Editorial

This third issue of RRA Notes is concerned with methodologies conducted in a number of different countries and at several different stages of the development process. The first piece illustrates very well the value of ranking techniques in understanding the complexity and importance of browse as a forage resource. Indeed the study threw up some surprising and unexpected results; it also appears that the later stages of the ranking and analysis did not add significantly to the findings generated very early on. It is also interesting that the chemical analyses, taking about one year, were apparently unnecessary - the pastoralists knew best. The second piece is a reanalysis of a repertory grid analysis used by the author in Papua New Guinea - there is of course much to be gained from this kind of disciplinary cross-over and careful evaluation of methodology. In the third piece the use of Sustainability Analysis in Thailand is described within the context of institutionalising RRA tools and techniques, and it appears to be successful at creating consensus within a multidisciplinary and multisectoral workshop - it is not threatening, it is inexpensive and effective. The final section concerns the representation of rural people's knowledge in stories, histories and portraits. These are colourful descriptions of situations encountered by an RRA team or individual whilst in the field.

These Notes are now sent to some 200 practitioners world-wide: in the next issue we plan to publish this network list to encourage the distribution of interesting reports or material between practitioners. Please, though, do continue to send in contributions - particularly if they are short. The success of these Notes depends largely upon their informality.

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Source: RRA Notes (1988), Issue 3, pp.3, IIED London

1

Ranking of browse species by cattlekeepers in Nigeria

Wolfgang Bayer

· Background

The Subhumid Zone Programme (SZP) of the International Livestock Centre for Africa (ILCA) has been involved in livestock systems research in West Africa since 1979. The SZP has been carrying out long-term observations of livestock management by agropastoralists and arable farmers in selected case study areas in central Nigeria, parallel to testing and refining innovations in animal husbandry and nutrition in collaboration with the livestock keepers. Rapid appraisal techniques have been periodically applied to gain a preliminary understanding of certain elements of the livestock production systems. An example is the ranking of browse species used within the agropastoral system.

A study of the grazing behaviour of cattle kept by settled Fulani agropastoralists in two case study areas - a farming region and a grazing reserve, had revealed that browse was an important forage resource, particularly in the late dry season (Bayer, 1986). Whereas other forage resources such as natural range or crop residues had already been studied in detail, little was known about what constituted 'browse': i.e. which trees and shrubs were most commonly eaten by the cattle. Closer observation of a grazing herd revealed that numerous different species were being browsed. In order to identify whether and how this forage resource could be improved, it was necessary that the pattern of browse usage be identified and the relative importance of the various browse species be assessed. To this end, the following quick study was carried out.

· Interview with key informants

A list of browse species in the study area was compiled on the basis of observations of grazing cattle and interviews with key informants. The SZP enumerators and herdsmen were men from the main ethnic groups in the area (Kaje, Kamantan, Fulani, Hausa) and had a good knowledge of the local vegetation. With their assistance, a preliminary list of browse species was compiled according to the species' local names. This list was checked with some Fulani agropastoralists who were collaborating with the SZP in on-farm ('in-herd') trials, and additional names of the browse species were added. The resulting list was arranged alphabetically and each browse species was given a number (code) in order to facilitate recording of the ranking results. My field assistant and I then prepared small cards with one species name (and the corresponding number) per card.

· Ranking interviews

We took these cards to six Fulani cattlekeepers in each case study area and, in individual interviews, asked them to rank the browse species according to their importance as feed for their cattle. As cattle herding is a male task among the Fulani, only men were interviewed. The procedure was as follows:

1. The plant name on each card was read out to the Fulani man (none was literate) and he was asked whether he knew the plant and whether cattle eat it. If he did not know the plant, the card was set aside. If he knew the plant, the card was laid down on the ground in front of him.

Source: RRA Notes (1988), Issue 3, pp.4–10, IIED London

2. In the case of each subsequent card, the man was asked whether the plant named on the card was known to him and, if so, if it was more or less important as cattle feed than the plants named thus far. This was done by pointing to the cards which had already been placed on the ground and asking: it is more (less) important than this one (reading out the name of the plant) ...than this one (ditto)... and so on.

3. After all the cards had been laid down in order of importance, the plant names in order of ranking from most to least important was read back to the Fulani. He could then change the order of the cards if he wanted to correct the ranking.

4. The man was then asked whether he knew of any other tree or shrub species in the area which was eaten by cattle but had not been mentioned thus far on the cards. If he named additional plants, the name of each was written on a card and he was asked to place the card as above.

