

Editorial

PRA and livestock development: some challenges

• Why PRA and livestock?

Much of the PRA debate and literature thus far focuses on the collection of data on crop production, and presents few case studies on methods for understanding livestock production and planning with livestock owners. This special issue therefore attempts to bring together some examples of practice and experiences in this field.

Among researchers and development practitioners alike, there is increasing recognition that the use of the range of techniques known as PRA (as distinguished, often, from RRA) involves far more than a series of methodologies for improving the speed or efficacy of data collection. PRA, if it is to live up to its ideals, must form part of a much wider process of participatory planning, controlled by local communities themselves (Chambers, 1992).

As the next century fast approaches, there is an increasing realisation among development agencies (bilateral, multilateral and NGOs) that the efforts of the last few decades have substantially failed to eradicate, or in many cases even reduce, poverty for many millions of people around the world. As a result, the development debate is turning anew to the importance of poverty alleviation, and to the emerging concept of livelihood security: it is now becoming recognised that poverty levels will only be substantially reduced when livelihoods are made more secure, with all that that entails (Maxwell, 1991).

Livelihood security encompasses not only access to food and the resources required to produce it in the present, but also those required to maintain production in the future, and the social networks which are necessary

for survival in the longer term. Among the vulnerable groups whose livelihoods are under threat, are smallholder farmers and pastoralists, for whom livestock play a significant role in the support of their livelihood and lifestyle. Development practitioners need to understand the nature of these livelihoods if they are to address the issue of poverty alleviation.

• What role can PRA play?

The significance of PRA data collection techniques is that local communities potentially gain greater access to and control over the process of understanding and analysing themselves, in which development workers are engaged. This in itself is a welcome departure from more 'extractive' forms of data collection which historically have disempowered communities. Furthermore, the advent of PRA, and the debates surrounding its good practice, have done much to expand the range of methods of information collection for both research and for project appraisal.

However, the extent to which PRA is ultimately effective depends on the context in which it is used, and the end point to which it is contributing. As highlighted above, PRA is only as participative as the remainder of the process into which it fits. A fully participative exercise which involves the community in analysing its own problems and even in preparing its own solutions, can be followed by an implementation phase conducted and controlled by outsiders. John Devavaram presents an example of this in his case study (this issue) of a buffalo restocking project in India. A participative evaluation, using PRA techniques, resulted in the identification of key weak areas in the design of the project and

clear recommendations for improvement. However, the recommendations were not acted upon, with the result that the community refused to participate in a later evaluation, feeling that their previous input had been wasted.

Similarly, Hadrill and Yusuf, in their case study of Sanaag herders in Somaliland, explain that the research on seasonal migrations, whilst making use of PRA techniques, was not in itself participatory, in that it did not form part of a wider participative process involving joint planning with the community. One of the positive outcomes of the research, however, was the identification of the need for further, and more participatory, appraisal in the future.

Since this issue focuses largely on the actual practice of the various PRA techniques which have been used in work with livestock owners, the end point of the work is understandably not always made explicit. The challenge remains, however, for both researchers and development practitioners, to ensure that the end point of participatory appraisal is not only participation by the community in whatever activities ensues, but also a real increase in the livelihood security of the community through the alleviation of poverty.

This is particularly - but not only - a challenge to researchers, for whom the direct links between their research and an increase in livelihood security may be harder to make, though nonetheless imperative. Participative involvement in a research project may in fact be more cruel than more extractive forms of information collection, if the end point is not some tangible benefit to the community. Expectations may have been raised further by the use of such methods for which the initiators may have some responsibility¹.

• How appropriate is PRA?

The appropriateness of PRA methods is also of central importance. PRA theory is characterised by flexibility and adaptability, which encourages the practitioner to develop

and enhance the techniques according to the local context. Nevertheless, despite this recognition, there is still the danger of an emerging 'new orthodoxy', which makes rigid a once open and flexible approach. Thus there is a need for constant vigilance and a commitment to real adaptation and learning.

This is highlighted by several of the case studies found in this issue. For example, Braganca questions the appropriateness of wealth ranking in a community recovering from many years of civil war: the community had been so dispersed that the normal levels of knowledge of each others' wealth were absent. Braganca also points out that the majority of women were absent, which provides a considerable challenge not only for the obtaining of gender balanced information *about* the community, but more importantly for participatory planning *with* the community.

Leyland too refers to the constraints due to the war: he explains that traditional decision-making bodies have been broken down, with the result that ultimately the project planning was performed by the outside NGO and the local mujihadeen leaders, in spite of the participative appraisal carried out. Leyland also explains the difficulties he encountered using graphics and pictorial representation, a cornerstone of PRA techniques, with farmers in the Daye Chopan valley, Afghanistan. In this case, oral communication proved more appropriate among communities unaccustomed to diagrams².

Clearly, the challenge for PRA practitioners is to develop appropriate participatory processes in each and every context. A key factor in this is not only a recognition of the wealth of indigenous knowledge, but also a willingness to learn about indigenous forms of communication and adapt or even reject PRA methods in response.

¹ The recent workshop on PRA and Gender (IDS, University of Sussex, December 1993) involved considerable discussion on the responsibility of those initiating participatory appraisal.

² Gerard Gill (*RRA Notes 18*, June 1993) questions whether "some 'participatory' techniques are culturally biased". He describes how he and colleagues unsuccessfully tried to use pie charts to explore cropping patterns with Nepali farmers, and outlines the adaptation which was subsequently developed, which involved using money as an analogy. This was based on a local tradition of using *annas*, the subdivision of the *rupee*, to express relative quantity.

A further challenge for PRA practitioners involved in livestock development is the understanding of the role that livestock plays in the community, in particular in securing livelihoods. While 'livestock' is the unifying theme of this issue, the case studies cover examples from a wide range of livelihoods, from pastoralists to small-scale mixed farming communities. In each community, the role of livestock needs to be understood as part of the livelihood system for household survival, and the PRA methods and techniques used need to reflect this. There can be therefore, no standard 'PRA for livestock'.

• Conclusion

For PRA practitioners, then, the challenges abound: to ensure that participatory planning, in the control of the local community, is an integral part of the PRA process; to make sure that that process will actually contribute to the livelihood security of the community (or at the very least, not undermine it); and to be flexible and adaptive in all contexts, in particular to be open to learn about local communication methods and channels. Livestock specialists face the particular challenge of understanding the varying roles which livestock play within the community, especially in relation to the other factors which make up the livelihood security of the livestock owners. PRA is a useful tool which can facilitate this understanding, whilst at the same time contributing to the empowerment of those communities.

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A review of PRA methods for livestock research and development

Kate Kirsopp-Reed

• Introduction

During the past six or seven years a range of methods for participatory rural appraisal (PRA) have been tried and tested in the field by development professionals from a wide variety of backgrounds. Most of these methods are continually being refined and adapted to cope with the diversity of local ecological conditions and cultures. This paper reviews a selection of PRA techniques that are either currently in use or which are believed to have potential application with communities who depend on livestock for their livelihood.

Detailed examples of many of the PRA methods outlined in this paper can be found in the case studies in this issue. While many PRA techniques are simple, others are more complex to implement, requiring concentration, organisation and full participation. The best results are often achieved when they are used flexibly and in sequence. Ultimately they provide a means of stimulating better discussion, rather than an end in themselves.

The following list of techniques is by no means exhaustive. It has been drawn up merely to illustrate the range of methods available.

• Methods

Direct observation and village walks

Perhaps the easiest and least time-consuming methods of learning about the local livestock management and production system are through first-hand observation and the recognition of key indicators. Direct

observation, often combined with informal questioning, can yield a substantial amount of general and specific information and should not be overlooked when conducting a PRA. They can give an indication of a number of important aspects of the local farming system including:

- The health and nutritional status of the livestock;
- The members of the family responsible for the livestock;
- Livestock housing system;
- Grazing/feeding strategy;
- Milking regime; and,
- Care of young stock.

Walking with farmers around their fields or homesteads will often draw the researcher's attention to local innovations or animal husbandry techniques which might otherwise have passed unnoticed. Visiting a watering place or a communal dipping site also provides ideal locations from which to observe types, breeds and numbers of livestock that are kept in, or pass through, the region.

During village walks and informal discussions it is important to be able to recognise key indicators of the status and well-being of livestock. M. Ghirotti (p.78) explains that knowledge of these parameters could help development professionals quickly assess the local livestock situation. This knowledge should also help to understand and interpret qualitative data collected through PRA techniques.

Indigenous knowledge

Knowledge of local calendars and classification systems often provides important

information about local farming systems. An initial understanding of these can avoid unnecessary questions later. David Hadrill and Haroon Yusuf (p.106) describe and explain the basis of a herders' calendar in Somaliland. It is governed by the different celestial formations and seasonal climatic variations. Disease incidence and nutritional management practices are strongly linked to this calendar. This knowledge was important in the subsequent planning of an appropriate primary animal health care programme.

Raul Perezgrovas, Marisela Peralta and Pastor Pedraza (p.69) discovered how little they and their colleagues knew about the indigenous sheep production system used by Indian shepherdesses in the Chiapas, Mexico. They were surprised to learn about the success and efficiency of the traditional management system and the extent of local knowledge of sheep production. They only discovered this by living with the shepherdesses and helping them with their daily chores and husbandry practices. This provided them with opportunities to ask questions, carry out some of the daily tasks for themselves and encouraged them to respect traditional practices.

Semi-structured interviews

Interviewing is one of the most important methods of gathering information, and often forms the core of a good PRA. Used to explore issues arising from participatory exercises, and to generate discussions which may lead to more visual techniques, semi-structured interviewing complements most participatory research methods. Interviews and discussions can be carried out with selected or randomly chosen individuals and groups.

Although practitioners should have a written or mental check-list of the minimum data to be collected, they should also be flexible. Thus if new aspects of animal production or socio-economic conditions crop up during the course of the questioning, she/he will be prepared to pursue these.

The following information is thought to provide the minimum data needed for livestock development planning (Swift, 1981):

- Total number of livestock species;
- Herd and flock demographics: herd structure, fertility, mortality;
- Output data: quantity and seasonal distribution of milk or eggs; and,
- Offtake rates: age and sex of animals sold or slaughtered, rates of weight-gain in young animals, days/hours worked by draft animals.

Case histories/animal biographies

It is often difficult to obtain data on livestock output or mortality and fertility. However, by systematically recording full animal life histories and genealogies, one can obtain this data in more detail and with greater accuracy. Often livestock owners remember their animals' life histories accurately and are not reluctant to part with this information. By simply shifting the emphasis of an interview away from the owners and focusing on the animal, the discussion becomes much easier and the information more detailed and reliable. In effect, livestock owners are used as translators for the animals¹. Swift (1981) suggests that a researcher visit the herd or flock with the owner and record, on a standard form, the major facts and events of each female's life, including:

- How it entered and left the herd;
- Any partial property rights;
- Reproductive history; and,
- Fate and health status of offspring and siblings.

Figure 1 is an example of a form for interviewing cattle used by Getinet Lemma, of SOS Sahel, during a PRA Training Course (IIED and ActionAid Ethiopia, 1992).

¹ Kassaye Hadgu, Mohammed Yissehak and Girmay Tekle present a cartoon in *RRA Notes 15* which gives details 'of an interview with a cow'.

Figure 1. Form for interviewing cattle

Interviewer:

Date:

Agroecological zone:

Farmer:

Peasant association:

Awraja:

Cow number:

Cow age:

Let us discuss this cow.

How many times did she calve?

Let us discuss the 1st, 2nd, 3rd etc. calf.

Calf no.	M/F	If dead, what cause and at what age?	Where is this calf now?	If now in herd, what age?	If sold, to what sort of person, at what age?	If otherwise disposed of, to whom, at what age?
1						
2						
3						
4						

Is this cow your own property, or are you looking after it for someone else?.....

If someone else, what relation are they to you?.....

If it is your own property, how, when, and from what sort of person did you acquire it?.....

ADULT MALES

No.	Age?	How acquired?	If not born in herd, purpose of acquisition?	If not born in herd, age at acquisition?
1				
2				
3				
4				

Source: IIED/ActionAid Ethiopia 1992. *Look Who's talking*. PRA Training Course.

Case histories can be used with all types of stock. When used to investigate longer time periods, case histories can lead to related discussions on change. Older animals make the best informants. The process could start with where they were born and what significant things happened to them during their lives. These can then be marked on a time-line (see below) and explored further.

Karen Iles (p.71) presents a case study of a progeny history which she carried out in Kenya on behalf of ITDG. She includes a structured question list which can be followed when interviewing farmers. John Young et al. (p.58) used progeny histories with farmers in Nepal to investigate the fate of offspring from

adult female livestock and to explore the disease problem. From this information they were able to calculate the rates of offtake through sale, slaughter and gifting, and loss through disease.

It is also possible to calculate fertility, calving intervals and mortality within different years from information collected through a case history. Case histories give researchers an idea of the entire range of fertilities and mortalities. Thus they should provide more realistic data than averages collected from many livestock in a single year. Furthermore, using animal histories to gather data allows dynamic models of household herds, rather than aggregate herds, to be constructed. This makes it

possible to compare the herding efficiency, management strategies and consequential loss of animals between individual households.

Ethnoveterinary question list

Animal health is often ranked as one of the major factors limiting production by communities who depend on livestock for their livelihood. Therefore the collection of local information about disease causation, prevention and treatment is a basic requirement of an animal improvement programme. Barbara Grandin and John Young (p.39) describe a systematic method for the collection of such data. They recommend that it be carried out in two stages:

1. Gathering background information on the local production system; species and breeds; the local calendar; and local disease names; and,
2. Use of a questionnaire to gather detailed information about each disease.

This information can provide considerable detail on the local perspective of disease, which can vary greatly between and within communities.

Participatory maps and models

Maps and models are simple, visual devices for representing information in an understandable format. They capture, analyse and present information which would probably be less precise, less clear and much less succinct if expressed in words. Instead of outsiders asking questions and recording answers in notebooks, maps are constructed by the informants themselves.

Maps often make a good 'ice-breaker' at the start of a PRA because they can create a common consensus and aid communication between different people. A map should act as a focus for discussion and should be bold and simple in design. Being three-dimensional, models can promote even greater discussion. Box 1 describes participatory mapping techniques:

BOX 1

PARTICIPATORY MAPPING

Maps are best drawn on the ground - this allows more people to see what is happening, and paper may restrict the drawing of boundaries;

The mapping exercise should begin with the drawing of two local reference points, since the concept of north at the top of the map is not universal;

Farmers are then asked to draw, mark and colour maps using local materials (sticks, stones, grass, wood, coloured sands and soils). This should be done with the minimum of interference and instruction from outsiders, other than to stimulate activity by open-ended questioning about the map or model;

During the mapping exercise it is often useful to note which features were drawn in first and by whom, and the discussions which arise around modifications of the siting of particular features;

Once complete, the map can be transferred onto paper for further discussion and to enable it to be re-used or cross-checked with others. A key should be added to either identify various topographical features or to represent agricultural products;

It is important that the exercise is repeated with informants representing different interests.

James Mascarenhas (*RRA Notes No. 12*) describes mapping and diagramming techniques in greater detail.

There are several types of participatory maps and modelling exercises. They can have many uses for learning about and explaining the local livestock management practices, constraints and potentials, as well as the socio-economic factors that affect livestock-keeping communities. Some examples are discussed below.

Social and wealth mapping

Social maps are often used near the beginning of a PRA to locate and record household members and social features in a village. They can be adapted to gather census material on the local livestock population. Using a map which shows all the households in a given area, local people can mark in the number of animals in each household, irrespective of ownership. Using arrows, the owners of these animals (if not owned by the household), can be indicated. If several types of sharing relationship exist, these can be marked onto the map using different colours or thicknesses of lines. If the map is big enough, it may also be possible to mark those stock owned by individual household members. Also the number of sick animals in each household can be illustrated. Alternatively, several maps could be produced, each focusing on a particular theme.

Social/livestock assets mapping can easily be done in sequence with wealth ranking exercises (see below). Wealth ranking can be carried out directly onto a community map, usually in conjunction with a group discussion of the main factors that constitute wealth and well-being so that researchers can gain an understanding of local wealth criteria. Anabela Braganca (p.157) describes and illustrates a participatory wealth ranking exercise that was carried out directly onto a map in Mozambique.

Social and livestock assets mapping can help to work out approximate populations, and can generate discussions on sharing ownership of livestock or livestock products within households. Mapping can also lead on to participatory network or systems diagramming techniques (described below).

Figure 2, taken from ActionAid and IIED (1992), is an example of wealth ranking using a social map. It was drawn by two Ethiopian women who could read and write. They were asked what was available in the *tukuls* (huts). This prompted them to describe and draw livelihood assets and family members. The map yielded information on family size and composition, and numbers of chickens, goats, sheep, cows and oxen. The same exercise, carried out with men, gave slightly different information.

John Devavaram (p.133) explains that the SPEECH team carried out a social modelling exercise with villagers in Tamil Nadu. This revealed that the existing caste system denies *Daliths* (members of the 'untouchable' caste) access to key resources in the village. It is unlikely that this information, although vital for the success of the project, would have been learned during a formal question and answer session.

Opportunities and services maps

Figure 3 shows a map, drawn by a facilitator and local farmers in Dilapa, Ethiopia, to investigate opportunities and services in the area (IIED and ActionAid Ethiopia, 1992). This could equally be applied to livestock - to investigate the availability of veterinary care or local healers, marketing opportunities, reserve grazing areas available during periods of shortages etc.

Figure 2. Social and assets map of 46 households

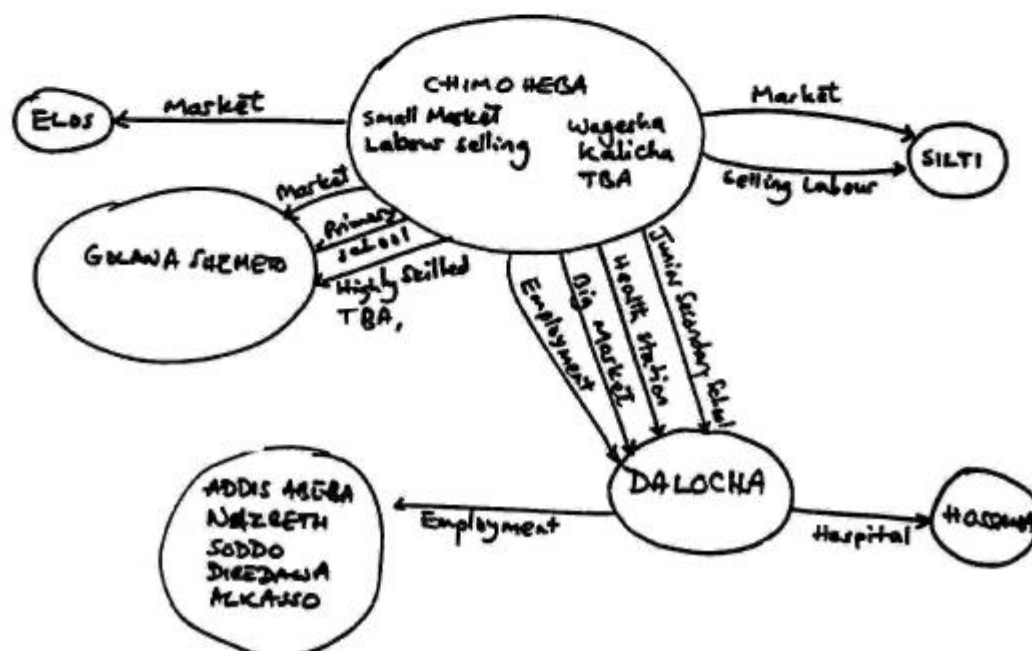
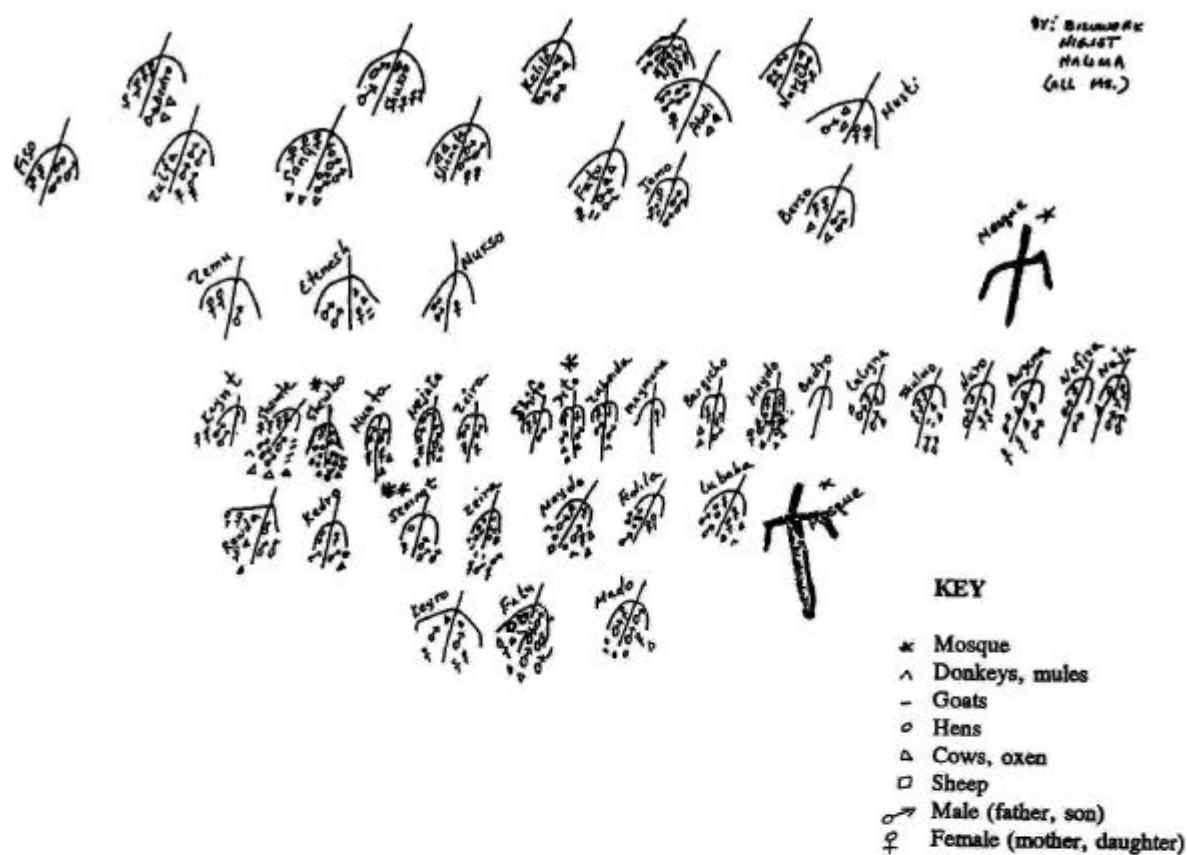


Figure 3. Opportunities and services map: Dilapa, Ethiopia

Resource maps

Resource maps and farm maps, drawn by local people, can be used to indicate which natural resources in the area are used by livestock. They are often used in conjunction with a transect walk across grazing areas. These maps can provide a valuable source of locally-specific information relevant to livestock management. For example they may reveal the browse and fodder species found in the region or the areas that farmers associate with disease.

Further suggestions for the use of resource maps include:

- Drawing separate resource maps for each different season;

- Mapping small areas of key resources to explain the factors that determine seasonal grazing patterns (e.g. the use of patches reserved for dry season grazing); and,
- To compare local ecological conditions before and after a significant historical event or the introduction of a technical innovation.

Lively discussions and large amounts of information can stem from resource mapping exercises. They can also lead into other activities such as preference ranking of feed types and seasonality analyses. Resource maps can become complex and detailed so it may be beneficial to draw separate thematic maps. Listed below are a number of examples of how resource maps can be used:

Use of map	Description
General Resources	John Young et al. (p.58) asked villagers to draw a map of Pyutar village. It shows a wide range of local resources: crops, livestock, grazing, forests, springs, houses, fodder trees and topographical features.
Grazing Resources	Robin Mearns et al. (p.95) include a map drawn by a group of Mongolian women. It denotes the differing qualities of the grazing resources and their relation to disease incidence. It also shows winter and summer shelters and pastures.
Key Resources	Robin Mearns et al. (p.95) provide a map showing the location of key seasonal grazing resources, drawn by a group of local farmers.
Topical Maps	These are often drawn by local experts, e.g. the soil, tree or water specialist.
Pastoral Grazing Cycle	Both David Hadrill and Haroon Yusuf (p.106), and Robin Mearns et al. (p.95) asked herders to document their seasonal movements. Mearns et al. show actual distances travelled on a separate diagram. The herders' movements are drawn by the facilitators on a map showing key topographical features such as rivers and highlands. Watering points could also be plotted.
Impact Monitoring	A map could be drawn to record the past, and expected future, impact of pest and disease incidence, livestock breeds and species, pasture quality, fodder resources etc.

Mobility mapping

This mapping technique is described in detail by Heather Grady et al. in *RRA Notes No. 10*. Mobility maps are used to determine where, why and how often men and women travel, either with or without their livestock. They are particularly useful with pastoral communities. The informant's community is drawn at the centre of the map, and other points represent possible locations where he/she might travel. Concentric lines are drawn between the community and the destination. Separate maps are drawn for each individual and notes are taken on the frequency of and reason for travel.

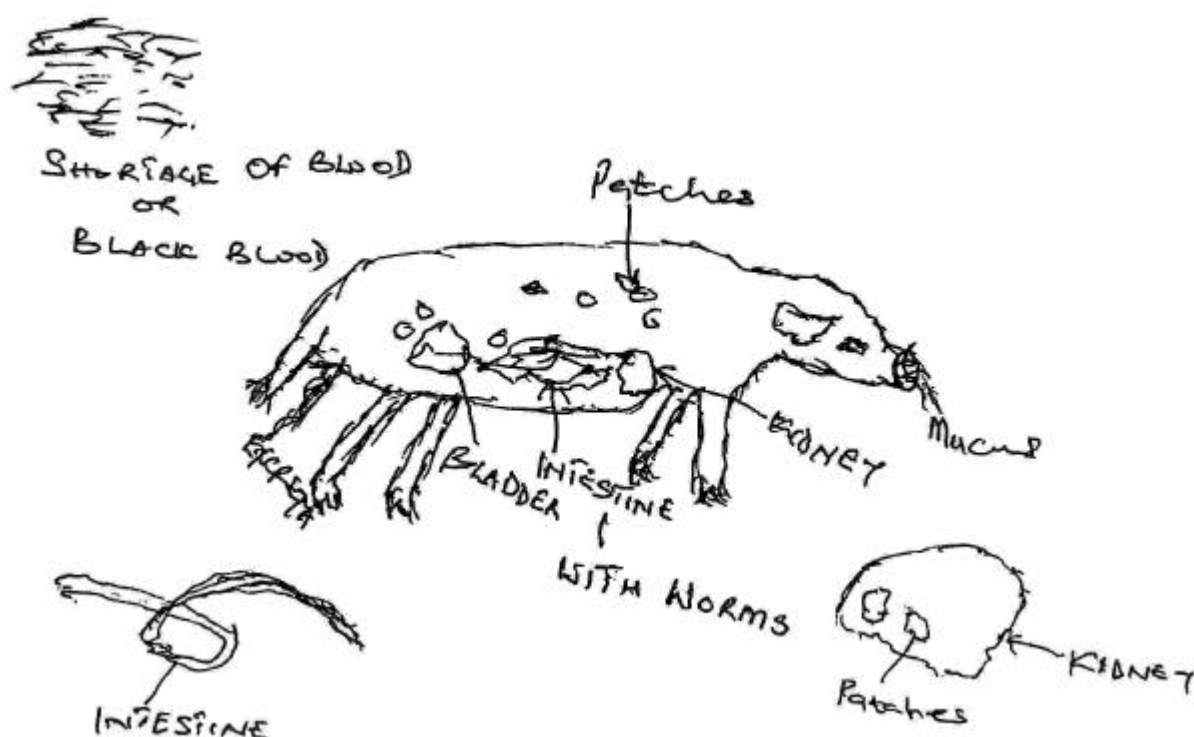
Louise Cooper and Narangerel Gelezhamstin (p.115) describe their experience with mobility mapping in Mongolia. Their maps illustrate

the relative distances travelled by herding men and women in the area.

Body maps

Andrea Cornwall (*RRA Notes No. 16*) used body mapping as a way of understanding people's knowledge and perceptions of their anatomy, physiology and the internal effects of certain diseases or treatments. This method can also be used with livestock (Figure 4). People are asked to draw an outline of an animal, then mark in where the food goes, where offspring develop etc. It is important not to lead by asking for structures, but to let people indicate them for themselves by focusing on processes. From this diagram further interviewing can lead to the marking in of other structures and processes as well as to explanations and theories of disease causation and treatment.

Figure 4. Body map of pig illustrating symptoms of Elede Alarun



Transects

Transects are systematic walks taken with farmers or key informants through an area. They are useful when carried out near the beginning of a PRA to give an overview of the farming system and natural resources in an area and focus attention on the different zones or micro-environments. They can follow a loop, a water course, straight line or S-shape to fit in with the local topography.

Transect walks are recorded using sketches in the form of a matrix table with the relief of the transect walked along forming the top of the table and the studied criteria listed in the left-hand column. Field notes and comments are entered in the appropriate box.

In the context of livestock production, transects can be used to discover types and quality of grasses and fodder trees, crops and by-products available as livestock feeds, communal grazing lands and water sources.

Figure 5 shows the results of a transect carried out with villagers in Mongolia (see also p.95). The aim was to gain a general introduction to the area and to begin to identify grazing and other key resources.

Participatory diagrams

Diagrams can be an important tool for summarising, recording and analysing farmers' information. As in mapping, it is necessary to repeat diagramming exercises with a cross-section of informants representing different interests. Discussed below are a number of different participatory diagramming techniques.

Systems analysis diagram

A systems diagram can prompt discussions on the details of the livestock production system, including:

- Inputs;
- Outputs;
- Opportunities;
- Services; and,
- Constraints, together with solutions developed to cope with them.

The diagrams are usually drawn by individual farmers or household members and tend to work best if done after farm or resource mapping, or once the farmer has listed his/her livestock assets and available resources.

A central circle is drawn to indicate the number and type of livestock in the household. From this, inputs and outputs, markets and services are mapped and discussed. Flows of resources between the different parts of the system can be indicated by arrows. The researcher asks open-ended questions to encourage the informant to analyse the system thoroughly. Different colours or thicknesses of lines can be used to mark labour inputs derived from different ownerships rights for livestock products.

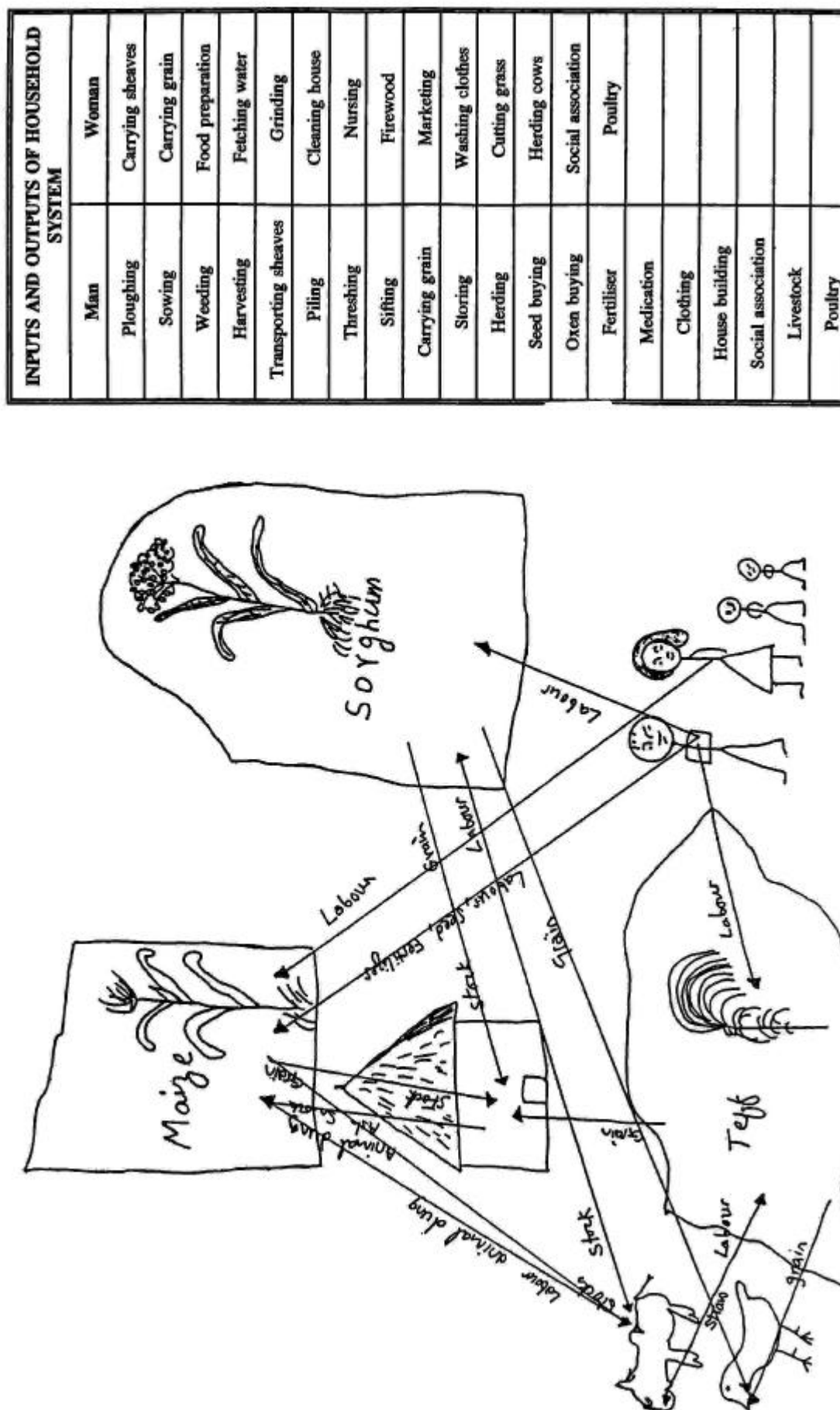
A household system analysis, shown in Figure 6, was carried out by ActionAid (1992) with the assistance of an Ethiopian farmer. The farmer was asked to draw his farm plots then list all the inputs and outputs of the system. He included the labour of himself and his wife separately.

Figure 7 shows a system diagram, drawn by a facilitator, to show the causes and treatments of human diseases (IIED and ActionAid, 1992). However this could just as easily be applied to livestock.

Figure 5. Transects Through Hukh Nuur Brigade, Mongolia

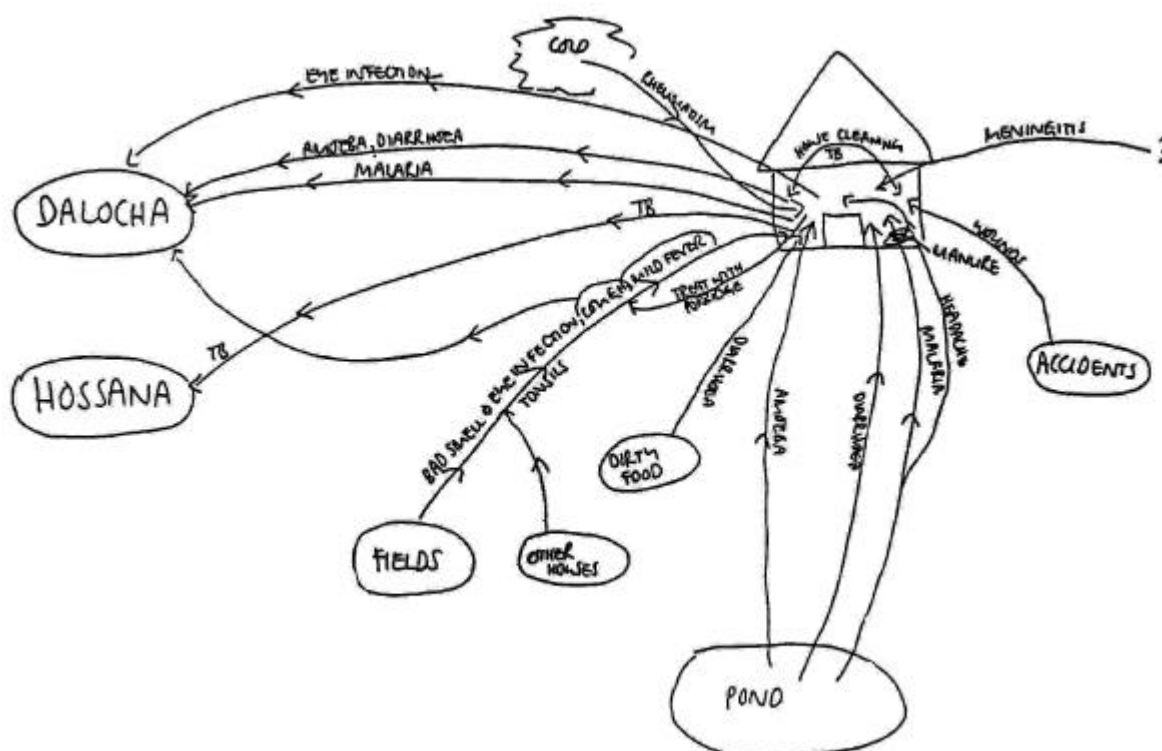


Figure 6. Household System Analysis: Kitkita, Ethiopia



INPUTS AND OUTPUTS OF HOUSEHOLD SYSTEM	
Man	Woman
Ploughing	Carrying sheaves
Sowing	Carrying grain
Weeding	Food preparation
Harvesting	Fetching water
Transporting sheaves	Grinding
Piling	Cleaning house
Threshing	Nursing
Sifting	Firewood
Carrying grain	Marketing
Storing	Washing clothes
Herding	Cutting grass
Seed buying	Herding cows
Oxen buying	Social association
Fertiliser	Poultry
Medication	
Clothing	
House building	
Social association	
Livestock	
Poultry	

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Process/flow diagrams

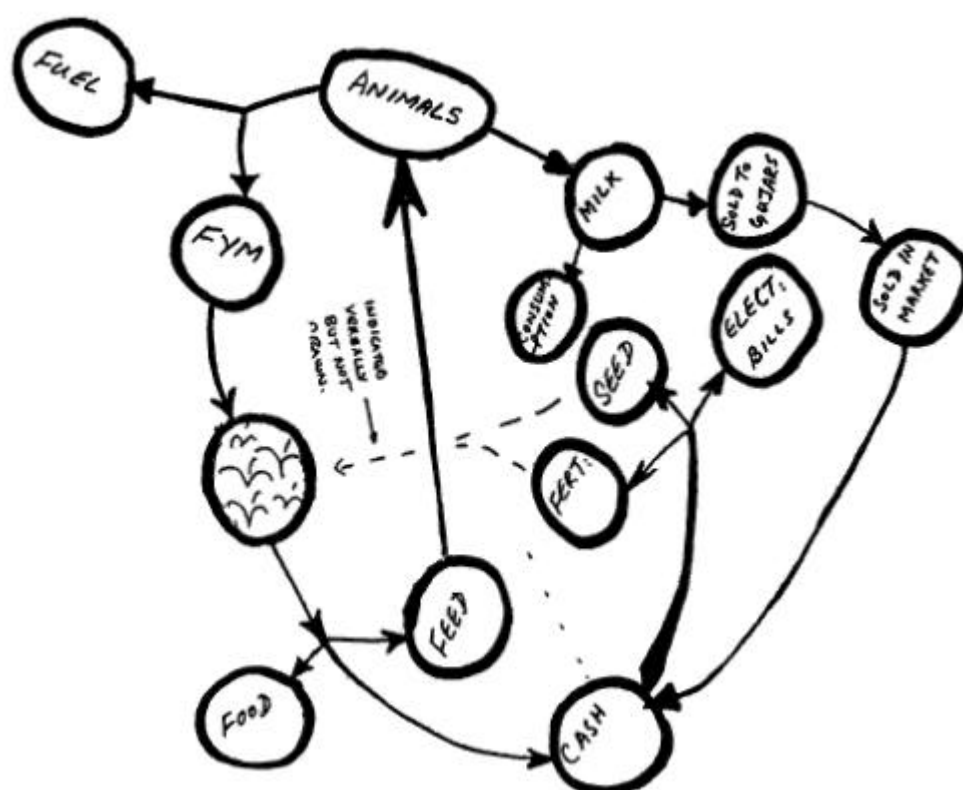
This method of diagramming is useful for summarising any sequence of events clearly. For example, it can demonstrate, step by step, the process of a production operation. If costs are incurred at any stage (including monetary and labour costs and returns) they are noted alongside. In this way the diagram can become a simple production account. This exercise demonstrates both the complexity of resource management and stimulates a range of discussions on related issues.

