

---

# Research Methodology and Rural Economy in Northern Nigeria

---

*Richard Longhurst*

This article draws on the experience of a research project in Malumfashi district in Northern Nigeria Hausaland to discuss how data collection could be made more cost effective. It provides suggestions for what Chambers (1980) has called the 'middle zone' between excessively long term research projects and excessively quick appraisals and how the poor might be 'uncovered' during RRA. The intention is that the lessons drawn here will have implications not only for improving research methods but also judgement on rapid appraisals.

## **I. Research Methodology**

The author started rural research in 1975 into a topic involving the collection of both farm management and nutrition data, and was based as a Research Associate at the Department of Agricultural Economics and Rural Sociology of Ahmadu Bello University at Zaria, Nigeria. At this Department there was already a rich amount of data and experience on local rural economy. Much of these data, particularly that of labour utilisation, had been collected by visiting farmers twice weekly for an entire year and who were located in two groups of three villages—in Zaria and Sokoto (Norman 1967, 1972, 1976). Excellent data were also available from different locations on yields, land use, farm cash expenditure, capital goods inventories and land/labour relationships. The fieldwork for a more comprehensive study to determine the size distribution, structure and determinants of personal income in another set of three villages had just been completed (Matlon 1977). Very detailed and extensive studies had also been carried out on grain marketing (Hays 1975) and nutrition and household expenditure (Simmons 1976). These latter two studies had been carried out in the three Zaria villages where Norman had conducted his farm management surveys a few years previously. An attempt had been made in presenting this work to link the farm management characteristics of households with their marketing, storage, nutrition and expenditure patterns, since the same families were surveyed in each case, albeit four years apart. As this author wished to examine hypotheses and issues related to the links between family farm operation (cropping patterns, use of inputs, size of farm), family nutrition (energy and protein intake) and child malnutrition (as measured by conventional anthropometric standards), it was seen that it would mirror closely the carrying out of the farm

management and nutrition components in the same village among the same families in one production period. This was a study of disciplinary breadth, rather than depth, and short cuts were unavoidable.

However, the use of frequent interviewing (once or twice a week) was out of the question in view of limited resources. Nor, with so much experience in the Department was it thought necessary, as baseline data had been built up. The frequent interviewing technique also generates enormous amounts of data, and can delay publication of results at least five years after the completion of fieldwork. To describe in detail the changes in methodology that were implemented on the basis of interviewing farmers every 6-8 weeks would be tedious and would lack generality beyond Northern Nigeria. They can be suitably described however, through two particular concepts that proved very useful in deciding on priorities.

The first is that suggested by Lipton and Moore (1972) of 'registered' and 'non-registered' compared with 'single point' and 'continuous' data. This indicates a continuum between 'registered' and 'non-registered' which refers to how well a respondent remembers a particular piece of information, eg how much he had to pay for an item because he had to count out the money to do so (registered), but forgetting how many of that item were bought if buying several each week (non-registered). The concept of 'single point' refers to the length of time taken to complete the activity. Therefore the sale of an asset may only occur once (single point) whereas the sale of a product such as milk is more continuous. Lipton and Moore also use the following illustrative examples: fertiliser application is 'single point registered' (occurring at one point in time in a manner that makes recall easy), manure application is 'single point non-registered' (given that manure may be applied from several types of containers making quantification difficult); hired labour is 'continuous registered' (although a farmer may hire much labour he will be able to remember the amount he paid if questioning is sufficiently well disaggregated by task, field or crop) and family labour is 'continuous non-registered' (a farmer not bothering to count the exact amount of time devoted, working only until the task is completed or he is diverted to more urgent or remunerative work). Further examples could be given.