5. We recorded the ranking by each man by writing down the card numbers (rather than the plant names) in the order of ranking. For example, if species No 5 was ranked as most important, species No 12 as second most important, species No 7 as third most important etc., we recorded the sequence 5, 12, 7 etc. Additional information given by the Fulani about the browse species during the course of the ranking exercise, e.g. about the plant parts preferred by the cattle, was also noted.

6. As new plant names could be added during each interview, the first Fulani interviewed did not have the chance to rank all the species mentioned by the time we had interviewed the 6th man in each case study area. In order to give each man the opportunity to rank all the species, a second round of ranking interviews was done with the same people. In this second round, no additional species were mentioned by the pastoralists.

7. Tables of species ranking (one for each case study area) were compiled by calculating an average from the rankings given by the pastoralists (see Table 1). A pocket calculator was used for this purpose.

Source: RRA Notes (1988), Issue 3, pp.4–10, IIED London

Table 1: Simplified table of browse species ranking according to importance as cattle feed

Species	Local name	Ranking by Fulani in farming area					Rank
		Moh.	Saleh	Adamu	Huss.	average	
Afzelia africana (Mahogony bean)	Kaawoo	1	1	2	1	1.25	1
Khaya senegalensis (Savannah mahogony)	Madaaci	2	3	1	2	2	2
Adenodolichos paniculatus (Fire bean)	Depaji	4	2	3	3	3	3
Oxytenenthera abyssinica (Bamboo)	Gooraa	3	5	4	4	4	4
Mucuna poggei (Cow itch)	Karara	5	4	5	6	5	5
Daniellia oliveri (African copaiba balsam)	Maje	6	7	6	5	6	6
Pterocarpus erinaceus (African rosewood, African teak)	Banwi	8	6	8	7	7.25	7
Cussonia barteri Barter's cussonia)	Tuwon giwa	7	8	10	9	8.50	8
Vitex doniana (Black plum)	Dinya	9	9	7	10	8.75	9
Parinari curatellifolia (Rough-skinned plum)	Nawari	10	10	9	8	9.25	10

* English names according to Dalziel (1937) or Gledhill (1972)

By the end of the ranking interviews, we had a list of about 30 species browsed by cattle. Subsequent evaluation of the ranking results revealed that the l5 most important browse species in both case study areas had already been included in the list after the ranking had been done by the first 3 Fulani interviewed. The 'top 10' species are presented in Table 1. For us, the importance of bamboo as a browse plant is somewhat unexpected.

In the late dry season i.e. during the period when browse is most intensively used, samples were taken of each browse plant for the purpose of estimating its quality as feed.

· Identifying the species

The ranking of browse species was done using local names of the trees and shrubs on the cards. The *lingua franca* in Central Nigeria is Hausa, but this is the second or third language of most of the inhabitants. The Fulani agropastoralists' first language is Fulfulde; the arable farmers in the case study areas, who belong to the Kaje, Kamantan and Ikulu ethnic groups, each speak their own language and have their own names for the local plants. Some Fulani knew certain plants only by the Fulfulde name, some only by the Hausa name, and a few plants were known only in the language of the local farmers. Wherever possible, we noted each plant name in

Source: RRA Notes (1988), Issue 3, pp.4–10, IIED London

Fulfulde, Hausa, and one of the other languages.

To be able to interpret our findings in 'scientific' terms, we then sought the Latin names for each plant. Valuable aids in this connection were Dalziel's Useful Plants of West Africa (1937) and a list of vernacular (Hausa) names of trees and shrubs which had been prepared by the Department of Forestry (Gbile, 1980). A final check of our 'identification/interpretation' work was made by a taxonomist from the National Animal Production Research Institute (NAPRI) in Zaria - 250 km north of the case study areas - who came to the field for this purpose.

· Survey of frequency of browse occurrence

With the aid of the taxonomist, we then made a quick survey of the frequency of occurrence of the different woody species in the case study areas. In each of the main vegetation/landuse types (upland range, fallow land, cultivated fields, riverine areas, shrubland) random quadrats were staked out and each tree/shrub was counted, identified and classified according to height: knee- high, waist-high, nose-high, and higher than the arm stretched above the head. The measuring rule (the author) was 196 cm tall, with an arm-stretch to a height of 2.4 m.

The size of quadrat varied according to plant density; the smallest quadrats were 10 x 10 m for recording shrub vegetation, and the largest were 100 x 200 m to record trees in cultivated fields. The number of quadrats per vegetation/landuse type ranged from 2-6 in each case study area. In locations with few tall trees and a dense understorey, we sampled a larger area for the tall trees (e.g. l00 x 200 m) and then within this area we sampled 3-4 quadrats of 10 m x 10 m to record the species up to 2.4 m in height.