Process diagrams can also be used to investigate daily activity profiles for tending livestock or for household duties. Flow

diagrams can be used to investigate the sequences followed in the progression of an illness i.e. showing local diagnostic skills and facilities, together with treatments given at each stage of the illness and any other significant factors.

A group of farmers in Pakistan, having discussed the farm profile, drew a systems flow diagram to illustrate the flow of nutrients and other inputs into the farm (Figure 8). They drew the diagram on the ground using pieces of straw, chalk, leaves, stones etc. and discussed the issues amongst themselves, at the same time explaining them to the research team and answering further probing questions (IIED and PSPDP, 1992a).

Figure 8. Systems flow diagram, Pakistan



Venn diagrams

Venn diagrams are mostly used to explore the relative importance of services and institutions to a community. The technique uses circles, drawn in various sizes, to represent the relative importance and range of individuals or institutions. Livestock owners are asked to position the circles according to the relationship between them, i.e. the degree of contact and overlap in decision-making. An alternative method is to draw lines between circles and the village circle, with the thickness of the line representing the strength of the relationship.

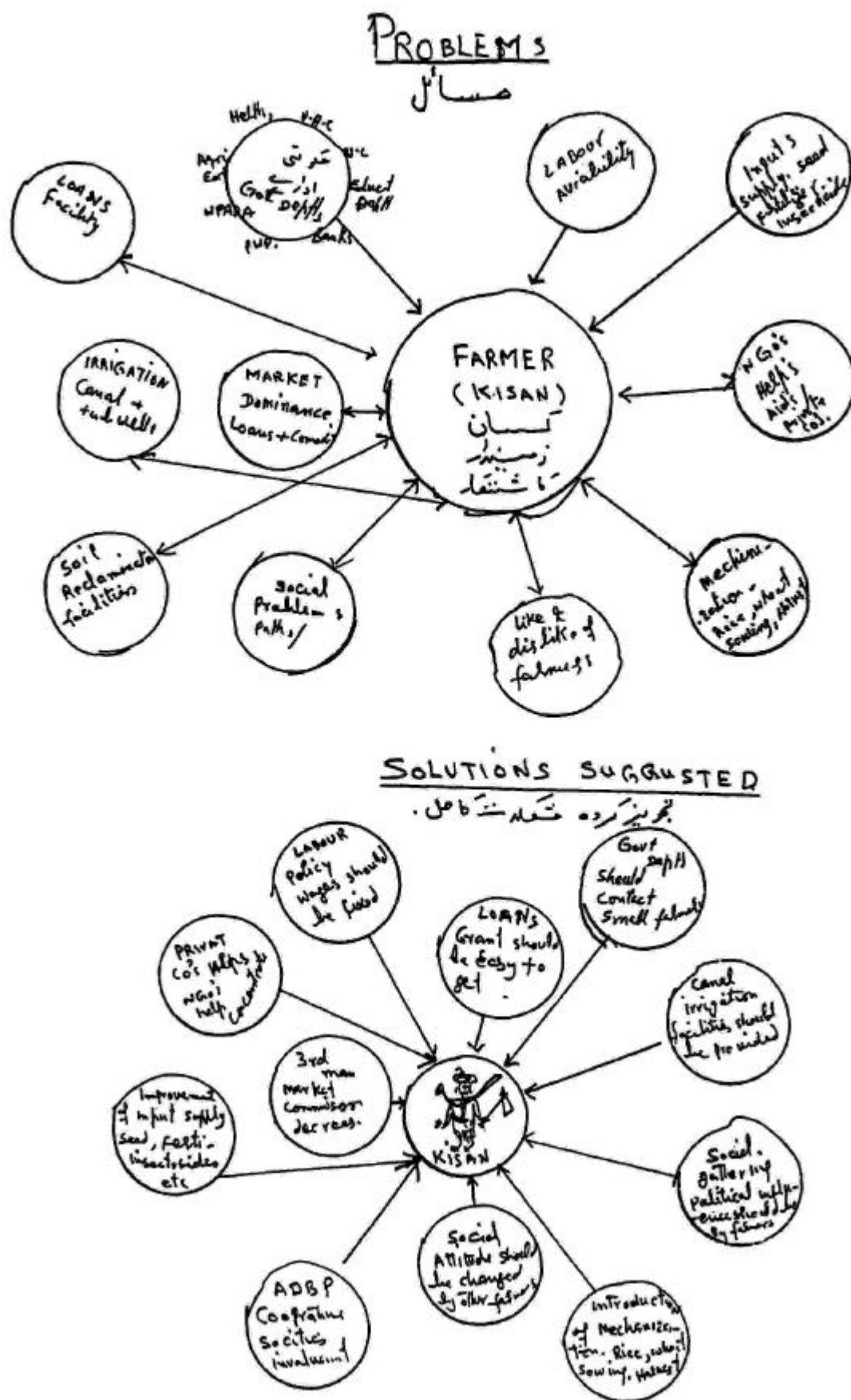
Venn diagrams can also be used to gather information on the relative importance of various livestock diseases and the relationships between them. Perceptions vary with the position of the person representing these

relationships, so Venn diagrams could be repeated with a range of different people, including owners of different types of livestock, vets, ministry and NGO staff. Braganca (p.157) used Venn diagrams in Mozambique to explore the relationship between villagers and government/non-government institutions before and after the civil war.

Network diagrams

This technique can be used to investigate the different networks surrounding livestock production. For example, the livestock of one household can be taken as the central focus and the human network around them explored. Alternatively, livestock can be plotted onto a map showing households. Links are then drawn to indicate sharing relationships and animal or product ownership.

Figure 9. Farmers' problems and solutions diagram: Pakistan



Decision trees

Decision trees are useful for discussing the range of strategies available to livestock producers. Decision trees can also be used to discuss the issues surrounding new strategies before they are implemented - for example the decision-making process and consequences of adopting a cross-breeding programme or a cut-and-carry feeding system. A tree could also be drawn to illustrate interlinked production problems or solutions.

Livelihood analysis

This exercise encourages people to consider their sources of income and expenditure and reflect upon past and present coping strategies in times of shortage. John Devavaram and his research team (p.133) carried out a livelihood analysis with project beneficiaries in Karaikeni village, Tamil Nadu. This revealed which activities provided the greatest source of income and gave an idea of typical expenditure patterns.

Problem and solution diagrams

Figure 9 provides an example of a problem and solutions diagram drawn by a group of farmers in Pakistan. The farmers started by drawing themselves in a circle in the centre and marking in the different problems they faced. A separate diagram was then drawn for perceived and actual local solutions.

Diagrams to investigate change over time

Seasonality analysis calendars

These are simple diagrams (Figure 10) that indicate the seasonal distribution of activities. They are often used to explore constraints and opportunities. The months/seasons can be written along the top of the diagram (according to the local concepts of time), with the activities relating to livestock management entered below. Calendars normally represent a 12-month period but can be extended to 18 months. This allows for the seasonal agricultural cycle and denotes differences between years. Calendars can also take on a circular pattern (IIED and PSPDP, 1992a).

Seasonality analysis calendars can be used to indicate trends over an average year, an adverse year or the present year. A similar technique can be used to explore relative change across longer time periods - years or decades. This may be done, for example, to investigate the effectiveness of the introduction of veterinary services, dipping operations or by-product feeding programmes. Calendars generally portray management or production criteria but they can have many different and specific themes. A selection of these themes is listed below, and some are outlined in further detail in the case studies in this issue of *RRA Notes*.

Figure 10a. Seasonal calendar: availability of fodder and grazing, Ethiopia

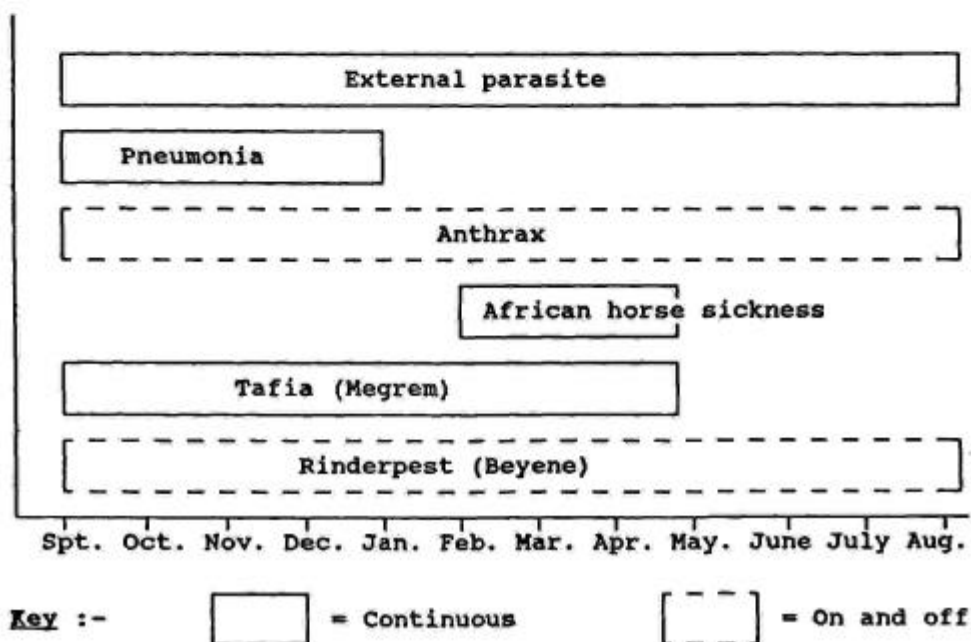
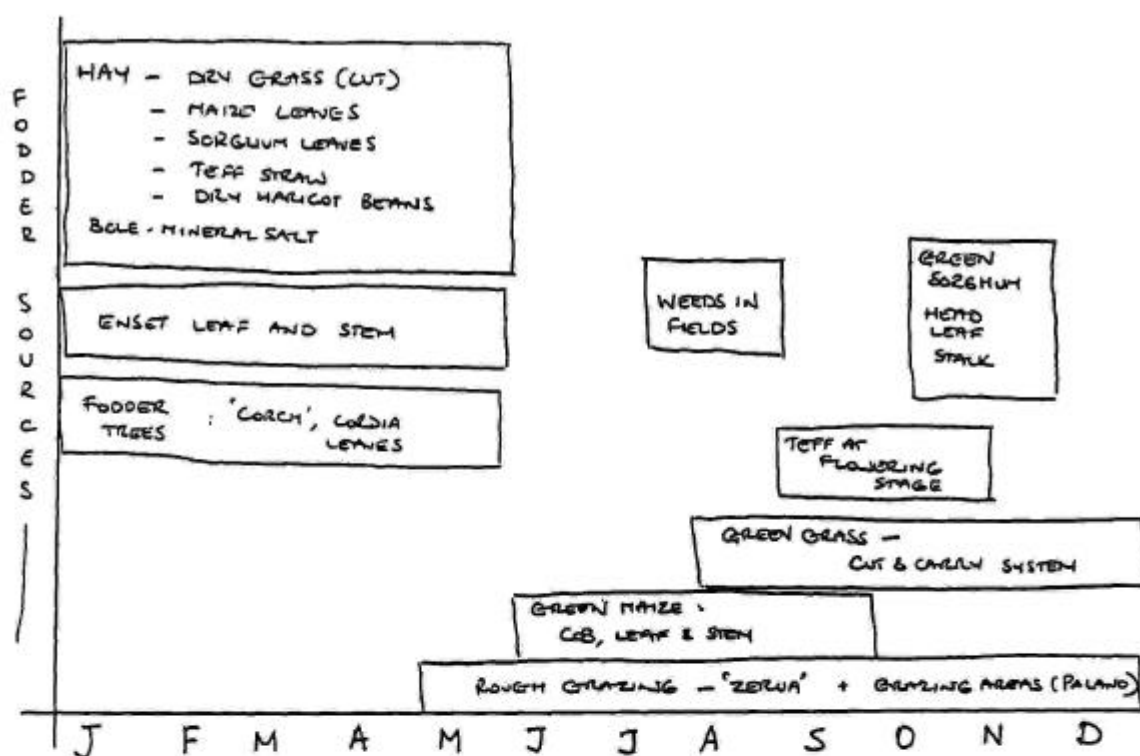


Figure 10b. Livestock disease calendar (Source: Konde, 1993)

Type of calendar	Description
Availability of fodder/ grazing resources	Shortage of fodder was identified as one of the major problems in Girara, Ethiopia. A calendar was drawn by 12 farmers to investigate the situation further (IIED and Farm Africa, 1991). This is shown in Figure 10a.
Disease incidence	David Hadrill and Haroon Yusuf (p.52) set up a matrix showing local seasons along the top, above a list of the main livestock diseases. They asked informants to score the different diseases to show which seasons they occurred in. See also Figure 10b.
Seasonal production	Factors affecting livestock production, including inputs/outputs, constraints and opportunities. The following case studies all include seasonal production calendars drawn by farmers: John Young et al. (p.58), M. Ghirotti (p.78), Robin Mearns et al. (p.95).
Seasonal food availability	Neela Mukherjee (p.127) prepared a calendar with villagers in Botswana to show the type and quantity of food available in a typical year. This shows the seasonal importance of livestock products in the villagers' diets.
Income and expenditure	John Devavaram (p.133) asked farmers to include details of their income and expenditure in their seasonal calendar.
Work pattern/division of labour	Louise Cooper and Narangerel Gelezhamtsin (p.115) use a monthly calendar to show the amount of time spent by men, women and children on livestock related activities throughout the year. Distinct seasonal activities, such as lambing, haymaking, shearing etc., are clearly marked on the calendar. Livestock related activities are plotted alongside domestic activities to help illustrate and explain the gender differences in labour allocation.

Activity profile

Daily activity profiles can be used to explore typical activities and routines, including livestock and household duties. They should be carried out with different farmers (male and female) during the various seasons of the year. Activities are charted during each hour of the day and the amount of effort, time taken and location of work are recorded. Louise Cooper and Narangerel Gelezhamtsin (p.115) did this in Mongolia, by asking women to describe their typical day.

Time lines and time trends

Time lines are often a good starting point for further PRA activities and exercises. They

illustrate diagrammatically past events which the community remember as being significant. Historical information can often be elicited by encouraging people to recite songs, poems or plays. Time-lines can also be used to show the changes that have occurred in a community. For example, it can indicate changes in farming systems (e.g. access to community resources) or monitor the impact of an introduced technology (e.g. destocking/restocking initiatives, dipping programmes). Ato Metenas was interviewed by researchers about his livestock (Figure 11). He chose to begin his story in 1954 and he explained every event in the past responsible for the loss or reduction of his livestock (Farm Africa and FFHC/AD, 1992).

Figure 11. Time-line: the history of Ato Metena's cattle herd, Ethiopia

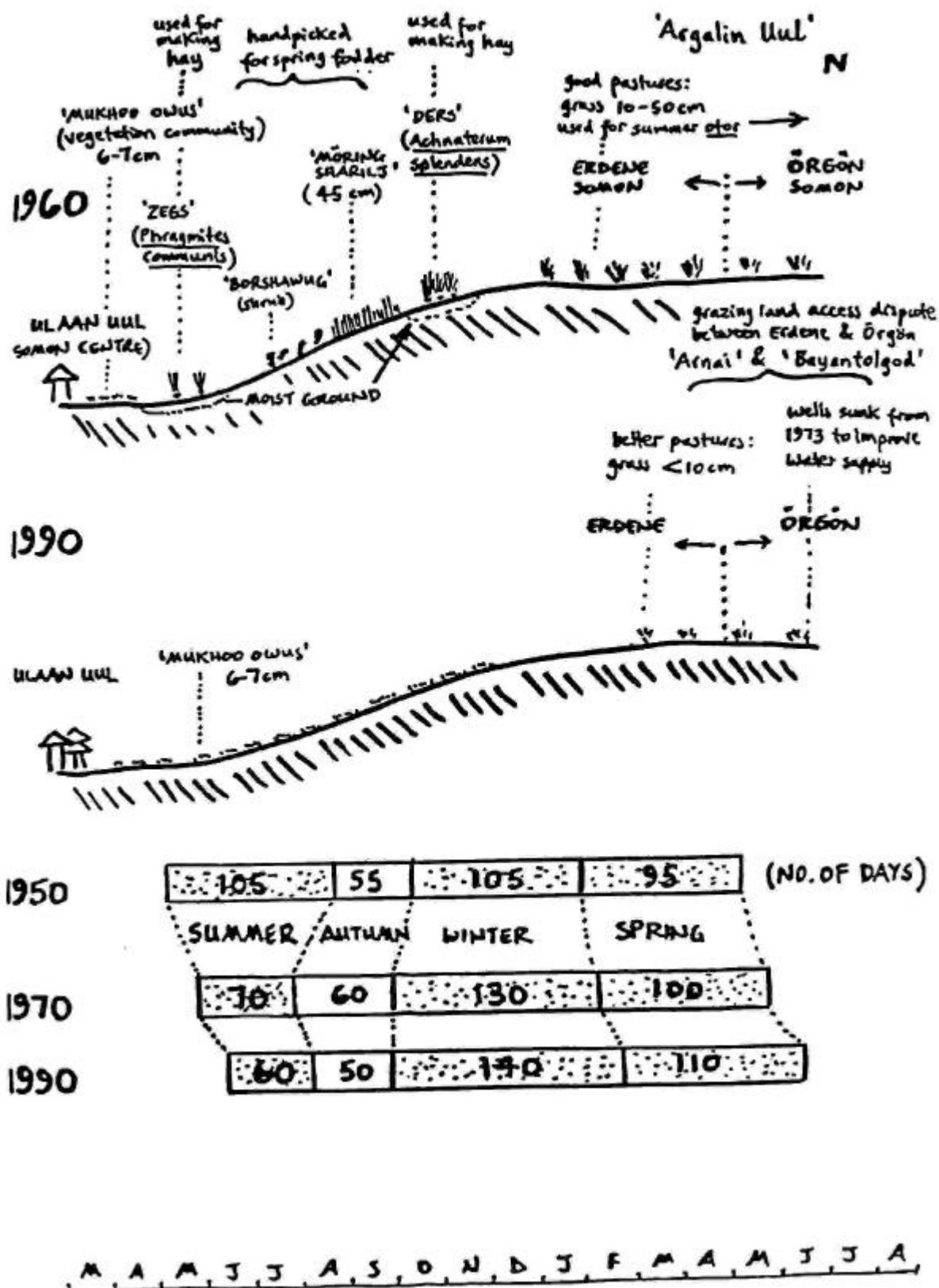
Constraints	Time line EC.	Effect on livestock
	1954	2 ha farmland 2 family size 2 cows (after crop yield selling) increased the No. by 1 M & 1 F calf
Died CBPP	1959	loss of 1 heifer L.S size 2 cows & 1 young bull
	1960	2 cows gave birth to 2 F calves L.S size 2 cows 1 young bull 2 F calves
	1963	increased the No. by 1 M calf from 1 cow L.S size 2 cows 1 ox 2 heifers 1 M calf
Died abortion	1964	1 cow died L.S size 1 cow 1 ox 2 heifers 1 M calf
	1965	2 heifers gave birth to 1 M & 1 F calves L.S size 3 cows, 1 ox, 1 young bull, 1M & 1F calves
Sold for land tax	1966	1 young bull & 1 cow sold L.S size 2 cows, 1 ox, 1 M & 1 F calves
	1967	Increased the No. by 1 calf (F) from the cow L.S size 2 cows, 1 ox, 1 young bull, 1 heifer
	1970	Increased the No. by 1 M & 1 F calves L.S 2 cows, 2 oxen, 1M & 1 F calves 1 heifer
Killed Black leg	1971	Loss of 1 M & 1 F calves (died) L.S size 2 cows, 2 oxen 1 heifer
	1973	Increased the No. by 2F & 1M calves L.S size 3 cows, 2 oxen 2F & 1M calves
Lost due to drought	1974	Loss of 1 cow (death) L.S size 2 cows, 2 oxen 2 heifers, 1 young bull
	1977	Increased the No. by 2 M calves L.S size 2 cows, 2 oxen 2 heifers, 1 young bull 2 M calves
	1981	Increased the No. by 2 F & 1 M calves L.S size 4 cows, 5 oxen 2 F & 1 M calves
Expired CBPP	1982	Loss 1 ox, 2 calves 1M & 1 F (death), 1 cow L.S size 4 cows 4 oxen, 1F calf
	1983	Increased No. by 1 M calf L.S size 3 cows, 4 oxen, 1 F & 1 M calf
	1984	L.S size 3 cows, 4 oxen, 1 M & 1 F calves

Historical maps and transects

Historical transects, resource and social maps can be a valuable resource for exploring change over time. Firstly, people can be asked to draw maps of the present situation, and then of what the area was like as far back as they can remember. This can also lead into mapping and perceptions of the future appearance of the area.

Maps and transects with specific themes (e.g. livestock production) can be drawn to give an insight into how and why a situation has arisen and assist with discussions on constraints and opportunities for owners of livestock. Anabela Braganca (p.157) asked farmers to draw a transect to illustrate the effect of the civil war in Mozambique on crop and livestock production and natural resources in the area. Robin Mearns et al. (p.95) asked herders to draw a transect to demonstrate perceived seasonal and ecological changes in Tsagaan Khutul, Mongolia. This is shown in Figure 12.

Figure 12. Historical transect: ecological and seasonal change, Tsagaan Khutul, Mongolia



Historical matrices

Historical matrices are useful for understanding communities' livelihood and coping strategies, past and present. They can help to explain why changes have taken place and often lead into discussions on what people felt may happen in the future.

Karen and Mark Schoonmaker Freudenberger (p.144) discuss the use of historical matrices in the context of livelihood strategies, coping strategies in times of crisis, and natural resource use. The informants choose the time period and name some significant past events. These form the top of the matrix. The components of the issue being studied (coping strategies, resource use etc.) are listed horizontally. Beans, seeds or stones can then be used to show the relative importance of each activity or resource in each historical period. It was found that people put their minds in a certain time period and remembered how things were then before moving on to the next time frame. Louise Cooper and Narangerel Gelezhamtsin (p.124) also used matrices to record changes in consumption patterns in Mongolia.

Preferences and proportions

Wealth ranking

Wealth can be a sensitive topic, especially in pastoral societies and herders may be suspicious of questions coming from outsiders about livestock ownership. Wealth ranking methods ensure that individual households do not feel targeted by researchers. Wealth ranking by sorting cards was pioneered by Barbara Grandin (1988) during work in Kenya with pastoral communities.

It is done by interviewing informants individually and asking them to list the households in the community. The name of each household is copied onto a separate card. The informants then sort the cards into groups according to the relative wealth status of the households. By using a number of informants, and cross-checking their answers, a fairly accurate picture can be obtained. The informants' own positions in the ranking can be determined through cross-checking with the

other informants. Robin Mearns et al. (1992) discuss wealth ranking with herders in Mongolia in *RRA Notes 15*, which is a special issue on wealth ranking.

Wealth ranking is an essential starting-point for most PRA activities. By grouping the community into different wealth strata, it allows the research team to be aware of how attitudes, decision-making criteria and production priorities are affected by wealth. It reveals much about local terms for wealth and the factors which distinguish the different groups. It also leads easily into discussions on livelihoods and vulnerability and provides a baseline against which the impact of future interventions can be measured.

Preference ranking and scoring

Preference ranking and scoring methods are effective participatory tools for learning people's categories, criteria, choices and priorities with respect to agricultural issues. They work best if used after wealth ranking exercises. Ranking lists items of interest (e.g. browse species, livestock breeds) in order of preference. For example, from a list of six fodder types, informants are asked which is the best and why. They are then asked which type is second best, and so on.

Scoring differs from ranking in that informants are asked to give each item a score, using beans, stones or seeds, according to how popular it is. The higher the number of beans assigned, the more popular the item. John Young et al. (p.58) used preference ranking methods in Nepal to determine the relative importance of farmers' problems.

Matrix ranking and scoring

If the researcher wants to carry out preference ranking and scoring for a number of variables, this can be simplified by using a matrix. Matrices enable a range of different items to be assessed against selected criteria. Local criteria are listed in the rows of a matrix, and items in the columns. The items can either be given a score, or ranked against each criterion.

For example, for fodder species, informants would be asked to decide which are the most and least palatable, nutritious, available etc.

Alternatively participants may put piles of stones, seeds etc. into boxes for semi-quantitative scoring. The criteria themselves can also be ranked to show which are considered to be of most importance.

Figure 13 shows how preference scoring matrices were used by researchers in Pakistan

(IIED and PSPDP, 1992b) to compare the different attributes of a variety of livestock. Matrix ranking can be used for a variety of planning purposes. Listed below are examples of how researchers have used matrix ranking to gather livestock-related information, and their location in this issue:

Theme	Researcher	Page No.
Institution Ranking	Robin Mearns et al.	154
Livestock Preferences	Anabela Braganca	157
	Neela Mukherjee	127
Fodder Preferences/Constraints	Anabela Braganca	157
	Ian Scoones	91
Wild Fodder	Neela Mukherjee	127
	Tim Leyland	47
Disease Issues	Tim Leyland	47
	Grandin & Young	39
Animal Losses	Adrian Cullis	87
Problem and Solution Ranking	Jeremy Swift & Abdi Noor Umar	138
	John Young et al.	58
Success Ranking	Stella Maranga	142
Household/Livestock Tasks	Cooper & Gelezhamtsin	115
	John Young et al.	58

Figure 13. Preference matrices for livestock: Pakistan

MATRIX OF LIVESTOCKS

CRITERIA	KIND'S OF ANIMAL'S					
	Buffals	Cow's	Oxen	Goats	Sheeps	Poultry
INCOME						
Food's.						
Cultivation				-	-	-
Symbol of status						
Total	13	15	20	12	11	6

FACILITATORS: * HUMERA MALIK
 ** SAFDAR HUSSAIN CHOUDHRY.
 & DRAWN BY FARMERS.
 - ANALYSED.

MATRIX OF MILKING BREEDS

MILKING BREED	BUFFALO				COW	
	CHUR KUNDI CHECHA WATTNI	RAVI NEELI	LOCAL	AUSTRALIAN	LOCAL	PHYSERIAN JARSY
CRITERIA						
MILK						
BUTTER						
BEFF PRICE						
EXPENDITURE						
REPRODUCTION						
PREFERENCE						
SCORE	18	14	11	17	12	13

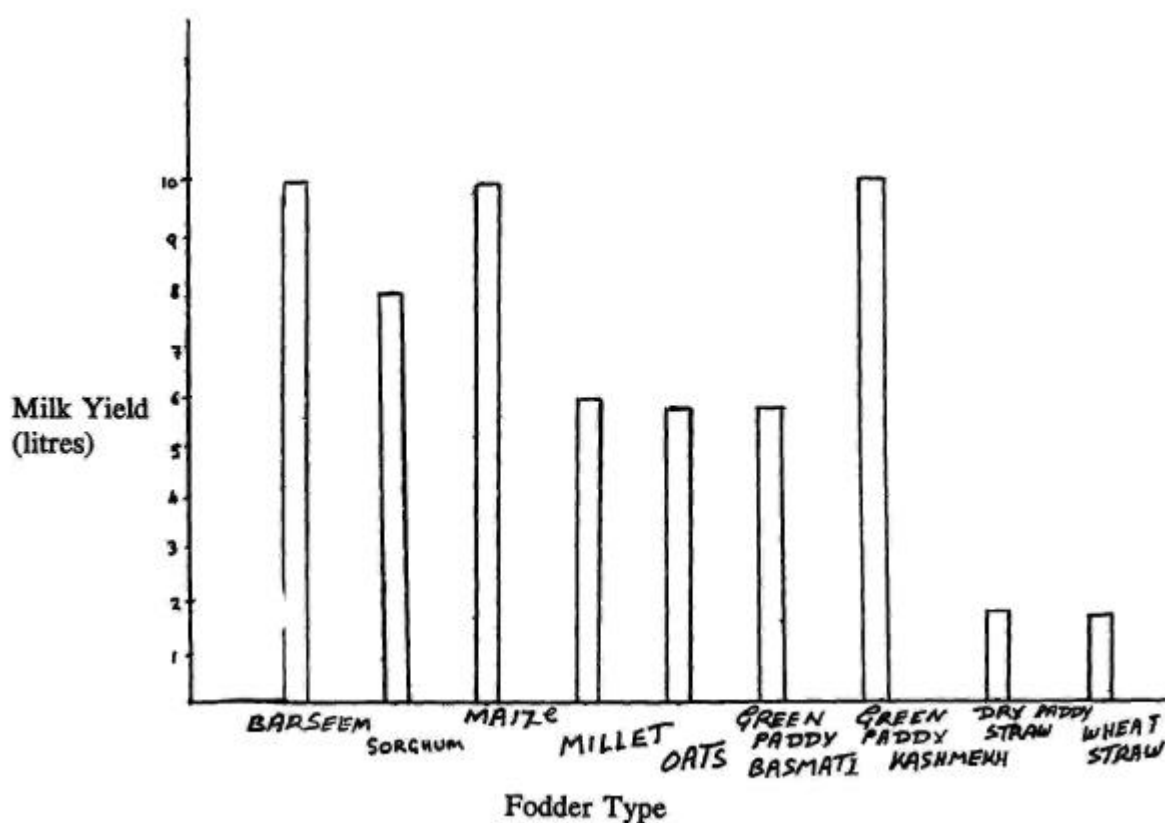
FACILITATORS: * HUMERA MALIK
 ** SAFDAR HUSSAIN CHOUDHRY.
 ▲ PICES OF BRICKS.
 ANALYSED:- MILK MAN:
 = FARMERS.

Proportional piling

A range of livestock issues can be examined in this way, including the distribution of livestock mortality among households, percentage of income from different sources, estimates of stock numbers in the area etc. Local natural materials, such as beans or seeds, built into piles, can be used by informants to illustrate their perceptions of relative proportions. Pie charts, bar charts and diagrams can then be drawn from these piles.

Figure 14 shows a bar chart, drawn on the ground by Gama Gujar and his mother using chalk and small stones. It illustrates the effect of different fodder types on milk yield (IIED and PSPDP, 1992a). The concept of litres was suggested by the facilitators. Cathy Watson (p.131) used proportional piling to investigate the relative contribution to household food supply of the different economic activities in which Turkana households are engaged.

Figure 14. Proportional piling: effect of fodder on milk Yield, Pakistan



• Summary

Summarised below is the range of production information that could be gathered with the help of local informants using some of the participatory tools described in this section:

- Seasonal trends in mortality, morbidity and nutrition;
- Estimates of mortality and morbidity among large livestock populations;
- Perceptions of the internal anatomy of various types of stock;
- Local knowledge of disease causation and treatment;
- Processes and preferences in the treatment of sick animals;
- Resources available to livestock, through seasonal resource mapping;
- Time-line issues that affect livestock;
- Time trends in livestock, through seasonal resource mapping;
- Daily activity profits for larger stock; and,
- Browse and fodder preference.

Further information can also be gained on the wider economic and social systems of which farmers, as owners and carers, are a part:

- Livestock population assessment, by livestock mapping;
- Distribution of livestock per household, by social mapping;
- Stock loaning and sharing relationships;
- Modes and sources of acquisition and disposal of livestock;
- The perceived status of livestock in relation to other assets;
- Opportunities and services mapping for livestock purchase, sale and vet care;
- Systems analysis of inputs and outputs based around livestock and concerning both beneficiaries of livestock labour and products, and the environment;
- Seasonal or daily labour inputs to livestock care by different household members;
- Livestock preferences;
- Matrix of veterinary care providers, by disease;
- Proportional income from livestock products; and,

- Ranking of uses of livestock products to the household (differentiated by users);

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NOTE

This paper draws on a PRA methods outline prepared by Andrea Cornwall, Department of Anthropology, School of Oriental and African Studies, London, for VetAid, Scotland.

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2

Ethnoveterinary question list

Barbara Grandin and John Young

• Introduction

This article focuses on the collection and use of ethnoveterinary data in the context of community-based animal health training programmes in Kenya. The programmes ranged from pastoral areas such as Samburu and Pokot, to settled farming in Meru and Machakos and were carried out by the Kenya Livestock Programme (KLP) of the Intermediate Technology Development Group (ITDG) in collaboration with various community-based NGOs. This article discusses the lessons learned in the programme to date and directions for the future.

• Data collection for the Kenyan livestock programme

The KLP has begun to identify a 'minimum data set' necessary to design and monitor the progress of community-based animal health (CBAH) programmes (Grandin et al., 1991). KLP has adopted a set of data collection techniques, which are flexible enough to be adapted to each project's requirements but standard enough to provide the minimum data and allow for comparisons across projects. These techniques include literature reviews, informal participant observation and discussions (e.g. with farmers, project personnel, government veterinary staff), as well as following more formal methods:

- *Wealth Ranking* to describe the differences between richer and poorer households, especially with regard to livestock keeping, problems, access to veterinary services, etc. (Grandin, 1988).
- *Progeny Histories* to provide basic information on offtake, fertility, mortality

(cause, age, seasonality) over a longer time-frame than is normally covered in single interviews (Grandin, 1984; Young, 1987).

- *Ethnoveterinary Interviews* which provide information on both local people's disease nomenclature and symptoms, causes, traditional and modern treatments for various diseases.
- *Household-Level Data Collection* to elicit more information on producers' perceived problems and stated needs with regard to livestock production.
- *Participatory Rapid Appraisal* techniques including problem and success ranking, seasonal calendars, mapping and diagramming.

• The ethnoveterinary question list

The question list was first developed and implemented in Kenya Maasailand by Barbara Grandin and her assistant Elijah ole Timpaine in 1984. It can indicate the general level and depth of knowledge on animal diseases and provide a list of local disease and symptom names. It provides information on the animals affected, signs by which people recognise them, how they are caused, whether they are seen to be contagious and whether there is a well known and effective traditional or modern medicine. There are two main stages of data collection:

- Collecting background information; and,
- Implementing the question list.

Stage One: collection of background information

General information

Knowledge of the following aspects of livestock production is required:

- *The local production system:* it is necessary to gain a basic understanding of the livestock production systems in the area. To ensure that representative informants are selected, particular attention should be paid to the division of labour within households e.g., who is responsible for, manages and treats sick animals. It is important to separate out cultural ideals of labour division from the actual situation.
- *Species of animal kept, breed differences and age divisions:* information is required on the local definitions of animal ages or other characteristics that are said to be strongly related to disease incidence and seasons of the year. This allows discussions on types of animals affected and seasonal occurrences to be more easily understood in ensuing interviews. This information is best collected specifically in the context of disease incidence since many languages, particularly pastoralists', have very elaborate terminology.
- *Local seasons of the year:* a basic understanding of the local seasons is useful as they often correlate with disease outbreaks.

Eliciting disease names

The second step for collecting background information involves the elicitation of all known livestock disease names in the language of the community. This works particularly well with a small group as the stories and ideas of one informant often spark the mind of another. However, there are several biases that should be avoided.

- *Seasonality:* producers are most likely to mention diseases of the current season. After those are elicited, ask specifically for diseases most prevalent in other seasons

and/or year round. Also, make sure that all species are mentioned, including equines and poultry.

- *Severity of disease:* producers are most likely to give the names of the most serious (i.e. fatal) diseases so make sure that chronic diseases and those which are not fatal, but may lead to production losses, are also recorded.
- *Incidence of disease:* it is useful to ask the group whether there are diseases that appear only periodically otherwise one might miss major epidemics that sweep through an area, or conditions that appear only in unusual climatic circumstances.

These biases can be dealt with after the initial listing of diseases. Researchers can prompt the group of farmers to name other diseases by reminding them that they are interested in chronic diseases, diseases of other seasons and so on.

The above information can be recorded on index cards. The back of each card is a useful place on which to write comments about the disease and the cards can be sorted and resorted to check for duplications. Cards also facilitate pulling the information together later. In the first interview the name of each disease can be written on an index card. These are checked later to avoid recording multiple names for the same disease or the same name (often a body part) referring to several, quite distinct syndromes.

In subsequent interviews the cards can be pulled out as each name is mentioned, and discrepancies checked. In some cases a group will have thought of a disease that previous groups have missed; in other cases, dialect or other differences (e.g. level of colloquialism) will be picked up. This helps the investigator to learn when there are different names for the same disease as well as the factors that lead people to use these different names.

Stage Two: implementing the ethnoveterinary question list

The second stage involves asking a list of questions about an individual disease. It can be asked of three or more informants, chosen to represent relevant diversity in the community

(by age, gender, wealth, location etc.). In most circumstances it is best not to ask about more than two or three diseases at a single interview to avoid interview fatigue and hasty answers. It is not necessary to ask the same few informants about all the diseases.

If there are traditional healers in the area, it is useful to include several, in addition to ordinary producers, in order to have a basis for comparing generalists' with specialists' knowledge. By asking a number of different people it is possible to get a good idea of whether the information is in general circulation or restricted to specialists and whether there are consistent views or a multitude of different views.

It is important that the interviewer spends time explaining the data wanted and why, stressing the value of the knowledge of local people. At no time should the informant be interrupted with the comparisons with Western views or treatments.

The specific questions are on the whole straightforward; the questions can be asked at the particular depth required for the specific project. Farmers and pastoralists are usually quite happy to talk about their animals' health. Often the problem is having them tell you more than you can possibly absorb, rather than there being gaps in the information.

This type of ethnoveterinary information can also be collected informally just by talking to people and asking questions. However a fairly fixed question list, such as the one below, has the advantage of ensuring that all points are covered and that data both within and across sites is comparable:

The questions

Question 1. What species, ages and sexes are affected?

It might be important to distinguish different breeds where there are local and cross-bred animals.

Question 2. Is there seasonality or other timing to the appearance of the disease?

