the team to take a full account of the social context of food processing and storage, including norms relating to ownership and distribution. This involves active local participation in assessing the qualities of new varieties with reference to factors such as palatability, cooking time, processing requirements, storage qualities and nutrition (Tripp, 1982).

Indigenous knowledge

A general observation during the 1984 Lusaka workshop was that agricultural research programmes usually underutilise the stock of knowledge held by the farmers they are trying to assist (GRZ/CIMMYT, 1984:59). It has been documented that important decisions relating to agricultural research are often taken without properly involving the farmer in the decision process and without making full use of his knowledge of both technical and social relationships which are likely to influence the performance and adoption of new technologies (Altieri, 1985; Richards, 1985; Sharpe, 1984 and Warren, 1984).

Gender

The significance of gender is particularly important in the region's subsistence farming systems since women provide the bulk of agricultural labour in these systems and are usually key decision takers as well (Due, 1986). Moreover, the topic has received considerable attention recently at international level. The observations of the IARCs put forward at the 1984 CGIAR seminar have recently been published (The Rockefeller Foundation and ISNAR, 1985) and the University of Florida conference discussed this issue in some detail in 1986 with more reference to national programmes (Women in Agriculture Program, 1986). Both conferences stressed the need to give more serious attention to male bias in agricultural research and extension programmes. This need remains to be translated into practical and acceptable action at the national level. Gender issues should not be the concern of sociologists alone, but they are clearly culturally-based issues which are closely related to household and community organisation.

Gender can be specifically incorporated as a variable by incorporating an established number of female headed households in survey work and on-farm trials (Sutherland, 1986a). In addition, there is need to use more sensitive interview and interaction strategies to involve women, particularly wives, in fact to face dialogue between researchers and farmers (Rocheleau, 1984, GRZ/CIMMYT, 1984).

External factors

This listing of important factors 'external' to the farming system relates to influences largely beyond the control of local farming communities. However it has been noted that because these factors exert a

significant influence on local decision making, FSR programmes must also take the broader socio-political and infrastructural context of small farmer development into account (Bantje, 1984, and Chilivumbo, 1984). Some of these external factors, such as marketing, policy, and input supply, are considered in the CIMMYT training manual (CIMMYT, 1980:15-16). However, as with some of the factors discussed above, the manual provides rather little direct advice on how to treat these and other external factors in the planning of an FSR programme. In certain cases it may be necessary for social scientists on teams to spend more time studying and following up broader issues which are not directly related to technical intervention, but are nevertheless vital to agricultural development once technologies have been identified. Sociological skills are not the only relevant ones here but sociologists should be prepared to provide an input where appropriate, for example by commenting to relevant authorities on the equity implications of policies and practices, and by anticipating and monitoring the response of local communities to policy and organisational changes. Such an involvement requires sensitivity to the fact that often national interests may differ from those of the FSR team's client group (Cernea, 1984 and GRZ/CIMMYT, 1984:69).

It is not suggested that all factors listed below need to be fully documented and understood for each farming system under study. External variables, particularly those relating to agricultural support organisations, will require different levels of attention,

Neglect of women in research and extension

This factor has been discussed above in relation to the understanding of local farming systems but it should also be considered in relation to external influences on these. Some of the suggestions which arose from discussion during the Lusaka workshop are intended to influence research and extension policies in favour of rural women (GRZ/CIMMYT, 1984:64-66).

1. There should be efforts to influence scientists to design more technology specifically addressing women's interests, and covering the full spectrum of women's work (including food storage, preservation, processing and off-farm work).
2. Given that gender roles are often culturally specific, more attention should be paid (in the training of national professionals) to training for the local context, rather than imposing ideas about women's development learnt overseas. Further training in agricultural

colleges and universities requires more emphasis on the importance of the women's role in agriculture in order to make the FSR extension link more effective.

3. Advice should be given on how to carry out in-service training for both female and male extension workers emphasising the importance of involving women farmers, and testing methodologies for achieving greater participation from females.

Rural-urban migration

Large-scale migration can have a considerable influence over agricultural decision making (Kerven, 1984; Russell, 1984 and Low, 1982). In such cases team sociologists should assess the importance of rural-urban migration and its influence on decision making especially in relation to household labour supply, cash management, investment patterns, crop preferences and land tenure.