During this quick survey, we found more than 100 woody species, including all but two of the browse species mentioned by the Fulani during the interviews. One species not found was Acacia albida, which is very well known as a browse species by scientists as well as the Fulani but is quite rare in the subhumid zone. The other was a Veronica spp which is planted in household gardens and used for seasoning soups but which is rarely found in the fields. We also found some plants which had not been mentioned by the Fulani as important browse species but which are described in the literature as browse plants in other parts of Africa (e.g. in Le Houerou, 1980).

When we expressed the occurrence of browse plants in percent of total number of woody plants, we found that the percentage of browse plants was higher in fallow and cultivated fields than in natural savanna (upland range). In the case of small plants (less than 180 cm or ca 6 feet in height) even the absolute number of browse plants was higher in fallow fields than in natural savanna. This would mean that the traditional way of clearing fields for cultivation does not reduce the availability of browse to the extent expected. The clearing practices and shrub/tree regeneration in indigenous agricultural systems are worthy of more investigation. Large agricultural development schemes in Nigeria often involve wholesale clearing by caterpillar. Much could be learned from local farmers about tree protection (e.g. species and their uses, techniques of fostering regeneration) to promote sustainable rather than destructive forms of agricultural development.

· Time required for the study

Two days were spent compiling the initial list of browse species and preparing the cards. The interviews (30-60 minutes each) were carried out during normal field visits for monitoring on-farm trials and therefore stretched over a period of about 6 weeks. If we had concentrated solely on the browse ranking interviews, they probably could have been completed within 3 days in each case study area, i.e. in a total of 6 days. Two half-days were spent in the field with the taxonomist in order to verify species identification. Calculating the average species rankings and compiling the ranking tables was a matter of 2 hours in total.

The survey of how frequently the woody species

Source: RRA Notes (1988), Issue 3, pp.4–10, IIED London

occurred required 7 days of fieldwork, followed by 2 weeks verifying species names, entering the data into a personal computer, and calculating species occurrence per unit area in each vegetation/landuse type in each case study area.

The samples of the browse species ranked by the Fulani were sent to ILCA Headquarters in Ethiopia for chemical analysis. After drying, the 30 samples had been milled in one afternoon, but it took almost a year before the results of the analysis were sent back to us in Nigeria. This aspect of the study could not, therefore, be classified as 'rapid'.

· Discussion of the methods

In general, the 'ranking interviews' gave us a fairly good idea about the complexity and importance of browse as a forage resource. Pastoralists were very willing to share their knowledge about browse plants with us and appeared to enjoy the interviews as much as we did.

What we failed to record systematically during the interviews were the other uses of the trees and shrubs in addition to fodder. Here, we managed to collect only incidental information.

Some of the browse species such as the savannah mahogany tree (Khaya senegalensis) provide valuable hardwood. Others such the Ficus spp are used for medicinal purposes. Still other trees such as Vitex doniana are preferred for beehives; they also produce edible fruits, and the leaves are used as vegetables. These multiple uses of trees and shrubs could have been more systematically recorded during the ranking interviews.

Looking back on how we conducted this rapid appraisal of browse use and importance, the questions arise as to whether all parts of the study were necessary and whether we might have conducted some parts of the study more efficiently. The key aspects were the identification of the species browsed and the cattlekeepers' opinions about the relative importance of these species for cattle nutrition. We chose to do the species ranking from 1 to 30, but it might have been easier and quicker for both the Fulani and us to have grouped the cards into, say, 3 categories, e.g. very important, important, less important. In fact, when we divided the 30 species in the final ranking lists into 3 groups of 10 species each, the 'top 10' turned out to be the plants best known to all pastoralists and were also plants with relatively high nutrient value; the second-best group of 10 were also well known to pastoralists but lower in nutrient value; and the third group included species not known to all pastoralists and of rather mixed nutrient value. Ranking in 3 categories would probably have yielded similar results.

The survey of frequency of occurrence was done to gain more information about 'browse on offer'. However, even a cattle herd kept by settled pastoralists can use forage resources within a radius of at least 5 km around the homestead, i.e. within an area of almost 80 km. To record the woody species with any degree of precision within such a vast area would be quite a demanding task in terms of time and personnel. The rapid survey within a small number of quadrats in the main vegetation/landuse types gave us a rough idea of the diversity of woody species in a subhumid savannah environment, yielded some limited quantitative data about tree and shrub density in different vegetation formation and under different forms of landuse, and clearly revealed which species of trees are left in the fields when land is cleared for cultivation in the traditional farming systems. The rapid survey did not, however, yield figures which could be used to estimate the total amount of browse available. The need for a specialist in taxonomy capable of identifying the great majority of the species in the field and the relatively time-consuming tasks of verifying taxonomic names and data processing may limit the applicability of such surveys.