This question requires knowledge of the local calendar. Where seasons are not the only timing variable the answers often reflect the correlations that producers see between other events and the disease under discussion, although they do not necessarily see a causation. For example, the Maasai clearly recognise that malignant catarrh outbreaks follow the period when wildebeests migrate in Maasailand and calve down.

Question 3. Does it usually affect one animal or a group of animals at the same time?

This is best asked broadly i.e. "Can the disease spread from animal to animal. If so, how?". Avoid technical terms such as contagious or infectious which may be limiting and not easily translated with accuracy. This question often leads naturally into a description of what people believe causes disease.

Question 4. What causes the disease (may be natural, spiritual or both)?

This may pose difficulties if the animal keepers know the interviewer is a veterinarian and/or a foreigner; they are unlikely to admit to a belief in the spiritual causation since they know many outsiders believe these ideas to be backward.

Question 5. Are there ways to prevent/avoid this disease?

Preventative measures are most commonly reported with contagious infectious and vector-borne diseases and often include isolating animals, avoiding certain pastures at certain times, hygiene, etc. Sometimes preventions are mentioned with treatments, especially when they involve traditional herbal or other remedies (or vaccinations).

Question 6. Describe the main symptoms in their order of progression and timing if possible i.e. what is the first symptom seen, what is the second symptom seen, when etc. and what is the symptom, if any, that makes you decide it is this specific disease?

Here the skill and interest of the researcher is critical to ensure the proper recording of what

is said and probing for more details. It is useful to indicate what is the definitive symptom since several diseases may have identical clinical signs. In Pokot producers were asked specifically “*Are there any similar diseases, if so, how do you tell them apart?*” in order to try to find out the key differentiating features.

Question 7. Are there any traditional treatments available? Basically, what are they? How are they obtained? What happens when used?

Details of treatments are not recorded at this stage but it is useful to note the main ingredient and/or action. There may be problems with informants providing information on traditional treatments if they fear this will preclude their gaining access to western drugs. Given its general nature the question may lead to superficial answers which is why Questions 10 and 11 have been added.

Question 8. Are there any modern treatments available? What are they? Where can they be obtained? What happens when used?

This provides useful information about the level of understanding of local people about western medicines including types, dosages, mode of application.

Question 9. What usually happens if the animal is not treated?

General outcome questions are very difficult to answer; “*Some die or some get better*” are common and reasonable answers as many other factors may intervene.

Question 10. When did you last have (or know of) an animal with this disease?

Question 11. What happened to it?

In agricultural areas where livestock numbers are low, to avoid numerous null answers this question can be changed to refer to the last time the farmer heard of an animal with the disease. These questions give an idea of the frequency with which a disease occurs in an area. It is useful to know how common a

disease is seen to be both for its potential impact on livestock production and to understand how well producers are likely to be acquainted with it.

The questions also serve as mini case studies of actual rather than ideal or generalized situations and often indicate deviations from the expected in terms of actions taken, outcome and sometimes reasons. For example, one producer replied that his animal was very old so he decided to slaughter it rather than waste time and money on trying to cure it.

Interviewer skills and the question list

As with any formal or informal data collection techniques the quality of the information depends on the quality of the interviewer and the relationship between the informant and the interviewer. Skills in administering the question list are critical. The decisions arising must be based on farmers' knowledge, not on the researcher's knowledge.

To accurately conduct interviews in the areas of indigenous technical knowledge the interviewers themselves must be reasonably knowledgeable about the area under discussion, have a well-developed vocabulary (or be willing to meticulously record vocabulary and definitions) and a clear understanding of the purpose of the questions. Otherwise they are likely to misunderstand replies, to filter out important information and/or to lump together points which the producer has disaggregated.

Interviewers using the ethnoveterinary question list should possess or be trained in the following attributes:

- Respect for local beliefs;
- A sound knowledge of animals, production and diseases;
- Knowledge of the indigenous vocabulary for animals, production and diseases;
- Knowledge of medicines and their dosages; and,
- Reasonable knowledge of animal health issues.

The translation and phrasing of questions is important. In the Samburu project, two pairs of assistants administered the household question

list which asked when the household last had a sick animal. Despite pre-translation and review of the questionnaire, the two groups used different phrases for sickness. As a result, one pair was told only of animals with serious illness, while the other were told of both serious, mild and chronic illness.

If the assistant does not have a deep respect for local beliefs this will inevitably be conveyed in the interviews and producers are unlikely to give detailed responses, particularly to questions about causation and traditional treatment. The fact that enumerators, extension agents and so on are from the local area does not necessarily mean that they will have the requisite skills for studies of indigenous knowledge. The Maasai research assistant was successful mostly because he carefully recorded indigenous vocabulary and he pointed out and tried to resolve discrepancies at the time of interview.

• Using data from the ethnoveterinary question list

Using the information in training of animal health assistants

The information is useful at many stages: project design; implementation; and evaluation. At the most basic level it is impossible to even talk to livestock owners about animal diseases without knowing the local names of diseases and how producers talk about them. Beyond that there are three major decision areas where ethnoveterinary information can be helpful.

Deciding who to train: intermediaries or producers

The question list indicates the level of veterinary knowledge amongst farmers within a given area. In the Meru region of Kenya, primarily a cropping area, the question list indicated that there was a relatively low level of ethnoveterinary knowledge among local farmers; they often failed to recognise disease symptoms until the animal was very sick. Thus, individual farmers were selected and trained to recognise and treat common simple diseases so that they could provide a basic animal health service to their neighbours. This

decision flowed logically from the pre-existing levels of ethnoveterinary knowledge and cultural traditions about reliance on traditional animal health specialists.

In Pokot, a pastoral area, the same approach was not successful. On re-examination of the question lists responses showed a very high and consistent ethnoveterinary knowledge, so it was decided to provide training directly to the Pokot pastoralists. Here, there is a strong tradition of each household having the knowledge and skills to treat diseases and on the whole pastoralists wanted to be trained themselves, rather than rely on an intermediary for veterinary assistance, particularly of a routine nature.

The successful incorporation of women into either type of training requires an appreciation of both their traditional and their changing roles in livestock keeping, as well as certain cultural norms which could facilitate or hamper their freedom to move around the countryside.

Deciding what should be included in the training

It is important to know which diseases are common and which concern farmers so that subsequent training can address their particular needs and priorities. The results from the question list will help to clarify this. On the whole, people know more about the things that concern them most so the spread and depth of knowledge of a disease will indicate its importance.

It may be helpful to ask livestock keepers to rank the diseases (using their local names) according to various parameters. These parameters could include the most common, the most fatal, those causing the most loss of production, or those most easily treated. This can yield interesting information, which is sometimes significantly different to the perceptions of local government staff or traditional animals specialists. Table 1 presents information about cattle diseases collected from farmers, government staff and traditional healers in Meru. The information is compared, and although a certain level of agreement is seen, some perceptions differ markedly.

Table 1. Common cattle diseases reported by different groups in Meru¹

Common name	local	English names	Farmer groups	Traditional healers	Vets and health assistants
<i>njoka</i>		Helminthiasis (worms)	+++	+++	+++
<i>nthiana</i>		Anaplasmosis	+++	+	+++
<i>mauri</i>		Pneumonia	++	++	++
<i>meetho</i>		Conjunctivitis	++	+	+
<i>ikai, itaa</i>		Theileriosis (ECF)	+	++	+ (1984)
<i>mutombo</i>		Trypanosomiasis	++	-	+
<i>kurema njau</i>		Dystochia	+	++	-
<i>ugere</i>		Mange	++	-	-
<i>nyongo</i>		'Liver'	++	-	-
<i>ikunguri</i>		FMD	+	-	+ (1984)
<i>kunguru</i>		Gid	+	-	-

Code: +++ very common, ++ common, + uncommon, - not reported. The dates in parentheses represent the last outbreak of the disease recorded by the government veterinary service.

Deciding the approach to take

Training should be based on what people already know in terms of nomenclature, symptom recognition, appropriate drugs and dosage rates. The descriptions of the signs of the diseases, and which animals are commonly affected can be used to assess the degree of overlap between local disease entities and the etiological definition of the modern veterinary medicine. The general level of agreement and detail used by livestock keepers to differentiate the different diseases will determine the amount of additional training they need in disease diagnosis. Understanding how farmers think diseases are caused is important in training on disease prevention or routine treatments and it is important to know what and how much producers understand about drugs and dosage rates.

Current and future directions in the use of ethnoveterinary information in the Kenya livestock programme

The project hopes to breach the divide between traditional and modern treatments and to ensure that modern treatments are not needlessly recommended if there are equally efficacious local ones. As a first step the programme is beginning to investigate the reported efficacy of traditional treatments for the common simpler diseases.

Ranking of traditional treatments

In addition to the information collected through workshops and interviews traditional healers and farmers are asked to rank the diseases elicited in the background phase according to the efficacy of their traditional treatments. This uses a card sorting technique, as in wealth ranking. In Machakos, in a pretest of the technique, 29 diseases were ranked by two farmers (of varying ethnoveterinary skills)

¹Source: Young, 1987.

and a traditional healer. The knowledgeable farmer knew of traditional treatments for 25 of the diseases, the less knowledgeable farmer treatments for 12 and the healer 26. As one would expect the healer generally ranked traditional treatments more highly than the farmers, but overall there was fairly strong agreement on there being quite effective traditional treatments for five diseases and none for another 11. Other diseases were more ambiguously classified and require further study. It is hoped that such ranks will enable the programme to select several reportedly successful treatments for more in-depth study so that they can confidently be included in training.

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Database

ITDG are building a database of ethnoveterinary knowledge and local names for animal disease using information collected from herders. This knowledge could provide the government veterinary department with information for monitoring diseases in the regions The Drought Contingency Unit could use disease incidence as an indication of drought and impending food shortages. The KLP hopes to use evidence of the sophistication of indigenous veterinary knowledge, alongside monitoring information indicating the effectiveness of the community-based animal health programmes, to encourage government and non-government programmes to take a similar perspective.

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3

Planning a community animal health care programme in Afghanistan

Tim Leyland

- Introduction

Arghandarb Valley in the Daye Chopan district is one of the least developed in Afghanistan. It is situated in the southern foothills of the Hindu Kush at an altitude of 1900-2900m. Rural development has been disrupted here by 13 years of war. Agricultural production is mostly subsistence with almonds providing a cash income. Sedentary farmers till gravity-fed irrigated fields with oxen and grow cereal crops as a staple. They also raise cattle, sheep and goats as a source of dairy products and meat. Significant numbers of transhumant pastoralists who keep sheep and goats and camels are located in the area and enjoy a symbiotic relationship with the sedentary farmers.

Health Unlimited, a medically-orientated NGO, has been working with the Daye Chopan community for the past eight years, running an integrated rural development programme. In response to requests from farmers for assistance to improve animal health, they recently asked VetAid to investigate the local situation.

Neither NGO knew much about the community's agricultural production system and even less about localised animal health problems in the Daye Chopan area, which lies outside the range of the Afghan Government Veterinary Service. Although a small-scale survey of animal management practices in Afghanistan was conducted by Findlen (1990), VetAid still had little notion of the community's production priorities and needs.

- Participatory Rural Appraisal

VetAid project staff decided to carry out their own survey of the Daye Chopan community using participatory research methods. Their aims were to discover:

- The decision-making process and abilities of individuals in the community;
- The problems affecting different wealth groups, as perceived by the community;
- Cultural restraints;
- Physical restraints; and,
- The indigenous technical knowledge of the area (such as recognition of diseases and ability to control or treat them, feeding strategies etc.).

Methods

VetAid wanted to involve the community fully in the project, so participatory techniques were chosen to encourage people to analyse their problems and identify potential solutions. A comprehensive range of PRA tools were tried and tested throughout the survey with the full cooperation of the people of Daye Chopan. Methods included:

- Informal structured interviews, using a compact tape recorder;
- Key informant interviews, using a compact tape recorder;
- Group interviews, to discuss and cross-check information;
- Diagrams, movement of livestock maps, transects and seasonal calendars;
- Wealth Ranking;

- Pair-wise ranking and direct matrix ranking; and,
- Progeny histories;

The research period was scheduled to run for three months. Of the above techniques informal structured interviews formed the crux of the survey. Wealth ranking was most useful in classifying the community's problems while other ranking techniques were good at determining how people saw their options.

Wealth ranking

The method described by Grandin (1988) was used at the start of the survey in three separate villages. Existing lists of landowners and farmers were used to carry out a formal stratified survey of livestock numbers and wealth indicators. Wealth ranking showed how the different sectors of the community perceived wealth. In addition, by dividing the community into different wealth groupings, it helped to identify how problems and production priorities were related to wealth.

In general people had no misgivings about talking about relative wealth, but were more reluctant to actually quantify it. On the whole, there was general agreement between informants on the rankings assigned to households. The wealth ranking exercise provided useful background information for follow-up discussions on livelihoods, vulnerability and the options which people felt were open to them.

Direct matrix ranking

Having identified the various wealth groupings, informants were asked to rank their most limiting socio-economic problems. This led on to a discussion of the factors which were limiting production and, more specifically, animal health disorders. This method of problem analysis allowed people to isolate and prioritise those situations which could realistically be improved using the minimum of resources.

Disease ranking

Disease was mentioned as a problem by all wealth sectors keeping goats and sheep but it was most significant for the Koochi pastoralists. Questioning and ranking focused on the nature of the problems and the traditional methods of dealing with them. People generally agreed about which diseases were worst, but the biggest problem was translating Pushtu names for diseases into scientific terms. This was because Pushtu names describe particular symptoms which might be caused by a number of pathogens, and it was often difficult to match these described symptoms to specific diseases. Thus western-trained vets face a language and communication barrier which can only be partially solved by using participatory methodologies.

Pushtu names for diseases were recorded and details of symptoms, occurrence, local treatment and proposed control methods noted. Table 1 shows the results of this ranking exercise. This shows that a small number of diseases were constantly ranked as most important, regardless of relative wealth strata. Ranking helped people clarify the disease problems and potential solutions available to them. The treatment and control of diseases that were ranked as being most important were included in the curriculum for the training of Basic Veterinary Workers (BVWs). VetAid staff also had the opportunity to collect information on local diseases whilst they were treating sick animals or carrying out post-mortem examinations.

Fodder ranking

The availability of adequate amounts of winter livestock feed is one of the main problems in the Daye Chopan district. To help overcome this shortage, wild plants are collected from the mountain sides in the spring, sun dried and then fed to camels, cattle, sheep and goats in the winter. Farmers and their families collect as much wild fodder as possible, especially if they can only cultivate a limited amount of winter fodder. The type of plants collected depend upon the location. These plants are ranked below (Table 2) according to their value as feed and their palatability.

Table 1. Farmers' ranking of diseases affecting livestock

Rank	Pushtu disease names	English disease names
Sheep and Goats		
1	<i>Tak</i>	Anthrax/acute pneumonia/enterotoxaemia
2	<i>Loey</i>	Pneumonia syndromes
3	<i>Garg</i>	Liver fluke
4	<i>Rikhak/Maknai</i>	Helminths
5	<i>Busmarg/Goat death</i>	Contagious caprine pleuro pneumonia (goats only)
6	<i>Poon</i>	Sarcoptic mange (goats only)
Cattle		
1	<i>Gomarg</i>	Haemorrhagic septicaemia (HS)
2	<i>Kundreze</i>	HS, pneumonia
3	<i>Pehrey</i>	Ruminal stasis?
4	<i>Thin</i>	Liver fluke, TB ?
5	<i>Thin and pica</i>	Phosphorous deficiency
6	<i>Tamba</i>	Frothy bloat
Camels		
1	<i>Tigawooni</i>	HS, anthrax
2	<i>Poon</i>	Sarcoptic mange
3	<i>Much Wahooni</i>	Surra
Donkeys and Horses		
1	<i>Bogmara</i>	Anthrax
2	<i>Marla</i>	Glanders, strangles, pneumonia
3	<i>Schumard</i>	Colic
4	<i>Shar shar bandh</i>	Exertional myopathy
Poultry		
1	<i>Shinee</i>	Red mites
2	<i>Kunabuki</i>	Newcastle's disease

Table 2. Ranking of value and palatability of wild plants collected for winter-feeding goats

Name	Month collected	Palatability	Value	Other
<i>Koumarla</i>	May	1	2	Difficult to collect. Supplement: donkey, horse, sheep.
<i>Pooshee</i> (wild rhubarb)	May/June*	2	1	Difficult to collect. Supplement: cow, camel, donkey, horse, sheep.
<i>Shinshoobi</i> (wild mint)	May*	4	3	Grows on irrigation channel banks. Supplement: donkey, horse, sheep.
<i>Spearki</i> (wild lavender)	May*	5	5	Easy to collect, causes sickness in sheep
<i>Woosha</i>	May*	3	4	Easy to collect. Supplement: donkey, horse, sheep.
<i>Sturkgh</i>	May*	6	5	Supplement: donkey, sheep.

* sun dried at place of cutting, transported to winter housing by donkey

Seasonal calendar

Drawing seasonal calendars helped both the VetAid staff and the farmers to visualise and consolidate the livestock management system, seasonal health and production problems. However it was discovered that people found it difficult to express themselves by drawing. People traditionally communicate using speech in this area - writing and drawing are not common methods of conveying information. Frequently interviews took place in settings that were not conducive to using pictures, e.g. inside a carpeted home where it was necessary to use paper and pens, themselves a foreign media. Hence, the underlying concept and purpose of using diagrams as a form of communication was not always understood by the informants.

• Project planning

The use of PRA methods to encourage communities to make their own decisions was only partially successful. The war has caused the breakdown of traditional decision-making bodies. As a result the local *mujihadeen* commander is responsible for community welfare and any community development proposals have to be approved by him. The community have lost the impetus to organise themselves and are quite willing to accept the advice of outsiders. Individuals were given the opportunity to express their own needs and analyse their own problems but it was left to VetAid and local *mujihadeen* leaders to propose the ensuing development programme.

The survey brought to light a severe animal health problem, affecting the poorest members of the community most seriously. The community leaders were consulted about ways of solving this problem and raising production in a sustainable manner, both economically and ecologically. The result was a project to train livestock keepers (who became known as Basic Veterinary Workers) to treat, prevent and control the most serious diseases, as ranked by the community. The training builds upon existing livestock knowledge, useful traditional beliefs and practices recorded during the survey. The project also plans to train shopkeepers in the use of anthelmintics and flukicides. The Basic Veterinary Workers

(BVWs) were not paid whilst being trained, instead they were to benefit from the sale of medicines at a profit after the training. Farmers readily accepted the project and expressed willingness to pay for the previously unavailable drugs.

The training was carried out on-site by Afghan paravets (previously trained in Pakistan) using practical training techniques suitable for illiterate people. Further training in the use of locally available medicines, the management of revolving funds and disease treatment was to be provided at regular intervals during the next two years. The BVWs received loans to buy their basic medicine kit and assistance with securing drug supplies.

The effects of training were assessed using structured informal interviews and monitoring forms. These asked about the effectiveness of the newly introduced drugs and the farmers' use of the service provided by the BVWs. Monitoring forms were designed to be completed by illiterate farmers and paravets.

The project hopes to lay the foundation for similar projects in other areas. Neighbouring communities have been contacted and are receptive to the idea of training members of their communities as BVWs. The interaction with farmers during the participatory survey has helped to establish a good working relationship with the Daye Chopan community. The Afghan paravets will be given PRA training so they can carry out a participatory appraisal themselves using the tools found useful in Daye Chopan. These locally tried and tested techniques can help the paravets to monitor and evaluate their work in order to become more sensitive to the needs of the local farmers. It was considered imperative, if the projects are to be sustainable, for the community to participate in evaluating their problems and discussing the solutions.

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4

Seasonal disease incidence in the Sanaag region of Somaliland

David Hadrill and Haroon

• Introduction

Participatory research methods were used with herders in the Sanaag region of Somaliland to build up a detailed picture of their lifestyle. This research was initiated by ActionAid and designed and supported by VetAid as part of a pastoral development programme.

• Seasonal disease calendar

One of the techniques used by the project management team was to draw a seasonal disease calendar with a village elder and a

group of interested herders, based on the local calendar (Figure 1). The calendar provided the following information:

- An indication of the different types of disease that are prevalent in the Sanaag;
- The diseases which the herders consider to be important or less important. Up to three stones were placed on the calendar to indicate the importance of each disease; and,
- The seasonal incidence of individual diseases.

Figure 1. Seasonal calendar: disease incidence



• **Conclusions**

The project team members were able to use this information to plan a Primary Veterinary Assistant training programme (see Hadrill and Yusuf, this issue of *RRA Notes*).

Only the most common diseases and those that were most important to the herders were addressed during training. Information on the seasonality of disease incidence, together with knowledge of the herders' grazing movements, enabled more effective drug distribution.

The team were surprised to discover that common ailments that cause loss of production, e.g. helminths, were considered by the herders to be less important than infrequent, but often terminal, infectious diseases.

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NOTE

This paper was extracted from a report written by David Hadrill for ActionAid, on the Sanaag Livestock Health Programme, November 1992.

5

Livestock healthcare for Tibetan agro-pastoralists: application of Rapid Rural Appraisal techniques

Claire Heffernan

• Introduction

Participatory Rapid Appraisal (PRA) and Rapid Rural Appraisal (RRA) research techniques are relatively new to the primary health care arena. Recently, there has been much interest in the application of these methods in information gathering for livestock healthcare delivery systems.

This Rapid Appraisal (RA) focused on the primary livestock healthcare system and knowledge of livestock diseases and healing among Tibetan agro-pastoralists of the Himalayas. This study took place in the village of Ringmo, in Shey-Phoksundo National Park in the Dolpa District of Nepal¹.

Shey-Phoksundo National Park comprises an area of 3,555km. Much of the park lies to the north of the main Himalayan range. Approximately 2,800 people, mostly agro-pastoralists of Tibetan descent, reside in the park (Bajimaya, 1990). Livestock herds are comprised mainly of yak and yak-hybrids with cattle and goat herds more common in the lower elevations of the park.

Ringmo village is located on the perimeter of Lake Phoksundo, in the northern corridor of the park. The Tibetans of this village are followers of the Bon Po sect of Buddhism. The village has residents from mid-spring to late fall each year. During the winter, families and herds move south to temporary settlements at lower elevations. Most of the herds in this

village were comprised of yaks with a few cattle. Unlike other areas of the park, few yak/cow hybrids were observed. The breeding of yak/cow hybrids is considered unpure and religiously frowned upon, thus the few *zho* (male) and *zhom* (female) hybrids observed, had been purchased from Tibetans from areas further north, who held no such religious objections.

• Study objectives

The objectives of this study were to:

- Outline the primary livestock healthcare delivery system;
- Define cultural beliefs toward animal disease and healing;
- Obtain an understanding of seasonal migrations and animal husbandry techniques; and,
- Determine community-driven needs for veterinary inputs.

• Methodology

Open-ended interviews with individuals from each household and key informant interviews provided the basis for most of the information of the study. Stocking numbers and migration patterns were mapped for each household and corroborated by key informants.

Key informant interviews

Three key informants were identified by the community members as having special knowledge of livestock healthcare. One key informant, the village animal doctor, unfortunately was on a trading expedition to Tibet at the time of the study. His son,

¹ This RA was part of a larger project undertaken by the Institute of Forestry and USAID Nepal, examining National Park resource use. This portion of the project took place over a six week period in August and September, 1992.

however, was able to supply some specialised information on the nature of several diseases and treatments from having observed his father. The village mayor was also considered a knowledgeable source because of his standing in the community. The third key informant was an animal shaman from a neighbouring village. He was considered by all to be an expert in the area of livestock healthcare and was called upon to treat difficult clinical cases and disease outbreaks.

Key informants were first asked to identify commonly occurring diseases. As these diseases were identified and discussed, specific questions were asked regarding clinical signs, causality, seasonality and post-mortem signs. Discussions about disease were viewed as an exchange of information from both sides and not simply an informal question and answer session. Many diseases are common to farmers the world over (such as mastitis) and thus presented the opportunity to share information. Herders became much more interested in the process and gave more detailed information when common ground was found.

All three key informants easily detailed the clinical signs and seasonal occurrences of these diseases. Post mortem signs were unknown in most cases. Due to the religious restrictions, the slaughter of animals is prohibited. Thus, the carcasses of sick animals are almost never consumed and are usually buried. Consequently, knowledge of internal anatomy is poor. The animal shaman was the only informant interviewed that could outline disease processes in internal organs.

Individual interviews

Herders easily talked about livestock husbandry, however most were reluctant to discuss livestock disease. There are two possible reasons for this. Buddhists consider animals to be spiritual beings. The nature of most illness, both human and animal, is considered spiritual (caused by an unlucky encounter with harmful ghosts and spirits). Commonly, throughout the Himalayas, many of the secular population prefer not to advance opinions on disease and illness because they believe there is a correct answer they do not have access to (Desjarlais, 1992). Secondly,

unlike other pastoralists societies, laymen do not treat sick animals. Even in cases of dystocia (difficult birthing), herders will not pull calves, but defer to the two animal healers in the area. Thus, knowledge of livestock illness and disease is specialised and considered a matter of great learning.

From our interviews, it also became apparent that women were reluctant to discuss livestock at all and referred us to older male relatives, even though women are the primary caretakers of livestock during the summer months when most men are on trading expeditions to Tibet or Jumla, Nepal.

Livestock disease ranking

This exercise was undertaken in order to gain an understanding of herders' perceptions of the importance of livestock disease within their production system. Herders were asked to name the diseases that caused the most problems in their herds.

The most serious problem indicated by household informants was *Cumar Po* - a poisoning caused by eating certain species of grass. This grass is found beside trails in the lower elevations. The clinical signs of this disease are dramatic with hematuria (bloody urine) and slow wasting. Most informants were able to give us specific information about this disease. First, as the nature of most diseases is spiritual, this disease was one of a few which did not have 'other worldly' associations, thus informants felt the most comfortable talking to strangers about it. Additionally, this disease is more common in the fall and the study took place in August and September.

Key informants, on the other hand, provided very different information regarding disease ranking. Diarrhoea was considered the number one disease problem in adult animals. It occurred year round, with a high seasonal incidence in the winter. Diarrhoea was also the major cause of calf mortality. Key informants also linked poor nutrition, which caused 'weakness', as a factor in this disease.

It became apparent from this exercise that disease ranking is complex and data often cannot be taken at face value. For example,

many herders who mentioned *Chumar Po* as their biggest disease problem, did not have animals who would have been exposed to it (yak or yak hybrids used on trading expeditions). Also, herders were aware of the species of grass that caused this disease and avoided areas where it grew. Thus we had to look for other cultural reasons that might cause herders to mention this disease most often.

Livestock numbers

Many pastoralist and transhumant populations are sensitive about questions regarding livestock numbers. The residents of Ringmo were no exception to this, and informants tended to exaggerate herd sizes. This was most common amongst the poorest members of the village. Thus, when attempting to accurately determine stocking numbers, triangulation is extremely important. First visual inspection and direct counts should be utilised when possible. The seasonality of the study is also often important. During the summer herds are kept communally and it is easy to perform direct counts of community totals. In the winter, households keep cattle and yak/cow hybrids in shelters at night with the yaks ranging close by, thus household numbers would be easier to acquire. Numbers were broken down into adult yak and nak (female yak), calves and yearlings; adult *zho* and *zhom*, calves and yearlings; and adult cow male and female, calves and yearlings. As different cultures determine the age of animals differently, it is important to determine what constitutes the age of an adult. All numbers were verified by key informants.

• Conclusions

The use of PRA/RRA methods in livestock healthcare systems research is at an exciting stage of development. These techniques gear researchers toward gathering information with a socio-cultural grounding. Among pastoralist populations where herding livestock is a culture and social matrix, as well as an economic livelihood, traditional research methods that ignored these factors created lopsided and illogical development practices.

In the Himalayas, religious beliefs and livestock healthcare are inextricably linked. Among the Tibetans of Dolpa, we found a

sophisticated livestock healthcare system that has developed over centuries. Knowledge of this belief system is vital to the formation of effective governmental and non-governmental interventions.

Globally, pastoralists exist in some of the most inhospitable and demanding environments in the world. Systems for survival have developed over centuries. RRA techniques allow researchers some insight into these survival strategies. Our study among the Dolpa Tibetans at the 'roof of the world' allowed us to glimpse the realities that make yak production systems viable in the Himalayas. One of the risks of doing rapid appraisals, such as this one, is to focus only on the problems and miss the larger picture. It was important for us to remember that a culture that has survived for centuries at 14,000 feet must be doing something right.

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6

Evaluation of an animal health improvement programme in Nepal

John Young, Henk-Peter Dijkema, Karen Stoufer, Narayan Ojha, Goma Shrestha and Lava Thapa

• Introduction

The United Mission to Nepal (UMN) Animal Health Improvement Project (AHIP) has been training Village Animal Health Workers (VAHW) at the Rural Development Centre farm in Pokhara for approximately ten years. The trainees are selected by community development projects run by the UMN and other organisations, and come primarily from many different parts of the mid-hills of Nepal. Since the start of the project approximately 350 VAHWs have been trained and the trainees have been followed-up to find out how they are progressing.

This paper is taken from a report on a project evaluation, and outlines some of the participatory techniques that were used by the team during the evaluation.

• Evaluation procedure

The evaluation was based on existing information within AHIP, some new information from projects, information from organisations involved in VAHW training and two field visits to Lalitpur and Palpa Districts. Two areas were chosen as case studies, because they have many AHIP-trained Village Animal Health Workers who have been working for a number of years. Consequently a large amount of information is available from their projects.

The villages are relatively accessible and whilst one is reasonably well developed the other remains fairly traditional. During the visits four members of the team stayed in the villages to collect general information from

groups, men, women and local VAHWs, while two members visited and interviewed as many neighbouring VAHWs as possible.

Participatory research methods

General village-level information

The team collected background information from groups of men and women in the village using the following participatory methods:

- *Map*: showing the location of houses, crops, forest, grazing areas, grazing areas associated with disease, nearest sub-centre, VAHWs' homes etc.
- *Wealth ranking*: to stratify village members according to wealth.
- *Production information*: information gathered on livestock keeping, including the type of livestock kept and why, their contribution to the household, all inputs (grazing, food, supplementation, housing, routine activities) and outputs (milk, dung, cash from sales, deaths, births etc.) and the action taken when animals are sick.
- *Labour diagram*: showing division of livestock keeping tasks by gender and age.
- *Proportional piling and annual disease calendars*: for disease and general problems with livestock. First problems were listed and then proportionally piled to discover relative importance of each problem. Next, disease calendars were constructed with villagers;
- *Transect walks*: to meet farmers and women to check land use, animal husbandry etc. against ground map and

other discussions, and also to conduct individual interviews.

- *Progeny histories:* for all adult females (buffalo, cow, goat, sheep) in herd. Information gathered for each offspring in turn including its sex, and its subsequent fate (see Table 1 for further details).

For all the above topics, an attempt was also made to establish the extent to which the situation has changed within the last ten years.

Semi-structured interviews with farmers and VAHWs

The team also interviewed male and female farmers and VAHWs individually. Through the use of a question list to guide the interview and maintain consistency, these interviews were more focused and structured than those described above. The interviews with the farmers were designed to gather information on the service they receive from the VAHWs, including:

- The frequency with which VAHWs have treated their livestock;
- The success of that treatment;
- The amount they were charged for this treatment; and,
- How they feel the service could be improved.

The interviews with the VAHWs aimed to assess:

- How they were coping with their work;
- How much treatment they have given;
- The catchment area in which they work; and,
- Ways in which they feel the training, or their own work, could be improved.

VAHWs were also asked to sort the household cards previously used during the wealth ranking exercise, according to whether they had treated, or vaccinated any animals belonging to each household. This was done to see if there was any bias by wealth or caste in the people they had served.

Application of participatory research methods in the field

There now follows a more detailed account of how the methods described above were applied in the field.

South Lalitpur District

Three village development committees were visited in South Lalitpur District - Ikudol, Pyutar and Asrang. Although they are less than 50 kilometres from Kathmandu and the district headquarters in Patan, they are still fairly remote. The area is characterised by ridges and hills up to 8000 feet transected by river valleys 3500 feet below.

Between 1981 and 1987, the project sent 32 farmers to the Rural Development Centre (RDC) farm for AHIP training as Village Animal Health Workers. According to the Community Health and Development Project (CDHP) staff, 24 of them are still treating sick animals in their villages. On this visit we met 11 of them, six of whom are regularly treating animals. Of the remaining five, two are treating very few animals while three have stopped work altogether.

During the visit we used a number of rapid appraisal techniques including wealth ranking, mapping, diagramming and semi-structured interviews to learn about the area. We were particularly interested in the social organisation, agricultural and livestock practices, general and livestock-related problems, and how the village animal health workers are working.

First farmers were usually asked to draw a map of their part of the village and to discuss any related issues arising from this exercise. Some of the team would then carry out a transect walk, observing farms and interviewing people as they went along. Wealth ranking was used to explore wealth-related differences in farming techniques, livestock ownership and access to help when animals are sick.

Livestock-keeping and problem ranking in Ikudol

We asked a group of farmers to name and then rank the general problems they had in their village. We then asked the same group to describe all the inputs required for, and

outputs derived from their animals, and how they varied during the year. The results of this have been included in a seasonal calendar (Figure 1). By allocating beans to each task, they were asked to show who did the work. Finally we asked them to name and rank the various problems they had with their animals.

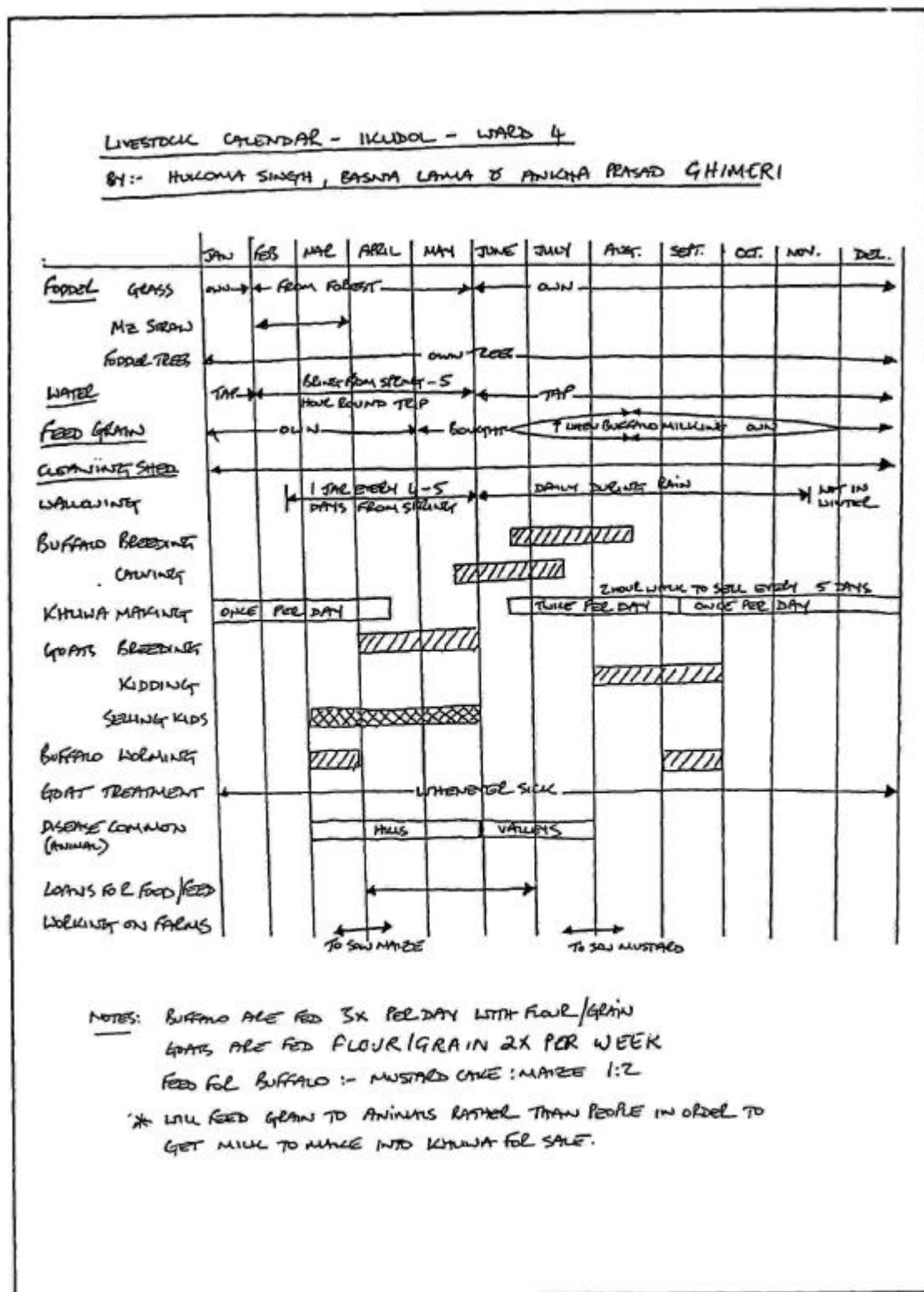
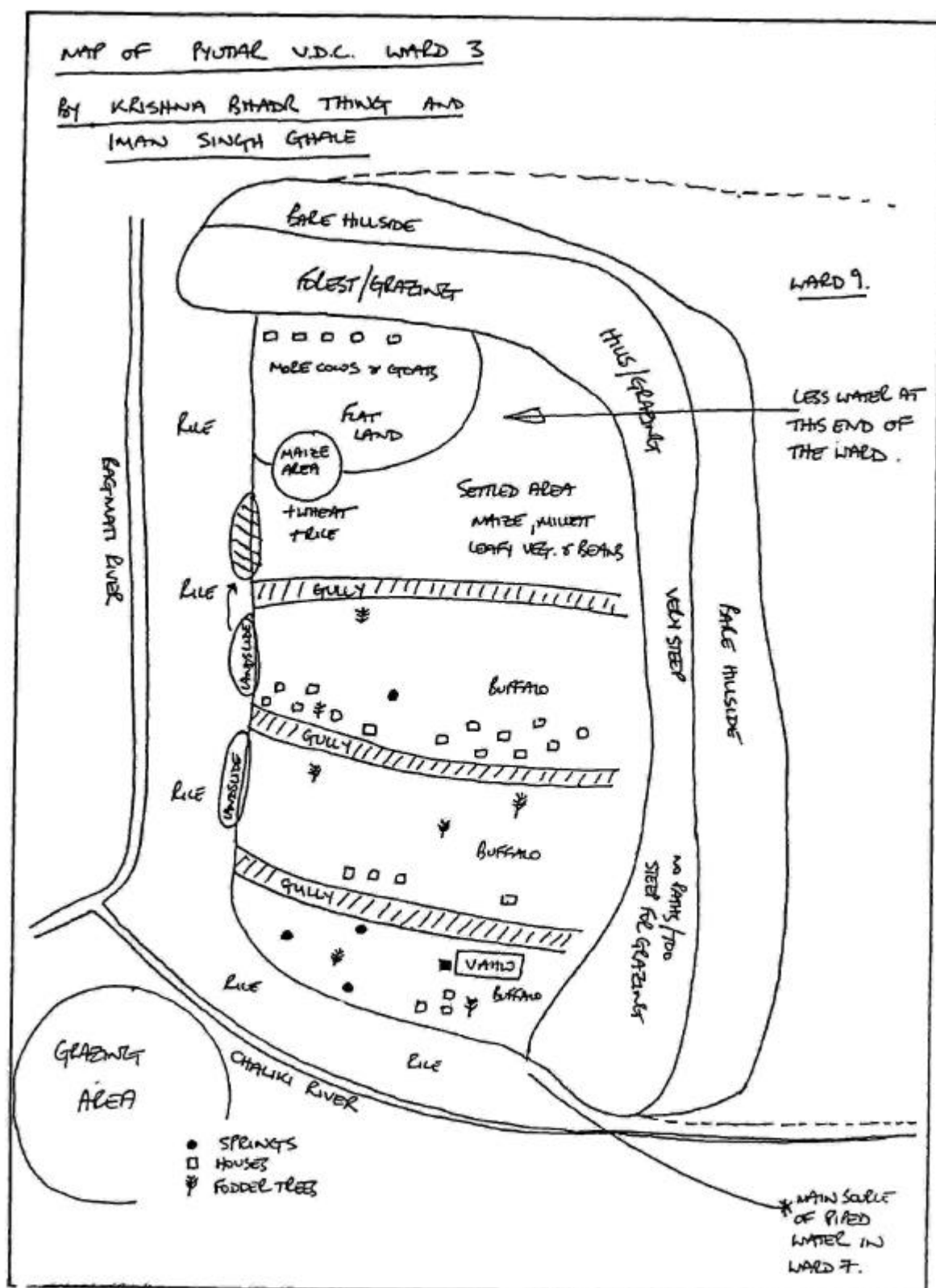


Figure 2. Farmers' map of Ward Tree, Pyutar village



Resource map of Pyutar

Pyutar Village Development Committee area is on the far side of Ikudol, down in the valley towards the Bagmati river. It is flatter, lower, and much more fertile. There are more people, the farms are closer together and a much wider range of crops are grown including rice, finger millet, various beans, pigeon peas, maize, vegetables, mustard, sesame, buck wheat and bananas and various fodder trees. There are more *murrah* and cross-bred buffalo and cattle.