This concept indicates that if time is short for collecting quantitative information, concentration on data that is 'single point registered' rather than 'continuous non-registered' is most sensible. Unfortunately such data can often be the most sensitive, such as the ownership of assets eg cattle, land and household items. Accurate data of a 'continuous registered' nature eg crop sales, expenditure on farm inputs such as fertiliser, labour or hire of animals can also be derived if questioning is disaggregated and the respondent asked to refer his memory to specific events. Hired labour use can be ascertained by asking a question specific to the field and task. Crop yields can also be obtained by reference to field and number of local containers or measures harvested. From an aggregation of such data, total farm production can be derived. A similar procedure could be applied to estimate total sales of major farm products. It must be emphasised that these are short cuts, focusing on those commodities or activities which are believed (on the basis of judgement or, exceptionally in this case prior detailed research) to constitute the bulk of the data aggregate. In a complex rural economy there is a cascade of social and economic transactions: cash exchanged, obligations fulfilled and incurred: not all of them are recorded in a quantifiable form by the participants. The further use of this concept in conducting short term research to understand aspects of rural economy, and social relations by forms of social stratification will be developed in the next section.

The second concept was that of a data core, judged to be of a known accuracy (mostly of a 'registered' nature) from which other information could be evaluated for its accuracy and usefulness. In this case, the core was decided as: (1) land holdings and area which was to be measured by the researcher: from this the labour input (amount and expenditure), crop yields, storage and crops sales data given by respondents in structured interviews could be evaluated; (2) family size and composition which was to be measured on four different occasions using different questionnaires. In Hausaland there is continual change in family size with births and deaths, emigrants and immigrants. The second component of this 'core' is essential for inter-family analysis (to standardise for family size and composition) of asset holdings and farm production.

In the next two sections these concepts, and other experience gained during the research period, are discussed in relation to first reducing the length of academic research and second, to improving the quality of information collected on a rapid appraisal, as might be done for project purposes. It must be emphasised here that making proposals for 'better' forms of rural appraisal is all the easier for this author given the existence of the detailed research that preceded his own fieldwork.

## II. Rapid Rural Research

Although the rapid collection of useful background information is probably quite straightforward, difficulty lies in incorporating it into a suitable frame of analysis. Data on land and other asset ownership, crop yields and sales, family size, hired labour and other farm input use, nutritional intake and status should be analysed in such a way as to shed maximum light on determinants of production and social relations.

In order to do this, and it is suggested in the next section, for the purpose of generating indicators in rapid project appraisal, some form of stratification may be required. A sample is usually needed and it is not intended here to enter into all the arguments over 'random' sampling: especially those which discuss the matter only at its extremes. There is no such animal as a 'random' sample and it has been unjustifiably elevated to eminence by statisticians: it is certainly not wise to rely entirely on 'random' sampling. (Even where quantitative data is necessary in an academic study, the careful observation of a few case-study families, albeit at the sacrifice of part of a large sample size, provides insights that survey techniques can completely ignore.) However, in this case, it is useful to use techniques which impose a structure with some notion of objectivity for the selection of respondents. The principles of a random survey eg interviewing at every tenth household, impose a logic that reduces suspicion on the part of the rural élite who might wish to restrict the investigation, and give a justification to those who wonder why they were being interviewed.

The following review of criteria for stratification is based on experience in Northern Nigeria and on a small number of studies that have stratified a sample, usually derived by stratified random sampling, on the basis of economic criteria. They are divided into two groups: those that stratify by grouping economic units (usually the household) in discrete units along some continuous variable eg income levels grouped as deciles, area of land owned per consumption unit, or other assets owned; and those studies that are grouped according to the economic unit's (usually family's) ability to meet a subjectively determined standard, such as subsistence needs.

### a) Stratification according to resource base

Ideally, measures in such exercises as this should be income levels per consumption unit for at least one year, and some measures of wealth such as value of assets. In Matlon's Northern Nigeria survey, income data (farm and off-farm: cash and kind sources) were collected for a group of 100 rural households with interviews for a subsample of 36 on a twice and even thrice weekly basis and the remainder on a monthly basis. In his post research evaluation, Matlon doubts whether the gain in quality by the more frequent

technique was justified by the time and other resources it required. (Matlon, personal communication.)