It is doubtful whether chemical analyses of the browse species were necessary. The results finally produced by the laboratory in ILCA Headquarters agreed well with the values already published in the literature (e.g. le

Source: RRA Notes (1988), Issue 3, pp.4–10, IIED London

Houerou, 1980).

Furthermore, there are considerable doubts as to the validity of standard chemical analyses for estimating the feeding value of browse plants, since substances such as tannins in the plant parts may render certain elements (particularly nitrogen) indigestible in the animal's stomach. As long as these problems of analysing browse species have not been solved, it may be sufficient to use published results of chemical analyses in order to estimate the feed quality of the browse species ranked by the livestock-keepers. Furthermore, the all-too-common delays in processing the plant samples in laboratories can lead to great delays in completion of reports. If results are to be produced rapidly for immediate use, it is probably advisable in most cases of rapid appraisal to avoid dependency on laboratories.

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Source: RRA Notes (1988), Issue 3, pp.4–10, IIED London

2

Direct matrix ranking (DMR) in Highland Papua New Guinea

Robin Mearns

· Introduction

Tools like direct matrix ranking (DMR) become honed down, improved and simplified over time, which is a very good thing. Reading Robert Chambers' piece on DMR in Kenya and West Bengal (RRA Notes No.1), I was struck by how much simpler the technique sounded than the one I used in the Southern Highlands of Papua New Guinea. However, the participatory learning process of eliciting the matrices in each case was very similar.

My objectives were:

- To compare a formal, 'scientific' land evaluation with local people's own evaluation of the same land resources;
- To show how social relations between clans in the area were critical in controlling access to valued land types; and,
- To highlight the differences between clans in access to valued land resources, and to show how this was reflected in disputes over particular land types.

I used DMR for the first of these objectives, to get to know people and let them get to know me, and to break the ice for our later and often sensitive discussions around the other issues.

· Repertory grid analysis

At the time I called the technique I was using 'repertory grid analysis', which should be seen as part of the same family of techniques as DMR. The origins of repertory grid analysis are to be found in the psychological literature on personal construct theory, which as Robert Chambers pointed out, gets complicated and difficult. But strip away the labels like 'mental constructs' and 'semantic differentials', and what you are left with is basically DMR, or so I had thought.

Other applications of repertory grid analysis in the context of rural livelihoods in the South include:

- investigation of the utilities by which farmers evaluate common weeds and local rice varieties in West Africa (Paul Richards);
- farmers' choice of crops in the Gezira, Sudan (John Briggs);
- small farmer perceptions of farming conditions and methods in Trinidad (Barry Floyd); and,
- the perceived worlds of colonists of the Colombian rainforest (Janet Townsend).

· The application in Papua New Guinea

With people from seven different clans or sub-clans, in group discussions, I drew up two sets of matrices, with the objects (land types) along the top and the criteria down the side. One set took local names for (and therefore definitions of) land types as the objects, while the other took the land classes (Land Mapping Units) defined in the formal land evaluation as the objects. Both sets of matrices used exactly the same criteria for distinguishing land types, which were the criteria people used when I asked them to make choices between land types. We did this for three land types at a time: "How is this one different from the other two?" although pairwise comparisons would have done just as well. Tables 1 and 2 are

Source: RRA Notes (1988), Issue 3, pp.11–15, IIED London

examples of the two matrices elicited for one clan.

The discussions all took place in the field on hilltops which overlooked the areas of land we were discussing. The groups were either all men, all women, or mixed, and the number of participants ranged from three to around 10.

· Problems

There were at least two major problems in the way I applied the ranking technique:

- With DMR the objects to be ranked (tree species, crop varieties etc) are often straightforward to define. Land types are not like that. I tried to match outsiders' definitions of land types (largely based on Western soil science) to local people's own names and bounding of the areas. Naturally there is no precise match, so any conclusions based on this comparison could only be circumspect.

  For example, I could not be sure that when we talked about e.g. *poi* or *kul* (valley bottom wetland, in the two local languages) we were actually referring to the same kind of land that the land evaluation classified as 'PB2' or 'WK1'.

  In fact this is precisely what I was trying to find out:

  "How well do the outsiders' definitions of land types match up to local people's own definitions?"

  "How useful is this expensive land evaluation in terms of the ways local people regard their own land resources?"

  "If a land evaluation is supposed to be a tool for decision making about land use, would decisions based on this outsiders' evaluation really be meaningful for local people?"