We asked Krishna Bahadur Thing to help us to draw a map of the village (Figure 2). While doing so he told us that 15 years ago, the whole hill behind the village was forested, and that the whole area was wetter. Vegetables grew better then, and there were more cattle

and goats which were taken out grazing. On the other hand the Bagmati River was wider and less predictable then, and now it is possible to cultivate more rice fields along its banks.

Progeny history in Ikudol and Pyutar

During the farmer interviews in both villages, we asked what had happened to the offspring from every adult female animal on their farm. Table 1 shows the results and gives an indication of rates of loss through sale, slaughter, gifts and disease. Where the age of death was known, all of the buffalo deaths occurred under six months of age; four out of 17 (c. 25%) at less than one month old and 10 out of 17 (c.60%) below three months old. In cattle three of the five reported deaths occurred at less than one month old, as did seven out of eleven goat deaths.

Table 1. Progeny history: the fate of offspring of animals in Ikudol and Pyutar

	Males		Females		Total	
	n	%	n	%	n	%
BUFFALO (no. females = 38)						
Retained	11	28	23	51	34	40
Sold	23	58	10	22	33	39
Given for share	1	3	-	-	1	1
Died	5	13	12	27	17	20
Total	40	47	45	53	85	100
CATTLE (no. females = 8)						
Retained	5	63	4	36	9	47
Sold	2	25	-	-	2	11
Given for share	-	-	2	18	2	11
Died	1	13	4	36	5	26
Exchanged	-	-	1	9	1	5
Total	8	42	11	58	19	100
GOATS (no. females = 20)						
Retained	7	14	18	36	25	25
Sold	32	65	19	38	51	52
Given for share	-	-	2	4	2	2
Died	9	18	5	10	14	14
Slaughtered	1	2	5	10	6	6
Lost	-	-	1	2	1	1
Total	49	49	50	51	99	100

Palpa Valley District

The village of Baugha Pokhara Thok is about 12 kilometres from Tansen town, along a ridge away from the Palpa valley. It is not as developed as some of the villages in the Palpa valley because it does not have any irrigated land. Despite a number of development activities in the village, agriculture and especially livestock keeping is still largely traditional. However, many men from the village are, or used to be, in the Indian army, and therefore bring a lot of money into the village through wages and pensions.

From this village, eight VAHWs have been trained by AHIP and one by the government. According to CDHP, seven of these are still active. Although, as on the visit to South Lalitpur a number of rapid appraisal techniques were used to learn about livestock keeping in the area, on this shorter trip, the

team mainly concentrated on the work done by the VAHWs and their relationships with the community and CDHP.

Livestock keeping: division of labour by wealth class

The information obtained from the wealth ranking was used in this exercise to assess how the division of labour is affected by wealth. Khem Bahadur Ale is a farmer ranked top in the wealth ranking exercise (Rank 1). He has a big family and many different types of livestock. He allocated beans to each of the tasks involved in livestock keeping to show who does the work (Figure 3a).

However, Man Kumari gave rather a different picture (Figure 3b). Her father is in wealth rank 5, they have four cows and a pig and her mother is very ill and cannot do much work.

Figure 3. Division of Livestock Labour by Wealth Class

a) Wealth Rank 1 Farmer

LABOUR OF LIVESTOCK KEEPING - BANGALAH BANGALAH THAK - UNDO 1
BY: KHENA BANGALAH ARE (WEALTH RANK 1)
- THE A DAY FARMER AND LOTS OF ANIMALS OF ALL SPECIES -

	TOTAL WORK	MAN	WOMAN	CHILDREN	OP. (BOTH)
GRASS CUTTING	31	1	1	1	1
CLEANING SHED	12	1	1	1	1
FEEDING GRASS	14	2	2	2	2
MILKING	15	2	2	2	2
GRAZING	23	2	2	2	2
SELLING	8	1	1	1	1
BUTCHER	6	1	1	1	1
REPAIRING	12	1	1	1	1
LOADING AND ANIMALS	21	1	1	1	1
REPAIRING SHED	6	1	1	1	1
	164	58	62	11	35

N.B. - HAVE DIVIDED THE TOTAL LABOUR INTO 4 EQ. - WOMEN WOULD WORK IN THE FIELD, BUT IF NECESSARY OTHERS WILL DO IT.

b) Wealth Rank 5 Farmer

LABOUR OF LIVESTOCK KEEPING - BANGALAH BANGALAH THAK
BY: MAN KUMARI (DAUGHTER OF BANGALAH BANGALAH THAK)

	TOTAL	FATHER	MOTHER	SELF	BROTHER
CLEANING SHED	11	1	1	1	1
FEEDING GRASS	12	1	1	1	1
GRAZING	6	1	1	1	1
FEEDING	35	1	1	1	1
MILKING	23	1	1	1	1
BEDDING	9	1	1	1	1
BUYING/SELLING	4	1	1	1	1

N.B. THEY HAVE NO MILKING ANIMALS AT THE MOMENT, AND HER MOTHER IS VERY ILL AND CANNOT DO MUCH WORK. SHE USED TO DO MUCH MORE

Livestock problem ranking by wealth class

The results of the wealth ranking exercise were also used to understand how wealth affects people's perceptions of livestock-related problems. Khem Bahadur Ale is another farmer ranked top in the wealth ranking exercise. He considered lack of grass to be the biggest problem, followed by disease and the lack of grain (Figure 4a).

However, Sumitra K.C. has only two buffalo, three oxen and five goats. Her husband is in wealth rank three and has an outside job. Her perceptions differ slightly - she ranked the lack of water first followed by disease and the lack of feed (Figure 4b).

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7

Sheep husbandry among Tzotzil Indians: who learns from whom?

Raul Perezgrovas, Marisela Peralta and Pastor Pedraza

• Introduction

The aims of agricultural technicians and development professionals are to help 'less fortunate' individuals to improve their crop or livestock production. However, it is easy to picture them in the field giving instructions, recommending hybrid seed, or new agrochemical/veterinary products, inspecting animals and writing prescriptions. But even if effective for the commercial producer, such knowledge and technologies are not always adopted by peasants or smallholder farmers, often because they simply cannot afford to.

Educated technicians are not used to receiving, let alone asking for, advice from peasant farmers. If they were to adopt a more humble approach they would probably find that farmers cooperate with them and they achieve better results. Local people may lack formal education but they have plenty of experience and empirical knowledge that technicians should look into and learn from. Using an ethnoveterinary approach, we were able to look deeper into indigenous knowledge, and to understand that we can learn a great deal about animal management and health when (and if) we listen carefully and respectfully to those who, educated or not, know better.

Our work among Indian shepherdesses in Highland Chiapas, in Southern Mexico, proved to be a most rewarding experience. Most of these women are illiterate, only speak their own language (*Tzotzil*) and live simple lives. They live in small hamlets in the mountains, and are responsible for daily household chores as well as grazing and watering the family flock.

The sale of sheep, wool and crafts provides an important source of income for Indian families in the Chiapas. Technicians from several government agencies have tried to raise the productivity of their sheep over the past few years. They attempted to introduce modern husbandry practices and highly productive sheep breeds; schemes that were effective for commercial producers in other regions. However in the Chiapas they have failed. The Indian farmers did not understand why their 'sacred' sheep should be harmed by injections, culled because of their age or low productivity, or killed for meat. They did not like the newly introduced breeds of sheep because they were always 'sad' and sick, and were often dead within a few weeks of arriving in the area.

• Research methods

During the early 1980s we tried a new method of improving sheep husbandry management with the Tzotzil Indians. Indian shepherdesses have been rearing animals for over 450 years in a different, but nevertheless successful way, so we studied their traditional management system. With the assistance of an Indian woman as an interpreter we talked individually to many shepherdesses from different villages. We walked with them whilst their flocks were grazing. We helped them to build wooden shelters for sheep and to gather plants and herbs for a sick animal. We sat for hours and chatted while some of the women transformed wool fibre into woollen garments, and we also shared scarce food and bad weather.

• Outcomes

As a result, we obtained plenty of useful information, which we discussed and analysed until the complete picture of the sheep management system became clear. More importantly, we underwent a change in attitude, becoming students whilst allowing the Indian women their role as expert teachers. We learned to observe carefully and to listen, and to respect their opinions.

It became evident why the original approach of the educated government technicians had failed. Without close contact with the shepherdesses, how could they have imagined that their recommendations were not only out of context but opposed to the culture of the Tzotzil Indians? In Highland Chiapas, sheep are sacred animals. They are named, cared for and respected as part of the family. The Tzotzils' religion prohibits the consumption of mutton and every Indian woman constantly prays to the Holy Shepherd, John The Baptist, for her sheep to be healthy and protected from 'wind' or 'evil eye'.

Besides this 'heavenly' protection, shepherdesses have designed and perfected a series of management practices that have proved to be very effective in keeping the animals in good condition. For example, parasites are controlled by rotating grazing sites, using grass-made muzzles, watering directly from buckets, and restricting access to meadows and streams. Nutritional imbalances are dealt with by supplementing the diet with mountain salt. Reproduction is managed by trading rams and isolating newly-lambd ewes, and sick animals are treated with plants.

These management practices are based on old pastoral traditions from Spain, ancient Maya customs or a blend of both. Furthermore, they can be scientifically translated into veterinary or animal husbandry terms. The whole management system is currently in the process of experimental validation, and the results will be used as the basis for future development programmes in the highland region.

This 'improved' traditional management system, along with a rediscovered local breed (Chiapas sheep), stands a better chance of being adopted by the Indian shepherdesses

since it came from them in the first place and because it is designed for the existing culture and context of sheep husbandry in the mountains of Chiapas.

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8

The progeny history data collection technique: a case study from Samburu District, Kenya

Karen Iles

• Introduction

This article focuses on the use of progeny histories to collect information on aspects of livestock production. The Intermediate Technology Development Group (ITDG) has used this technique extensively in studies carried out to develop community-based animal health care programmes in various parts of Kenya.

In 1989, Oxfam requested the help of ITDG in developing the animal health component of their livestock and restocking programme in Samburu district. Samburu district is located in the semi-arid rangelands of northern Kenya. Livestock are the primary means of livelihood for the majority of the pastoralists living in this region. They provide food, household commodities, a source of cash and perform numerous social functions.

As a first step, we carried out a study to determine the following:

- The nature of animal health problems in the area;
- Existing levels of veterinary knowledge amongst pastoralists; and,
- Animal health services already available, both indigenous and Western veterinary services.

This was done using both formal and informal techniques. The formal techniques consisted of wealth ranking, a short household questionnaire, an ethnoveterinary question list and a progeny history question list. The informal techniques included discussions with pastoralists and government staff, use of key informants, observation of husbandry practices,

and a review of relevant literature. The progeny history technique was therefore used in conjunction with a variety of other data collection methods.

Progeny history: methodology

Progeny histories can be used to collect information on a large number of animals in a short period of time. The technique is relatively straight-forward and easy to carry out. In the Samburu study pastoralists enjoyed talking about their livestock during the interviews, and were quite happy to provide the required information.

Progeny histories are essentially livestock genealogies, which describe the fate of all the offspring of a given female animal. They provide quantitative data on the fate of animals that have left the herd or flock. This includes information on voluntary offtake, such as number of animals sold, exchanged, given away as gifts and slaughtered for food, as well as animals that have died as a result of disease, drought, predators or other causes such as theft.

Background information required

Before using the progeny history technique it is essential that certain background information is known. This is essential to ensure that the data collected is relevant and accurate. This will require the assistance of both a veterinarian/livestock production specialist and a social scientist. Also critical to the process are dialogue and participation with the livestock owners themselves. Background information should be collected on the following:

- *Local disease knowledge.* A list of diseases and disease syndromes recognised by livestock owners living in the area should be compiled in the local language. Attempts to translate these into Western veterinary equivalents for the purposes of the interview can be problematic and is best avoided. This is because pastoralists frequently categorise disease according to observable signs rather than causal agents, as is the case with western veterinary medicine. During the interview diseases should be recorded in the vernacular to avoid confusion and to ensure accuracy.
- *Local age categorisation.* Pastoralists like the Samburu rarely age their animals in years. Instead livestock are categorised according to maturity, physiological state, reproductive history and potential, and barter value (Table 1). Such systems are detailed and accurate but often complex and must be clearly understood. To ensure accurate data collection and to avoid errors brought about by translation, age categories reported by respondents should be recorded in the vernacular language during interviews. The categories can be later simplified (for example into years and weights) for analysis.
- *Important local events.* The names and dates of recent events in history, such as droughts and major ceremonies, can be compiled in order to date out-breaks of disease, and assist in determining the age of animals.
- *Social organisation of the community.* The sample of people interviewed should be representative of the community as a whole so that the results of the survey can be applied generally to that population. This requires some method of stratifying the community. In the Samburu study the wealth ranking technique was used. Communities were stratified according to wealth, which is defined by pastoralists as the number of animals owned. Wealth is known to effect factors such as animal husbandry practices, offtake and response to disease outbreaks (Iles, 1990). For the progeny histories, pastoralists from poor, middle and wealthy households were interviewed. Use of the wealth ranking

technique requires some knowledge of the social organization of the community.

The progeny history question list

The technique involves conducting an interview with the owner or herder using a structured question list, illustrated in Box 1. The informant is first asked to select from the herd or flock, an adult female animal that has given birth. Interviews are best conducted at the homestead near to the livestock corral so that the animal under discussion can be seen. The informant is then asked the questions listed in Box 1. Responses are recorded systematically in a notebook. It is important that they are written clearly in a predetermined format for ease of coding. Analysis is straightforward and may be carried out by hand or computer.

From this, detailed information on exactly what diseases (as defined by pastoralists) animals are dying of can be determined. The precise diseases affecting certain ages and classes of livestock can also be quantified, and this information can be used to determine mortality rates. The progeny history technique also provides data on herd and flock structure, and from this information on fertility can be derived. An advantage of progeny histories is that they provide data over an extended period of time (approximately 5-10 years), compared to other single interview techniques, such as questionnaires, which often only provide information over a short time frame. Information from progeny histories can be used to illustrate patterns in the fate of livestock over time so that trends can be identified. Unexpected, irregular events such as droughts and major disease outbreaks can be taken into account.

The type of questions asked during progeny history interviews can be varied depending on the objectives of the study. For instance, if disease incidence and transmission is the focus of interest, then probing questions on disease classification, age/sex specific disease impacts, symptoms and treatment can be explored. However, if livestock functions are of more interest, then more probing can be invested in exploring the motivation behind sales, the

contexts for animal purchase etc. (B. Grandin, pers. comm.).

Table 1. Samburu cattle production categories

Livestock	Samburu	Nearest English Equivalent	Translation/Comment
Female	Nkashe Lelerie	Calf	Young calf
	Nkashe Pus		Grey calf
	Nkashe Botor		Big/senior calf
	Nkarami	Weaner	Full grown
	Ntawo	Heifer	
	Ntawo e Laigoni	Cow	Heifer of bull
	Mtawo e Laong'o		Heifer of steer, birthed 1 or 2 times
	Nkiteng		Mature cow, birthed 3+ times
Male	Lashe Lelerie	Calf	Young calf
	Lashe Pus		Grey calf
	Lashe Botor		Big/senior calf
(castrated)	Larami	Weaner	Full grown
	Laong'o le sile	Steer	Steer of debt
	Laong'o le laugut		Steer of Leugut ceremony
	Surnash	Castrated Bull	
	Laong'o le ntawo	Steer	Steer of heifer
	Laong'o le Lashau Okuni		Steer of 3 calves
	Laong'o le Ong'uan		Steer of 4 calves
(entire)	Lashe Lelerie	Calf	Young calf
(castrated)	Lashe Pus		Grey calf
	Lashe Botor		Big/senior calf
	Larami	Weaner	Full grown
	Lpole	Young Bull	Not mounted
	Lponos	Bull	Young but mounted
	Laingoni	Bull	Mature bull

Source: Sperling, 1987 (where further information on goats, sheep, donkeys and camels can be found).

BOX 1

THE PROGENY HISTORY QUESTION LIST

First explain to the livestock owner that the point of this exercise is to find out what problems he/she has with his animals. If he/she only tells us about the good ones, then we won't know what the problems are. We need to find out about good, average and poor animals so that we can plan the programme.

Write the person's name, *manyatta* name, and card number down, then:

1. Ask the livestock owner to give the names of six bloodlines¹ of animals and from this ask him/her to choose two good ones, two average ones and two poor ones. Pick an adult female animal in his/her *boma* which has had calves, kids or lambs. Write them down. If he/she has less than six lines, just write down the ones he has.
2. For one good animal, write down the name and ask:
 - Where did it come from?
 - How many pregnancies?
 - How many abortions?
 - If still in herd, is she pregnant, dry or barren?
3. Then for each birth ask:
 - Was it a single or a twin? (record twins separately)
 - What happened to it?
 - Why?
 - Age now, or age when left herd?

If it was female and is still in the herd and has given birth, then write its name down as the mothers name -1. For subsequent ones, number them sequentially.
4. When you have finished all the births of the original animal, repeat questions two and three for each of the female offspring which gave given birth².
5. Repeat questions two and three for at least one average and one poor animal, and time-permitting, for the other three animals. If the owner does not have that many lines in his herd, then do all the lines that he/she has.

Source: Iles, 1990.

¹ In Maasai this translates literally as 'house' (B. Grandin, pers. comm).

² Barbara Grandin reports that it was possible to go back in time to cover the progeny history of the 'mothers' of each live female. One woman went back 30 years to the animals she was given on her wedding day! This gives a much longer time frame for information than just using animals in the herd. This is particularly important for exploring episodic events and long-term cyclical impacts (Grandin, pers. comm.).

Case study: progeny histories in Samburu District

In the Samburu case, the interviews were carried out in the vernacular language by Oxfam staff who were themselves pastoralists. The responses were recorded in English. Elders

made up the majority of the people who were interviewed.

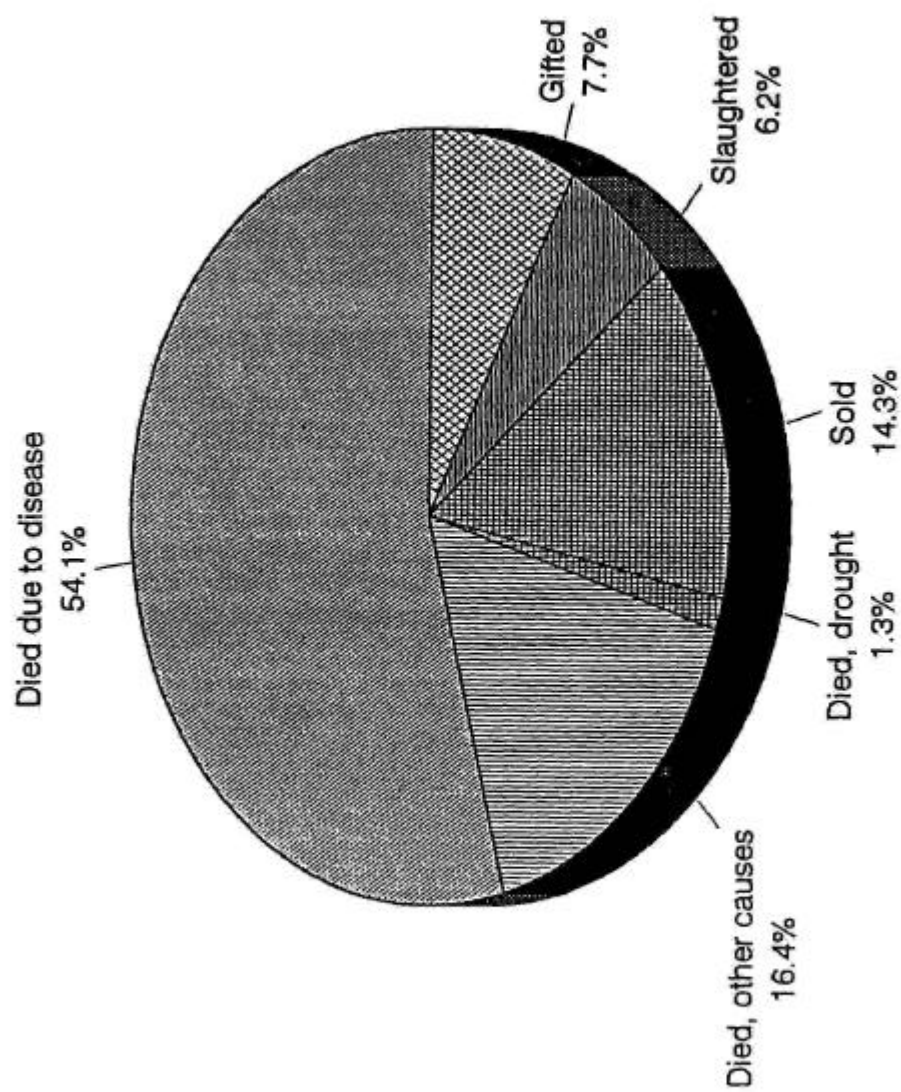
Table 1 and Figure 1 illustrate examples of the type of data collected in Samburu district. For example, 66 per cent of cattle born into the herd remain in the herd (Table 2). Of the goats and sheep that left the herd 54.2 per cent died as a result of disease (Figure 1).

Table 2. Overall fate of offspring, Samburu District

Fate	Camels (n=42)	Cattle (n=144)	Goats/Sheep (n=121)
Still in the herd	61%	66%	60%
Died: disease	23%	12%	22%
Died: drought	1%	4%	1%
Died: other causes	5%	4%	7%
Sold	4%	9%	6%
Slaughtered	2%	2%	2%
Exchange/gift/loan	4%	3%	3%

Source: Iles, 1990.

Figure 1. Fate of Smallstock Leaving the Flock (as percentage of total leaving)



Source: Iles (1990)

• Lessons learned

Progeny histories are limited in that they do not provide information on such topics as livestock owners' attitudes (for example towards traditional medicine), or data on chronic, non-fatal diseases which may nevertheless be important from the pastoralists' point of view. Progeny histories should therefore be used in conjunction with other data collection techniques such as ethnoveterinary question lists, informal interviews and sentinel herd studies, if a wider understanding of the constraints to livestock production is required. Other lessons learnt during the study are discussed below.

Interviewing

Experience from Samburu illustrates the critical role that interviewers play in the collection of data using the progeny history technique. The interviews can be carried out by extension workers, as was the case in the Samburu study. However, it is important these interviewers are given training in interview techniques and have ample practice in asking questions and recording the responses accurately and systematically. Training should also provide them with a clear understanding of the purpose for the questions and to what use the data will be put. Interviewers should have a knowledge of and respect for the local culture and traditional livestock practices. If not, their lack of understanding will inevitably be conveyed and pastoralists are unlikely to provide detailed and accurate information, or even be willing to devote much time to the interview. The interviews are best carried out by people fluent in the vernacular language, who will also be aware of how questions can be asked in a way that is appropriate to the culture.

Adapting questions to the local culture

Testing the technique before it is used as part of a larger study is essential to ensure that the questions themselves are culturally appropriate. For example, in the Samburu case there was a problem over the question about the number of abortions an animal had had (Box 1). The Samburu tended not to regard these as a pregnancy, so that the number of pregnancies

for a single animal could potentially be under reported. The interviewers overcame this problem by broaching the question through discussion.

The size of the data set

Even though information can be collected rapidly through progeny histories, the coding and entering on computer of this data can be time consuming, especially if a large number of animals are involved (3000 in the Samburu case). To avoid wasting time and resources, the number of animals on which data is required should be calculated, and from this the number of interviews carefully planned.

• Conclusion

The progeny history technique is an extremely useful method for collecting accurate information in a culturally sensitive way. It compliments other data collection techniques, in particular providing quantitative information to verify qualitative data gathered through discussions.

Progeny history techniques work best with more important, valued species. Everywhere cattle data has been better than for smallstock species. Largestock give birth less often, rarely twin and so histories are easier to remember.

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9

Rapid appraisal techniques: a tool for planning and managing animal health and production development programmes

M. Ghirotti

• Introduction

This paper describes the steps taken to perform a rapid appraisal (RA) to provide a quick, systematic and cost-effective picture of livestock conditions and veterinary problems, especially in agropastoral communities. The original RA was carried out in the Central Ethiopian Highlands in 1985 and further tested and improved in various areas of Ethiopia, Zambia, Guatemala and Namibia.

The collection of appropriate data is crucial for the planning, management and evaluation of animal health and production interventions. Some data collection techniques use detailed, baseline surveys but they involve a number of constraints. Rapid appraisal (RA) methods have been developed to overcome these limitations and to capitalise on farmer experience.

• Main stages of a Rapid Appraisal

Deciding the appropriate type of RA

Firstly researchers should decide which type of RA will most effectively achieve their objectives. McCracken et al. (1988) describe three different classes of rapid appraisal:

- *Exploratory*: identifies the general features and constraints of the livestock production system at the start of a development programme.
- *Monitoring*: evaluates the progress or impact of development activities.
- *Topical*: focuses on more specific issues.

A fourth class is suggested here:

- *Framework*: carried out alongside existing investigations to put into context the results of more selective studies. This was carried out in southern Zambia to identify husbandry practices, cultural and environmental factors. It helped to interpret the results of a sero-epidemiological investigation on major cattle diseases and to identify valid and acceptable control measures (Ghirotti et al., 1991).

Preparation

Constitution of the team

The team should consist of a maximum of four persons, ideally including:

- A veterinarian, with sound knowledge of animal production, epidemiology and disease economics;
- An ecologist, with a background in pasture management and animal population dynamics; and.
- A social scientist, acquainted with pastoral and agropastoral societies.

Each should apply an inter-sectoral approach to problem analysis and solving. The team should also include local technical officers.

Identification of target areas and communities

The target population should be stratified according to the variables to be investigated. These may include the main eco-agricultural systems, the different socio-economic groups or the presence or absence of a given factor e.g.

vaccination. If it is not possible to include all villages, the target area can be based on representative villages. However the potential sources of bias and the dangers of generalising must always be considered in the choice of villages (see below).

Desk reviews and interviews of professionals

Before performing a preliminary field visit, secondary information should be collected. Geographical and meteorological data as well as maps are some of the most important data required. Valuable practical advice can be obtained from experienced professionals who have previously worked in livestock development, disease control, on-farm research and other community-based programmes.

Informing central or local authorities of the study objectives

Administrative and technical authorities should be informed about the scope of the study and their approval should be gained. Officers can be an excellent source of reliable information on the livestock situation in the study area. Records from vaccination campaigns or dip tanks may provide rough estimates of livestock populations (especially for large ruminants).

Preliminary visit to the communities

The preliminary visit allows the research team to present and discuss the purpose and objectives of the study with the community. It also allows the team to obtain background information on the local farming and livestock system before starting deeper investigations. The preliminary visit will involve the collection of information using a combination of the following techniques:

- Semi-structured interviews with key informants;
- Individual interviews on selected topics using questionnaires;
- Direct observation;
- Case histories;
- Group interviews with farmers or livestock owners; and,
- Workshops.

Accurate information can only be collected from farmers if their trust is gained. Informal leaders should be contacted - their support is often essential in gaining this trust, especially in areas where government authorities may be disliked. It should be borne in mind that questions about flock or herd size may raise suspicions about future taxation. The endorsement of the team by the community is therefore crucial and community leaders can play a key role here as mediators.

During this preliminary visit the main environmental features, as well as social and ethnic groups are identified and recorded. The information to be systematically collected at this stage relates to three main areas: background information, production information and seasonal information.

Background information:

- Estimation of number of herds and households present in the area;
- People's reasons for keeping animals: their role in the farming system and in the economics of the household;
- Presence of development programmes and facilities in the area (e.g. crushes, dip tanks, veterinary clinics). Development constraints, including the arguments for and against existing or potential development activities;
- Main environmental changes and events occurring over the past years (for example the introduction of new farming practices, or disease outbreaks in the area). Especially important are factors that may have caused changes in production strategies, husbandry practices, livestock performance or disease occurrence; and,
- Vernacular names of the most common human and livestock diseases, their importance and spatial and temporal distribution. Presence and distribution of pests and vectors of diseases. Local health beliefs and care systems.

Production information

- Species and breeds of livestock kept and the main husbandry practices: including spatial distribution and changes in species and breeds of livestock kept in the past. The

presence or absence of species and breeds can be used as indicators (e.g. browsers rather than grazers as a sign of land degradation, degree of susceptibility to diseases);

- Gender division of labour, especially for livestock husbandry tasks;
- Average production figures and their seasonal patterns: fertility, milk or egg production, productive career, different types of offtake (rough percentage of sales, exchanges, gifts or slaughter);
- Foods of animal origin most commonly produced, consumed or sold, including the use of other animal products or by-products (e.g. dung, horn, rumen content). The existence of any food taboos should also be established;
- Main sources and availability of feed (including use of by-products) and water; and,
- Main markets for livestock and wildlife products.

Seasonal information

- Local cropping calendars;
- Seasonal variations in labour demand: meetings with farmers and eventual project activities involving their active contribution should be concentrated in the slackest periods of the year;
- Important festivals: animals are slaughtered mostly for ritual purposes during festivities. Post-mortems of these animals may provide information and specimens. Some operations on livestock are also ritually performed on such days: in the central highlands of Ethiopia castration of bulls is carried out on *Maskal*, an important local festivity (Ghirotti and Woudyalew, in press); and,
- Seasonality of supply, demand and prices for livestock and wildlife products.

Data collection

From the results of the preliminary visit and the suggestions provided by the community, the final research objectives can be identified by

the team. Data is then collected which focuses specifically on these issues.

Identifying the sample unit

For sampling purposes, two different clusters can be chosen for livestock data collection: the household unit and the grazing unit. The former is recommended for an exploratory RA, whilst the latter is useful for the analysis of a selected livestock species.

For example, in the Ghibe valley of Ethiopia, on average only one herd in five contains a bull. If each herd is considered separately rather than as part of the overall livestock situation, it would be difficult to understand the reproductive performance of individual herds and the overall dynamics of the livestock system. Where land is communal, the steps in selecting the herds are as follows:

- Estimate how many grazing units there are in the area;
- Identify the criteria for their formation;
- Decide which have to be studied on the basis of such criteria;
- Analyse their composition;
- Make a list of livestock owners; and,
- Interview some of the owners.

Methods of data collection

The information gathered during the preliminary visit will help to design question lists to research the issues which the team has decided to concentrate on. A question list helps to standardise answers and draws explanations and opinions from the farmers. It should concentrate on a few selected quantitative features which, integrated with the information already gathered through the semi-structured interviews, can give an accurate picture of the situation.

Interviews with pastoralists should never focus on herd or flock size. Instead they should concentrate on production dynamics (seasonal distribution of events such as calving or mortality) and qualitative information (e.g. epidemiology of diseases, husbandry practices). In each herd or household the following data can be recorded for ruminants and equine species:

- The number of births or deaths of calves, kids or lambs (under one year of age) within the last 12 months;
- The number of adult females of reproductive age (conventionally, in traditional systems: cattle over four years of age and sheep and goats over one year old);
- The number of adult females not of reproductive age (i.e. heifers between two and three years of age);
- The number of adult uncastrated males (over one year of age);
- The number of adult castrated males (e.g. oxen);
- The number of adults which have died within the last 12 months; and,
- The number of animals sold, slaughtered or given away within the last 12 months.

From this data it is possible to estimate herd fertility rates (calving, kidding, lambing percentages), mortality percentages below or above one year and offtake rates. The relative proportion of the different age/sex classes can provide additional information, not only on herd growth, but also on the main purposes for keeping livestock. For fowls, information should be collected on:

- Number of adults and chicks owned;
- Number of births and deaths of chicks during the last 12 months; and,
- Number of adults sold, slaughtered or given away during the last 12 months.

Bee-keeping and breeding rodents are often important additional sources of food and income which can be investigated.

Collection of Specimens: some external specimens can be collected for further investigation (faeces, ectoparasites). Performance measurements can also be made, such as milk offtake, body scoring and weight estimation. It is not advisable to approach animals too closely and insistently in order to avoid irritating the owners. A few case histories can be recorded on the spot to check earlier answers.

Avoiding bias

When using RA techniques, the researcher must be aware of the possible ways in which biases may arise. These are often a result of the following:

- The presence of outsiders can influence people's behaviour. Responses may be altered to please, confuse or deceive the researchers. Expectations can be aroused and answers may reflect more what people wish than what they know and think;
- In group discussions and meetings, the literate and members of the elite may receive more attention than others. People may avoid openly expressing their opinions in public; and,
- Cultural bias. An 'outsider' researcher often has the cultural expectation that every question will receive a straightforward, spoken answer, and that the answer will be concise.

Biases can best be avoided by being aware of the above factors. Using correct sampling and questioning techniques and making direct observations will also help to reduce them.

Summarising and presenting RA results

Several types of diagrams are widely used to summarise and present the collected information. Besides histograms, bar, pie charts and maps the most commonly used are:

- *Transects.* These summarise the most important features of the different areas and ecozones, and are useful in showing spatial differences and trends (Figure 1);
- *Seasonal calendars.* These highlight the temporal patterns of human activities, production and biological events (including diseases). These factors can also be plotted against climatic data (Figure 2); and,
- *Flow diagrams and decision trees.* These can present clearly the key factors which may influence decision-making and the consequences derived from such decisions or other changes.