The structure and functioning of agricultural support organisations

Sociologists have a role to play in studying the larger institutional context of agricultural development with a view to making it more effective in meeting the needs of the small scale farmer. Anthropological methods can be used to investigate the organisational linkages between institutions serving the small farmer, particularly the research-extension link (IRRI, 1982; Moris, 1983 and Sutherland 1985); and particular attention can be paid to the operations of individual office holders and locally based organisations, such as local farmer co-operatives, operating at the interface between the small farmer and the larger support organisations.

National policy and local farming systems

In situations where national policy is a major constraint to increased small farmer production, such that technology improvement depends critically on input supply and marketing policies, there may be scope for in-depth studies of the interplay between national policies and local farming systems (Bantje, 1984). The dynamic interplay between local and external factors also needs to be considered, so that the FSR team can better target its research and extension related activities in relation to an accurate projection of future trends in the system (Maxwell, 1984b). Such studies need to try and assess the potential of national and regional policy to respond to new production possibilities arising

from improved technology, particularly in situations where agricultural planning is highly centralised. Such studies will also assist in identifying the kinds of technologies likely to be acceptable to the farmer given minimal change in the policy and institutional environment.

Regional interactions of farming systems

In areas where there is a high degree of interdependence between local farming systems, it may be necessary for the sociologist to be involved in a detailed examination of this from a regional perspective. The need is to anticipate if changes in one system, whatever the nature of the causes (e.g. drought, policies, technology changes, investment, resettlement etc), will produce changes in other linked systems, and then assess the implications of those changes for research activities (Sharpe, 1984 and Little, 1985).

FSR project evaluation

Sociologists, along with those in other disciplines, have a role to play in the evaluation of FSR & E projects and support programmes to ensure that short-term visible effects (measured as an increase in output or agricultural activity) are placed in their proper perspective. There is clearly a difference of perspective here between FSR projects of a limited lifespan, and programmes for institutionalising FSR into the national agricultural research and extension structure (Kean et al., 1986). FSR projects tend to have a wide view of development and as a result run the risk of undertaking support activities which are the responsibility of other government departments for the sake of 'project success'; government employees may be used to further project objectives, rather than to increase the effectiveness of the government department from which they are seconded.

Programmes of FSR institutionalisation, on the other hand, attempt to build up the national capability to carry out on-farm research and extension which will, in the longer term, lead to improved smallholder productivity. The issue of how best to evaluate FSR programmes is a topic likely to attract further discussion particularly as many FSR projects are currently under review by their respective donors.

4

Methodologies

The range of methodologies available to facilitate a sociological input is implicit in the previous chapter, but to assist with implementation of the recommendations it is worth giving more explicit guidance on methodology. Four basic methods outlined in a previous debate relating to FSR were 'surveys, participant observation, analysis of farmer's knowledge systems, and literature review' (IRRI, 1982:98).

Each of these four basic options can be further elaborated. For example, there is a wide range of survey methods. The informal survey approach used in 'sondeo' type activities (Hildebrand, 1981) is perhaps the most useful method for sociological as well as other kinds of data. Rhoades (1982 and 1985) provides useful guidelines on this. However, in order to convince colleagues from other disciplines and/or policy makers on particular issues it is sometimes necessary to use a more formal structured approach which tests or verifies a hypothesis through quantified measurement of variables. Formal surveys can range from 'single shot' focused surveys to multiple visit surveys covering a wide range of information (Casley and Lury, 1982 and Kearl (ed), 1976). Formal surveys are best avoided, except when absolutely necessary as they are both costly and time consuming and they should always be preceded by rigorous informal surveys. In all types of survey, the art and strategy of interviewing is of paramount importance (Gordon, 1969, and Schatzman and Strauss, 1973).

Classical participant observation is an effective method in relation to sociological variables, but a team sociologist will generally only have time to put it into practice for short periods. A comprehensive introduction to participant observation methods can be obtained from McCall-Simmons (ed) (1969). Short periods of observation can be supplemented by encouraging literate householders to record their own activities, and to train technical support staff and other team members to operate as participant observers. Such methods are usefully combined with a case study approach, examining a small

number of farmers/households in detail in order to illuminate important principles at work in the population at large (Maxwell, 1984a).