- The values I entered in the matrices were scores, from 1 to 5, where 1 represented 'best' and 5 'worst'. The numbers were written on cards which people would point to for each object, and according to each criterion, in turn. In other words, we did not the land types at all, in relation to each other, but simply gave each a score in relation to an abstract standard. In this way, many of the land types would be given the same score on particular criteria, in which case they cannot be ranked.

  Looking back on it, I could kick myself for doing it this way! Although it is possible in many instances to rank the land types from the matrices, at the time I did not see the exercise as being primarily a ranking exercise. How important 'labelling' can be: had I thought I was doing DMR rather than repertory grid analysis, the process of 'ranking' would have been uppermost in my mind. Instead, I got people to explicitly rank or make choices between land types only informally, as a means of identifying the criteria they used. This information, sadly, went unrecorded.

Some lessons learnt

- Eliciting the matrices proved to be an excellent ice-breaker and means of structuring discussions.
- The design of the study was complex, which made interpreting the results that much more difficult. However, it was possible to identify which types of land people valued most, and these were by no means always those land types which the formal land evaluation classified as most productive for food crops.
- Perhaps more important - or more interesting - than the intended outcomes of the analysis, were the unforeseen observations. Most notable among these were the differences in the kinds of responses that different groups made:
  - where a village big-man was present in the group, he would almost invariably dominate the discussion. Other people would keep quiet or simply agree with his opinion. This was true only with all-male or mixed groups.
  - in all-women groups, by contrast, it was more common for there to be a lively exchange of opinions from all

Source: RRA Notes (1988), Issue 3, pp.11–15, IIED London

participants, and for the final score to be the apparent consensus view of the group.
- generally men were more confident in their responses giving extreme scores of l's and 5's, while women would give scores in the middle ranges.
- mixed groups of both men and women were unsuccessful as mixed groups, since in such cases the men would not allow the women to speak.

- Repertory grids were designed to be analysed using sophisticated multivariate statistical techniques, based on multi-dimensional scaling, cluster analysis etc., and most applications of the approach have tended to use such tools of analysis. But this would be highly inappropriate for the kind of information generated by this exercise, which is simply not up to this form of treatment. The use of numbers in eliciting the matrices - allocating scores to each land type on the basis of a range of criteria - means there is too great a temptation to apply sophisticated statistical analysis. It is like trying to drive in a pin with a sledgehammer; more often than not the pin will break.

On reflection I should have used combinations of the symbols +, - , ++, --, 0, etc. to imply the same scoring. The matrices could be re-cast in this way, except that it would be unfaithful to the original information. You cannot be sure that if you use a range of --,-,0,+,++, instead of 1,2,3,4,5, people would give - where they would otherwise have said 2, or ++ for a 5. Better still, I should have tried direct ranking instead of abstract scoring!

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Table 1. Ranking of land types by members of Pim-Pulwoiap clan: Local names

Mendi name	**Poiem**	**Sepiem**	**Sunem**	**Erisonde**	**Tipso**	**Poi**
Imbong'Gu name	**Kul-kala**	**Ga-kala**	**Waru-kala**	**Kondi-kala**	**Konde**	**Kul**
Fertility	1	1	2	1	1	4
Slope	2	3	5	3	5	1
Vegetation easy to clear	3	4	5	5	5	5
Cleared vegetation makes good compost	2	2	2	2	2	4
Soil is easy to work	4	3	2	3	3	3
Well-drained	5	5	5	4	2	5
Productive for sweet potato	1	1	2	1	1	5
Productive for mixed vegetables	1	3	2	1	1	4
Good for pig foraging	3	4	4	4	1	1
Good for gathering karuka*	5	5	5	1	1	5

*Karuka nuts, from customarily owned trees in the natural forest

Scoring: 1 = Very good…… ……5 = Very poor

Key to local names:

Poiem/Kul-kala	Gardens on alluvial or drained swampland
Sepiem/Ga-kala	Gardens from grassland (mainly sweet potato)
Sunem/Waru-kala	Gardens from steeply sloping grassland (sweet potato and mixed crops)

Source: RRA Notes (1988), Issue 3, pp.11–15, IIED London

Erisonde/Kondi-kala	Gardens from forest or secondary regrowth ('greens' and mixed crops with sweet potato)
Tipso/Konde	Lower montane forest
Poi/Kul	Wetlands (alluvial or swamp, undrained)

Table 2. Ranking of land types by members of Pim-Pulwoiap clan: Land mapping units