Figure 1. Transect of Sidama Awraja (Ethiopia)

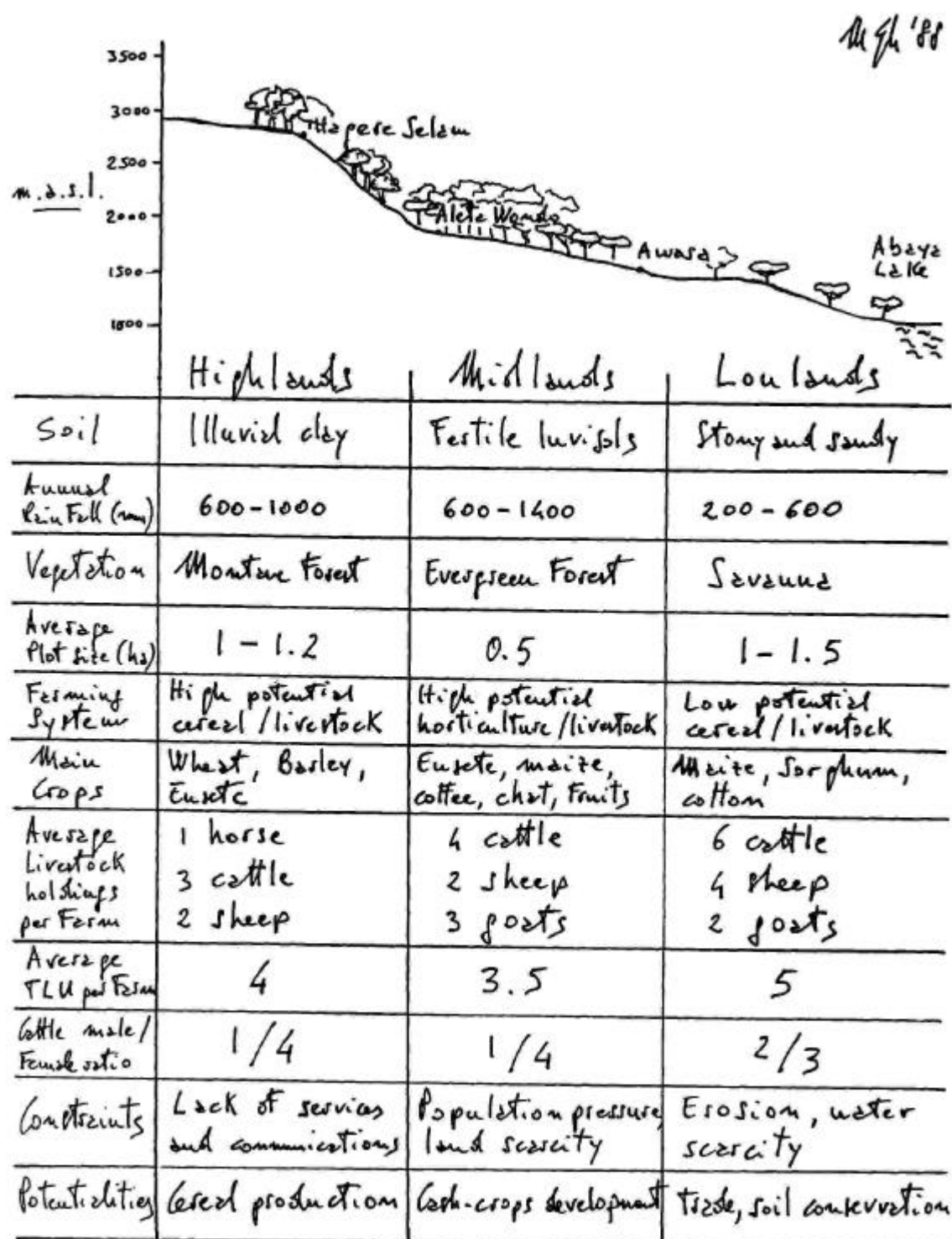
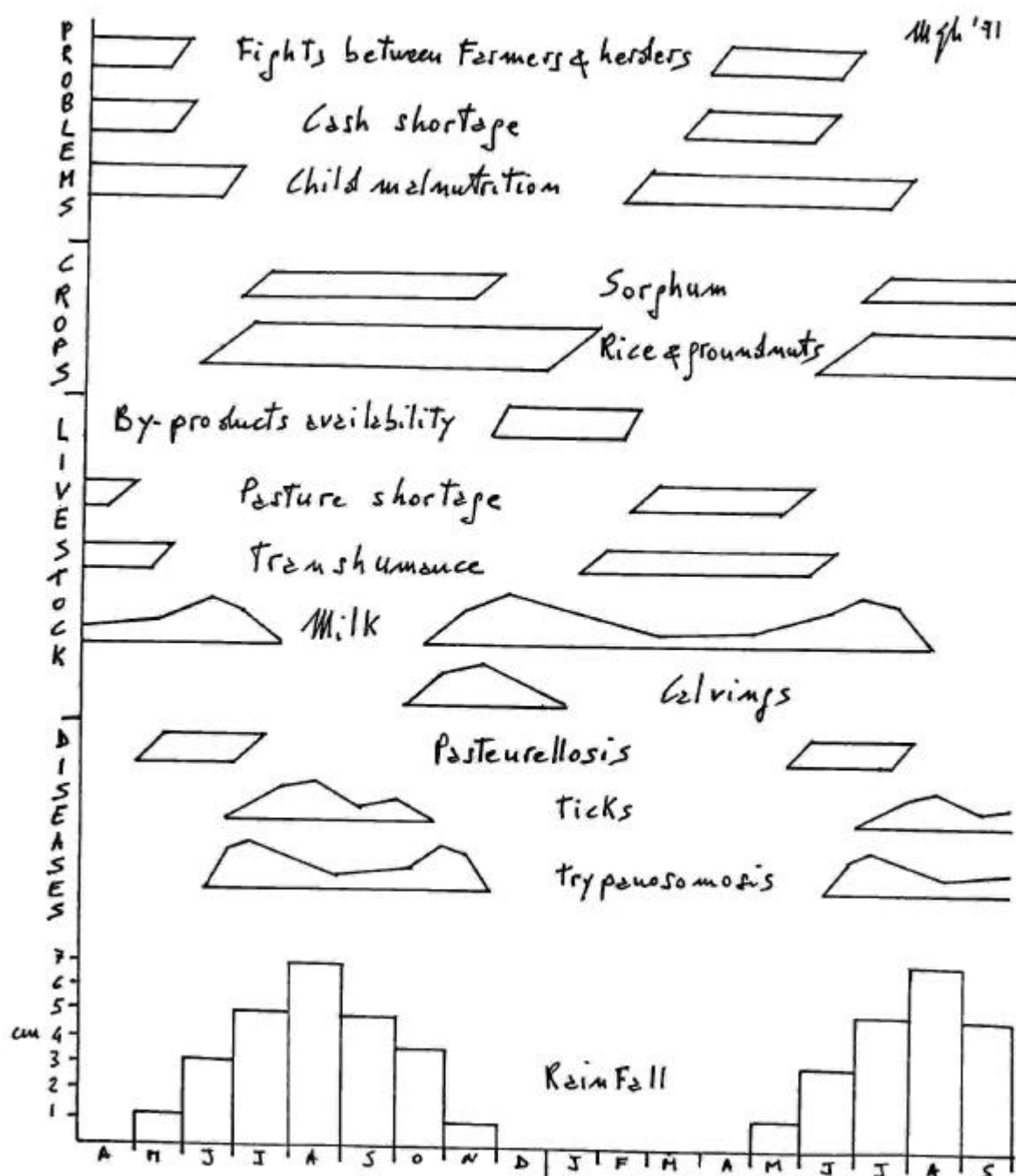


Figure 2. Seasonal calendar: Boké (Guinea)



Data analysis and interpretation of results

The data should be analysed as quickly as possible. The accuracy of the data collected can be established by comparing data obtained from different sources. Significant differences should be investigated and hypotheses for these differences made and tested while the team is still on the site. Comparisons between grazing

units and households can be made by converting the different size and species into Tropical Livestock Units (TLU). A TLU is commonly an animal of 250kg liveweight.

Feedback and discussion with the community

The results of the appraisal, their different interpretations and possible solutions should be

openly discussed in summing-up meetings with the farmers concerned. This confirms the data and ensures that the team does not have a misleading picture of the area.

The answers gained through RA should lead to the identification and selection of practical development projects. If the relevant authorities approve these suggested practical solutions and if the resources are available, some of them should be implemented.

The RA should have revealed the degree of trust which local farmers felt towards the researchers. If it revealed a high level of trust, more accurate sampling and measurements can be used in the future (e.g. blood sampling). Interested farmers can be involved in future studies or pilot project activities. The reasons for a lack of interest perhaps shown by others can be investigated. Thus RA becomes a tool for understanding the community.

• Conclusions

Because of their qualitative nature, rapid assessment methods are not a substitute for standard epidemiological techniques. However they are a good complement to these more quantitative methods. Their main value lies in their ability to quickly identify those factors which are jeopardising improved utilisation of animal resources. The aim of the development professional is to find practical solutions to straightforward problems. The use of field methods which identify and include the farmers' viewpoint and involve the community as much as possible certainly assist with this difficult task.

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NOTE

A more complete description of this methodology has been published in the Proceedings of the meeting of the Society for Veterinary Epidemiology and Preventive Medicine held at the University of Edinburgh, 1-3 April 1992.

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10

Ranking with Shagaa in Mongolia

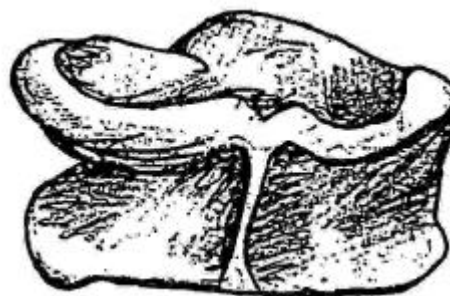
Adrian Cullis

• Introduction

Extensive livestock production forms the mainstay of the Mongolian economy, providing employment for almost 40 per cent of the population. Policy Alternatives for Livestock Development in Mongolia (PALD) is a research and training project involving collaboration between the Research Institute of Animal Husbandry and the Institute of Agricultural Economics in Mongolia, and the Institute of Development Studies at the University of Sussex in the UK. A number of studies have been carried out as part of this project (see also Cooper and Mearns et al., this issue of *RRA Notes*), including an investigation, in late 1992, into the potential of rainwater harvesting for fodder production. Seasonal fodder shortage is a key constraint to livestock productivity, and one which will probably be exacerbated by the liberalisation of the Mongolian economy.

The investigation into fodder constraints and the potential for rainwater harvesting involved interviews with herders in three districts, as well as with key informants (administrative staff and co-operative leaders). During the discussions with herders, the team learned about *Shagaa*, which is a bag of sheep and goats' knucklebones (Figure 1). Each facet of the bone represents a different livestock type. One side represents a camel, another a horse, and so on for sheep, goats and cattle. The bones are used like dice or counters in about 20 different games. Most households appeared to have a bag of 30-40 bones.

Figure 1. A Shagaa bone



• Aims of the exercise

The team decided to make use of the *Shagaa* bones for a ranking exercise with herders to rank winter livestock losses over the last 10 years.

• Methodology

The herders were very familiar with the names of the years (based on the Chinese years) and so were able to divide the pile of bones between lines drawn on the floor representing each of the 10 years. When the exercise was complete, the piles were subdivided into livestock types within each year. This exercise was a combination of time trends and proportional piling.

The technique proved useful in illustrating the trends in livestock losses over the years and providing a basis for discussion. As is often the case with participatory techniques, the level of interest was very high, with many people gathering round to offer advice and contribute to the discussion. The exercise was enhanced by the use of the bones, which to the herders already represented animals (the

pastoral equivalent of ranking with beans or seeds).

The research team felt that the *Shagaa* bones had enormous potential for much wider use in ranking and other participatory techniques with Mongolian herders, especially using the different facets of the bones to represent the livestock types.

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REFERENCE

This paper is based on: Cullis, A., Jigjidsuren, S. and Bujantogtoh, T. 1993. *Preliminary Assessment of the Potential of Rainwater Harvesting for Fodder Production*. Policy Alternatives for Livestock Development in Mongolia, Research Report No.6. Research Institute of Animal Husbandry and the Institute of Agricultural Economics, Ulaanbaatar, Mongolia, and the Institute of Development Studies, University of Sussex, UK.

11

Browse ranking in Zimbabwe

Ian Scoones

• Introduction

This short paper reports on the use of browse ranking in southern Zimbabwe. Two types of ranking were conducted. First, a simple scoring of a full list of all available trees in the area was carried out. Next, a more focused matrix ranking explored a few key species against a range of criteria. In combination these ranking exercises provided important information for a local woodland management project.

Browse scoring

A recently compiled dictionary of local tree names (Wilson, 1987) was the main requirement for the initial ranking exercise. This listed all the trees found in the area with vernacular and scientific names. This list provided the checklist prompt for a discussion held with five livestock owners. For each tree named on a card the group indicated three pieces of information. These were:

- The tree part eaten (leaves, litter, bark, fruit);
- The effect the tree has on grass growth (promotes, no effect, hinders); and,
- A rating of fodder preference (highly favoured, eaten on occasions, only eaten in drought, never eaten).

The group indicated their assessment using local markers (e.g. maize grains or stones as counters). This process was repeated three times for different livestock species (cattle, donkeys, goats) (Scoones and Madyakuseni, 1987).

Since there were 120 trees on the list, this exercise took several hours on two occasions. The composition of the group changed over

the period (with the exception of two people who remained throughout). This did not appear to matter as there was remarkable consistency in response and rarely a sustained dispute over the ratings. All informants were however adult men; the question of whether women or children would have rated the species differently was not pursued on this occasion.

The 32 browse species rated by the farmers as highly favoured by cattle were compared with Walker's (1980) recommendations based on such factors as crude protein content, digestibility etc. The availability of each species was also considered in the comparison. This information had been gathered in a separate study of browse availability in the area. Table 1 lists the results of the comparisons for cattle.

The results showed that livestock owners' rankings tally closely with quality assessments based on chemical analysis. A similar correlation between chemical analyses of browse material and herders' rankings has been shown by other studies. For instance Wolfgang Bayer found that the top third of 30 species ranked by Fulani pastoralists in central Nigeria had significantly higher nitrogen and phosphorous contents, as well as dry matter digestibility, than the middle third of the species ranked (Bayer, 1990).

Matrix ranking and scoring

Matrix ranking and scoring can be used to explore the criteria of choice between different trees in more detail. Table 2 shows the results of one such exercise.

During a discussion on drought, the importance of browse for sustaining cattle was

raised. Mr Shanduka mentioned five trees that he regarded as particularly important in sustaining cattle both in droughts and in other years. Samples were found of each of the trees from around the homestead. These were laid on the ground in a row. To establish the important criteria each tree was compared with another in turn, with the questions “what is good about this tree?” or “what is bad about

this tree?”. This probing continued for some time until the full range of criteria had been mentioned. In this case only five criteria were offered.

We then proceeded to the matrix scoring. 20 beans were allocated to each criteria and Mr Shanduka showed how he believed they should be distributed between the five trees.

Table 1. Trees ‘highly favoured’ by cattle, plus indicators of (1) local availability and (2) whether important browse species according to scientific analysis

Local shona name	Botanical name	1	2
Mubhondo	Combretum apiculatum	*	*
Mububuhnu	Grewia flavescens	*	*
Mubvumira	Kirkia acuminata		*
Muchakata	Parinaria curatellifolia		*
Muchechete	Mimusops zeyheri		
Mudyahudo	Strychnos potatorum		
Mudzviri'nombe	Vangueria sp.	*	
Mupwezha	Combretum collinum/fragrans		*
Mususu	Terminalia sericea	*	*
Mufupa	Tarenna neurophylla		
Mugaragora	Boscia albitrunca		*
Muhumbakumba	Bridelia mollis		
Mujerenga	Acacia nilotica/rehmannii	*	*
Mukamba	Afzelia quanzensis		
Mumveva	Kigelia africana		
Munanga	Acacia nigrescens/polycantha		*
Mununguru	Flacourtia indica	*	
Muonde	Ficus sur		
Mupanda	Lonchocarpus capassa	*	*
Mupane	Colophospermum mopane	*	*
Mupangare	Dichrostachys cinerea	*	*
Mupfura	Sclerocarya birrea		*
Mupumbu	Acacia galpinii		*
Murungu	Ozora insignis		
Mushuku	Uapaca kirkiana		
Musumha	Diospyros mespilliformis		*
Rusungwe	Euphorbia tirucalli		
Musvimwa	Lannea stuhlmanni		
Musvita	Ficus sycamorus		
Mutarara	Gardenia spatulifolia		*
Mutechani	Combretum hereroense		*
Mutehwa	Grewia bicolor	*	*

Table 2. Matrix ranking by S. Shanduka

Criteria	Mupane	Mubhondo	Mupanda	Mususu	Mupwezha
Early shooting of leaves	7	4	5	2	2
Good taste; salty	7	4	5	2	2
High water content	-	-	13	-	7
Dry leaves can be eaten	1	-	-	19	-
OVERALL	1	4	3	2	5

At the end of the discussion Mr Shanduka was asked to rank the trees in terms of overall preference. This was investigated further when a scoring of the criteria was explored. This showed that early shooting was by far the most important criterion (13 beans). This was followed by the importance of dry leaves as fodder (5 beans). Taste/salt and water content were not regarded as so important (1 bean each). The weighting of the criteria meant that *mopane* (*C. mopane*) and *mususu* (*T. sericea*) were ranked highest in the overall ranking

• Discussion

Ranking exercises may provide apparently complex information very easily, but the investigator must be aware of some of the drawbacks or potential complications. The following guidelines may be important in the context of browse ranking.

- *Do not confound preference with availability.* Livestock may eat virtually any browse if it is available and other, more preferred fodder, is not. This does not mean that such species should be concentrated upon for browse development, as there may be other less common, and so less known, species that may have potential.
- *Differentiate between livestock species.* The results reported here have all referred to cattle (although rankings were done for other species). Due to differences in mouth parts and digestive physiology different livestock species can make use of different browse species.
- *Differentiate between plant parts.* Different parts of a browse tree can be eaten (leaves, twigs, bark, pods/fruits) and in different states (fresh or dry). This may be important in differentiating between species. For instance, *T. sericea* was found to be highly favoured because of the

fodder quality of dry leaves in the dry season.

- *Take note of seasonal phenology.* Particular species may be important during particular times. For instance, fruiting (e.g. of *Acacia* pods) may be highly seasonal. Similarly the palatability of leaves may vary due to the build up of tannins and other secondary chemicals.
- *Drought years are often different.* The extreme conditions of a drought year may provoke very different foraging patterns. For instance, in the drought years of 1991 and 1992 in Zimbabwe totally new species were used by livestock. Such species should not be ignored in fodder development plans, even if they are only used occasionally, as they may be critical for the long-term sustainability of livestock populations.
- *Investigate with different informants.* Knowledge about browse fodder is not evenly distributed within herding communities. It is important to repeat ranking exercises with different people to get the full range of ideas. For instance, children often know a lot about foraging behaviour from their observations while herding animals. Older people may offer insights into patterns of use in the past and may suggest browse species that had once been common and could be the focus for regeneration.

• Conclusion

Browse ranking with livestock owners can be a quick and effective way of finding out about fodder preferences and availability in an area. Rankings of fodder quality by livestock owners are highly correlated with indicators of fodder quality derived from chemical analysis. Such ranking exercises can thus provide high

quality information without the need for expensive and time-consuming laboratory analysis. Ranking methods can therefore be useful planning tools for helping to design fodder improvement programmes with herd owners.

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12

Natural resource mapping and seasonal variations and stresses in Mongolia

Robin Mearns, D. Shombodon, G. Narangerel, U. Tuul, A. Enkhamgalan, B. Myagmarzhav, A. Bayanjargal and B. Bekhsuren

• Introduction

This paper documents fieldwork carried out in 1991 during the initial stages of a collaborative policy research and training project in Mongolia. The Policy Alternatives for Livestock Development (PALD) project aims to facilitate the transition from a centrally planned to a market economy in the extensive livestock sector which dominates the Mongolian rural economy.

Since the fieldwork reported here was carried out, many changes have taken place in rural Mongolia. Most significant of all has been the dismantling of the pastoral collectives and the privatisation of formerly state or collective-owned animals. The fieldwork, however, is reported in the 'ethnographic present' of 1991.

This report describes a few of the research methods used during the training of Mongolian research team members and gives details of their outcomes. The training programme concentrated on the use of participatory or rapid rural appraisal techniques. Fieldwork was carried out in the Arkhangai *aimag* (province) representing the forest/mountain steppe ecological zone and the Dornogobi *aimag* in the Gobi desert and desert-steppe zone.

The research consisted primarily of case studies of two former brigades, one in each *aimag*, with extensive semi-structured interviewing conducted at household level and supplementary interviews at *aimag* and *negdel* (agricultural collective) levels.

• Participatory research methods

The programme of research and methods used in each of the two zones followed a broadly similar pattern. First, interviews were held with officials at the *aimag*, *sum* (district) and *negdel* (collective) level. The aims of these were to:

- Introduce the research team;
- Explain the purpose of the project; and,
- Acquire *aimag* statistics, local maps and secondary information.

Next, field research was carried out in a single brigade (50-100 households) within each *negdel*. The research team stayed overnight with herding families in their *ger* (felt tent), which allowed interviews to take place well into the evening, when the herders are less busy. The team divided into pairs or groups of three to conduct semi-structured interviews or participatory diagramming sessions with individual herding men and women or small groups of herders.

The first methods to be used in each brigade were generally wealth ranking and participatory mapping and transects.

Wealth ranking

The wealth rankings were designed to understand local perceptions of wealth and to produce a simple wealth classification of households in each brigade. This helped to stratify the brigade population and assisted later interviewing on a range of issues for which it was important to understand household background (Mearns et al., 1992).

These methods helped the team to explore the diverse range of circumstances and to begin to understand the different needs and priorities of poorer and better-off households.

Participatory mapping and transects

Participatory mapping and transects were used to gain a general introduction to each brigade and to begin to identify grazing and other key resources, patterns of seasonal mobility etc. Some team members travelled by horseback which made for extra conviviality in interviewing the herders they met along the way. Covering transects in this manner was a way of avoiding some of the most common biases that arise in conventional field studies, i.e. only talking to more visible and accessible households. It also gave herders a chance to point out things of interest along the way.

Use of checklists

A checklist of issues was prepared to guide the field research process. These issues were explored using a number of participatory techniques, including:

- Semi-structured interviewing;
- Diagramming of labour distribution, production and other seasonal variations;
- Preference ranking exercises (e.g. for fodder species or animals);
- Historical analysis, especially of ecological change; and,
- Basic income and expenditure surveying, including estimates of income in kind.

The households to be interviewed were selected from each of the wealth classes identified during the wealth ranking exercise. The checklist of issues used during the interviews is summarised below.

CHECKLIST OF ISSUES AS A GUIDE FOR FIELD RESEARCH

Household production and marketing strategies, risk and vulnerability

Seasonal labour profiles (men, women, children)
 Flexibility of women's labour between productive/domestic activities
 Income/expenditure patterns
 Simple demographic indicators
 Income in kind (production for own consumption, barter transactions, gifts)
 Vulnerability related to differential asset position of households:
 Asset management, marriage and inheritance, herd ownership
 Access to services (and potential changes with higher cost recovery)
 Herd species composition
 Herd management strategies
 Food security

Seasonality, grazing management, natural resource tenure

Pasture use and management
 Identification of key grazing resources
 Seasonal patterns of production
 Seasonal patterns of migration
 Animal condition
 Fodder availability, supply sources and costs
 Criteria/rules of access to key resources
 Disputes over access to grazing or other key resources
 Conflict resolution
 Historical patterns and changes

• Animal production and natural resource management

Information about the various aspects of livestock production was collected using participatory methods in a study of Arhangai *aimag*.

The annual grazing cycle

Figure 1 shows a map of the annual grazing cycle for Hukh Nuur brigade, drawn during a semi-structured interview with *Mandlhai* of Sharbolgin *tasag* (dairying team during the summer months). This indicates the broad pattern of seasonal movements between pastures.

Spring is the only time of year the entire brigade lives in the same general area. Almost all the spring shelters lie along the North Tamir river. The brigade divides into its two *tasag* for dairying during the summer months. Towards the end of the summer, when annual quotas have been delivered to the *negdel*, the *suuri* (herders' base camp) move to other new pastures to complete their own milking during the late summer months. Some move back to the North Tamir valley whilst others move to high summer pastures near the lake.

From their autumn pastures, within which they make two moves during a difficult year, all *suuri* move to their own winter shelters in the deeper, more sheltered valleys of the area. In total each *suur* makes between four and six moves a year, generally one move per season.

Figure 2 is a diagram of the approximate (maximum) distances from the *suur* that animals are taken to pasture during the different seasons. During the autumn, the furthest distance moved from the *suur* is between four and five kilometres. Occasionally it may be necessary to drive stock up to 10 kilometres to graze on mountain tops where the snow is thinner due to the strong winds. Stock are pastured closest to the *suur* during spring, when young animals are reared.

Characteristics and location of grazing resources

Figure 3 is a map of the brigade resources drawn by a group of women: Gundegmaa, Altanshagai, Tsovoov, and Tsetsegmaa. It includes special information about particular grazing areas and the incidence of animal diseases. Many of the poor grazing areas are used in the spring. This is the time of year when animals are at risk from poisoning from over-eating the new growth of certain grasses.

Figure 1. Hukh Nuur Brigade: annual grazing cycle

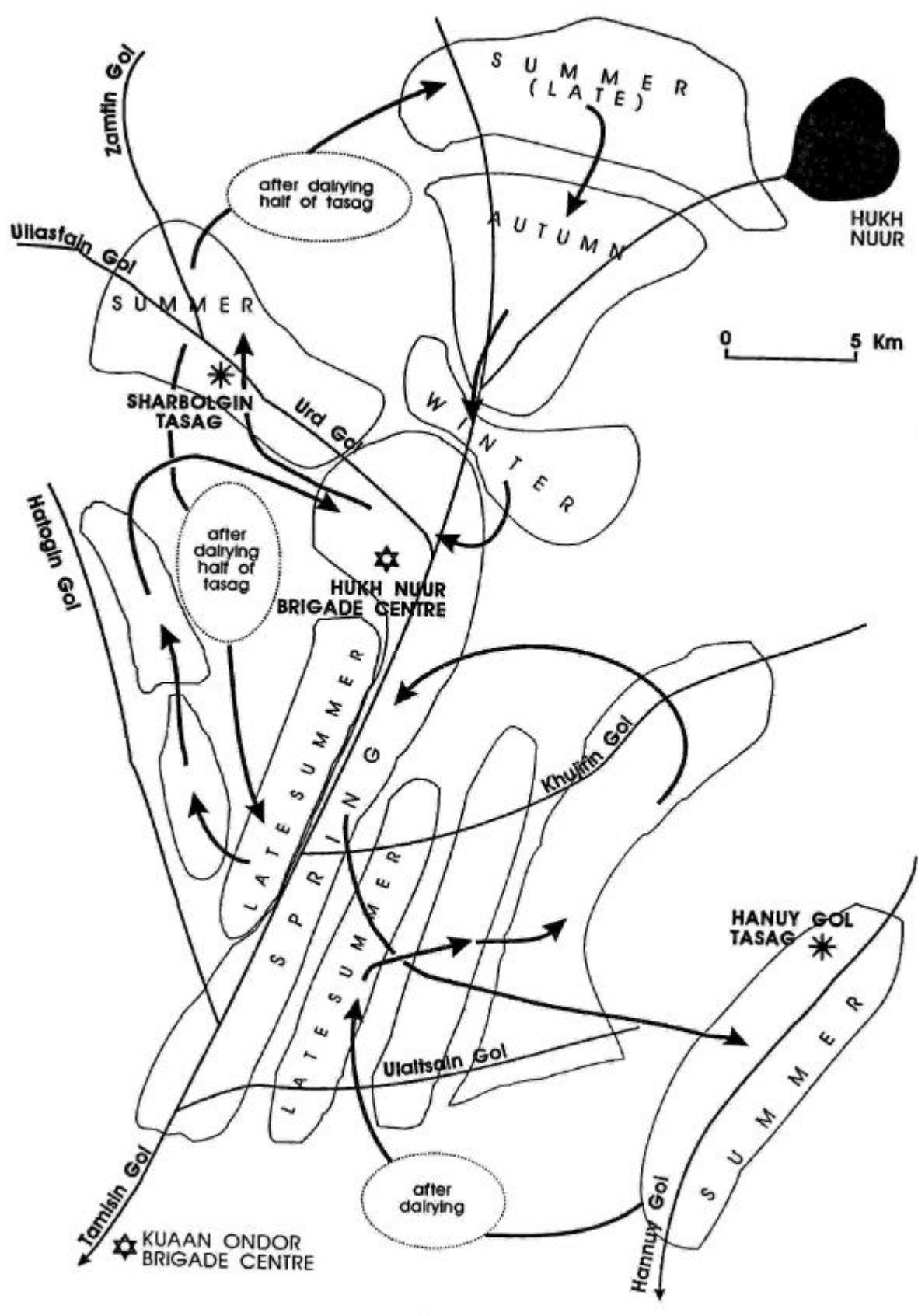


Figure 2. Hukh Nuur Brigade: annual grazing cycle showing seasonal differences in distances covered from Suur to Pasture

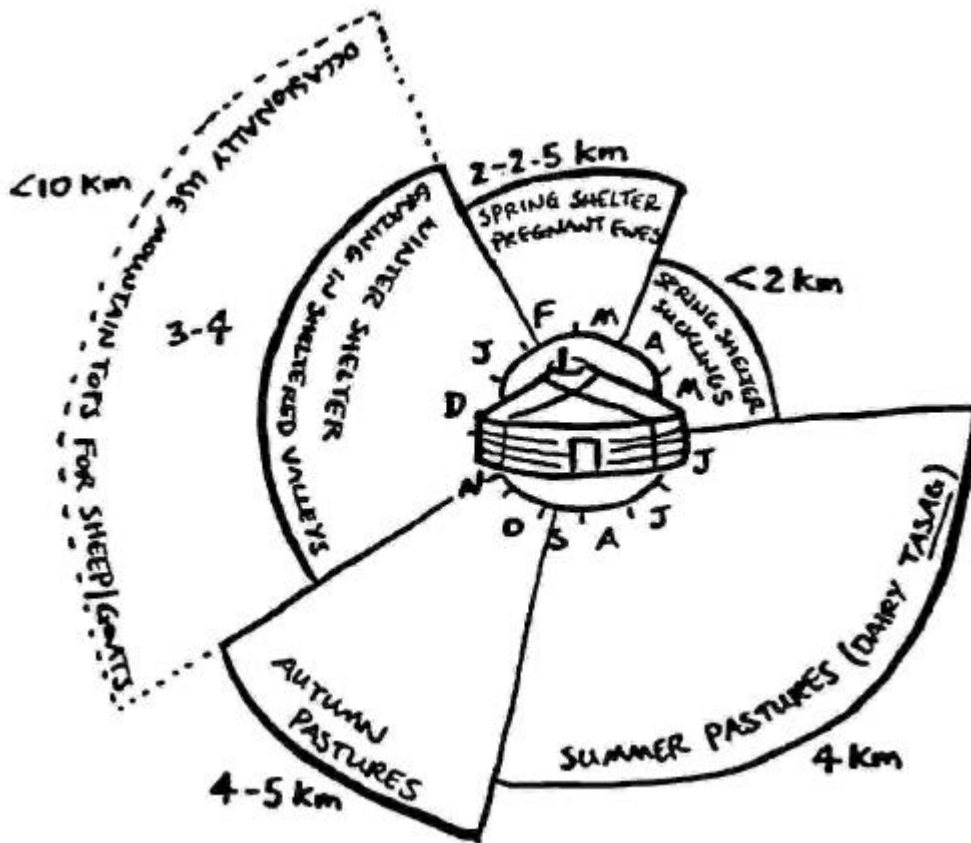
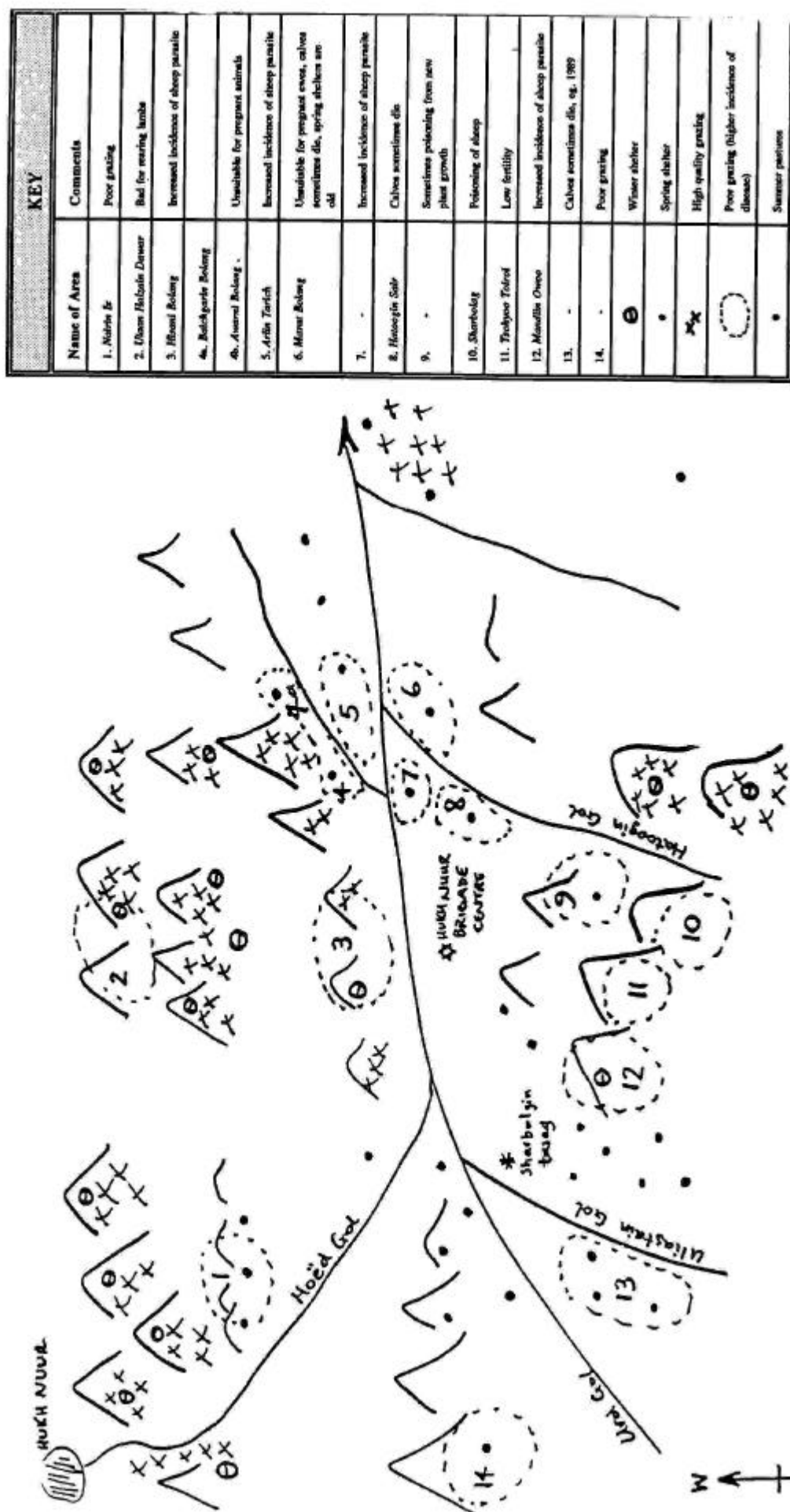


Figure 3. Hukh Nuur Brigade: Women's Map of Grazing Resources



Preference ranking of grazing resources

A pairwise preference ranking was conducted with two male herders to compare the grazing qualities of the territories of the five brigades in Ih Tamir *sum*. This exercise helped the team to understand which characteristics of pasture areas herders consider to be important. It showed the important features to be access to water supply at all times of the year, good quality pasture and opportunities to make hay and shelter from snow and wind. The information collected during this ranking exercise was confirmed during a transect ride through the brigade territory.

Seasonal production calendar

Figure 4 indicates the main seasonal pattern of production in Khukh Nuur brigade, along with variations in climate, incidence of diseases and labour. *Tsagaan Sar* marks the beginning of the Mongolian year. Soon after this comes the parturition season - the period of peak labour demand and also the time of highest mortality among young sheep and goats from pneumonia. It is also the time of peak demand for mineral supplements.

Supplementary animal feed is prepared during the summer months for feeding to animals in the winter and spring shelter. Men and boys cut the hay using scythes and women prepare *zodoi* (small hand-made balls of fodder) for young animals. After harvesting, hay is carried to and stacked in the winter shelters and stockyards. The date of moves between seasonal pastures are given quite precisely, since this is when transport is made available by the *negdel* for those who require it.

Seasonal production variations and stresses in the Dornogobi Aimag

Figure 5 shows the major events and seasonal variations in the production calendar for Tsagaan Khutul brigade in the desert-steppe zone. Climatic parameters vary considerably from one year to the next. The diagram shows a relatively high rainfall and snowfall year to indicate the times when most precipitation falls.

Dry and variable ecological conditions require flexible management and mobility. In this dry Gobi zone most *suuri* make at least a dozen nomadic moves a year to ensure access to grazing resources over a large area. Mobility is most important during the summer period for fattening animals, when moves are usually made every two or three weeks. Autumn and winter are not difficult times of the year. There is rarely deep snowfall and temperatures do not drop low. Fodder supplementation is not usually required unless the depth of snow exceeds 10cm. The *negdel* and state will assist herders during periods of stress. For example, additional labour is brought in from the district centre to help clear snow, feed hay, transport hay or make protective coats for young stock.

The difficult seasons in Dornogobi are spring and summer. These seasons are very dry, winds are desiccating and what little rain there is falls late in the summer. At this time animals are moved regularly between *suur* sites. These are chosen primarily by the location of wells, and secondarily by the presence of surface water sources and salt/soda licks. Many areas of good pasture are unusable simply because they lack wells or other water sources.

Camels are rarely milked during the summer months as it is too dry. Camel herds are usually divided into two parts, calving in alternate years to ensure an almost continuous supply of milk. Similarly, nobody keeps milk mares during this season because they are suckling their foals.