As an *ex ante* means of stratifying his sample, in this relatively land abundant, low technology situation his subsample of 36 households was chosen on the basis of a two-way, four cell stratification matrix:

"1) above and below mean land to worker (those available for weeding) ratios, and

2) use or non use of *both* chemical fertiliser and seed dressing during the *previous year* . . . An additional sample of five households was purposively selected on the basis of political position and village status." (Matlon 1977:42)

He was not able to measure the entire area of land owned and cultivated. His method of quickly estimating land areas where farmers do not know their acreages was most ingenious and according to his later analysis (after he had been able to measure *all* fields for a subsample), highly successful. He identified and measured only the largest field farmed by each household and estimated the remaining fields as a proportion of this field. This was done by the household head through the proxy comparison of differently sized squares of paper. In cases where land areas have not been measured, it is possible to do this rapidly if recent aerial photographs are available; this is rarely the case, and farm identification can still be time consuming. In the same locality, Norman (1972) did measure land areas owned and cultivated and so was able to stratify a sample of 120 households in three villages on the basis of land area cultivated per resident, but only in an *ex post* manner. He also stratified on the basis of cattle ownership in one village, and in another on place of residence—central village or dispersed hamlet: these could also be considered as a 'quick' means. The three villages had originally been selected on the basis of their ease of communication with an urban centre.

Norman has argued:

"The justification for this (ie stratifying on land per resident basis) is based on the fact that land and labour are the two main factors of production. Low capital utilisation means that the range and variability of resources and enterprises are not very great. In addition, all families in the master sample use only hand tools for cultivation, while the source of most of the labour is the family itself. The land-per-resident ratio therefore forms a convenient means of defining a farm under such low technological conditions." (Norman 1972:9)

However, this stratification was carried out after the sample had been selected because of the time needed to measure field areas. In localities where land has already been measured (perhaps for registration purposes) land holdings can be used as an *ex ante*

means of stratification. One example of this is the study of Epstein in South India (Epstein 1962:42-43). She took a full census of population and land holding of all households in the village and then gave each household a point value according to the size of wet and dry land holding.

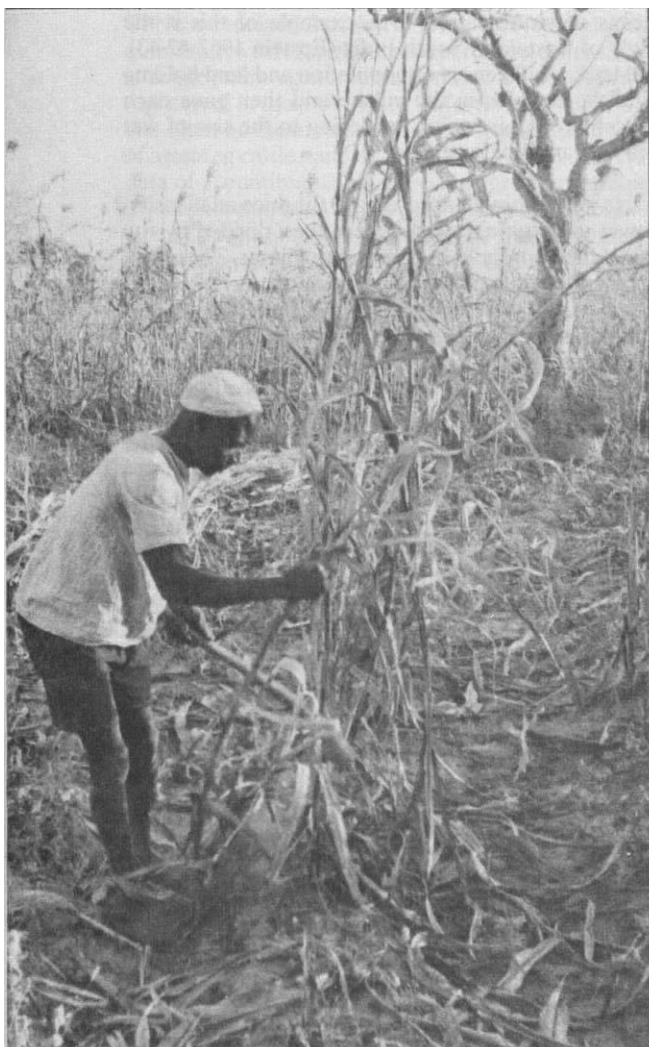
Points were allocated according to the price relationship of wet and dry land which were then divided by the size of the household in consumption units. Therefore a point allocation per consumption unit per household was devised. These point values were listed into categories at a group interval of five, which gave five categories for the village. The five categories were then combined into three with about 40% of the total, households belonging to the poorest section, 57% to the 'middle-farmers' and 3% to the 'magnates'. Then a third in each category were selected completely at random:

"Thus my sample is random in so far as the actual households selected in the sample were selected at random, but it is stratified in as much as households had been previously put into economic categories on the basis of land holding and the size and age composition of the household". (Epstein 1962:43)

This example of *ex ante* stratification is a means of ensuring that the investigation contains a wide range of households.