Indigenous knowledge is not a method as such, but a very valuable data source which can be accessed through a variety of methods (Brokensha, et. al., 1980). Skilful informal interviewing and participant observation combined with recording can be very effective. More formal approaches, such as 'hierarchical decision tree modelling' (Gladwin, 1983) are also useful especially when other disciplines are directly involved in the study.

Literature review is an under-used and under-valued method. FSR team members, including sociologists, often spend far too little time searching for, reading, making notes and summarising available literature. Because relevant literature is usually scattered, time needs to be invested in searching for it. In addition to the libraries of universities, colleges and research organisations, much can often be obtained by visiting the offices of relevant government departments, private and charitable organisations, and donor agencies. Archives are another useful source if time is available. The sociologist should be able to compile a bibliography of relevant sociological data, ordered by farming system or recommendation domain, and make copies of relevant documents and reports where possible to add to the team's data base. The main findings in relation to particular factors of concern to the FSR team should be made available as a summary report in advance of any further study.

In practice, the team sociologist will have to decide on the basis of his or her experience which methodology to use in order to address a particular research problem. This decision will be guided by consideration of such factors as: the amount of time, transport and funds available; the calibre and previous experience of the principal researcher(s); and who the end users of the research findings will be. Perhaps the most important of these factors are the time and the funds available. It is essential that sociologists, in common with scientists of other disciplines, develop low-cost research methodologies, make full use of existing data, and liaise closely with social researchers and institutions working in similar fields, thereby helping to keep costs down.

Generally, costs can be kept lower by concentrating research within a smaller geographical area, and by fully utilising existing data, including that previously collected by the team (especially in established teams). In addition, the use of a case study approach to

collect time series data is a fairly cost effective way of observing trends in the system so that the FSR team can monitor change and keep an eye on the 'moving target' (Maxwell, 1984a and 1984b).

While team sociologists will have to make their own decisions, the suggestions and tables below provide guidelines to assist with the identification of methods which are likely to be more appropriate for different tasks, both in relation to the CIMMYT sequence and factors outside the sequence. An indication of some of the literature which offers further guidance in relation to particular methodologies and topics is given.

Methods relevant to the CIMMYT sequence

Identifying and describing target groups of farmers

The two key methods are a literature review, combined with the selection of key informants to ensure an indigenous knowledge input into target grouping. Sharpe (1984) gives a description of how he selected and used key informants for this in Nigeria, and comparable methods are available for Kenyan pastoralists (Grandin, 1984) and mixed farmers in Swaziland (Kabagambe, 1984). Collinson (1981) describes a useful method for using extension staff as key informants. Hansen (1984) gives an indication of the value of literature review in Zambia, but other comparable examples for elsewhere in the region are scarce.

A sociological profile of the target group should be based on literature review and possibly limited field research based on informal survey, depth interviewing and participant observation. Kerven (1984) outlines a methodology for limited field research to achieve this.

Informal Survey

Rhoades (1982), Collinson (1981), and Hildebrand (1981) provide good guides for informal survey methods, some based on experience in South/Central America and Asia, but relevant to the region. Strategies for reducing bias in the selection of Zambian farmers for interview are discussed by Sutherland (1986b). Kerven (1984) describes an alternative procedure to the CIMMYT approach to informal surveys by using a more anthropological style. Simelane (1984) discusses criteria for selecting Swazi farmers for interview. Behnke and Kerven (1983) and Baker and Lesothlo (1984) discuss methods for bringing interhousehold linkages and decision making into informal survey work in Botswana, and Sutherland (1984a) describes a similar

methodology for Western Zambia. Ideas for incorporating interhousehold linkages and defining units of production in the region were discussed at the Lusaka workshop (GRZ/CIMMYT, 1984:33-34).