Figure 4. Hukh Nuur seasonal production calendar, showing climatic variations, incidence of disease and labour requirements

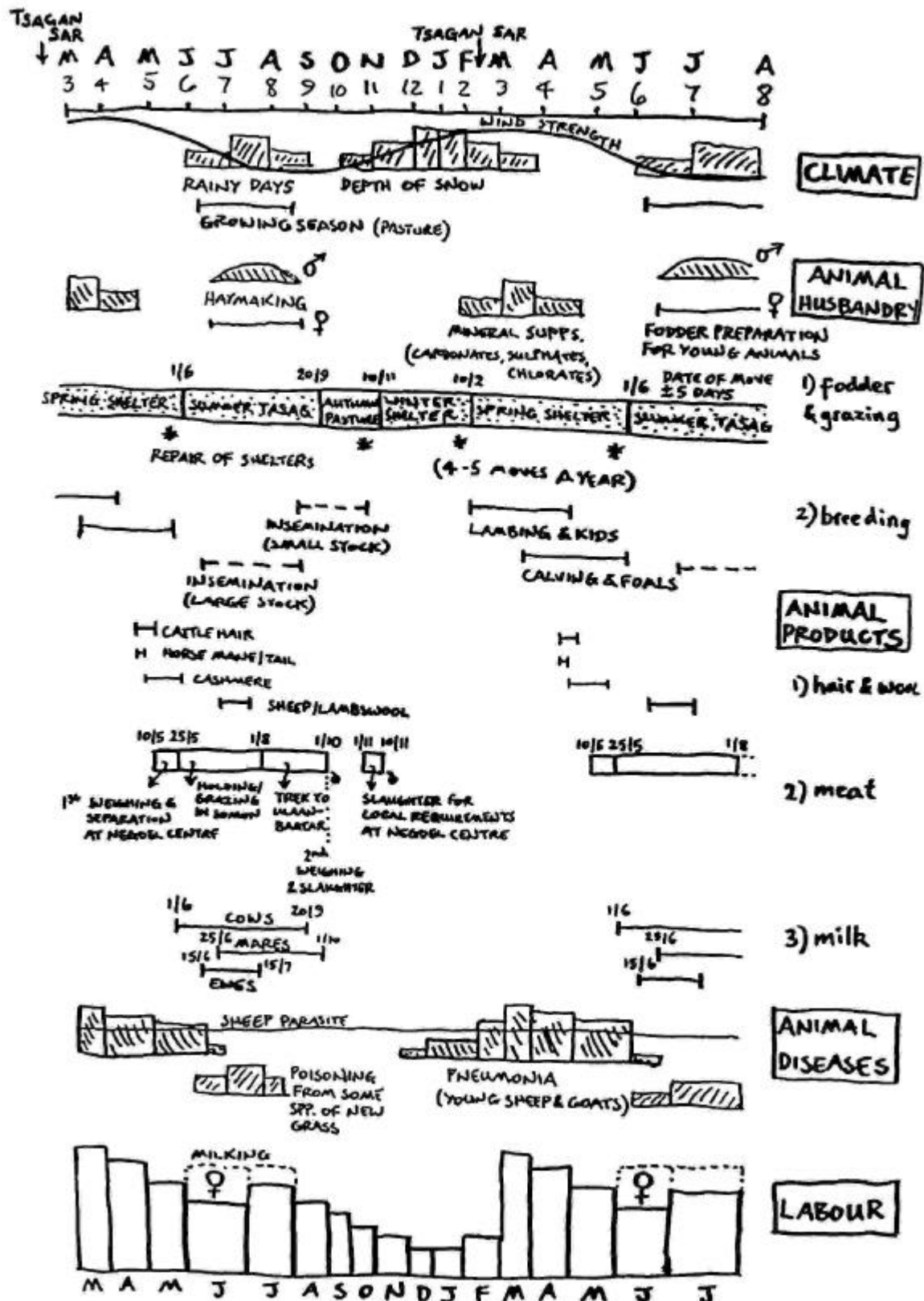


Figure 5. Tsagaan Khutul Seasonal production calendar

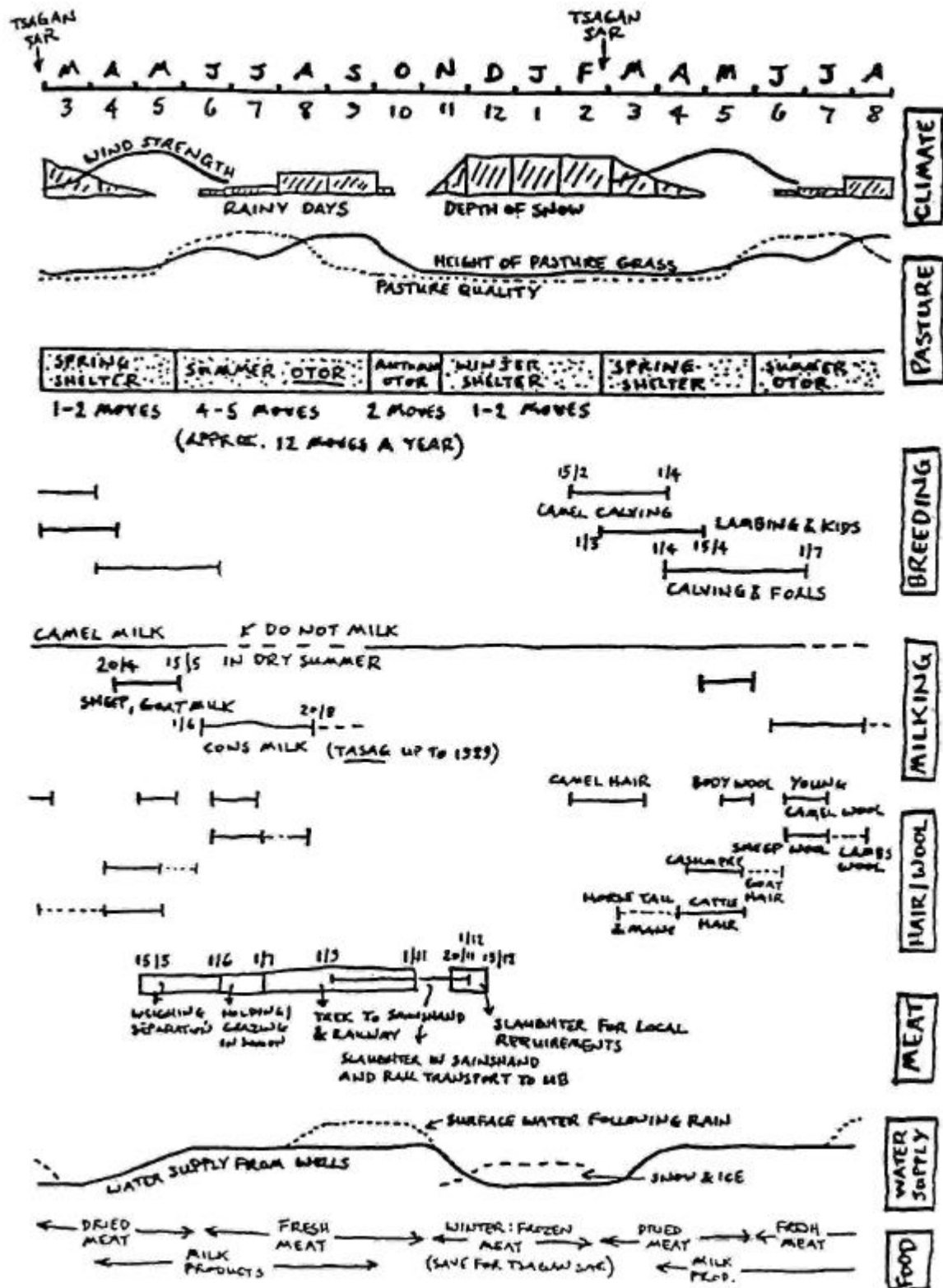
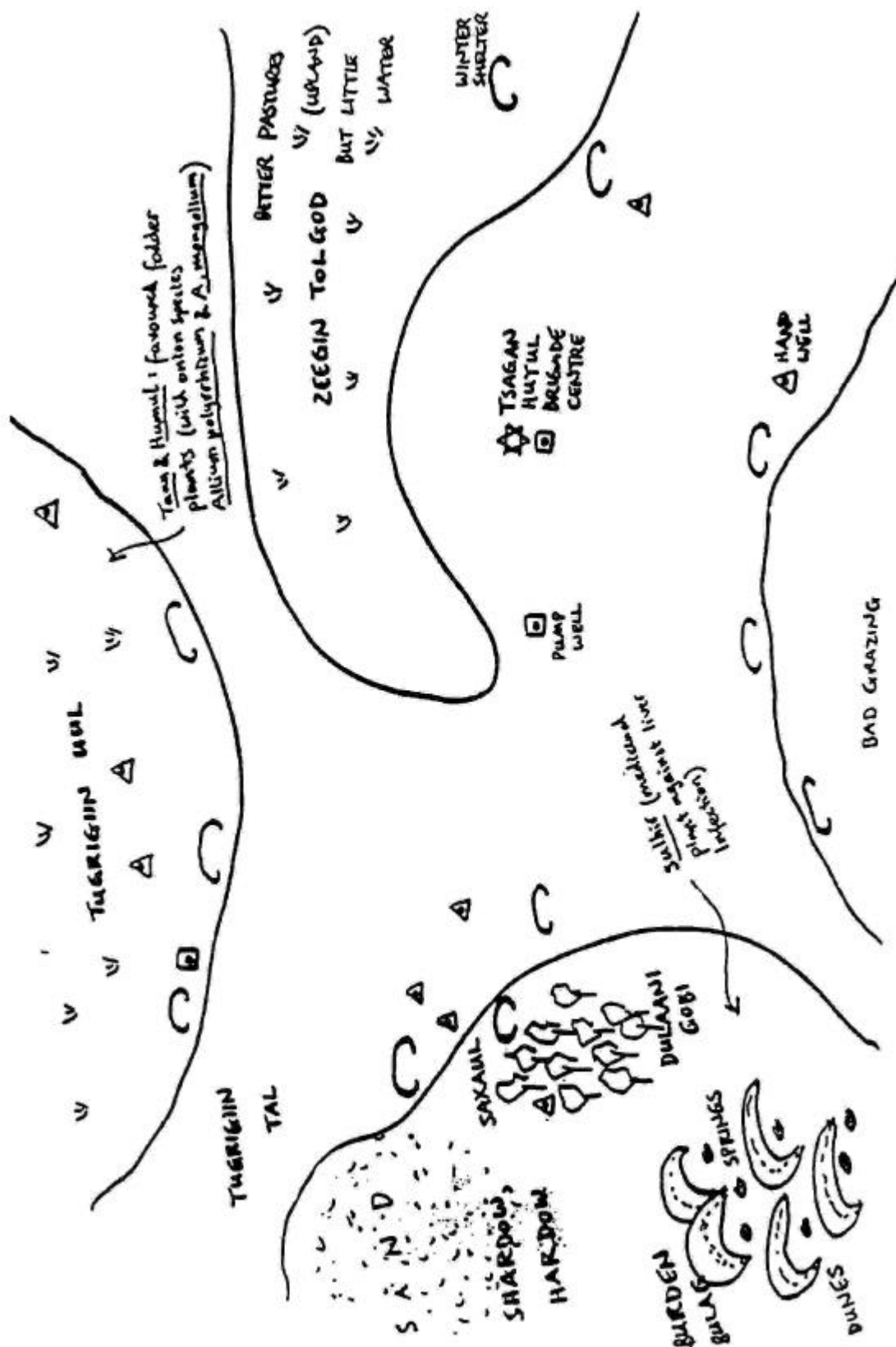


Figure 6. Sketch Map of Part of Tsagaan Khutul Brigade Territory



• Access to key resources

In a risky environment like the Gobi zone, key resources such as valued areas of grazing and browse, or shallow wells, tend to be reserved for difficult periods. Flexibility in natural resource tenure agreements is vital for successful dryland management in the Gobi. To negotiate seasonal moves, especially those which cross *sum* or *aimag* boundaries, each *suur* normally informs the *negdel* chairman of their preferred grazing destination. They then place a bid for it, usually following a reconnaissance visit to assess pasture quality. On this basis the chairman decides which *suuri* will go where.

A brief case history of how herders in Tsagaan Khutul brigade have used these resources in recent years is presented in Figure 6. This is a map drawn by Choisuren and Tumurhoeg. It shows an area of sand dunes located in the far west of Tsagaan Khutul brigade territory. The key resources in this area are as follows:

- The sandy hills of Shardow and Hardow;
- The surface water springs of the dune area, known as Burden Bulag; and,
- The saxaul tree (*Haloxylon ammodendron*) grove of Dulaani Gobi.

The whole area is avoided during the summer when it is too hot and dry, but it provides valuable resources during difficult winters. Burden Bulag is particularly valued for the warmth and shelter provided by the dunes in winter.

Saxaul is valued as browse for camels and, in exceptional circumstances, for other animals. Even camels generally only browse it during a rainy spring when green shoots emerge. By the summer the leaves are too dry. During a very hard winter when snow covers the ground camels may graze it as a last resort. Saxaul is also used for shade by small stock and the dead wood is used for fuel.

Band and Tuvdendorj recalled a recent harsh winter with 30-40cm snow in much of Tsagaan Khutul territory when a number of *suuri* moved to this area of key resources. Unfortunately, there was high mortality amongst animals during that winter so the

same group moved to Argalin Uul in the neighbouring *sum* of Orgon. However, another group had also decided to move here because of the better quality pasture (steppe-type grass rather than short Gobi vegetation). There has been a dispute over this land since the mid-1970s when new wells were sunk to improve water supply. The *aimag* administrations were brought in to supervise migration to the area. They made agreements that the pasture could only be grazed if there was no rainfall and on condition that they returned as soon as possible to their normal grounds.

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13

Mapping of seasonal migrations in the Sanaag region of Somaliland

David Hadrill and Haroon Yusuf

• Introduction

Shortly after Somaliland declared its independence from Somalia following four years of civil war, ActionAid set up a rehabilitation programme in the Sanaag region. The programme provides basic animal health care to the pastoral communities living in the region whose livelihoods depend upon their livestock. Camel, sheep and goat milk and meat are mostly consumed by the herders and their families, while sheep are frequently sold or exchanged with traders in return for imported wheat, rice and other products. ActionAid contracted VetAid to design and provide technical support for the programme.

The existing rehabilitation programme provides basic veterinary health care training for Primary Veterinary Assistants (PVAs). It also provides drugs, at a subsidised price, to herders who have had their flocks and herds decimated by the war (herders now pay the market price for drugs). PVAs visit the herders and supply them with veterinary drugs and advise them on basic health problems. The PVAs are trained in basic diagnosis, treatment and prevention skills but the majority of medications requested by and prescribed to the herders are used to control internal and external parasites.

• The pastoral grazing system

Project staff have been using participatory research methods on an informal basis throughout the course of the development programme. Their main objective was to build up a more detailed picture of the herders' lifestyle, particularly their management of communal resources, animal husbandry practices, and methods of managing disease.

Participatory methods were used during routine meetings with herders rather than as part of a planned, structured appraisal. Much of the information gathered by the project staff was collected using semi-structured, informal interview techniques. Of particular interest to the team were details of the seasonal migration patterns followed by different groups of pastoralists in the region. These details were mapped and provided a fairly comprehensive picture of seasonal migration patterns in the Sanaag region and the distances covered during the individual migrations.

During the *jilal* (long, winter dry season), livestock are concentrated around permanent wells. This is the hardest time of year, especially if the preceding *dhair* rains have failed. Conflicts can break out over access to water during this period. Camels are taken up to seven days' walk from the wells to graze, and watered every two weeks.

The herding boys live only on camels' milk during this time. Women and elderly men look after the sheep and goats up to a day's walk from the wells. As the dry season progresses they are taken further away to graze and camels bring them water. The *jilal* ends with the *gu* rain after which herds are moved to grazing lands in places without wells. Livestock can get adequate water from fodder and puddles following showers. As the *hagar* (summer) progresses the grass becomes dry and fibrous and livestock are moved to grazing near permanent wells. The *dhair* rains fall at the end of the summer. If they are good the herds are taken back to the wet season grazing grounds.

Migrations in the Sanaag region

The Isaaq and Darod clans inhabit the west and east of the Sanaag region respectively. They maintain a natural buffer zone between them over which neither clan claims to have definitive overall grazing rights. During the civil war there was a great deal of conflict between the Isaaq and Dorod clans in the Sanaag region. But in peace-time there is greater flexibility of movement and the clans enter into each other's territory, subject to prior agreements.

Interviews with herders indicate that the distances travelled by Sanaag herders and their flocks are relatively short. Typically the limits of their migration may be around 80km apart. Project staff were surprised to find that the migration patterns are not seasonal movements to and from the same grazing grounds annually, as they had previously believed. Instead, herders are opportunistic and move their animals according to the prevailing

rainfall and quality of the pasture. The extent of change in pastoral grazing strategies during the civil war years is not clear. Herders apparently continued with their traditional seasonal migration patterns. In some instances, access rights to grazing lands may have changed hands between clans and sub-clans depending on the outcome of local battles. However, in general, herders continued to migrate with the rains or pasture.

• Mapping pastoral movements

One herder, Warasame Hirsi, described herders' general movements and then recalled where his own *rer* (flock) had been in the recent past. His stock stay near Erigavo, to the east. Their movements are recorded in Figure 1. He was asked questions such as "*Where were your animals last season? Where were they the season before that?*" and so on. These prompted him to describe his flocks' general movements which are summarised in Table 1.

Table 1. Seasonal pastoral movements: camels, sheep and goats

Season	Description of Movement	
	Camels	Sheep and Goats
<i>Gu</i> (spring rain)	They often go down to the plains at Karaman (south of Eil Afwein) if it is peaceful; otherwise to Sol Giriyo	When it rains, they move to the south of the district (eg. Sool Giriyo)
<i>Hagar</i> (hot, windy summer)	They stay on the plains, remaining close to water sources such as Gof	Towards the escarpment and closer to the water points (Madare, Erigavo area)
<i>Dhair</i> (autumn rain)	If there is plenty of rain, they move to Sool Giriyo	To the plains (Sool Giriyo, Qaarey)
<i>Jilaal</i> (long, dry winter)	Stay near water sources around Sool Giriyo eg. Gof	To the nearest water source, especially towards the escarpment

This table illustrates how the seasonal movements of camels differ from those of the sheep and goats.

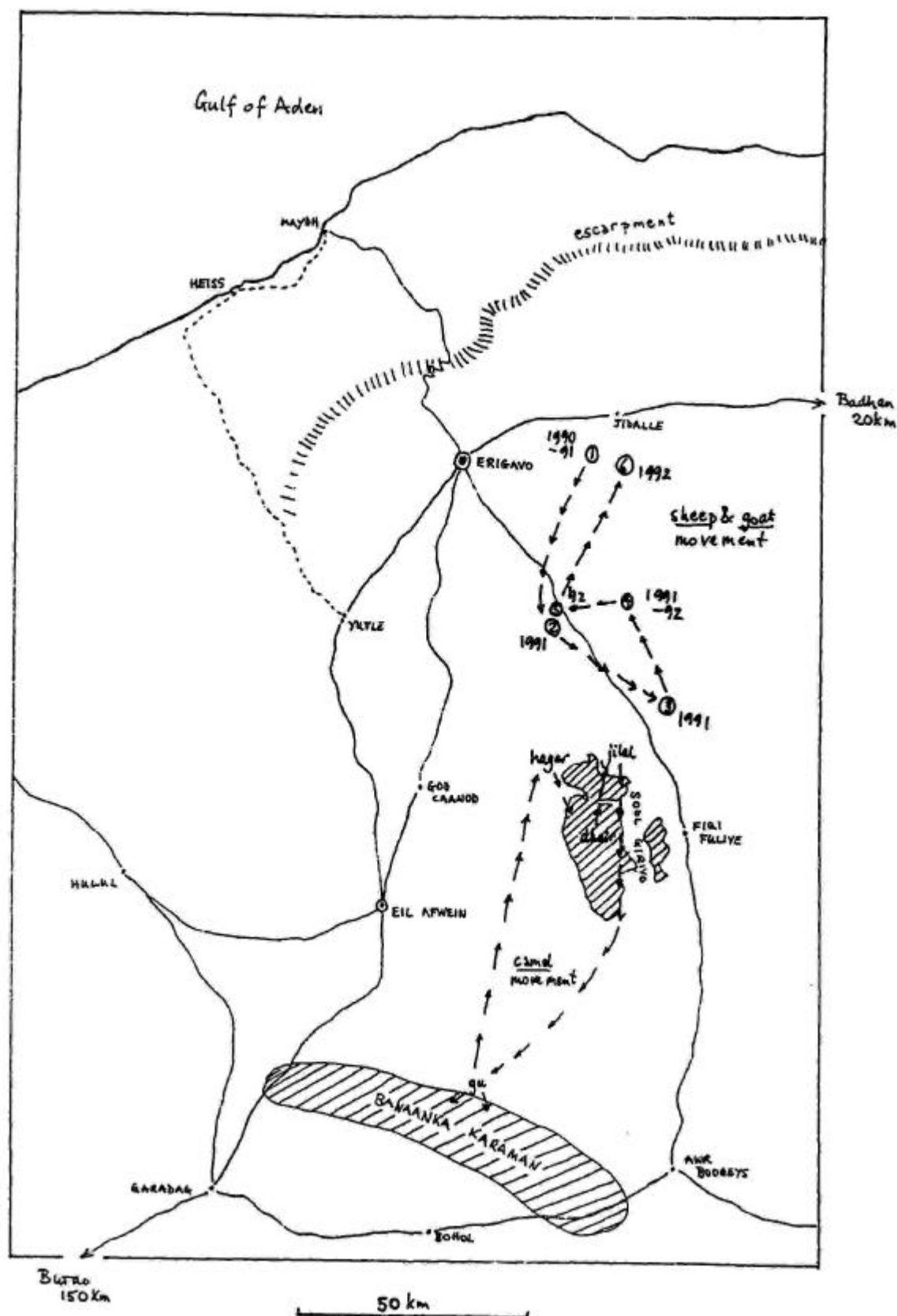
Jama Ashkir then recalled the places his *rer* (flock) had been during the last three years. In peaceful times 10-15 families of the same sub-clan would move together. However, now about 50 Isaaq families may move together for

security. For example, they all moved to Sool Giriyo earlier this year when there was tension between Isaaq and Darod clans. However, when they moved to Kabid recently only three families moved together. The details of where the *rer* moved are summarised in Table 2, and also illustrated in Figure 2.

Table 2. Details of *Rer* moves (the numbers refer to Figure 2)

Season	No.	Month	Place	Duration
1992				
<i>Jilal</i>	16	November	Durdur	Next move
<i>Dhair</i>	15	October	Kabid/Dhabeeda	There now
	14	September	Dibqarax	
<i>Hagar</i>	13	August	Carmo, south of Jidalle	
	12	July	Higliquran	20 days
	11	June	Eil Qoxle	25 days
	10	May	Dhir Galeedhle	1 month
<i>Gu</i>	9	April	Darawayne	15 days
1991-1992				
	8	February	Bohol	2.5 months
<i>Jilal</i>	7	December	Karin Biyood	2 months
<i>Dhair</i>	6		Gureer area	3 months
<i>Hagar</i>	5		Wareeg (well) near Hulul	2.5 months
	4		Xanig (well) near Garadag	
<i>Gu</i>	3			
1990-1991				
<i>Jilaal</i>	2		Karaman	4 months
<i>Dhair</i>			Buur Caanod	

Figure 1. Mapping pastoral movements: Warsame Hirsi's Rer (Flock)



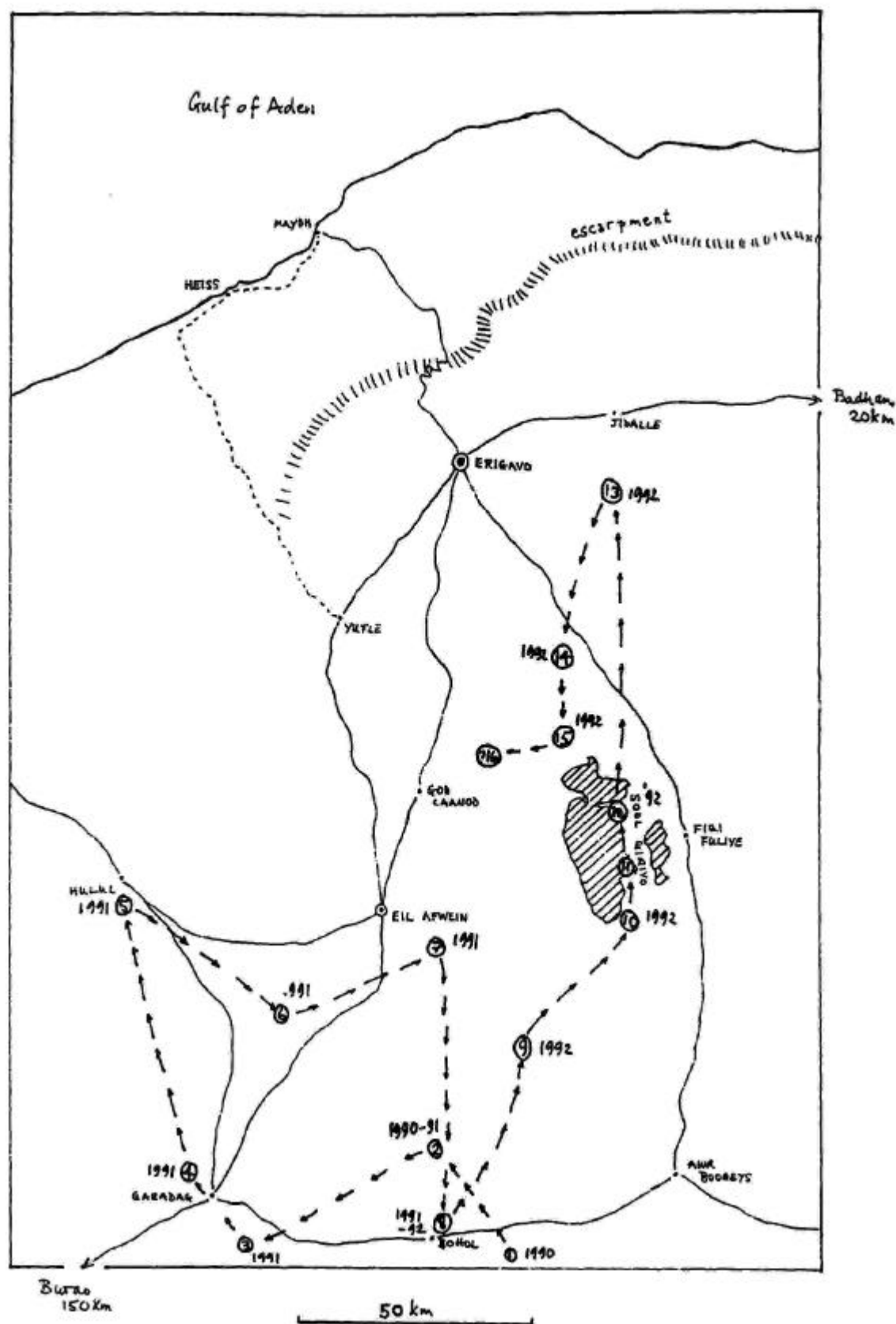
The maps indicate that Jama and Warasame move stock to the territories of their Diya-paying group. Information about seasonal migration patterns confirmed that herders are likely to be in a certain area during a particular season of the year. This knowledge assisted with the planning of drug distribution, making it compatible with the herders' needs and seasonal location.

Informal interviews were always attended by clan chiefs and community leaders and were carried out through an interpreter. More often than not the quality of information collected depended upon the individual characters of the chiefs and leaders. The most successful informal interviews often took place when a member of the project staff was called by the

herders to treat an animal and took the opportunity to make a few enquiries about their livelihoods.

The team also endeavoured to draw maps, calendars and use visual aids. If nothing else, they provided a talking point and helped to stimulate a discussion. The strict Muslim culture made it necessary for an exclusively male team of researchers to conduct the informal interviews and mapping exercises. However, this made it virtually impossible for discussions to take place with the women in the communities. The team were aware of the gender bias and consequently appointed a woman to try to redress the balance.

Figure 2. Mapping pastoral movements: migration of Jama Ashkir's Flock over the past three years



• Indigenous knowledge

During informal interviews herders gave information on the different celestial observations used to divide their year into seasons. Researchers also learned details of the indigenous system of classifying the characteristics of rainfall, drought periods, plant species, soils, and livestock diseases and their traditional treatments.

The herders' calendar

An appreciation of the herders' calendar is important in the planning phase of any

development project. An understanding of the calendar can help explain why herders plan their movements and grazing patterns. The names given to the different seasons are often linked to meteorological factors. The herders divide their year into two seasons, each of 180 days. The first 180 days are called *biyo daalalo* and are divided into nine periods of 20 days. This season coincides with the *dhair* (autumn rain) and *jilaal* (dry winter). The second 180 days are called *diriir* and are divided into six periods of 28 days. These coincide with the *gu* (spring rain) season and the following *hagar* (hot, windy summer). Table 3 lists the names of each of the periods within the *Biyo daalalo* and *Diriir* seasons.

Table 3. The Herders' Calendar

Period	<i>Biyo daalalo</i> Season	<i>Diriir</i> Season
1	<i>dye halalood</i>	<i>aminla</i>
2	<i>dye habr adlin</i>	<i>adhi caseye</i>
3	<i>dye habis</i>	<i>deydo</i>
4	<i>diraac good</i>	<i>sermaweydo</i>
5	<i>xoomir</i>	<i>diriir cawleed</i>
6	<i>wajino</i>	<i>diriir sagaalaad</i>
7	<i>xeyse</i>	
8	<i>canbaaro</i>	
9	<i>agaaliyo</i>	

Herders often plan their movements and herd management around the seasons and position of the stars. For example, the beginning of the *deyr* season, which falls during the first part of the *biyo daalalo* season, is denoted by seven stars appearing in the sky. They are named *haltodobaalo*. These stars begin to disappear in sequence. The interval between the disappearance of each star is either 7 or 14 days, depending upon the star's position in the sequence. When all the stars have disappeared (after about 56 days), it is the end of the *deyr* season.

Another example is the *diriir* star that lies close to the moon on the first day of the *gu* season and denotes the *aminla* period of the calendar. A full cycle of 28 days passes before a second *diriir* lies close to the moon. This denotes the beginning of the *adhi caseye* period. This cycle continues, each time different *diriir* lying close to the moon until six *diriir* periods are completed.

• Lessons learned

This information has alerted both VetAid and ActionAid to the need for a more detailed and more participatory appraisal in the near future. Cooperation with the herders should allow a better understanding of the pastoral economy in preparation for the second phase of the programme which envisages herders paying market prices for drugs.

On reflection, the research was more informative than participatory - the herders were not given an opportunity to design their own development programme. However it did provide the development agencies with sufficient information to reflect on their past work, and to assist with the future planning of the programme.

Whether the current programme is sustainable in terms of drug supply is questionable, but it has helped to reduce the incidence of helminth and tick related disease in the area, allowing herders to rebuild their stock numbers. The development agencies are now planning to embark upon the second phase of the programme. The emphasis is to shift away from relief and rehabilitation towards a longer-term, sustainable method of health care provision and community development.

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NOTE

This paper was extracted from a report written for ActionAid by David Hadrill in November 1992 on the Sanaag Livestock Health Programme.

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14

Pastoral production in Mongolia from a gender perspective

Louise Cooper and Narangerel Gelezhamtsin

• Background

This paper discusses the organisation of pastoral production at the household level, from a gender perspective. It describes and explains the use of matrices and mobility mapping as participatory methods for gathering information on seasonal labour allocation, time use, and mobility. The research was carried out as part of the Policy Alternatives for Livestock Development (PALD) project, to study and make policy recommendations on the liberalisation of the Mongolian pastoral economy and its impact within the household.

Research was carried out in two contrasting ecological areas: Erdene sum in Dornogobi province (in the desert-steppe zone of South-East Mongolia) and Tariat sum, in Arkhangai province (in the forest-mountain steppe zone of the Central-West of the country). The organisation of research was the same in both areas.

• Household labour organisation

Each household comprises the occupants of a single *ger* (felt tent), usually a husband, wife and unmarried children. Within the household there exists a clear division of labour according to gender and age. Men are largely responsible for long distance herding of large animals (cattle and camels), building and repairing winter and spring shelters and the sale and marketing of livestock.

Women are responsible for herding smallstock (sheep and goats), milking, and the shearing and clipping of all animals. In addition, women perform all domestic tasks, including product processing, cooking, cleaning, washing, sewing and collecting *argul* (dung or

wood, for fuel) and water. This gender division of labour is common and is seen as the 'ideal' which all households would adopt given a suitable gender composition within the household and sufficient labour. Certain tasks are frequently assigned to children and their labour can be essential to households.

Explaining the gender division

The nature of pastoral production necessitates the division of tasks. The men usually carry out long-distance herding duties. This is mostly for practical reasons: pregnant women or women with young children are likely to find this task arduous. However, the organisation of labour is flexible and women will perform long-distance herding in the absence of constraints. Such flexibility does not apply to domestic tasks, which are always the responsibility of the women. In common with other pastoral economies, the division of labour in Mongolia operates on both an ideological and practical level according to socially constructed ideas about men and women, which ascribe them different gender roles.

In the pastoral economy labour is invested both in the creation of livestock products for consumption or sale and in the continual generation of the herd. In spite of women's responsibilities for milking and the care of small, sick, pregnant and weak animals, it is men who are associated with the overall reproduction of the herd and women with the production of goods. This association is made for a number of reasons:

- The pastoral labour process is such that the labour of one person presupposes the effort of the other so the objective contribution of men and women is difficult to assess; and,

- The relationship between labour effort and any subsequent gain is easily obscured since the benefits are only seen over a number of years.

Thus, the contribution of men and women to productive activity is open to a wide variety of cultural interpretations, making it easy to overlook women's contribution and associate their work primarily with the domestic sphere and the reproduction of labour.

• Methods

First the households were ranked according to their wealth (Grandin, 1988; Mearns et al., 1992). This was followed by semi-structured interviews. A total of 37 interviews were carried out with households in the two sample areas. The majority of these were with women. While a focus on women was important, the lack of substantial comparative data on men means that the findings should be seen as preliminary.

A range of participatory and rapid rural appraisal methods were used during the interviews for two reasons:

- They enabled the team to gain a rapid understanding of patterns of organisation within the household; and,
- They were useful in revealing the perceptions and judgements of informants.

Analysis of labour tasks

The role of cultural and ideological factors in shaping patterns of labour organisation in the Mongolian context was observed through analysis of men and women's perceptions of the task-based gender division of labour, patterns of time use and overall work load.

Three women and one man were asked to describe the different tasks they performed for the household. They were then asked to compare tasks (two at a time) by saying what they liked or disliked about each one, to highlight differences between them. This was done to generate the informant's own criteria for describing their work.

As a result different tasks were described as 'hard', 'easy', 'time consuming' etc. These criteria were then used to form a matrix showing the range of different tasks and the criteria used to describe them. Informants were asked to score each task between one and five against each of the criteria (e.g. one would denote 'very easy' and five 'not very easy'). Table 1 summarises the data from the three matrices. The table shows that there is a difference between the criteria used to describe the productive and reproductive tasks that women perform.

Table 1. Tasks performed by women

Productive Tasks	most able to do	take s most time	hard work	needs help from others	least able to do	easy work	takes least time	done at same time as other tasks
Processing	x	x	x					x
Milking	x	x	x					
Watering animals	x		x					
Clipping small animals	x	x	x	x				
Clipping large animals		x	x	x	x			
Repairing shelters			x		x			

Reproductive Tasks	most able to do	take s most time	hard work	needs help from others	least able to do	easy work	takes least time	done at same time as other tasks
Collecting <i>argal</i>	x					x	x	
Cooking	x					x	x	x
Cleaning						x	x	x
Washing						x	x	
Sewing		x				x		
Childcare	x					x	x	x

Productive tasks were seen as the most time consuming and requiring the most effort and help from others, while reproductive tasks were all seen as the easiest, often done in conjunction with others. While the informants themselves did not suggest that tasks were organised and performed alongside others this criteria was introduced in two cases and proved to be important. Similarly, reproductive tasks were seen as less time consuming. While they may take up a large proportion of women's total available time they are usually carried out in short periods throughout the day. They are performed between, or alongside, other work. As a result they were not perceived as taking up a single block of time.

The three women felt able to perform both productive and reproductive tasks equally well. However, they felt they only had sufficient skills, strength and knowledge to perform some tasks (milking, processing). There were some other tasks (mending shelters, clipping wool from larger animals) which they were only able to do given sufficient time or assistance. The criteria used by women to describe their work reflected their concern about their ability to perform

certain tasks according to time, labour and physical characteristics.

The single male informant identified a more diverse range of activities and judged them according to different criteria. His preferred task was building and repairing winter shelters, followed by watering, training and selling animals. He enjoyed these tasks either because they were seasonal, manual, restful, skilful or social.

Seasonal labour calendar

The task-based allocation of labour resources results in different patterns of time use and mobility for men and women. These operate according to seasonal and daily patterns and are shown in Figures 1 and 2. There is a high level of labour intensity for both men and women during the lambing and calving periods from February through to May. Generally, women are busiest during the milking season in the summer months while men are busier in winter, preparing shelters. There are different periods of intensity in the two research areas at different times.

Figure 1. Tsagaan Khutul labour calendars, showing gender division of workload

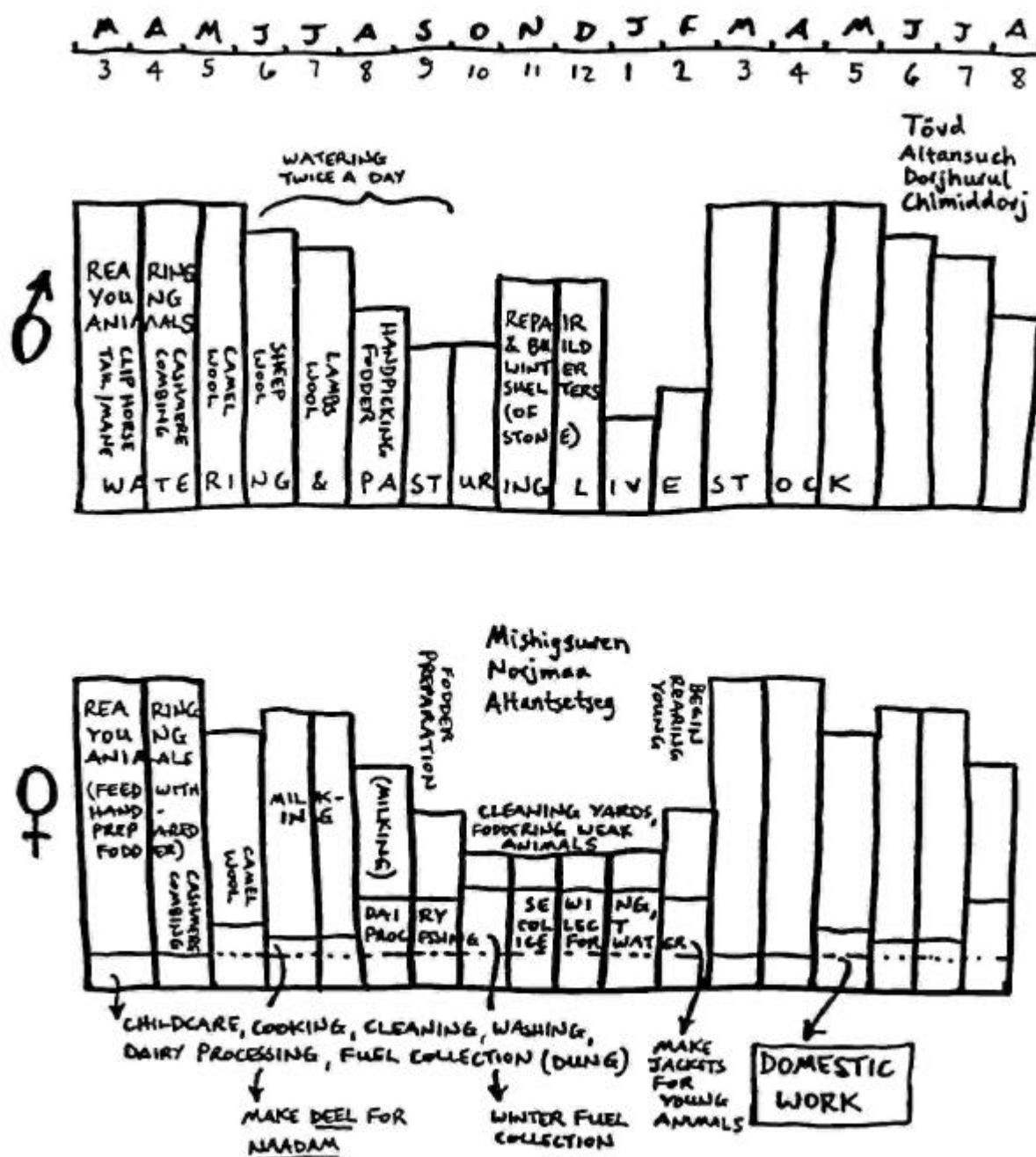
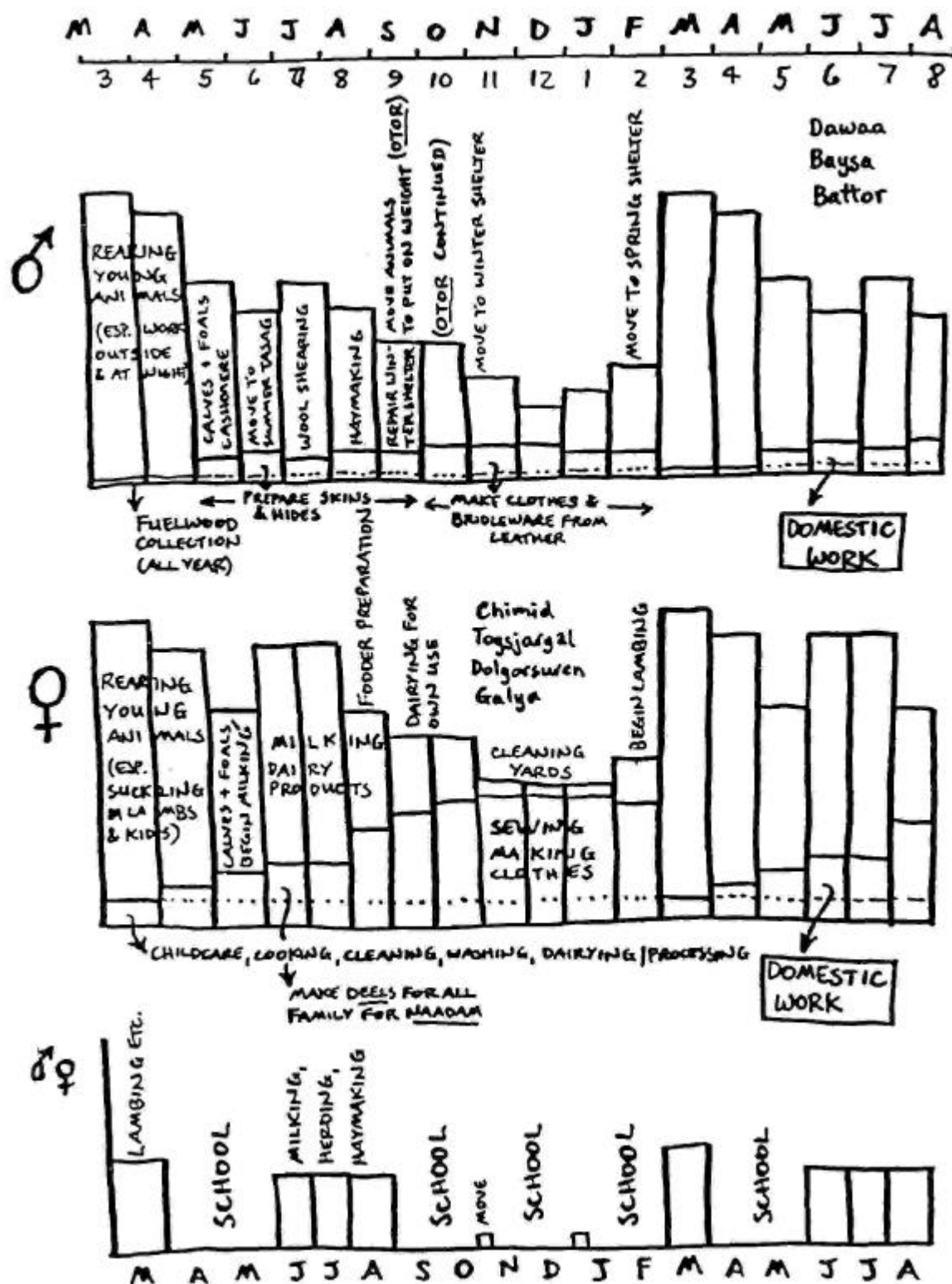


Figure 2. Xex Nuur labour calendars, showing gender division of workload



Daily labour profile

Daily labour profiles were carried out with two households (Tables 2 and 3). They revealed very different patterns of time use for men and women. Given time and other constraints,

daily profiles were not carried out during different seasons. Instead a woman from each sample area described a typical day for herself and her husband.