In drawing lessons from these means of stratification both for making research more cost effective and improving rapid project appraisals, those means which could be employed *ex ante* are of greatest interest. This allows a frame of analysis to be incorporated from the start and the research can proceed along the lines of understanding differences between the various strata. All those described above have involved the measurement of some variable but quicker means of stratification are possible, without necessarily imposing a false structure on the research. Examples would be stratification by caste in India or by occupational class in Northern Nigeria. In the academic literature Smith (1959) has suggested how household heads could be classified into upper, middle or lower class based on occupation type and this method may capture the longer run differences in economic status between groups, which land holdings or annual income may not do. Occupational groups form themselves into guilds. These class levels have been shown to be strongly correlated with asset holdings, land holdings and expenditure on hired labour (Longhurst 1980a).

Income data in the form of absolute levels can really only be collected on the basis of a year in order to record the seasonal variations; data collection should be frequent in order to pick up kind payments as well



Harvesting of sorghum.

Richard Longhurst

as cash. However, there is much doubt as to the usefulness of collecting absolute income levels in view of the resources it requires. A strong argument could also be made that in rural subsistence societies, it is not a useful concept. In a rural economy where incomes are largely derived from land (ie little off farm income), and areas cultivated can be quickly derived if known by the respondent (as, for example, in the manner of Epstein), an investigation that breaks down farm income into specific components (by crop, enterprise or field) can derive good farm income data at one visit. Farmers will tend to recall what had happened in a 'normal' year rather than be able to remember specific years. Data from off-farm sources are difficult to collect and there are few studies that have done so.

If rapport is good, information on asset holdings can be obtained in a quick visit. Rather than detail endless lists of assets in order to derive a complete inventory, a better approach is to ask about selected assets that represent the majority of the value of holdings. They can be valued by applying the local resale value.

These data should be standardised on a family size (consumption unit) basis. Family size appears to be an easily and quickly collected piece of information, but in some circumstances this can also fluctuate. Apart from births and deaths, there can be seasonal migration as well as temporary visitors, food may be sent out on a regular basis to people living elsewhere, in particular, elderly parents.

The difficulty of collecting useful economic data on the basis of quick surveys does suggest falling back on the old faithful of house-type and deriving a score based on number of rooms, type of wall (mud or brick) and roof (thatch, mud or tin). The statistic of house type is one that can be observed by the investigator. It is ironic that measures such as these are used as indicators of socio-economic status in research studies outside rural economics, especially of a medical nature. (A good example is Mata (1978)<sup>1</sup>). The author found in his study in Northern Nigeria, that with two quickly collected statistics expressed in per consumption unit terms—house score and value of household assets—there were significant differences in the expected directions when related to the slowly collected statistic of the position of the household head in the grain market: net seller, self sufficient or grain giver, net buyer, or person reliant on grain gifts. House score<sup>2</sup> in particular is a good proxy for levels of economic well being. These are of course only associations and say little about underlying economic processes and social relations.

#### b) Stratification by threshold measures

Threshold stratifications may reflect *structural* differences in allocational behaviour between two groups: they indicate an 'either-or' situation. To determine the status of a respondent such information could be rapidly collected eg whether a participant in a

<sup>1</sup>Economists criticise medical research workers for not collecting socio-economic data more adequately than this although they rarely offer advice as to what could be collected. Correspondingly, economists in their work may collect data of a medical nature based on quickly measured indicators, eg upper arm circumference. Therefore we find slow and quick (according to discipline) researchers being willing to 'go quick' outside their discipline: for example, slowly collected measures of respiratory infections correlated with quickly collected roof types (medics) and sales from different farm enterprises of the head of household correlated with upper arm circumference of his children (economists).