Formal Survey

While the general literature on social survey methods is abundant, there is a paucity of material on methods relevant to a sociological input into FSR. Onyango (1984) discusses the uses of and methods for carrying out attitudinal surveys in relation to technology adoption in Kenya. Questionnaire design to include indigenous knowledge and decision making is discussed in general by Gladwin (1976, 1982 and 1983) and in relation to Kenyan maize growers by Franzel (1984). Methods of sampling and interviewing which reduce bias are described by Sutherland (1986a and 1986b) for Zambia, by Bulla (1984) for Malawi and by Baker and Lesothlo (1984) for Botswana. Definition of the relevant unit of data collection and analysis depends on an anthropological type of understanding as discussed at the Lusaka workshop (GRZ/CIMMYT, 1984:32-36), and discussed by Baker and Lesothlo (op. cit.) for Botswana.

Planning research priorities

Methods for more fully incorporating both the social scientist and the farmer into the planning process are described for Kenya by Raintree (1984) and Rocheleau (1984) in relation to agroforestry. Rhoades and Booth (1982) describe the anthropological methods used for this in relation to potato-related technologies in Peru, and similar methods are described by Okali and Milligan (1982) and Doherty et al., (1982). However, all of these methods described for increasing farmer participation in the planning of research go beyond the scope of the CIMMYT sequence, as they involve farmers (as individuals and as groups) in a continuous dialogue relating to technology design as distinct from problem identification. This implies the need to insert a stage of more active participation of farmers in trial selection and design within the CIMMYT sequence in addition to encouraging the 'iterative' method advocated by Tripp (1985).

Methods relevant to topics outside the CIMMYT sequence

Labour Data

The usefulness of methods depends on the objectives of the study.

Broadly based time allocation studies provide an overview which is best achieved by a combination of participant observation (including daily record keeping) and multiple visit surveys. Specific labour issues, such as those relating to peak period activities can be effectively tackled by using participant observation combined with a questionnaire administered (once or twice) during and/or just after the peak. The advantages of different survey methods in relation to farm management research in East Africa are discussed by Collinson (1972). Wollenberg (1986) discusses the advantages and disadvantages of a wider range of methodologies in relation to FSR for rice farmers in the Philippines. Coleman (1982) reviews methods for Africa in relation to Nigeria in particular. Many studies have been undertaken in the region over a long period. Examples of classical anthropological studies using participant observation are Richards (1939) in Northern Zambia, and Gulliver (1971) in Tanzania. Reynolds (1984) provides a more contemporary example in relation to a study of child labour as part of an FSR project in Zimbabwe. N'diaye (1985) presents an interesting preliminary account of an explicit attempt to go beyond the limits set by classical farm management survey approaches through participant observation in an area covered over a longer period by frequent visit time allocation survey. Examples of classical farm management type labour studies based on frequent visit survey techniques are Collinson (1972), in Tanzania, Cleave (1965) in Uganda, and Elliot et al. (1970) and IRDP (1984) in Zambia. Given the high cost of carrying out labour studies, both in terms of data collection and analysis, team sociologists need to concentrate on developing methods for topic specific studies which combine participant observation with rapid surveys across the target group to verify observation made in a limited area.

Land Tenure

An appropriate method for studying land tenure in the region is a combination of depth interviews and participant observation. The study of case records in local courts relating to disputes over land can also be a valuable method when these records are easily accessible. Aerial photography can be useful in conjunction with ground survey work, as described by Okali and Milligan (1982) in relation to pasture legume rotations in Northern Nigeria. All studies should begin with a review of the available literature on land tenure. An example of using an anthropological approach in relation to technology adoption in Malawi is provided by Kishindo (1984). Francis (1986) describes

methods used to examine land tenure in relation to alley-cropping in Nigeria.

Risk and Investment

Formal methods for evaluating risk are provided through the hierarchical decision tree methodology discussed by Gladwin (1982) and Franzel (1984).

The area of cash flows and investment

This is where methodologies are plagued with difficulties. An example from Mali suggests that participant observation is superior to the frequent visit method (Curry, 1984). Often it is less important to collect comprehensive information on household income and assets, and more valuable to focus on specific aspects crucially linked to new technologies proposed. Moreover, rather than focusing on actual amounts, general principles of exchange and priorities for expenditure and investment can often give valuable insights at a much lesser cost. Using informants' own criteria for assessing wealth as described by Grandin's method of 'informant wealth ranking' is also cost effective and accurate (1984).