Table 2. Spring daily labour profile: Monkhtogoo and Tserennadmid's household (Household Reference Number: 110 Erdene Sum Dornogobi)

Tserennadmid (Wife)		Monkhtogoo* (Husband)	
5am	Gets up, (makes tea and dresses children?)	6am	Gets up and drinks tea, saddles horse, prepares for day
7.30am	Gives fodder to animals, supervises suckling of young animals, separates young from mothers after feeding, gives fodder and hay to lambs	7.30am	Takes camels to pasture, waters camels, repeats with cattle and horses
10am	Gives fodder and hay to young camels		
12am	Cooks and eats lunch, does washing and sewing, cares for children		
4pm	Supervises suckling of lambs		
7pm	Cooks and eats dinner, checks on animals for the night	7pm	Returns from pasture, eats, checks on animals
9pm	Sleeps	9pm	Sleeps

* Information supplied by Tserannadmid

? These tasks only added after questioning

Table 3. Spring daily labour profile: Altantsetseg and Dangasuren's household (household reference number: 56 Tariat Sum Arkhangai)

Altantsetseg (Wife)		Dangasuren (Husband)*	
5am		7am	
Gets up, makes tea, gets daughters up, does other domestic tasks		Gets up, collects cattle from pasture, brings cattle for milking, checks animals in shelter	
8am		10am	
Milks cows, cleans shelters, takes female cattle to pasture		Takes sheep to pasture, takes animals to river, cares for horses, reads books	
11am			
Brings milk to <i>ger</i> , chops logs for fire, collects ice from river, puts animals in shelter			
5pm		7pm	
Prepares food, cooks and eats		Returns from pasture, eats	
8-9pm		8-9pm	
Checks animals in shelter		Suckling animals in shelter	
12pm		12pm	
Sleeps		Sleeps	

* Information supplied by Altantsetseg

The profiles show the women working on a wide range of tasks in and around the *ger* with the men spending most of the day away from the camp performing long distance herding. There was a high level of cooperation between them in the care of young animals during the morning and evening. Both women initially omitted to mention some domestic tasks they performed, suggesting that they are seldom considered as separate or indeed, as 'work'.

An assessment of the time use patterns of men and women at different points in the year is still required. However it is probable that these profiles reflect a typical pattern of time use within the household. They show men and women co-operating on specific production tasks but otherwise working separately. Women are seen as dividing their time between domestic and productive tasks and

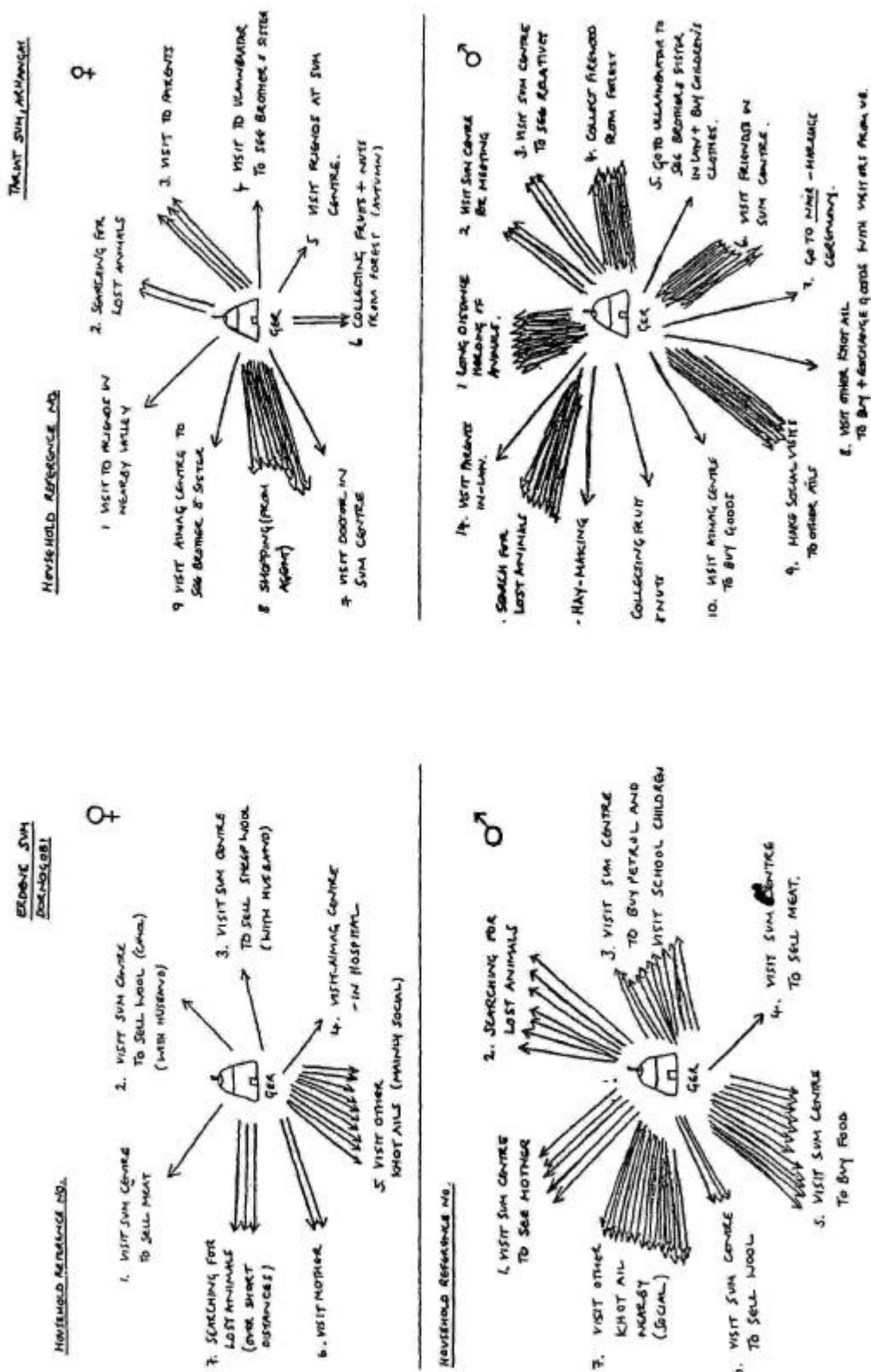
working longer hours than men, thus shifting the overall burden of household labour in their direction.

Mobility mapping

This technique determines where, why and how often people travel. The maps show the home in the centre, and on each the interviewer records destination, frequency and reason for travel for every respondent.

Men and women experience very different patterns of mobility. This reflects the gender division of labour and different time use patterns of men and women. Figure 3 shows the mobility maps of two men and two women in each sample area.

Figure 3. Mobility Maps: Men and Women



The majority of men's movements reflect their responsibility for herding movements and pasture use. As well as their daily herding responsibilities they make regular trips to *sum* centres and other *khot ail* for meetings and general information, and for the sale and marketing of products. They also attend more social occasions than women.

The majority of women's labour takes place near to the *ger*, so women make fewer trips than men. They usually make trips to do shopping or to visit friends and relatives. They usually make these trips during the quieter months of December, January and February when there is no milking and labour demands are less intense.

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15

Historical matrices: a method for monitoring changes in seasonal consumption patterns in Mongolia

Louise Cooper and Narangerel Gelezhamtsin

• Introduction

This note reports on the use of matrices for evaluating the impact of economic liberalisation on consumption patterns in Mongolia. They represent just one of many participatory research techniques that have been used since 1991 in a collaborative research and training project with pastoral communities in Mongolia (see other papers in this issue).

• Seasonal consumption matrices

Changing household income and expenditure patterns following the wide-ranging agrarian reforms are reflected in changing consumption patterns. Most important among these reforms has been the dismantling of the collectivised state which formerly organised livestock and livestock product marketing, and the supply of flour and other food items and consumer goods.

Tables 1 and 2 show seasonal consumption matrices of two households, a richer household from Tariat district in the central forest/mountain steppes, and a poorer one from Erdene in the desert-steppe zone. The households had previously been ranked according to their wealth status. There are two matrices for each household, the first shows the seasonal pattern of household consumption during the *negdel* period, five years ago, and the second, the seasonal pattern for 1992.

These matrices were constructed by asking each informant to name the different foods that are/were consumed by the household and then to give each food item a score against each month of the year. The total available score for each month was 10.

This fixed method of scoring was used to encourage informants to make precise choices about the relative importance of each food item in a given month. A high score (e.g. 4 or 5) meant the item was a primary food source during that month. A low score (e.g. 1 or 2) meant that little of that particular item was consumed during the month.

Table 1. Seasonal consumption matrix of a wealthy household, Tariat Sum, Arhangai Province (Informant: D. Janjahuu)

5 Years Ago	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Meat	3	3	3	3	3	3	3	3	3	3	4	3
Flour	4	4	4	4	4	3	4	4	4	4	4	4
Milk	1	1	1	1	1	2	2	2	1	1	1	1
Milk products	2	2	2	2	2	2	1	1	2	2	2	2

1992	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3	4	4	4	4	4	3	3		3	4	5	5
Flour	2	2	2	2	2	2	2	2	1	1	-	-
Milk	1	1	1	2	2	3	3	3	3	3	2	2
Milk products	3	3	3	2	2	2	2	2	3	2	3	3

Table 2. Seasonal Consumption Matrix of a Poorer Household: Erdene Sum, Dornogobi Province (Informant: G. Tudevbar)

5 Years Ago	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Meat	3	3	3	2	2	2	2	2	2	3	4	5
Flour	3	4	4	5	5	4	3	2	3	4	4	3
Milk	2	2	2	2	2	4	2	2	2	2	1	1
Milk Products	2	1	1	1	1	1	3	4	3	1	1	1

1992	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Meat	6	6	7	4	4	3	2	2	2	5	5	5
Flour	1	1	1	1	1	1	1	1	1	1	1	1
Milk	2	2	1	4	4	5	5	4	4	3	3	3
Milk Products	1	1	1	1	1	1	2	3	3	1	1	1

The matrices show that consumption patterns have changed significantly over the past five years, since privatisation and decollectivisation. Flour was previously the staple food throughout the year in Erdene and Tariat, with additional meat consumption in winter and milk/milk products in the summer. With current shortages and high costs, flour consumption has been severely reduced in Erdene and, in some cases, almost eliminated from the diet in Tariat, to be replaced by increased consumption of meat and milk products over periods beyond the seasonal norm.

Meat is now the main food, consumed between November and June, with months between July and October divided equally between milk, milk products and meat. As a result many households are slaughtering more animals for winter household consumption and have sold fewer milk products during the summer.

The richer household in Tariat consumed half as much flour as during previous years but still more than the poorer household in Erdene. The shortage of flour is actually more acute in Tariat than in Erdene which indicates that the richer households here are not having to adjust

their consumption patterns as much as the poorer. The poorer households compensated for the lack of flour with significantly increased meat consumption. This is largely because Erdene households have fewer milk products available to carry them through the winter months. In Tariat, the level of milk production is high so households can fall back on consumption of milk products where necessary.

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16

Livestock, livelihood and drought: a PRA exercise in Botswana

Neela Mukherjee

This note is based on a PRA training exercise conducted with the villagers of Mapoka, Zwenshambe and Nlaphwane in the north-east district of Botswana and the participants of a PRA workshop. The workshop was arranged by the FAO Farming Systems Programme, Gabarone, Botswana in June 1992. Some interesting aspects of livelihood emerged from the exercise and are described below.

• Background

The climate of the north-east district of Botswana is semi-arid, with a rainy season generally lasting six months, although there are marked variations in annual rainfall. It is a region largely inhabited by the Bakalanga people.

A substantial part of the district consists of freehold land containing commercial farms. The remainder is communal land, where the PRA was conducted. Here there has been considerable out-migration of young males to nearby towns, leaving more than half of the households headed by women.

The training exercise was conducted whilst the villagers were experiencing one of the worst droughts of the century. This was inflicting tremendous pressure on the farmers' livelihoods through:

- Crop failures;
- Shortage of pasture; and,
- Livestock mortality (leading to loss of draft power and manure, further reducing capacities to grow crops).

Livestock, although few in number at the time, play a critical role in the subsistence economies in the north-east district of Botswana. They are used primarily as a source of draft, manure, income and food.

• Participatory methods

Some PRA methods were used to learn more about the relationship between the villagers and their livestock. This paper presents a selection of livestock issues which came to light during the exercise.

Matrix scoring

Preferences for different types of livestock were expressed by the villagers of Zwenshambe using a matrix scoring exercise. The outcome is shown in Figure 1. They chose four types of animals: cattle, goats, poultry and donkeys. These were then ranked according to the following six attributes: numbers kept; utility; hardiness; security; ease of acquisition; and ease of marketing. The animals were given scores for each of the six attributes. The scores were assigned using seeds and other materials.

Figure 1. Matrix scoring of livestock: Zwenshambe village, Botswana (Village analyst: Matopote)

ATTRIBUTES	CATTLE	GOATS	DONKEY	POULTRY
NUMBERS	3	10	5	9
UTILITY	9	18	7	14
HARDINESS	5	6	13	10
SECURITY	10	7	7	6
ACQUISITION	2	4	3	6
MARKETING	2	5	3	7

Source: courtesy of the Kudus Group, PRA Training Workshop, 15-20 June 1992, FAO, FSP, Francistown, Botswana.

Semi-structured interviews

The following topics were discussed during informal interviews:

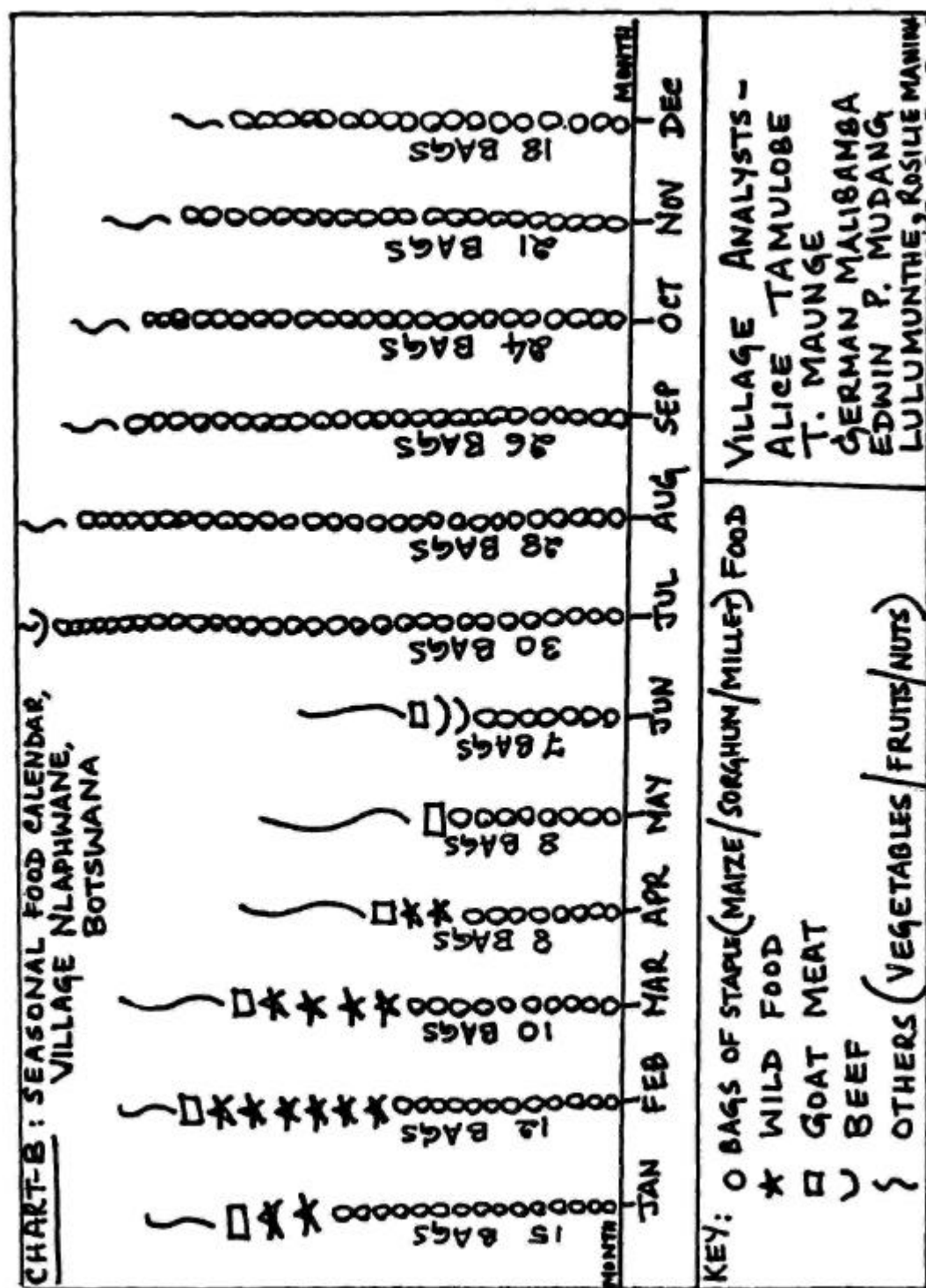
- The existing agricultural management system;
- Levels of household livestock ownership;
- Patterns of labour;
- Land ownership; and,
- The main constraints on crop cultivation (quality of land, variable rainfall, shortage of draft power and inadequate supply of manure).

The importance of livestock in the local agricultural system was emphasised during the

interviews. Manure provides the main source of crop nutrients, fertiliser being too expensive to use on a large scale. Some farmers own too few animals to produce adequate amounts of manure to fertilise all their fields, while others possess no livestock at all.

Draft power is also a limiting factor in the local agricultural system. Farmers without animals commonly hire them for cultivation in exchange for their own labour in the lenders' fields. Villagers did not consider tractors to be a viable alternative to draft power. One farmer observed that tractors plough deep, encouraging the spread of unwanted couch grass which has deep roots.

Figure 2. Seasonal Food Calendar: Nlaphwane Village, Botswana



Seasonal food calendar

The villagers of Nlaphwane prepared a seasonal food calendar to illustrate the type and quantity of food available during a drought-free year (Figure 2). This shows the importance of livestock products in the villagers' diet at times when the staple crop foods are less abundant. The preparation of the calendar provided an opportunity to discuss livestock marketing and survival strategies during the dry season or in times of drought. Goat meat is consumed during the period of diminishing food crops and *biltong* (dried beef) is eaten during food shortages. In times of drought, goats will be sold or exchanged in the market for staple foods. Cattle are rarely sold but provide milk, meat and draft power.

Preference ranking

Many farmers grow fodder crops on their farms to supplement the diets of their herded animals. Wild trees are also an important source of fodder. These were the focus of a ranking exercise in Nlaphwane. The trees were scored and ranked according to their suitability as animal fodder.

• Conclusion

The PRA exercise highlighted a range of different aspects of village livestock and livelihood. The issue of livestock was so integral to the village economies that it was referred to time and time again in discussions about different aspects of livelihood. The visual PRA methods brought to the surface hidden problems, priorities, preferences and uses of livestock and helped in deeper probing of issues important to the villagers.

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17

Proportional piling in Turkana: a case study

Cathy Watson

• Introduction

The Turkana people of north-west Kenya are nomadic pastoralists, whose livelihood depends largely on their herds of sheep, goats, camels and cattle. However, they supplement their household economy with a number of other activities, such as growing sorghum in hollows and along dry river beds, fishing (for those living by Lake Turkana), hunting and gathering, and trade.

The Loiktaung Pastoral Development Project (LPDP) is an Oxfam-funded project based in the north of Turkana District. The project, which began in 1984, focused initially on rainwater harvesting for crop production, looking at ways to strengthen the traditional practices of sorghum growing. Project activities have since broadened to include other initiatives which respond to the needs of marginal pastoralists.

The project is working in three locations, Kachoda, Kaalin and Loarengak, which is on the shores of Lake Turkana. Interest in the improvement of sorghum gardens was greater along the lakeshore than at the inland locations. This was attributed to the history of sorghum cultivation among the sub-section, the Ngisiger, who live along the shores of the lake.

In late 1989, a study was commissioned to investigate the socio-economic context of the project participants along the lakeshore, including the relationship between the various economic activities of gardening, pastoralism and fishing. Two of the project sites were selected for this particular study, together with a sample from a peri-urban settlement on the edge of Loarengak village. Interviews were conducted with all the households in the sample sites, and followed up with group discussions.

• Aim of the exercise

This case study focuses on one particular technique used during the study, proportional piling. Piling was used as a central method during interviews with the sample households. It was used to investigate the relative contribution which the families' various economic activities made to household food supply. The exercise provided indicative values - based on the families' own perceptions - and also served as a basis for further discussion. The exercise was carried out twice, for the wet and dry seasons. This enabled seasonal differences to be assessed and discussed.

• Methodology

A pile of about 100 pebbles was used. They were heaped up in front of the respondent (usually a woman), who was then asked to divide them into piles. The piles represented the household's different sources of income or food, including:

- Milk and meat from livestock;
- Fish (and income from fishing);
- Sorghum;
- Income generating activities; and,
- Food or remittances from relatives.

The categories were selected by the respondents themselves. The number of stones was approximately constant in all the exercises, to maintain some consistency. The exercise was first done for the wet season, and then repeated for the dry season.

The results were compiled into a table, showing the average number of pebbles per category for the whole site. From this the approximate percentage contribution to household food supply of the various activities was calculated.

The wet and dry season results from each site could then be compared, as could the results from the two sample sites. An example of the

results from one site, Nadopua, is shown in Table 1.

Table 1. Proportional piling: income and food sources, Nadopua

Activity	Dry Season %	Wet Season %
Charcoal/wood selling	35	13
Gifts from relatives	24	8
Livestock products	18	30
Fishing	16	15
Wild fruits and berries	5	6
Sorghum gardening	1	27
Friends	0.5	-
Purchased sorghum	0.5	1
Total (n = 9 households)	100%	100%

The table shows some of the seasonal changes in food supply. For example sorghum gardening and livestock products play a major role in the wet season, while gifts from relatives and sales of charcoal and firewood are clearly an important factor in the household economy during the dry season. A comparison between the results from the different sample sites showed that the households in the second site, Naupwala, were far more dependent on relatives and friends, and consequently view themselves as less self-sufficient.

Although it provides no absolute figures, proportional piling is a very simple, visual method which is useful for illustrating relative values and proportions, from the perspective of the respondents. Similar to many participative techniques, it is also an excellent basis for further discussion, and can be used to compare current and past practices as well as seasonal differences, for a range of different topics.

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18

Evaluation of a community-based buffalo project in Tamil Nadu

John Devavaram

• Background

In 1990 a community-based dairy buffalo project was established by the People's Service Society (PSS) in partnership with VetAid in the villages of T. Kallupeti and Karaikeni, Madurai District, Tamil Nadu.

The project assists families, drawn from the economically and socially deprived sectors of society (mostly landless), by providing them with a dairy buffalo. The beneficiaries then pay back 60 per cent of the purchase price of the buffalo over a three year period using income from milk sales. The balance is paid by the Indian government. On completion of the loan repayment the buffalo belongs to the beneficiary. Until then, the buffalo are housed in a communal shed in the village where the beneficiaries will inevitably meet up whilst attending to their animals. It is hoped that this regular contact will help to foster a sense of community spirit between beneficiaries during the course of the three year loan repayment and ensure the project's sustainability in the long run.

Whilst VetAid provides the funds to erect a communal shed to house the buffalo in each village, the beneficiaries are supposed to milk, feed and take full responsibility for their own animal. Each shed has an on-site manager and a part-time veterinarian employed to provide advice and training in management and health. The milk produced is measured, recorded, pooled and sold in nearby Madurai. The PSS, who provide accounting and administration for the project, receive the income from the milk. They put this towards individual loan repayments and the purchase of essential inputs. They give the balance to the

beneficiaries, depending on the milk yield of their individual buffalo.

• Mid-term evaluation of the project

In December 1991 VetAid asked the Society for People's Education and Economic Change (SPEECH), a local NGO, to carry out a mid-term appraisal of the project¹. The overall objective was to understand the implications of the project from the beneficiaries' point of view. The specific aims of the evaluation were:

- To gather and analyse socio-economic-cultural information from the project beneficiaries and their families;
- To evaluate the relevance of the buffalo project with respect to the livelihoods of the beneficiaries; and,
- To determine whether the project managers should take further measures to create a greater sense of involvement for the beneficiaries.

With the above goals in mind we prepared a set of key questions which we felt needed to be answered. By incorporating a wide range of participatory (PRA) methodologies we hoped to create an atmosphere in which people would interact freely with the PRA practitioners and respond honestly and in depth to the different questions and exercises.

¹ Mattick, A. 1991. The VetAid Community Milking Buffalo Project: A Mid-Term Review. VetAid, Roslin, Scotland.

• Participatory research methods

The SPEECH team chose the following participatory techniques:

- Social and resource mapping;
- Seasonal calendars (labour division, income, expenditure, disease, rainfall, fodder);
- Trend change and linkage;
- Daily routine diagrams and livelihood analyses;
- Semi-structured interviews; and,
- Individual family profiles;

Having introduced ourselves, we divided the group of 30 villagers into three groups according to their villages. A group of older participants was also selected for the trend change and linkage exercise. A report on the outcomes and issues associated with the application of some of these techniques is outlined below.

Trend change and linkage

An historical analysis of animal husbandry practices showed that in the past animals were traditionally purchased through money lenders. They were housed, cared for and the products either consumed or marketed by individual owners. Local bulls were loaned for mating and if an animal was sick a traditional healer was called for assistance.

However, this scenario has changed. The buffalo are now kept in a communal shed, the PSS provide medical care, artificial insemination and concentrates for the buffalo. The PSS also market the milk themselves. Inevitably the beneficiaries do not feel responsible for their animal and to date have not received any training in animal husbandry and health from the PSS.

Semi-structured interviews

These provided most information about the organisation and structure of the project. We discovered that the villagers had some concerns about the way the project was being managed and it was not difficult to get them to speak openly about their feelings. Relations between the PSS and the villagers seemed poor. There was a basic lack of

communication between the two groups, the villagers misunderstood the project goals and management structures and were not participating fully in the project.

It is worth noting that in a second evaluation of the buffalo project by SPEECH in 1993² the villagers were no longer willing to participate in PRA activities. The recommendations from the first PRA workshop had not yet been acted upon. As a result the villagers were disappointed and wished to withdraw from the project. They scorned any suggestions of 'playing games' (drawing resource maps), claiming that there had been no changes since the first evaluation so there was no need for a second one. The facilitators tried their best to probe into the issues using open-ended questioning and to establish some solutions but they were in a difficult and uncomfortable position.

Seasonal calendars

A seasonal calendar (Figure 1) helped VetAid and PSS to appreciate and understand fully the responsibilities and production constraints involved in buffalo husbandry. The employment potential in the area appears to be high, roughly 200 days for men and 160 days for women. This is significant because it means that the beneficiaries spend a large proportion of the year seeking casual harvesting jobs in different localities. Therefore they do not have the time to constantly tend their buffalo or to attend animal production and health training courses. The calendar showed that March, April and October are the months in which buffalo suffer from different diseases, while it also showed that from February to June green fodder was available.

² Devavaram, J. 1993. *Participatory Appraisal on Buffalo Project*. Report on an evaluation carried out on behalf of VetAid. VetAid, Roslin, Scotland.

Figure 1. Seasonal Calendar: Buffalo Husbandry

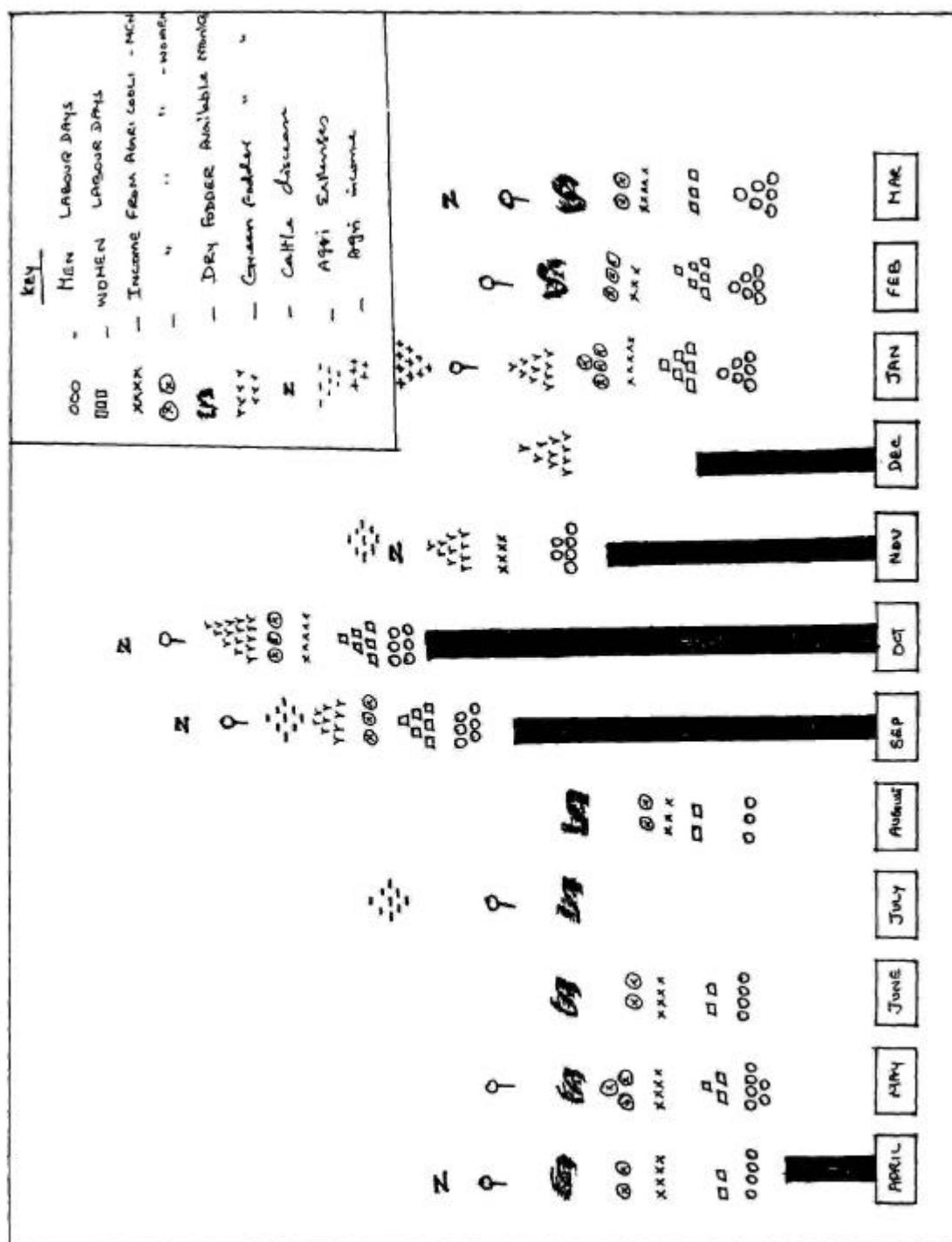


Figure 2. Livelihood Analysis: Karakeni Village

DETAILS	SAMINING	KOMATI	REKUMET	THUDAM	STANUS	CHINAM	GOAT	ALUMBI	S. ALUMBI	SAMINING
<u>HOUSEHOLD MEMBERS</u>										
MALE	1	1	1	2	1	2	1	2	2	1
FEMALE	1	1	1	1	2	1	1	2	1	1
CHILDREN - MALE	-	2	-	1	1	2	-	1	1	1
- FEMALE	-	3	-	1	1	-	3	2	2	1
<u>ANIMALS OWNED</u>										
COW	-	-	-	-	-	-	-	-	-	-
GOATS / SHEEP	4	-	-	-	-	-	2	2	1	2
CHICKEN	5	3	1	2	-	3	4	-	-	4
BUFFALO	1	1	1	1	1	1	1	1	1	1
<u>SOURCE OF INCOME</u>										
AGRI - OWN	-	50 cents	-	-	-	-	-	-	-	-
AGRI COOP	Rs. 300/-	Rs. 225	Rs. 300	Rs. 150	Rs. 300	Rs. 225	Rs. 300	Rs. 275	Rs. 150	Rs. 150
LIVESTOCK	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
<u>REMITTANCES / CONSUMPTION</u>										
Family (feeding)	100%	150%	100%	100%	100%	100%	100%	100%	100%	100%
Loan Repayment	50%	50%	-	-	-	50%	25%	-	-	-
Fodder	50%	50%	-	-	-	50%	75%	-	-	-
NOTE: Out of income from cattle										

Livelihood analyses

The livelihood analysis (Figure 2) showed the following. Taking into account the average number of labour days available, a family with both members working seems to receive Rs.3,000/- to Rs.3,500/- per year. This information further emphasises how a waged income provides a primary and significant source of income for the villagers. This explains why they allocate a large proportion of their time to waged activities rather than to their buffalo.

Resource map/model

A physical model was made of the Karaikeni village. This showed the resources available within the village and the location of houses. It drew VetAid's attention to the fact that the *Daliths*, around 20 per cent of the project beneficiaries, are excluded from common resources such as grazing areas, ponds and wells because they are from the 'untouchable' caste. This inevitably affects their ability to manage their own buffalo efficiently.

• Lessons learned

One reason why the PSS development project failed to achieve some of its objectives was because an in-depth consultation with the villagers was not carried out before it was implemented. The donors had merely relied upon advice from key informants and used social and economic indicators to identify needs. By doing so they had overlooked some of the social, economic and cultural constraints and aspects of their livelihood that had implications for the proposed project.

The PRA revealed information about how the villagers perceived the project in relation to their needs and priorities. This type of knowledge could not have been gained without the full co-operation of the villagers. They reported feeling isolated from the day-to-day events of the project and felt they were not being informed of details of milk sales, loan repayment, project expenditure etc. This information allowed VetAid to recommend that the PSS take steps to increase the involvement of the beneficiaries in all aspects

of decision-making and implementation. As a result the project was modified to make it more people-centred and participatory.

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19

The problem and solution game

Jeremy Swift and Abdi Noor Umar

• Background

This paper is based on socio-economic research carried out on the Isiolo Livestock Development Programme, Kenya¹. It describes a ranking game played by the research team with the inhabitants of Isiolo. The aim was to get different, yet related, groups of farmers to identify and rank their own problems, and then suggest ways of solving them. The game is based on a well-known and commonly played board game.

Local people are well placed to identify and understand development problems, and to identify potential solutions. It is widely agreed that their knowledge and perceptions are essential but it is not easy to elicit their opinions in a representative manner. Public meetings tend to be dominated by one or two people who are often not representative of the community as a whole, with the voices of women and the poorest rarely being heard. Questioning by technical staff often produces answers which reflect mainly the respondent's expectation of what is on offer. Besides, it is an illusion to expect communities, stratified by age, gender and occupation, to have a single view of priorities.

The way people see problems and solutions depends directly on their personal experience and their own position relative to others in the community. In order to get round these problems, we used a problem and solution ranking game.

¹ Swift, J. and Umar, A.N. 1991. *Participatory Pastoral Development in Isiolo District*. Final report on socio-economic research in the Isiolo Livestock Development Project.

• The problem and solution game

The problem and solution ranking game is best played after a community has been ranked according to wealth. It is important for planning purposes to know how equally wealth, particularly in livestock, is spread in the communities being studied.

Households with few or no animals have different perspectives and different problems from those with many animals. Development priorities will be different. For example, a restocking programme might be a priority for households with few animals, while better marketing facilities would be more appropriate for those with many animals. It is usually counter-productive to ask households directly about animal holdings, so wealth ranking was used.

The game was played with particular groups of people (e.g. similar wealth groupings, groups of women) who might be expected to share views of problems and solutions. In total, 70 groups played the game, each composed of representatives of different households. They were from each of the 11 *deda*, covering each of the three main livestock production systems in the area: *Waso* pastoral, *charri* pastoral and agropastoral and all wealth ranks.

It was played first with the wealthiest households in the community and then the poorest and, time permitting, one group in between. Although it was difficult to organise, the game was also played with three groups of poor women in the *Waso* pastoral system. The game aims to allow these groups to identify their problems, rank them and then list possible solutions in order of priority.

Playing the game

To play the game, the following five steps are taken:

1. The researcher scoops six holes in the ground, in two parallel rows of three and sits on one side with his or her team. The community group sits on the other side and nominates one person as their representative.
2. The researcher then explains that each hole is a major community problem and that the group must decide what each hole represents. The researcher then follows the discussion, noting points of debate or disagreement. When the group has chosen what problem label should be given to each hole, the researcher writes these down and asks the group why these particular problems have been chosen rather than others. The reasons are noted.
3. The researcher then produces ten one-shilling pieces and asks the group to use them to rank the problems in order of importance. The coins represent possible investment by the project to solve the various problems identified. The group may put from zero to five coins in any hole, according to the importance of the problem. Again the research team listens to the discussion and notes down important points. Once the ranking is finished the research team notes the results.
4. In the second round, the team may go into more detail about each of the particular problems identified. The coins are picked up and the group are told that all the holes now represent components of the most important problem which they have just identified. Each hole represents one component and ten coins are distributed among the different components in order of priority. At this stage the researcher may begin to add ideas of his/her own about potential solutions and suggestions for the group.
5. This is repeated for the two other most important problems identified.

The game is best played in a camp where the researchers are already known. It should

ideally last for one hour only, or a maximum of two.

Scoring and recording the game

The results of the game are recorded by the researcher in a notebook as the game proceeds. Assistants note the discussions among participants, especially on the reasons given for particular choices, on disagreements and on other issues raised. Significant phrases used are noted down verbatim.