Land mapping units	FK1	SN1	PB1	FS	SB2	PB7
Fertility	1	2	2	2	3	2
Slope	2	4	4	5	4	5
Vegetation easy to clear	4	5	4	4	5	5
Cleared vegetation makes good compost	1	3	3	3	2	2
Soil is easy to work	3	5	2	2	2	3
Well-drained	5	3	5	1	3	3
Productive for sweet potato	1	2	2	2	2	2
Productive for mixed vegetables	1	4	3	2	2	1
Good for pig foraging	1	4	1	2	1	1
Good for gathering karuka*	5	5	4	5	1	1

*Karuka nuts, from customarily owned trees in the natural forest

Scoring: 1 = Very good…… ……5 = Very poor

Key to land mapping units:

The land mapping units could be identified in the field from the land evaluation map

FK1 Ki Floodplain, active floodplain area of recent alluvium and collo-alluvial deposits around confluence of Mendi, Ki and Kwi rivers, wetland grasses and sedges, Ishaemum dominant in drained areas, high intensity cultivation of sweet potato and mixed crops

SN1 Nene Spurs, strongly dissected spurs at periphery of Birop Plateau, ridge crests and plateau remnants, brown ash and olive ash soils, Miscanthus grassland, low to medium intensity cultivation of sweet potato and mixed crops

PB1 Birop Plateau, high altitude volcanic ash plain, olive ash soils with brown ash soils on steeper slopes, Miscanthus grassland with patches of remnant forest, low intensity sweet potato gardens with mixed crops on steep slopes

PB7 Birop Plateau, steep river gorges, associated with volcanic ash plain (see PB1)

FS Fault Scarps associated with volcanic ash plains, olive ash and brown ash soils, lower montane forest and derived secondary regrowth, Miscanthus grassland, 'bush' gardens of varying intensity

SB Wambul Footslopes, lower dip slopes and colluvial aprons associated with Tambul Mountains, olive and brown ash soils, sedimentary soils, mixed ash soils, Miscanthus grassland, medium intensity sweet potato and mixed gardens

Source: RRA Notes (1988), Issue 3, pp.11–15, IIED London

3

The use of sustainability analysis in Northeast Thailand

Iain Craig

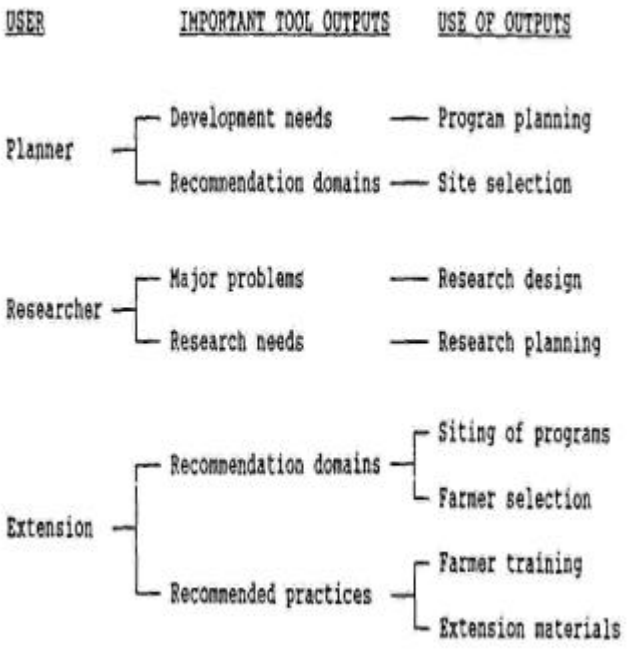
· Introduction

There is a growing interest throughout the world in simple, systematic and innovative techniques designed to acquire, analyse and effectively utilise information in rural development programs. These techniques or 'tools' differ markedly from conventional approaches, which are largely characterised by a lack of flexibility, a concentration upon the collection of quantitative data and their inability to respond to the real needs of rural people.

Most of these new, innovative techniques have been developed by practically-oriented academic groups, following Farming Systems Research, Agroecosystem Analysis or Rapid Rural Appraisal approaches. However, their adoption by national development programs has been slow, mainly because potential users tend to view them as mutually exclusive approaches, rather than as a collection of component tools that can be assembled for a particular purpose. Many of the tools also require simplification if they are to become widely used, the challenge is to accomplish this while still maintaining adequate scientific rigour.

The NERAD Project, in association with Thailand's regional Universities, has been addressing these issues by reviewing, analysing and simplifying the individual techniques, and documenting them as 'tools' by means of user-oriented handbooks. The handbooks have the common objective of assisting staff and officials of rural development programs to choose suitable tools according to their specific needs and available resources. By this means, it is hoped that workers with little or no previous experience, will be able to assemble the most appropriate 'user- tailored package' and utilise the tools rapidly and effectively.