<sup>2</sup>The score was derived by multiplying the number of rooms by factors according to whether the wall was absent (x 1), cornstalk (x 2) mud (x 4) or cement (x 8), whether the roof was grass (x 1), mud (x 2), or tin (x 4) and if the floor was earth (x 1) or cement (x 2). Ten points were added if the compound had a well. This score was then divided by the total family size in consumption units.

development project uses chemical fertiliser, is male or female, indigenous or a recent immigrant, if these are believed to represent important structural differences. Other classifications such as self-sufficiency in grain or whether net buyers or sellers of farm labour have greater data needs. Those such as debtor/creditor may intrude into areas so sensitive that even long-term research might not find the answer.

In practice, use of self-sufficiency has been seen in Hart's work in Java:

"the criteria which I have used in specifying an operational definition of the three main classes of households in the village are based on the relationship between minimum needs and control over production assets, and are as follows:

Class I: households which are self-sufficient in the sense that they can attain a net income of at least

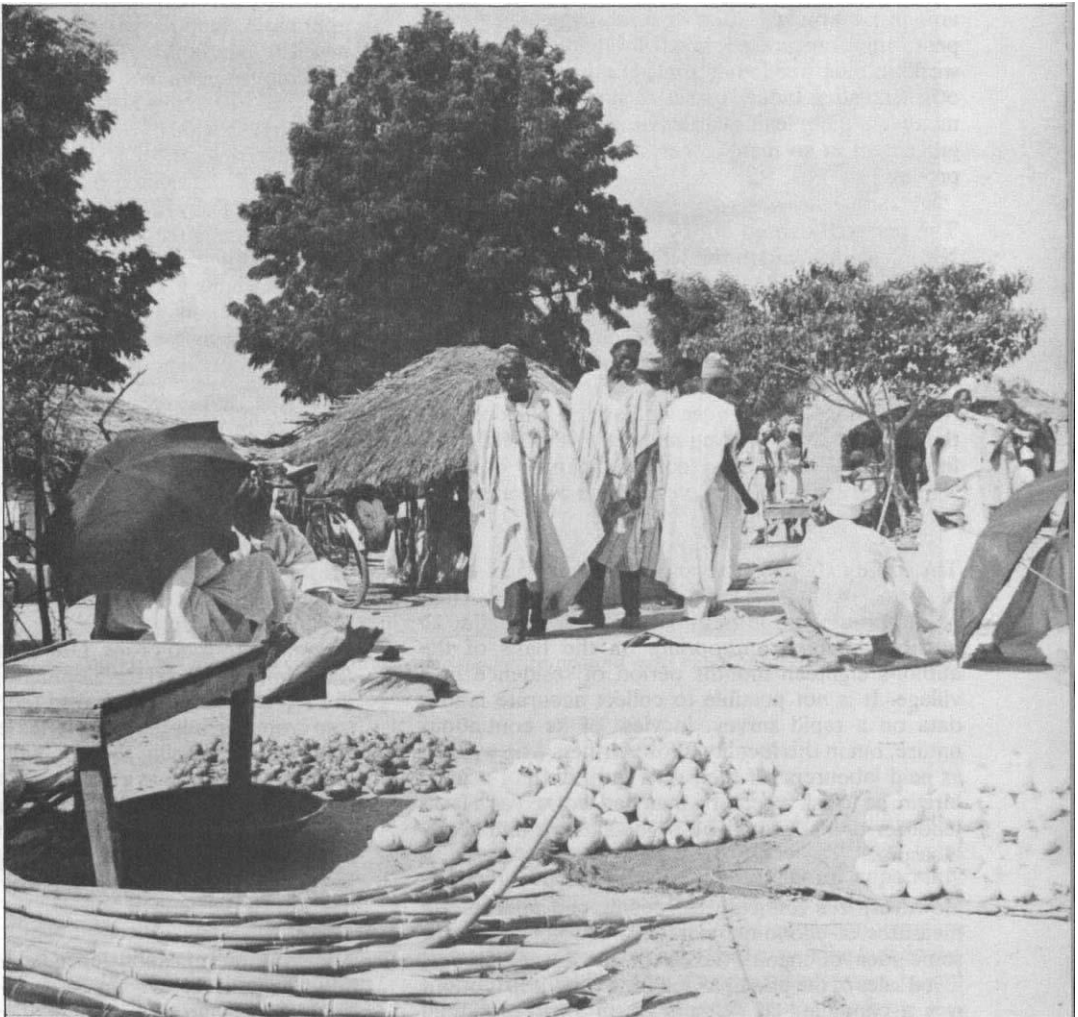
300 kilograms milled rice equivalent per consumer unit per annum from their own productive assets.