Food processing, storage and nutrition

Data on food processing and storage methods and social rules relating to them can often be found through literature review of anthropological monographs. Failing this source, short periods of participant observation combined with depth interviewing can be an effective method. The sociological aspects of nutrition are more complex than processing and storage, and may require a more subtle methodology. Tripp (1982a) and Maxwell, (1984d) discuss some methods of nutrition survey in relation to FSR. Case studies of families combined with interviewing of local health workers, in collaboration with a nutritionist, have the potential to provide valuable insights which would be difficult to obtain from formal survey work.

Indigenous knowledge

Methods for extracting and recording indigenous knowledge range from informal interviewing, with the object of letting the farmer lead the discussion, to formal interviewing using the hierarchical decision tree method to try and sought out farmers' knowledge of cause and effect relationships (Gladwin, 1976). A more conventional taxonomy

approach can also be very effective, particularly with regard to classifications of soils, weeds, pests and local crop varieties (Warren, 1984). In collecting local classifications, it is important to try and record the meaning of the term as this can provide insights into the characteristics of the soil/weed/variety most important to the local farmer.

Gender

Methodologies for handling gender in the context of FSR programmes have been neglected in the CIMMYT training materials. White (1984) offers a useful short discussion in relation to time allocation and decision making. In some cases very minor adjustments in methodology are required, such as including gender of household head and the sex of main providers of labour for particular operations. Rocheleau (1984) provides an example of a participatory method of encompassing gender into agroforestry planning. Most important are methods and approaches which ensure that gender as a variable is systematically included in both routine survey activities and studies of specific topics. In FSR programmes where this has not been the case, there may be a need for specific studies based on informal survey, participant observation and literature review, including the analysis of census data when this breaks down data by gender of household head. (see Table 3 — Sociological Methods in Areas outside the CIMMYT sequence — 'Internal Factors').

Migration

The use of participant observation combined with depth interviewing is an effective method as discussed by Kerven (1984) in relation to the region. This can be supplemented by literature review and examination of census data where available. Depth interviewing is essential to reveal the processes at work in migration and the motivation involved because, as Russell (1984) points out for Swaziland, the processes cannot be replaced by economic models of income maximisation which are sometimes used to explain migration behaviour.

Table 2: Sociological methods appropriate to the CIMMYT sequence

Stage in Sequence	Most relevant methodology	Reference Guide
1. Diagnosis		
a. Target grouping	Selection of key informants and interview approach Gender aspect Sampling General approach & interview	Grandin (84), Kerven (84), Kabagambe (84), Collinson (81), Sharpe (84) Sutherland (86), Hudgens (86) Kerven (84), Sutherland (86b) Rhoades (82, 85)
b. Informal survey	Use of guidelines for Sondeo style Sampling	Collinson (81) Hilderbrand (81) Kearl (76), Sutherland (86b), Hansen (86)
c. Formal survey	Questionnaire design Household definition Interview Error check Interpretation	franzel (84), Casley (82), CIMMYT (80) GRZ/CMYT (84), Simelane (84), Kearl (76), Baker (84), Casley (82) Kearl (76) Kearl (76) Russell (84)
2. Planning	Farmer participation	Raintree (84), Rocheleau (84), Rhoades & Booth (82)
3. Experimentation & assessment	Farmer selection Indigenous knowledge Farmer participation & assessment	Sutherland (86b) Altieri (85), Biggs (80) Rocheleau (84), Rhoades (82, 84a)
4. Recommendation & extension		
a. Recommendation formulation	Indigenous knowledge	Richards (85), Warren (84)
b. Extension methodology	Gender roles T&V with FSR Attitude survey	Mungate (83), Ayieko (86) Sutherland (85) Onyango (84), Mukhebi (85)
c. Adoption		

Table 3: Sociological methods in areas outside the CIMMYT sequence — 'Internal Factors'