This report describes NERAD's attempt to do this for 'Sustainability Analysis', one of the first tools to be documented as a handbook in both Thai and English. The article is intended merely as a general summary of the major lessons learned, and more details and specific guidelines for using the technique can be found in the handbook, copies of which are available from the NERAD Project Director.



Source: RRA Notes (1988), Issue 3, pp.15–18, IIED London

· Practical application

Sustainability Analysis was one of the 16 tools reviewed, simplified and documented as a handbook by the recent workshop held for this purpose in Korat, Thailand (See RRA Notes No 1, June 1988). The completed handbook has now been used by NERAD for training participants in the Project's technical review workshops, before they use the tool to analyse the results of trial technologies implemented by the Project.

In the first of these workshops, which covered integrated water-resource development and utilisation, participants received training in Sustainability Analysis techniques on the first morning, and then broke into sub-groups to use the tool. Half a day was allocated for the analysis of each technology, and although progress was slow at first, skills improved rapidly as experience was gained, and a total of ten technologies listed below were analysed by the end 0f the workshop.

Group 1: Groundwater

Shallow wells
Modified well

Group 2: Fish Production

Fish in paddy
Village fishery
Village school fish ponds

Group 3: Construction

Diversion weirs
Embankments
Swamp rehabilitation

Group 4: Integrated Use

Family water-use
Communal use

The outputs from the analyses are now being used as guidelines for the production of extension handbooks. These will contain recommended implementation-practices, recommendation domains and future research and development requirements for each technology, and will be published and distributed to the relevant line- agencies for use in their regular work in the future. As an example of the type of outputs obtained, a summary for the technology of raising fish in the rice paddy, is presented in the following table.

Source: RRA Notes (1988), Issue 3, pp.15–18, IIED London

Implementation stage	Key problems emerging	Key solutions identified
Choice of site:	- lack of security - poor water control - prone to flooding	- site close to house ❖ modified shallow well - mid-elevation paddy
Farmer training:	- construction delayed - farmers unwilling to dig trenches/ponds - lack of knowledge on fingerling sources	- closer supervision - farmer to farmer study-tours - media broadcasts ❖ local fish spawning by farm
Preparation of materials:	- netting/construction too expensive	- loans for farmers
Fish release:	- lack of water - lack of fish feed - effect of fish on rice and vice versa	❖ modified shallow well - nursery ponds deeper ❖ use farm by-products ❖ study of rice/fish ecology needed ❖ change fish species
Marketing:	- lack of local markets	- farmer marketing groups

❖ Denotes a potentially promising but untested solution, that warrants a high research priority

· Conc1usions

Sustainability Analysis has proved useful to NERAD for a number of reasons. First, it is simple and inexpensive to use and can be applied to analyse any type of technology. Secondly, it is not threatening to either research or extension personnel, and thus promotes a frank and honest analysis. Finally, its effectiveness can be significantly enhanced by using it in conjunction with other tools, in particular: On-Farm and Multi- location Trials, Topical Agroecosystem Zoning, Triage and Farmer Classification.

Sustainability Analysis undoubtedly still has many potential uses that have not yet been tested, and further applications of the technique should therefore be encouraged. Use of the tool in Thailand has demonstrated the generally poor level of understanding of the system properties of productivity, stability, equitability and sustainability, and promoting a wider acceptance of these as important measures of system performance, will enhance the utility of the tool. Perhaps the most pressing development need for Sustainability Analysis is to find a more appropriate name for it. This is by no means a pedantic requirement, as the purpose of the tool is often perceived as assessing only the key sustainability properties of the system, and as a consequence, it has been significantly under-utilised.

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For further information or copies of these reports please contact Iain Craig.

Source: RRA Notes (1988), Issue 3, pp.15–18, IIED London

4

On oral history and local calendars: experiences in the field in Papua New Guinea

Robin Mearns

· Local calendars and nutritional studies

Anthropometric means of assessing nutritional status among children are often criticised for comparing unlike with unlike. Jelliffe's standard tables, for example, are scarcely valid if you are comparing the nutritional status of school aged children in the Highlands of Papua New Guinea, whose diets are typically deficient in protein, with that of children of a similar age in Europe or North America. However, anthropometric techniques, relying on measurements of a child's height-for-age or weight-for-age, provide a useful means for comparing the nutritional status of two sample groups of children within the same overall population. Measuring height and weight in the field presents few problems other than logistical ones. Telling someone's age however, can be a whole new ball game.