Class II: households which control sufficient productive assets to cover food staple needs (150 kilograms of rice per consumer unit) but not enough to achieve a minimum subsistence level of income.

Class III: households which do not control sufficient productive assets to meet even staple food needs." (Hart 1978:103)

This stratification reflects different behaviour between strata in that it incorporates the inverse relationship between farm size and yields per hectare and the lower proportion of purchased inputs on small farms in its construction. In this case, if rapport is good, such information might be obtained during one interview if it were shortly after harvest. If a substantial proportion

Jeremy Jackson



Rural market.

of income was derived from off-farm sources, then this would not provide an accurate picture.

A variation on this means of classification has been used by Hill (1972) who, in a village in Northern Nigeria at the time of a delayed grain harvest, classified, farmers on the basis of opinion supplied by informants as follows:

“group 1 consisting of those who, far from suffering hunger, were actively assisting others in their plight by means of gifts or loans; group 2 of those who were ‘neither suffering nor helping’; group 3 of those who were suffering ‘somewhat’; and group 4 of those who were suffering ‘severely’.

(Hill, 1972:59)

This means of stratification was successful as subsequent, more detailed data collection showed correlations between these groups and measures such as amount of farm labouring work, acreage of farm land per farming unit and per head of weighted population, working men per family unit, grain production and other statistics. Indeed to classify households in such a manner is quite legitimate in view of the need to use judgement at so many other stages in the research process.

The research carried out by this author in Northern Nigeria already had the benefit of advice on short cuts from those who had carried out more intensive research. Strenuous efforts to quantify labour allocation, off farm income levels or income levels in total were not attempted from the start. Other pruning is difficult to imagine as research on farm production cannot be reduced to less than a year with a cropping calendar that starts in April (taking manure to the fields) and finishes in January (last cotton picking). In areas where there is marshland, year round cultivation can occur.

The stratification by class and by net buying or selling of farm labour (the latter reflecting the important cultural desire to be free of farm labouring if at all possible) seemed appropriate on the basis of the author's eighteen months period of residence in a village. It is not possible to collect accurate labour data on a rapid survey, in view of its continuous nature, but in this locality, those farmers who worked as paid labourers off their own farm did not usually hire in, so to ask whether a man had worked as a farm labourer *or not* would be a good rough and ready measure.

However, it is less easy to recommend appropriate measures of economic status from which to derive some idea of income levels or purchasing power. Total sales of the principal non-food cash crop (cotton) was a candidate as farmers of all socio-economic

levels grew and produced similar amounts per consumption unit of the main grain staple (sorghum) and appeared to ‘top up’ with cash crops if resources to extend the farm operation were available. However, this should be applied with care; in the year of the research survey a change in relative prices led to sorghum becoming a profitable ‘cash’ crop. Any measure of the farm operation should be used with care in view of the importance of non-farm income, especially in villages situated on tarmac roads. In the three villages surveyed by Matlon, non agricultural income net of paid farm work was approximately 20% of total income in the lower six deciles, one quarter in the eighth and one third in the top two deciles. These may be further swelled by remittances from relatives in towns.

### III. Improving Project Appraisal

The lessons from the research in improving short term appraisals, such as for project formulation, are not new and can be found in other contributions to this *Bulletin*. Nonetheless they can bear repeating. To have read all relevant documents before coming to the field is obvious, yet many missions appear to have come into this area of Northern Nigeria without having assimilated the standard text on rural economy in Hausaland, Polly Hill's *Rural Hausa*. It is true that this text is an academic study, not oriented towards those wishing to devise policy or design projects, but the unique insights it gives warns many rapid appraisers about important aspects of rural economy. These include the separateness of male and female household budgets, the clear sexual division of labour, land tenure practices, the nature of the male work unit (*gandu*), agricultural practices such as local methods of maintaining soil fertility. Secondly they appear not to have consulted the comprehensive rural survey work of Norman at Ahmadu Bello University between 1965 and 1972 from which three vital points stand out. These are the importance and prevalence of: mixed cropping as a strategy of maximising profit and minimising risk; the labour peak around the time of first weeding; and allocation of farm labour preferentially to food crops. Despite this work, a World Bank-financed rural development project introduced in 1975 emphasised improved technologies based on sole cropping, improved varieties less resistant to local weeds (so increasing the weeding labour needs) and encouraged cotton as a cash crop. A recent evaluation (D'Silva and Raza 1980) has shown how the emphasis on cotton was misplaced and that it was sorghum (the main food crop) which showed the greatest increase in production. Production benefits overall did not justify the cost of the project.