<i>Subject Area</i>	<i>Most relevant methodology</i>	<i>Reference Guide</i>
1. Labour	Participant observation Frequent visit survey	Reynolds (84), Wollenberg (86) Collinson (72), Elliot (70), Coleman (82), IRDP (84)
2. Land Tenure	Participant observation Aerial survey Ground survey Lit. review General	Kishindo (84), Werbner (82) Okali (82) Allan (48), Doherty (82) Francis (84) Whalen (84), Sutherland (81)
3. Ethnic/Religious factors	Participant observation Rapid survey	Sharpe (84), Barth (69) Sharpe (84), Sutherland (84)
4. Equity Issues	Participant observation Social impact analysis	? USAID (75)
5. Risk Evaluation	Participant observation Models	? Gladwin (76, 83), Franzel (84)
6. Cash Flows & Investment	Participant observation Depth interview	Curry (84) Grandin (84)
7. Food processing, storage and nutrition	Participant observation Literature review General	Tripp (82), Richards (39) Maxwell (84d) Tripp (82), Maxwell (84d)
8. Indigenous knowledge	Models Classification Self reporting Participant observation	Gladwin (76, 82), Franzel (84) Warren (84), Richards (85) Sharpe (84), Curry (84) Richards (85), Brokensha (80)
9. Gender	Participant observation Depth interview Group interview	Haalubono (84), Wollenberg (86) ? Rocheleau (84)

10. Migration	Focused survey General	Mungate (83), Hudgens (86) White (84), Sutherland (86a)
	General	Kerven (84), Russell (84)

5

Institutionalising a Sociological Input

This section draws extensively on ideas in a paper presented at the 1984 Lusaka workshop (Kean and Sutherland, 1984). Institutionalisation is clearly a critical issue when developing guidelines for the incorporation of sociology into farming systems research. Policy makers in each country will be faced with choices. No one model for incorporating sociology into the process of agricultural technology generation could be expected to be appropriate for each country. Although a range of institutional options is presented later, in practice each research organisation will need to be considered individually, considering the following factors.

1. The current structure of agricultural research organisation

The structure of agricultural research in a country often involves several different organisations, sometimes each one having quite different objectives and activities. Such organisations may have existed for many years; their present structure representing the accumulation of decisions during the colonial period and by subsequent independent governments. Some of the important questions to consider about the features of the research organisations include:

which organisation is conducting the research; government, parastatal, private bodies, universities, or a combination of all four? how is the research organised e.g. multidisciplinary commodity focused teams, commodity focused research institutes, or regional research institutes focused on local problems? is the structure centralised or decentralised? are social scientists presently involved in any way? does the research organisation have responsibilities for, and linkages with, extension activities?

Options for institutionalising sociology may need to be quite different where, for example, agricultural research is undertaken by a centralised government research organisation which is commodity

focused and has extension responsibilities as compared with a situation where there is a university-based multidisciplinary research programme with a regional focus.

2. State of knowledge from past sociological research

If there has been extensive sociological research conducted in a country for many years there will be a wealth of information and expertise both of which could be drawn on immediately to make a contribution to agricultural research. In this case institutionalisation would need to give priority to ensuring that good institutional links were developed and that existing data were readily accessible.

3. Manpower availability

The numbers of trained and experienced sociology graduates available within a country will obviously affect the numbers who can be employed to work in agricultural research. It may be unwise to place young and inexperienced sociologists in a research organisation in which they are out numbered by natural scientists, who may be sceptical of the contribution the sociologist can make. Initially, therefore, an attempt to build up a mutually supportive core of local expertise, supported by external technical assistance if needed, would enable the sociologists to be incorporated and accepted more rapidly.

4. Financial constraints

Financial support for agricultural research is frequently below the level required and so this may affect the numbers, location, mobility and operating efficiency of sociologists who may be employed. When considering cost it should be recognised that sociologists may be most effective when their operations are localised, servicing more than one organisation, than when the operations of a single organisation are stretched over a wide geographical area.

These factors will influence the way in which different countries and research organisations might institutionalise the sociological perspective. There are several options which might be considered appropriate.

The first option would be to incorporate sociologists at the provincial or regional level working together with other disciplines, having either a regional and/or commodity focus. This would be advantageous if there is a high degree of social and geographic variation, and distances are large.