The team should fill in a score sheet as soon as possible after the game is over. The following information should be recorded on this sheet:

- Characteristics of the group, particularly its position in the wealth rank and what this means in terms of livestock and other resources;
- Each problem identified and allocated coins in the first round, together with the score (out of a possible maximum of ten) it received. Problems which were raised and given holes but not allocated any coins score a half;
- Each component of the major problems identified in the second round, the order of priority agreed upon and any solutions discussed (if particular facilities are suggested such as dams or boreholes the respondents are asked to specify sites and the researcher records the details);
- Details of the discussions held throughout the game, especially disagreements, debates about priorities, views, issues and reasons put forward to justify particular choices.

To analyse a series of games, the score sheets are grouped first by geographic area or production system and then by wealth strata within the production system or geographic categories. Problems are grouped into categories such as water, and scores totalled, with comparable problems grouped together. Final scores are reduced to a percentage of the potential maximum i.e. an average of all the individual scores. A similar procedure is followed for the second round scores for components of the major problems.

• Outcomes of the Isiolo problem and solution game

Table 1 shows how the different wealth groups perceived their problems. Although the problems were also analysed within the three different production systems, the rankings from the three different production systems have been grouped into a single Isiolo-wide set of problems, ranked by wealth.

In compiling this table, individual problem scores were weighted by the number of wealth groups identifying them and the importance they were allotted. For simplicity the problems and solutions have been grouped into four categories..

The game revealed that livestock management problems are the overwhelming concern of the rich. Of the issues included in the 'livestock management' category, water was the most important, followed by animal health and the problems of outside graziers.

The poor were concerned by their lack of livestock, and suggested restocking as a solution. Agriculture and the possibility of alternative employment were also ranked as important. The middle wealth rank's concerns spanned those of rich and poor. Livestock management concerns, with water given the first place, were given most importance but lack of livestock and restocking were also given high priority.

Table 1. How different wealth ranks perceived problems and solutions

Problem/Solution	% of Total Possible Score		
	Rich	Middle	Poor
Livestock management	87	51	7
Lack of livestock	-	21	49
Agriculture	4	9	13
Other:			
alternative employment	2	4	10
need for direct assistance	-	2	12
school	3	5	7
miscellaneous	4	5	2
Total	100	100	100

• General conclusions

The groups were entirely free to select their own problems and allocate their own priorities to them. Nevertheless, a high degree of consensus emerged, based not on the difference between production systems or geographic areas, but on differences in wealth. In all three production systems the emphasis was on livestock. Even the poor groups in the agropastoral system were more concerned with livestock, or their lack of it, than with agriculture. Respondents often had detailed views about specific livestock interventions that, in their view, were needed. They were often critical of the siting or construction of past infrastructural interventions.

The rich, by virtue of their wealth, were able to focus their attention on specific livestock management questions. The middle and poor groups had more diversified interests and expectations. Agriculture was given a low but consistent priority. The need to deal with problems associated with school emerged as common, in different degrees, to all wealth groups.

Groups of poor women focused on problems similar to those of other poor people, although discussions with them highlighted particular aspects of their situation. For example, widows had few livestock of their own in anticipation of a future inheritance. However, they retained economic responsibility for their young children's stock. They often had labour shortages, exacerbated by their responsibility for domestic water collection, and were unable to take part in community labour or community redistribution schemes because they did not participate in the social and economic life of the community on the same basis as men.

Relatively few people asked for direct assistance. Several groups pointed out that restocking was the only viable way back to a reasonable livelihood and that it is a kind of assistance which cannot be squandered. People in all three groups were willing to participate in new investments by providing labour but had no cash to contribute. Several groups stressed the importance of Boran traditional institutions for the local

management of interventions, especially where they concerned natural resources. They believed that Boran management structures were effective and well understood and should be built upon, not ignored.

Finally, several groups expressed enthusiasm for this participatory approach to planning. They hoped the project would pursue the outcomes and solutions identified in the game, and not simply decide to go ahead and follow its own ideas.

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20

Success ranking in Garba Tulla, Kenya

Stella Maranga

• Introduction

Success ranking is an adaptation of the wealth ranking technique and was first used in the evaluation of a restocking project in Garba Tulla in Isiolo District in north eastern Kenya. The Catholic mission had initiated a restocking project to help displaced families go back to a 'traditional' pastoral way of life, by giving them goats. ITDG was asked to evaluate the project.

Formal monitoring had failed to yield useful information on the success of the project due to the distances that pastoralists move and also the low literacy levels of the people involved in the monitoring. To get a clearer picture of the actual impact of the programme it was necessary for the evaluation team to use PRA techniques as well as to continue to analyse the formal data already collected. Success ranking was one of the PRA techniques used.

• Success ranking

The objective of the success ranking was to determine each individual household's level of success and to elicit the local people's perception of success. In addition, the findings were used to select a stratified random sample for conducting a flock census, and also to give the evaluation team an idea of the levels of success of the individual restocked families.

The procedure was as follows:

- A list of all restocked households was obtained in each of the four *manyattas* where restocking had taken place (*manyattas* are town residential areas based loosely on traditional units);
- Informants (both men and women, most of whom had been restocked) from these *manyattas* were then asked to rank households according to their perception of the household's success;
- The informants were asked to say what criteria they had used for deciding the level of success and also the most important determinants for success and/or failure;
- Piles were reviewed with each individual or group informant, and cross-checking was done;
- Final ranks were worked out by taking an average rank of each household (each household was ranked by at least four different informants). Discrepancies were investigated and final scores were worked out; and,
- The households were then grouped into four ranks, with rank one being the most successful and rank four the least successful.

The results from two of the *manyattas* were as follows:

Table 1. Number of restocked households in each success rank by *Manyatta*

Success Rank	Dhemo <i>manyatta</i>	Prison <i>manyatta</i>
1	9	5
2	12	5
3	9	4
4	9	9
Total	39	23

The criterion most commonly used for success was the number of animals a household had left. Sometimes this was precise and sometimes it was an estimate - within a range of plus or minus 5 to 10 animals. Other criteria included the health of those animals and the distance from town that those households had settled (it was assumed that the further one was from town, the more successful). Other determinants of success included whether the family had another source of income; the knowledge and skills of the shepherd and the size and maturity of the family (families with very young children were deemed unlikely to succeed).

The success ranking enabled the evaluation team to see how effective the programme had been, and also what the constraints had been for those families who had not been very successful.

Other sources of information confirmed that an alternative source of income was a very important factor in the success of individual families in the restocking. One of the conclusions of the evaluation team was that although restocking was a good idea, restocked families either needed food for the first year of being restocked, or they needed to be restocked with more animals if they were to resume successfully their pastoral way of life (households in Garba Tulla were restocked with 40 goats and one transport animal per family).

• Conclusions

The main advantage of using success ranking was that a lot of useful information was collected and analysed on the spot. It was an easy technique to use in this case, as the pastoralists all knew about each other and were able to accurately assess each other. Apart from the information on how many livestock the people had left, we were also able to learn about local people's perception of success and their analysis of failure. In both cases their analysis was very logical and contributed to the conclusions drawn by the evaluation team.

Another advantage of using ranking as a way of collecting information is that informants are more in control of the process of collecting

information. People handle the cards themselves, they decide the criteria they want to use and they justify why each criterion is important. Because it is very relaxed, people enjoy doing it, which makes the whole process of collecting information easier and it generates a great deal of information very rapidly.

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21

Livelihoods, livestock and change: the versatility and richness of historical matrices

Karen and Mark Schoonmaker Freudenberger

• Introduction

One of the greatest dangers in doing rural research is the tendency to take a static view of things and to focus all our research energies on the present, rather than seeing the present as a temporary situation that is a product of the past and a precursor of the future. A number of the RRA tools, such as historical profiles, help to move us beyond this limited view but it is often difficult to connect the discrete benchmarks found in the typical profile with larger trends in people's lives.

We have found that historical matrices are powerful tools that complement and enrich historical profiles. They are effective in facilitating local populations' own analyses of how their situation has changed over time and the causes and consequences of that change.

As the examples that follow will illustrate, historical matrices can illuminate an enormous range of issues. We have found them to be particularly useful for understanding local livelihood strategies and the complex, adaptive portfolios of activities that result from these strategies. Some of our most surprising results have come from what these matrices reveal about the changing role of livestock in the local economy. We were surprised to find that livestock were, in one case, much more important than we had thought since there was little evidence of them in the village (they had been conferred to specialist herders who migrated with them in search of the best grazing areas).

In other cases we have found that livestock is of little importance at the present time but has been much more important at different periods

in the past. This leads to questions of why the changes took place and what may happen in the future which, in turn, often provokes much broader and revealing discussions about environmental or economic changes.

• Historical matrix: livelihoods

Table 1 is a straightforward livelihood matrix from the village of Gillangel in the Gambia. It shows the relative importance of various activities in the household economy and how these have changed over time. We asked our informants to limit the number of beans to 20 in each square. The number did increase in the last column¹.

One interesting result from this matrix was that, while the importance of different crops has varied greatly over time as people adjust their strategies to changing conditions (drying up of the swamp where rice had been grown, introduction and then failure of an irrigated rice scheme, etc.), the importance of livestock and tree products remained relatively stable.

¹ We have found that for historical matrices it is generally easier for people to do the matrix vertically. That is, they put their minds in a certain time period and remember how things were then, before moving on to the next time period. This avoids jumping back and forth in time which can be confusing.

Table 1. Historical matrix: evolution of livelihood strategies (Gillangel, The Gambia)

PERIOD SOURCE OF LIVELIHOOD	Until the end of swamp rice >25 yrs ago	Until the Chinese rice project 15-25 yrs ago	Period of Chinese rice project 12-15 yrs ago	End of rice project to fertilizer problem 3-12 yrs ago	PRESENT (past 3 years)
Millet	12	19	7	22	30
Groundnut	8	19	5	24	40
Rice	15	6	19	5	10
Maize	8	17	8	20	32
Findoo Grain	4	4	4	4	5
Gardening	14	18	5	20	40
Tree Products	20	20	20	20	45
Cattle	18	20	20	20	20
Sheep and Goats	17	20	20	20	20
Money from Relatives	5	5	10	25	30
Fishing	8	8	10	8	10
Pumpkins	7	7	10	10	20

• **Historical matrix: natural resource use**

Table 2, from the village of Sinthiane in Senegal, focuses on issues of natural resource use. In this case the reduction of livestock, both cattle and sheep and goats, has been dramatic and (as shown in the last column) is expected to decrease even further to the point where no sheep and goats will be kept in the village at all. As we explored the reasons behind this and other patterns observed in the matrix, a fascinating story unfolded.

Traditionally, in the village tenure system after crops were harvested livestock could graze freely on the stubble. This was an important grazing resource for the community. Over the past ten years, in the wake of the Sahelian droughts, some farmers (particularly wealthier male farmers who have the resources to construct wells) have entered into dry season, irrigated gardening and fruit tree orchards. Once a plot is fenced off, animals no longer

have the right to graze and, indeed, it becomes the responsibility of the animals' owners to ensure that their animals do not trespass into the fenced area.

These enclosed gardens and orchards have led to major conflicts between animal owners and gardeners since it has proved to be almost impossible to keep small animals out of the tempting and succulent gardens during the dry season. The gardeners, generally more powerful members of the community, have succeeded in levying heavy fines on owners of errant sheep and goats. These owners are, in many cases, women and the poorer members of the community.

To avoid further conflict there has been a massive disinvestment in ruminants to the point where there are now virtually none left in the village. Using other techniques, we were then able to explore the implications of this on household economies and, particularly, on women's income.

Table 2. Historical matrix: evolution of Resources (Sinthiane, Senegal)

Time Period RESOURCE	BEFORE DROUGHT (s) (>20 yrs ago)	SINCE DROUGHT (s) PRESENT	FUTURE ?
Land under Cultivation	20	15	9
Land in Fallow	18	2	
Land Loaned	10	3	· 1
Orchards/ Gardens	· 1	5	8
Trees	18	9	7
Cattle	· 16	7	5
Sheep/Goats	14	3	
Labor Supply	15	9	· 6

• **Historical matrix: coping strategies in times of crisis**

Table 3, from the village of Ndam Mor Fadamba in Senegal, shows yet another variation on the historical matrix. In this case, the matrix focuses specifically on periods of crisis in the history of the village, as defined by our informants. On the vertical axis our informants brainstormed the many survival strategies used during periods of extreme

hardship. This permitted us to understand better how certain strategies have become more or less important.

Livestock and fowl both showed up as critical survival mechanisms and, in fact, the sale of chickens was the most consistently important survival strategy regardless of the nature of the crisis. This highlighted an aspect of livelihood that is often overlooked.

Table 3. Historical matrix: coping strategies in times of crisis (Ndam Mor Fademba, Senegal)

CRISIS STRATEGY	WW II 39/45	Locust Invasion 1950	Fire in Village 1967	Drought 1973	Rat Invasion 1976	2nd Locust Invasion 1988
Eat Nèow Tree Fruit
Eat Wild Leaves	
Eat Manioc				
Eat Dugoor Tree Fruit	..					
Food Aid
Cultivate + Weave Cotton				
Eat Millet Bran				
Hunting	
Eat Cowpeas
Dig trenches against locusts				
Trade Nèow fruit for millet	
Sell chickens
Rural → Rural Rural → Urban Migration			
International Migration			
Sell weak animals to buy food for strong		
Buy flour				...		
Cut branches for animal feed				...		
Eat own animals		

Source: *Fields, Fallow and Flexibility: Natural Resource Management in Ndam Mor Fademba, Senegal*. IIED, London, 1993.

• Conclusions

These three case studies illustrate the tremendous versatility and richness of historical matrices as tools in Rapid/Participatory Rural Appraisal. They have proved so valuable and have raised so many surprising issues that might otherwise have been overlooked, that we can no longer imagine conducting a village study without doing at least one historical matrix. The key factors to remember when doing these matrices are:

- To explain them systematically;
- To allow your informants to define the time periods that are relevant to them²;
- To make sure that, even if some of the variables represent your concerns, there is plenty of opportunity for people to add their own;
- To be certain that everyone has the same interpretation of what the number of beans means (e.g. frequency or importance of the event or activity); and,
- Not to stop when the matrix is filled with beans, but to then go on to launch a discussion about why things happened and what it all means.

Perhaps the best reason for doing historical matrices is that they are invariably fascinating for the local population. As one of our key discussants in Sinthiane said, as he regarded with pride and a certain amount of awe the diagram he and his colleague had just completed:

“This is just astonishing. We know each of these pieces because they are parts of our existence. But we have never thought of it all put together like this. This is our life and our history”.

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² Discussions to get at the most meaningful and appropriate time periods can be time consuming but are often a very enlightening part of the exercise.

22

The application of PRA methods to the study of conflict management in a pastoral society

Michael Bollig

• Introduction

Research into conflict management has gained some attention over the past few years in the field of development studies. Planners and practitioners are being forced to recognise that the success of development projects is not only based on their expertise and on the financial input of donors but also, to a large extent, on the ability of those people involved in the development process to manage conflicts in their social environment.

Violent conflicts are common worldwide and many development efforts are doomed because of them. Somalia, Liberia and the Sudan are the more spectacular examples, but many more projects are hampered because of inter-ethnic conflicts, political rifts and friction at the local level. A keen interest in conflict resolution should be an integral part of any development effort. There should be ample motivation to analyse local conflict behaviour and connect research results to the planning of a project's organisation.

Until recently research into local conflict management was the responsibility of anthropologists. This usually meant long periods of field research and, often, complex academic descriptions of conflict causes and processes. For development practitioners a clear-cut and less time-consuming mode of obtaining data on local conflict management would be highly beneficial. Thus it may be useful to consider how rapid rural appraisal methods could be applied to the analysis of conflict management.

However, the degree to which understanding of conflict situations can be achieved by rapid methods seems uncertain. Conflicts are

conditioned by economics, social organisation and ideology and it takes time to become familiar with the various social factors that affect conflict behaviour. Whilst industrialised societies have a highly formalised method of resolving conflict, the authorities within many other societies manage conflicts informally and adapt their methods according to the scope of the people involved. These societies often have no fixed laws and there is usually a great deal of discussion before a solution can be found for a specific case. Additionally, their executive powers are often informal and fragmented.

• Conflict management

The project outlined here aimed to describe modes of conflict management in a pastoral nomadic society (the Pokot) in north-western Kenya and tried to find causes for successful or non-successful (non-violent or violent) conflict behaviour. The project ran for two years and the recording of data involved the gathering of numerous case histories on inter-ethnic and intra-ethnic conflicts.

Qualitative and quantitative information had to be obtained on the economic strategies, the social organisation and the belief system, since individual conflict strategies are inextricably enmeshed with other spheres of social life.

Intra-ethnic conflict

The picture which emerged showed that the Pokot managed internal conflicts fairly well. There were rarely any violent rifts; long-standing feuds between factions were unknown and there were few murder cases. Hence, internal conflict management was highly successful, despite being thoroughly informal.

Neighbourhood councils acted as forums for discussing conflicting issues. Decisions were based on consensus and it sometimes took days to find a solution.

There was no judge or body of elder men with this function and anybody who had an interest in the case could participate in the debate. Furthermore, there was no stipulated way for discussing cases and anyone could state his opinion at any given time. Additionally, ritual experts made efforts to, in Pokot terms, 'restore harmony'.

Inter-ethnic conflict

Violent inter-ethnic conflicts stood in sharp contrast to internal peace. For many years raiding was the mode of interaction between the Pokot and their pastoral neighbours. The colonial administration reduced the power of the councils who act on an inter-ethnic level. In pre-colonial times elders would sit together after a period of raiding and forge a truce enforced by solemn oaths. Today the gun reigns. For instance, in Somalia, Ethiopia and Sudan there is no accepted authority able to bring about peace in inter-ethnic conflicts - only the state can enforce a ceasefire.

Explanations

How can this internal peace and external violence be explained? The Pokot livestock management system is conditioned by their unpredictable and varying environment. Droughts, epidemics and stock raiding take a heavy toll on household herds. Herders endure this by diversifying their livestock property, maintaining their mobility and maximising their social capital, by distributing their cattle and smallstock amongst other herding families.

The need to distribute livestock to accumulate friendship-ties, important in times of need, obviously has a positive aspect on conflict management. Every single person is enmeshed in a net of exchange relations. To avoid endangering these, everybody is wary of being too aggressive in internal conflicts. The kinship system, based on patrilineal lineages and clans and the hierarchical institutions of the age-set system, provides a framework for non-violent conflict management.

However, most important is an ideology which discourages any physical aggression towards a fellow tribesman. Aggression is channelled and expressed in rituals of conflict in which violent actions are dramatically enacted, but unthinkable in reality.

There are obvious reasons for unsuccessful inter-ethnic conflict management. The weapons race between Somalia and Ethiopia and the ensuing civil wars in both countries have had a detrimental effect on inter-ethnic relations in northern Kenya. On a local level it is obvious that inter-ethnic exchange is not as relevant to the individual actors. Intra-ethnic exchange and inter-ethnic conflict do not endanger risk-minimising and exchange relations. Furthermore, the pastoral ideology endorses courage and ferocity in inter-ethnic conflicts.

• A review of research methods

Although there are limitations, especially when it comes to identifying the causes of conflict behaviour, PRA methods may gather an appreciable amount of descriptive data. The researcher should begin by listening to and recording the accounts of several informants to learn the different views of a specific conflict. Where the laws have not been formalised, individuals' interpretations of 'customary laws' will almost always be different. The researcher may need to attend a council to obtain a feeling for the value of the different accounts.

After recording a number of cases, more formalised interviews or diagramming exercises can be conducted to explore:

- Authority: who is able to influence decisions? How are decisions influenced - by power, by rhetoric?
- Norms: what norms of cooperation control the flow of goods and rights between people?
- Societal scope of norms: which norms relate to which set of people? Do norms relate to kinship groups, village members, age-set comrades, project groups, ethnic groups?
- Character of sanctions: are sanctions of a corporal, material or physical character? Who enforces sanctions - elders, juniors or ritual specialists?

Answers to these questions should enable researchers to gradually acquire knowledge of conflict behaviour. However, there is no guarantee that a clear cut picture will emerge quickly. Conflicts are complex social processes, frequently drawn out and consisting of a multitude of individual interests.

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23

Institution ranking and social mapping in rural Mongolia

Robin Mearns and D. Bayartsogt

• Introduction

A wide variety of institutions currently exist in rural Mongolia, following the dismantling of the pastoral collectives (*negdel*) and their partial replacement by various forms of joint stock and limited liability companies and cooperatives (*horshoo*). Apart from these formal organisations, informal community institutions exist. These are the main context in which pastoral livestock production is carried out. The question of what institutions will take over the functions of the former collectives is still very much open. PRA methods were used to try to understand holders' perceptions of the various institutions they participate in.

• Social mapping

Social mapping of local institutions is an adaptation of the wealth ranking technique and was used to identify the composition of informal neighbourhood communities. This 'methodological innovation' can use the same cards used for wealth ranking. It may be carried out in sequence with wealth ranking, although in a community of 100–200 households, this would result in an excessively long interview.

The method is simply to ask an individual or small group of informants to divide the pile of cards representing the whole community into progressively smaller piles, according to the different levels of local group identified by the informant(s).

At each stage of subdivision, the household reference numbers marked on the cards are recorded. If relevant, the geographical locations of the group can be mapped. At the lowest level, where individual *khot ail* (herders' base camps) are identified, other information was gathered. This included genealogies to identify kinship relations between members of *khot ail* and (where relevant and possible) their neighbours.

Table 1 shows the main pastoral institutions at different scale levels during the three periods: pre-collectivisation, collectivisation, and contemporary de-collectivisation. While there has been greater continuity in pastoral organisation at the local level than is often realised, local institutions during these distinct periods have, by turns, been suppressed, transformed, re-introduced or have re-emerged.

Table 1. Historical evolution of Mongolian pastoral institutions

Scale level	Order of Magnitude (households)	Pre-collectivisation (1930s)	Collectivisation (1930s-1980s)	Decollectivisation & Transition (1990s)
Encampment	1 1-2 2 2-12	herding family <i>sakhaltiin ail</i> <i>jarsiin ail</i> <i>khot ail</i>	herding family <i>suur</i> <i>sakhaltin ail</i>	herding family <i>sakhaltiin ail</i> <i>khot ail</i>
Neighbourhood	20-50 50-100 100-250	<i>neg nutgiinhan bag</i>	team (<i>kheseg</i>) brigade	<i>neg nutgiinhan</i> cooperative (<i>horshoo</i>) <i>bag</i>
Administrative Unit	500-1000 1 000-1 500 10 000	<i>khoshun aimag</i>	collective (<i>negdel</i>) district (<i>sum</i>) province (<i>aimag</i>)	company district (<i>sum</i>) province (<i>aimag</i>)

• Matrix ranking and scoring

Other methods used included matrix ranking and scoring. These were used mainly to understand herders' perceptions about the institutions of which they are members and in which they participate.

First a general discussion is held around the issue of local institutions, their functions and how they have changed over time. The names of the various institutions identified are then written on cards. The cards are offered to the informant for pairwise comparison until all possible combinations have been exhausted. In order to make the comparison, the herder is asked: 'Which of these two institutions is the most important to you, and why?'.

The six or so most frequently mentioned criteria form the rows of a matrix, the columns of which are given by the names of the institutions themselves. The matrix is then completed systematically, either by ranking (in ascending

order) the institutions against each of the criteria in turn, or by awarding a score (e.g. from one to five) to each institution for each criterion.

Table 2 shows the matrix ranking and scoring of institutions as perceived by Dangaasuren of Tariat district in the central forest/mountain steppes of Mongolia. The most important institution to him was the *khot ail*, for collective management of herds and family labour. This was consistently ranked top, except on the criterion of sharing the use of a vehicle. It was discovered on closer questioning that this criterion implied for him the joint ownership of the vehicle and he felt the *khot ail* was too small an institution to own such a lumpy asset.

The *neg jalgynhan* ('people of one valley') was consistently ranked next highest. At the other end of the scale Dangaasuren ranked the district administration bottom on all criteria, implying that it was almost completely irrelevant to him.

Table 2. Matrix ranking and scoring of institutional preferences, Tariat District

Criteria:	<i>horshoo</i> (cooperative)	<i>sum</i> (district)	<i>negdel</i> (former collective)	<i>khot ail</i> (herders' base camp)	<i>bag</i> (lowest administrativ e unit of state)	<i>neg jalgynhan</i> (‘people of one valley’ - a neighbourho od community)
Members have strong common interest	4 (5)*	6 (0)	5 (0)	1 (5)	2 (4)	3 (4)
Communication between members is easy	4 (4)	6 (0)	5 (0)	1 (5)	3 (4)	2 (5)
It is easy to reach a decision collectively	4 (2)	6 (0)	5 (0)	1 (5)	3 (3)	2 (4)
It is possible for members to share the use of a vehicle	3 (-)	6 (-)	4 (-)	5 (-)	2 (-)	1 (-)
There is good contact between leader(s) and members	4 (4)	6 (0)	5 (5)	1 (5)	3 (5)	2 (4)
It is easy to organise collective activities	4 (4)	6 (0)	5 (4)	1 (5)	3 (5)	2 (5)

*Note: 4 (5) = Rank (Score)

Informant: Dangaasuren, *horshoo* (cooperative) member

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NOTE

This report is extratced from: Mearns, R. 1993.
PALD Pastoral Institutions, Land Tenure and
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Research Report No.3. Institute of
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24

Livestock rehabilitation programme in Mozambique

Anabela Braganca

• Introduction

Throughout the ten years of civil war in Mozambique thousands of *camponese* (traditional farmers) sought refuge in urban centres. The cease-fire, signed in October 1992, has now made it possible for them to return to their former villages and farms. VetAid, a UK-based NGO, has responded to these changing circumstances and are planning a community restocking programme in the Inhambane Province. Here, livestock-keeping is traditionally important for both subsistence and economic reasons. Previously, VetAid worked in a training capacity with the Provincial Livestock Services Department (SPP) in Inhambane Province.

• Participatory Rural Appraisal

The *camponese* existed for ten years in virtual isolation. Neither government nor non-government organisations possess up-to-date information on the social, economic and environmental impact of the civil war on those *camponese* remaining in the rural areas. The *camponese* have also just experienced one of the worst droughts of this century.

Only by collecting current information could VetAid begin to assess the situation and respond to the immediate needs of both the remaining community and the returning refugees. To achieve this, we planned a participatory appraisal (PRA) to gather information on the socio-economic, ecological and political conditions in the villages. This information was then used to help design a restocking programme appropriate to the needs and priorities of the community, the existing local resources and the traditional livestock production system.

The specific goals of the PRA were to:

- Gather information on existing agricultural production systems, animal husbandry, market structures and credit schemes;
- Establish what the community consider to be their most pressing needs and limiting resources;
- Make an inventory of local natural resources and the infrastructure required for a restocking programme; and,
- Carry out a wealth ranking exercise to identify groups with common interests and wealth status and assess whether they possess the resources, knowledge, time and inclination to raise loaned stock as part of a restocking programme.

Participatory Appraisal techniques

The PRA took place over 10 days in the village of Mangorro, Inharrime District. A wide range of PRA tools were used, including:

- Informal group interviews, ensuring that at least one person in the group spoke the local language;
- Transversal walks and resource mapping;
- Venn diagrams indicating institutional relationships;
- Seasonal calendars of disease incidence;
- Wealth ranking;
- Time-line transects; and,
- Preference ranking for livestock and disease treatments and criteria matrices.

This was the research team's first experience of participatory methods and the first opportunity to test them in an area that had previously been a conflict zone. It was a challenging and

unpredictable task. The team knew little about the area so it was essential to carry out a background study based on old official registers, knowledge of local structures etc. We also collected vital information on the whereabouts of landmines.

A description of a few of the methods used are outlined below. The information collected and the difficulties encountered both throughout the appraisal and with the application of specific techniques highlight some of the problems with using PRA techniques in a community ravaged by conflict.

Wealth ranking

A wealth ranking exercise was carried out with 14 *camponese*. It revealed the extent of poverty in the area. According to World Bank indicators, an estimated 78 per cent of *camponese* live in abject poverty. The ranking exercise helped the research team to understand and define how farmers perceive wealth, for example in relation to farm size and number of animals owned.

However, the team found that the criteria were distorted because many people had been absent from the area for a long time and could not define current-day wealth indicators. Mangorro had been at the centre of the conflict for ten years, culminating in a severe drought, so existing wealth criteria seemed neither relevant nor appropriate. The *camponese* interviewed found it difficult to classify the different wealth ranks. For example, they ranked farmers, who had been rich before the civil war but had now lost everything, on their former wealth and social status in the community rather than on their current status. Nevertheless, the

information gave us an indication of the extent of poverty in the village, and hence an idea of the scale of any ensuing restocking programme.

Informal interviews

Initially the *camponese* were reluctant to speak to members of the PRA team about their way of life. They associated strangers in the area with terrorist attacks on the village; they had lived in constant fear of this threat for many years. During the first two days of the appraisal the villagers gave false names and information, but as they became more familiar with the team they began to trust them and respond to the different approaches and PRA exercises. The turning point came when a group of farmers were asked to make a social map of their area (Figure 1). This seemed to break down barriers and even facilitated the correction of false names. The most fruitful interviews took place around the dipping tank at Nhacoongo where the *camponese* felt relaxed and willing to talk freely. By this stage the *camponese* had gained enough confidence to trust the research team so the full range of PRA methodologies were used with them.

Since traditional village structures had collapsed and families were still returning to the provinces, the research team found that a majority of the inhabitants were men, many of whom were reviewing the security situation in the area before advising their wives and families on whether it was safe to return. This meant that the majority of interviews were conducted with men. All informants were farmers but also had other vocations, such as teachers or nurses.

Matrix ranking

The absence of women in the community was a constraint for the research team. It was difficult to gather reliable information about the livestock for which the women would normally be responsible such as goats and poultry. The animals provided by the planned restocking programme were likely to be poultry, goats and rabbits so it was important that representative views on livestock preferences and management practices were recorded. In spite of this bias, a ranking exercise was carried out to establish local criteria and preferences for different types of livestock.

Diagrams

Venn diagrams (Figures 2 and 3) were drawn to show the level of institutional interaction before and after the civil war. These indicated the collapse of traditional village structures and religious activities in the region and the fragmented nature of the community. Using the venn diagrams as a discussion point, the team were able to establish that the *camponese* were keen to redevelop community activities and to restore village life to its former, pre-war situation. However, the *camponese* expressed caution about their involvement in any imposed co-operative systems, which they thought might be introduced as part of a rehabilitation project. Previous experiences of institutions imposed by

the Frelimo regime had proven to be corrupt and inappropriate.

The venn diagram in Figure 2 shows the situation before the war. It shows how NGOs were linked to the central Government and Ministry of Agriculture rather than to the communities they were intended to serve. This made VetAid aware of how the villagers had perceived their own, earlier attempts at assistance. VetAid had been involved in training Ministry personnel in improved basic animal health measures. It may be inevitable that the *camponese* could not fully appreciate the aims and benefits of this training programme if they were not benefitting directly from it. An analysis of the venn diagram prompted VetAid to review their policy and attempt to correct the *camponese* perceptions of NGOs.

VetAid proposes to link their work with both the Department of Rural Extension and the Ministry of Agriculture to avoid working in isolation. This should enable the rural communities to maintain better links with the government sector, especially the SPP. It should facilitate the communities' access to resources and assistance, preventing them from becoming marginalised and dependent upon NGO assistance. By working through traditional institutions and farmers associations, where they still exist, VetAid hopes to strengthen war-torn communities and help them to develop linkages with other institutions.

Historical transect

The drawing of an historical transect (Figure 4) demonstrated the dramatic fall in livestock numbers over the past eighteen years and, in particular, the overall reduction in agricultural activity during the war years.

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25

Endnotes

• **Contacts for further information on livestock development**

Animal Traction Network. This includes the West Africa Animal Traction Network which aims to foster the use of animal power for agricultural development in West Africa and elsewhere, through the exchange of information and cooperation amongst its members. Contact: Paul Starkey, Animal Traction Development, Oxgate, 64 Northcourt Avenue, Reading RG2 7HQ, UK.

Arid Lands Information Network, Caisse Postal 3, Dakar, Senegal. ALIN produces the fieldworkers' journal *Baobab* in both English and French.

BAIF Foundation, Senapati Bapat Road, Pune 411016, India. BAIF produces the BAIF journal which focuses particularly on livestock development.

Bureau d'Etudes et de Réalisation Agropastorales, BP 290, Dori, Burkina Faso. BERAP is a centre for research collaboration with herding communities. The centre also produces a regular publication. Contact: Boubacar Ly.

Drylands Programme, International Institute for Environment and Development, 3 Endsleigh Street, London WC1 HODD. The Drylands Programme at IIED produces a quarterly bulletin, *Haramata*, which together with an Issues Paper series is produced in English and French. Contact: Nicole Kenton.

FARM-Africa, Box 5476, Addis Ababa, Ethiopia. The Farmers' Research Project based in southern Africa has been employing rapid rural appraisal techniques for the analysis of

livestock development issues. Contact: Simon Adebo.

Forest Trees and People Programme, IRDC, Swedish University of Agricultural Sciences, Box 7005, S-75007, Uppsala, Sweden. FTP produces a regular newsletter which often contains articles related to livestock development. The programme is also encouraging the spread of participatory research and development techniques together with partners in a variety of countries. Contact: Daphne Thuvesson.

Heifer Project International, PO Box 808, Little Rock, AR 72203, USA. Heifer Project Exchange is a free newsletter which concentrates on small-scale livestock husbandry and low-cost veterinary techniques.

Information Centre for Low-External-Input and Sustainable Agriculture, PO Box 64, NL-3830, AB Leusden, Netherlands. ILEIA produces a regular newsletter which is a valuable source of information on alternative approaches to agriculture development. A recent issue (3/92) focussed on the role of livestock in sustaining livelihoods. Contact: Ann Waters-Bayer.

Institute of Development Studies, University of Sussex, Brighton BN1 9RE. IDS are collaborating in a major research programme in Mongolia with the *Mongolian Research Institute of Animal Husbandry and the Institute of Agricultural Economics, Zaisan, Ulanbaatar 36, Mongolia.* A series of research and training reports are being produced as outputs of this project. Contact: Robin Mearns at IDS.

Institute of Development Anthropology, PO Box 2207, Binghamton, NY 13902, USA. IDA has a number of on-going research projects on pastoralism, including work on gender aspects. Contact: Michael Horowitz.

Intermediate Technology Development Group, Myson House, Railway Terrace, Rugby CV21 3HT. ITDG produce the regular journal *Appropriate Technology*, which often has features on livestock development. ITDG also has much experience in pastoral development and village animal health care. Contact: Cathy Watson.

International Buffalo Information Centre, Kasetstart University, Bangkok, Bangkok 10900, Thailand. The centre produces the *Buffalo Bulletin* which is a quarterly journal about buffalo husbandry in Asia.

International Livestock Centre for Africa, PO Box 5689, Addis Ababa, Ethiopia. ILCA holds a large documentation collection and offers limited searches to applicants from Africa. ILCA publications deal with a variety of aspects of livestock production. Contact: Information Services.

Land Tenure Center, University of Wisconsin, 1300 University Avenue, Madison, Wisconsin 53706, USA. The LTC is a leading centre for land tenure studies and produces a number of publication series. Short courses are also offered. Contact: Mark Freudenberg.

League for Pastoral People, Pragerstrasse 20, 64372 Ober-Ramstadt, Germany. The League is an advocacy and support organisation. Together with the School of Desert Science in Jodhpur (India) it organised a workshop on CPR and Pastoralism in Rajasthan. Contact: Dr I. Köhler-Rollefson.

Oxfam, 274 Banbury Road, Oxford, OX2 7ZS, UK. Oxfam produce the practitioners' journal, *Development in Practice*, which occasionally covers livestock development issues. Field programmes in Africa include pastoral development and decentralised animal health service initiatives in dryland areas. Contact: John Rowley.

Pastoral Environment Network for the Horn of Africa, PO Box 494, 1 Laney House, Portpool Lane, London EC1N 7SP. PENHA is a regional network with contact points throughout the Horn of Africa. London contact: Zeremariam Fre.

Pastoral Development Network, Overseas Development Institute, Regent's College, Inner Circle, Regent's Park, London NW1 4NS. PDN produces quarterly papers which cover a wide range of pastoral issues. A register of PDN members is also available. The ODI holds a comprehensive collection of literature on pastoral development issues. Contacts: Roy Behnke, Cathy Butcher.

Pastoral Information Network (PINEP), PO Box 29053, Nairobi, Kenya. Contact: Kassim Farah.

Rodale Institute, 222 Main Street, Emmaus, PA 18098, USA. International Ag-Sieve provides a regular sifting of news about sustainable agriculture. A recent issue (IV(6)) focused on pastoral development.

Scandinavian Institute for African Studies, PO Box 1703, S-75147 Uppsala, Sweden. SIAS produces the journal *Nomadic Peoples* as well as holding a major documentation collection.

United Nations Sahelian Office (UNSO), c/o FAO, Box 2, Dar es Salaam, Tanzania. UNSO works in pastoral areas of Africa and is active in supporting policy change in this area. Contact: Maryam Niamir-Fuller.

VetAid, Centre for Tropical Veterinary Medicine, Easter Bush, Roslin, Midlothian, Scotland. VetAid support a number of para-veterinary field projects and have been involved in adapting R/PRA techniques to livestock health applications. Contact: Jeremy Davies.

• **Call for articles: a reminder to all readers about three upcoming special issues for which we would greatly welcome experiences and reflections from the field:**

- *RRA Notes Special Issue on Children*
- *Special issue on PRA and Gender*, following the workshop held at IDS in December 1993.
- *Special issue on PRA methods and techniques for use in urban areas.* As a

result of many requests from readers, IIED's Human Settlements Programme is collaborating with the Sustainable Agriculture Programme to prepare a special issue of *RRA Notes* on the use of participatory inquiry in urban areas. We invite groups and individuals using participatory research and development approaches in urban areas to send us papers describing and analysing their experiences.

We hope to compile a broad range of experiences and insights. There is such a variety of ways in which different countries distinguish between rural and urban areas that what are considered rural villages in some countries may be small urban centres in others. We plan to include papers on the particular application of PRA in 'large' villages which have many characteristics associated with urban areas (for instance several thousand people living in a relatively concentrated settlement).

Please send us papers about the different methods and techniques you have used, what has worked and what has not, what have been the problems and successes. We will reprint articles that have been published elsewhere, if those who hold the copyright permit this. Note that *RRA Notes* is an informal publication. Articles can include drawings, maps and diagrams of work undertaken. The length of articles should be between 1,000 to 5,000 words. We have some funding for translation costs and would be delighted to receive articles in French and Spanish. In addition to sending the special issue to all those who currently receive *RRA Notes*, we also intend sending copies to subscribers of *Environment and Urbanization*.

These will be cheaply available, fully illustrated, and draw on the experience of trainers and practitioners worldwide.

- **Forthcoming guides from IIED: two guides are in preparation which will be published in the course of 1994. These are:**
 - A Trainers' Guide for Participatory Inquiry
 - A Users' Guide for Participatory Inquiry

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