The project formulation depended implicitly on ‘trickle-down’ from large to small farmers and, within households, from men to women, as the means of benefit



*Hausaland village in Northern Nigeria: the moslem women are secluded behind compound walls made of sorghum stalks or mud.*

distribution. Yet a survey of available literature would suggest that given the nature of class structures and economic transactions, benefits between families are unlikely to spread very far and this was in fact the case (D'Silva and Raza 1980). Secondly, given the existing sexual division of labour and network of family responsibilities, men are under no cultural obligations to pass on their benefits to their wives (Longhurst 1980b).

This criticism is not intended to minimise the difficulties of project design in such a complicated local rural economy. Nevertheless, the evidence of apparently little effort being made to understand the local rural economy in the presence of much useful information suggests that this rapid appraisal may have lacked the time in the field or that the evaluators were biased initially in favour of a particular type of project.



It would be possible, however, for appraisal teams in Hausaland to gather much useful information to at least warn them of the complexities of the situation by spending a few days in rural areas, mixing prearranged interviews with visits to local markets and impromptu sessions with farmers. The team would need to include a female member if contact was to be made with the secluded Moslem women. Making time available for such investigations has to be recognised as essential by the sponsors. From the experience of carrying out research, four aspects are suggested as topics in a rapid appraisal. These were formulated in rapid appraisals carried out by the author in villages outside his immediate research locality in an exercise to understand its representativeness:

i) The first step was to concentrate on the technical aspects of agricultural production ie crop production and animal husbandry. In this respect, devising a cropping calendar is a most important device as technical aspects of how crops are grown do not make respondents suspicious and give them a chance to talk about what they know. This will indicate those areas where year-round cultivation is possible. Questions about the *timing* of operations showed the degree of dependence of respondents on the climate, their own labour and use of technology and how far it alleviated constraints in terms of labour time. Farmers owning oxen (about one twelfth of household heads) were less concerned about the first weeding peak as they were able to prepare a better seed bed with less weeds as a result, than those farmers who planted by hand on the previous year's ridges. Richer farmers were able to make the choice between groundnuts and cotton as a cash crop on the basis of the nature of the early rains. Good early rains favoured groundnuts but the seed was expensive.

ii) Well remembered events of the past and the occurrence of outside interventions were used as a pivot for understanding village institutions and the allocation of resources between groups. When the society was under stress (eg as a result of drought, delayed rains, flood, insect or fungal attack) many of the inequalities and disparities between groups were accentuated. At this time resources external to the communities (eg grain, medicine, clothing) become available and their allocation and appropriation provided useful information.

iii) Other than in times of stress, Hausa farmers and households obtained a variety of 'external' resources such as fertiliser, pesticide and credit. The source of such inputs for respondents (eg private trade, gift, repayment of a loan, Local Authority schemes, Government cooperatives) gave valuable information on how the benefits of an increased supply of inputs might be distributed.

iv) Finally, the clearcut sexual division of labour in Hausa Moslem societies cannot be ignored if benefits are to spread beyond men. The Western concept of the family as a homogeneous decision-making unit is misleading in this case and women must be considered as separate entrepreneurs.<sup>3</sup>

Questions should be asked to ascertain respondents' position in the household and their access to off-farm work as this indicates, when a project is introduced, the likely distribution of benefits and workloads to maintain subsistence.

It is suggested that information concentrating on the aspects mentioned above will provide guidance on crop production and its constraints, and the allocation of resources between and within families. It should improve both the efficiency and equity of an agricultural development project. It may also bring to light those groups normally left out of a project formulation.