Secondly, if manpower and financial constraints are limiting, it may be possible to incorporate sociologists at the local level with a split responsibility between adaptive research and extension. This option would strengthen research extension linkage and capitalise on the advantages of a localised input. Possible disadvantages would be a feeling of marginalisation combined with unrealistic demands from both organisations. This option would be appropriate only where experienced sociologists were available.

Thirdly, the sociological component could be incorporated as a support service to a regionally focused and/or commodity focused research organisation. In this case the sociologists could be based centrally or divided into broad geographic areas, taking agroecological zones or broad cultural regions as the basis for demarcating areas of responsibility. This would be a less expensive option in terms of manpower, but perhaps place more dependence on good transport and communications between research stations.

The fourth option would be to have very few full-time sociologists but instead have a co-ordinated programme of social research conducted on specific topics. University students, if supervised, could be employed to do some of this work as well as researchers from outside organisations. This option would make a smaller impact on the research organisation but it could be more appropriate where both manpower and financial constraints are limiting and where only limited commitment has been given by policy makers to the role of sociology.

The fifth option would be to establish close co-operation between natural scientists in the agricultural research organisations and sociologists in other organisations, within the country, which have the expertise to be able to provide a sociological perspective. This would be the most difficult option to institutionalise but it might be appropriate where commitment is high but financial and manpower constraints are severely limiting.

These options offer scope for adjustment to local situations, and are not mutually exclusive. Given that within many countries there are several different organisations conducting agricultural research, it could be expected that a combination of these options would be feasible.

Promoting interdisciplinary teamwork

While each country will make its own institutional arrangements, some general strategies have been identified that can guide an

institutionalising programme in order to make the most effective use of sociologists employed. It is felt necessary to detail these because social scientists, for a variety of reasons neatly described by Maxwell (1984c), often face difficulties in gaining acceptance and full integration into agricultural research organisations. Indeed, Maxwell notes that sociologists face more problems in gaining acceptance than agricultural economists (*op. cit.* p.41).

In practice, research teams tend to form pragmatically out of a group of problem areas identified. Any permanent sociological staff engaged to address an aspect of the identified problem should expect, and be expected, to participate on the same institutional basis as other scientists. These expectations need to be recognised and endorsed by team leaders and research administrators. Relatedly, the sociologist's entry point should not be one in which he or she plays the role of an outside scientist coming in to evaluate the results of research in other disciplines (IRRI, 1982:100). It is very important, wherever possible, to involve sociologists at the planning stage of FSR projects. This will avoid the sociologist who joins later being regarded by other team members as a 'problem solver' or 'trouble shooter'.

Training

The training of sociologists is an important area which, in common with training in related disciplines, has received very little attention (Opio-Odongo, 1985 and Kean, *et. al.*, 1986). The majority of experienced sociologists practising in FSR programmes are expatriates, mostly with doctorates in anthropology. Nationals with relevant training and experience are fewer, and most are based in universities, often with little time available for conducting research. Anthropology has not been taught as a subject in most of the universities of the region, and in contrast with West Africa, few nationals hold a post-graduate degree in anthropology. The sociology taught tends to be urban in orientation, and with a quantitative bias, while rural sociology and qualitative research is relatively underdeveloped as a sub-discipline.

Of great importance is the training of graduates in national universities (Blackie & Anandajayasekeram, 1986). Agricultural graduates require a sociological perspective, while sociology graduates require more background in technical subjects relating to rural development and agriculture (Opio-Odongo, 1985). Sociologists in FSR programmes should establish strong ties with local universities, especially with social science departments where they can act as links

between the two systems. These linkages should be used to train national social scientists for work with the national agricultural research institutes (IRRI, 1982:97). As part of an overall strategy for strengthening national FSR programmes, 'national universities should be encouraged to strengthen programmes that emphasise applied social research' (IRRI, *ibid.*). In particular, undergraduate courses in rural social research require strengthening, and students with research potential involved in field research as much as possible as part of their training (Blackie, *op. cit.*).

6

Conclusions

Further research

There is a great need for further applied social research in FSR & E in the region, and an area in need of most attention from sociologists is on-farm experimentation and technology testing. Very often social scientific involvement stops with the completion of diagnostic surveys, with the danger that experiment station methods and attitudes will be taken onto the fields of the small farmer, rather than the other way around (Tripp, 1985). Sociologists need to be involved in the development of more farmer-centred methods of technology testing and evaluation.

Another area in need of a fuller social research input is that of extension methods appropriate to small farmers. Various countries in the region are in the process of trying out the Training and Visit system of extension. Yet there has been little research done on how this system will fit in with the farming systems approach also being widely adopted (Sutherland, 1985 and 1987c).

Other topics likely to become of increasing importance relate to issues such as land tenure, conservation and agroforestry, settlement and land-use planning, and the local organisations relevant to agricultural support (primary co-operatives, credit groups, farmers and womens clubs, etc.). All of these are strongly influenced by socio-cultural factors, and all may have an important bearing on technology generation and adoption.

Social engineering

The tradition in agricultural development has frequently been to regard cultural factors as obstacles to rational development. In this context the role of the sociologist may have been conceived, somewhat negatively, as helping with the identification of these obstacles. However, a much more positive approach would be to regard such difficult areas as offering opportunities and challenges for creative

'social engineering' (Cernea, 1984). Agricultural development often involves new kinds of co-operation at the community level between groups of individuals and new technologies often place new demands on existing forms of co-operation or involve changes in patterns of co-operation (Doherty et al., 1982). Perhaps because the region has adopted the CIMMYT focus on technology specific to individual farmers, such as new hybrids and varieties, the whole issue of how technology adoption relates to effective local co-operation has been a neglected area. Sociologists in the region should be prepared to take up the challenge of social engineering, rather than adopt the attitude that socio-cultural factors regulating group formation are outside the control of individual farmers, and thus new technology involving co-operation, such as irrigation or agroforestry should not be considered within an FSR methodology which focuses on individual farmers rather than communities.

Incentives and Identity

The extent to which the general climate for social research in the region can be improved requires further attention. With regard to further social research relating to FSR & E it is most important that researchers in the region are able to publish and circulate their findings, and have the opportunity to meet periodically to discuss matters of common interest. In this way they will be able to accumulate a solid body of applied research skills and knowledge, and be encouraged to try out new methods and ideas. In this respect the CIMMYT networking programme and farming systems newsletter, along with regional journals which publish articles on applied social research, provide valuable opportunities for increasing the level of interaction between applied sociologists in the region.

This report has discussed the incorporation of a 'sociological' perspective and talked of 'sociologists', but the question of how to label social research and researchers deserves final comment. Often it is not sociologists but anthropologists who have proved to be most useful and acceptable in FSR & E programmes. Yet the discipline of anthropology is very poorly represented among nationals in the region and has a low profile on university curricula. Moreover, other professionals, notably field-oriented geographers and economists have often made more substantial contributions to providing a sociological perspective for FSR & E. Rural sociologists, trained as such, have been conspicuously absent. Yet in terms of a theoretical

basis it is sociology more than any other discipline which is relevant to developing applied social theories and methods.

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The Agricultural Administration Unit (AAU) was established at ODI in September 1975, with financial support from the Ministry of Overseas Development (now ODA).

The aim of the AAU has been to widen the state of knowledge and the flow of information about the administration of agriculture in developing countries. It does this through a programme of policy-oriented research into selected subject areas and the promotion and exchange of ideas and experience in four international 'Networks' of individuals directly involved in the implementation of agricultural development. The four Networks are concerned with Agricultural Administration (Research and Extension), Irrigation Management, Pastoral Development, and Social Forestry. Members are drawn from a wide range of nationalities, professional backgrounds and disciplines.

This, the sixth Paper in the series, argues for the systematic incorporation of a sociological perspective into Farming Systems Research (FSR) in Southern and Eastern Africa. FSR emerged in the late 1970s in response to the need to increase the relevance of agricultural research and extension for the small-scale farmer. Alistair Sutherland regards the sociological approach as essential if this aim is to be achieved, and offers some guidelines as to how it may be incorporated into the work of the research team as a whole.

Further information about any aspect of the work of the Agricultural Administration Unit may be obtained from the AAU Secretary, ODI, Regent's College, Inner Circle, Regent's Park, London, NW1 4NS.

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