#### IV. Conclusion: Who are the Poor?

The continually expressed desire of rural people in Malumfashi was to be free of arduous farm work and illness. Those who are always entirely dependent on their own labour power without off-farm income sources are likely to remain poor. Therefore ownership of effort-saving technology and membership of guilds indicates the better off.

The interlocking biases and perceptions described by Chambers certainly make the poor less visible in Northern Nigeria; Moslem women are not seen during the day. But this research showed another aspect of the invisibility of poverty which might not come out in a rapid survey. The incidence of child malnutrition and infant mortality is as high as in many villages in land-scarce areas of Asia; examination of pregnancy histories of women show considerable losses of children, particularly just after birth. For this reason, measures of nutrition and health should be included with those indicators of rural economy that have been mentioned in this article.

<sup>3</sup>The women are free to pursue their own income-earning work (usually preparing cooked food for sale) as long as they provide labour for food preparation, child bearing and care, and general domestic chores. They must remain secluded. The husband provides food, water, firewood, housekeeping money and shelter for the family as well as gifts at festival times. Other male relatives in the family may be part of the *gandu* with decisions about the farm operation being left to the senior male. There are similar household structures in other parts of West Africa.



## References

- Chambers, R., 1980, 'Rapid rural appraisal: rationale and repertoire', *Discussion Paper* 155, IDS, Sussex
- D'Silva, B.C.D., and M. Rafique Raza 1980, 'Integrated Rural Development in Nigeria: The Funtua Project', *Food Policy*, vol 5 no 4, pp 282-297
- Epstein, T. S., 1962, *Economic Development and Social Change in South India*. Manchester University Press
- Hart, G. P., 1978, 'Labour Allocation Strategies in Rural Javanese Households', PhD Thesis, Cornell University, New York
- Hays, H. M., 1975, 'The Marketing and Storage of Food Grains in Northern Nigeria', *Samaru Miscellaneous Paper*, 50, Institute for Agricultural Research, Ahmadu Bello University, Zaria
- Hill, P., 1972, *Rural Hausa: A Village and a Setting*. Cambridge University Press
- Lipton, M. and M. Moore, 1972, 'The methodology of village studies in less developed countries', *Discussion Paper* 10, IDS, Sussex
- Longhurst, R., 1980a, 'Work, Nutrition and Child Malnutrition in a Northern Nigerian Village', DPhil Thesis, Sussex University
- Longhurst, R., 1980b, 'Rural development planning and the sexual division of labour: A case study of a Moslem Hausa village in Northern Nigeria', *World Employment Programme Research Working Paper* 10, ILO, Geneva
- Mata, L. J., 1978, 'The Children of Santa Maria Cauque: a Prospective Field Study of Health and Growth', *Cornell/MIT International Nutrition Policy Series*. New York
- Matlon, P. J., 1977, 'The Size Distribution, Structure and Determinants of Personal Income Among Farmers in the North of Nigeria', PhD Thesis, Cornell University, New York
- Norman, D. W., 1967, 'An Economic Study of Three Villages in Zaria Province, 1. Land and Labour Relationships', *Samaru Miscellaneous Paper* 19, Institute for Agricultural Research, Ahmadu Bello University, Zaria
- 1972, 'An Economic Study of Three Villages in Zaria Province, 2. Input-Output Study', *Samaru Miscellaneous Study* 37, Institute for Agricultural Research, Ahmadu Bello University, Zaria
- with J. C. Fine, A. D. Goddard, W. J. Kroeker and D. H. Pryor, 1976, 'A Socio Economic Survey of Three Villages in the Sokoto Close-Settled Zone, 3. Input-Output Study Vol. 1: Text', *Samaru Miscellaneous Paper* 64, Institute for Agricultural Research, Ahmadu Bello University, Zaria
- Simmons, E. B., 1976, 'Calorie and Protein Intakes in Three Villages of Zaria Province, May 1970-July 1971', *Samaru Miscellaneous Paper* 56, Institute for Agricultural Research, Ahmadu Bello University, Zaria
- Smith, M. G., 1959, 'The Hausa System of Social Status', *Africa*, vol 29 no 3, pp 239-259