In many parts of the Southern Highlands in Papua New Guinea, there are only very incomplete written records of the birth dates of children older than six or seven years. For those children at school, the school register does include a column for age or year of birth. You only notice the problem when a first-year schoolchild, aged seven, stands before you with a healthy stubble on his chin. Naturally, if he is in Grade One at school, it stands to reason that he is seven years old. For children not at school, you do not even have the school register guesstimate to go on.

Constructing a local calendar is a good way of overcoming the problem of putting ages to people. The oral record of important local events is often very accurate and widely known. For example, I was able to match the ages of some people to the date the local airstrip was built, in 1961, an event which heralded great change in the area. Their parents' ages you could sometimes judge by the dates of the 'first contact' patrols to pass through these remote parts of New Guinea, in this case during the 1930s. Once a range of reference ages had been set in this way, you could ask mothers whether their second-born was born before or after another woman's child known to her, and of known age, and so on. Laborious work perhaps, but fascinating as well as fruitful in the end.

· Oral history

Oral history is an engrossing subject in itself. In one area where I worked, Upper Mendi in the Southern Highlands, a number of old men I spoke to remembered very clearly the first contacts they had with white outsiders. Kumape of Egari village and Pondo of Komia village remembered them best. There were three very distinct events which had made a very deep impression on them. Two of these were Australian patrols during the 1930s, one administrative, and an earlier one by gold prospectors. I spoke to several people in different villages about these, and tried as far as possible to match their recollections to the reports of the patrol officers and the script of a radio interview given by one of the prospectors. Suffice to say there was a mismatch. Perhaps the latter's story was censored for Australian radio, though I doubt it.

The 'third time', so the old men's stories go, was during the Second World War when a number of fighter planes flew over Upper Mendi travelling from Wewak on the north

Source: RRA Notes (1988), Issue 3, pp.19–20, IIED London

coast towards Port Moresby on the south coast. The noise of the aircraft was at first baffling. Everyone looked around on the ground to see where it was coming from. The eventual sight of many, planes stacked in the sky proved to be unforgettable; the men took great delight in demonstrating with their hands what it looked like.

Finally, oral history serves at least two additional purposes for the fieldworker. Not only can it be used for dating and putting ages to people, as mentioned above for nutritional studies, and as I also found in trying to put a timescale on local vegetation change, but it is also an excellent way to break the ice with people, where you may want to discuss many other things more directly related to 'development research'. While I was researching access to land through clan linkages, land disputes and vegetation change, getting people to tell me their stories made a refreshing change when we got bored with these matters!

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Source: RRA Notes (1988), Issue 3, pp.19–20, IIED London

5

Portraits and stories

Jules Pretty

Introduction

The notion of using stories recounted by people met in the field as an important source of information described by Robin Mearns above was also explored in a recent zoning exercise conducted in North West Pakistan. The Malakand Fruit and Vegetable Development Project conducted a Rapid Agroecosystem Zoning (RAZ) of Alpuri Sub-Division, with the principal objective of producing strategies for the future development of the region. There were 4 major principles to the RAZ: local people helped to define the zones; the information was gathered by a multi-disciplinary team working in the field; the process involved several iterative phases of progressive filtering of information, joint workshop analysis and focussing on insights; and finally the zonal boundaries and strategies produced will always be subject to change in the light of information generated in the future.

Amongst the techniques used were portraits and stories, which are short, colourful descriptions of situations encountered by an RRA team in the field or stories recounted by people met there. They describe information that is difficult to incorporate into diagrams, help to bring to life the conditions of rural people, and in particular draw attention to how rural people perceive problems and opportunities.

- A farmer from Besham-Karora valley with 2 wives and 19 children. When asked, he himself had to ask a son the number of girls. Only the boys went to school: there is no local girls school. He owns 60 kanals (3 ha) of mostly irrigated land; producing mainly rice, but some maize and wheat. Until 10 years ago his mother cultivated vegetables and worked in the field, but stopped due to old age. She complained that the young generation were not interested in working in the field and her skills were being wasted. Neither wife was interested - "why should they work in the fields if they can buy vegetables in the bazaar?" Since the forest were felled 15-20 years ago, the farmer believes that there is currently less rainfall and more soil erosion.

- A farmer and his elderly father by the Indus described the impact of the building of the Karakhoram Highway, completed in 1974. The forests were rapidly depleted by local people, determined to maximise revenue. The hillsides are now almost empty, save for a few Acacia, and pine at higher elevations. The forests used to contain leopard, bears and jackals. But porcupine is still a serious pest, regularly damaging maize. These are located in their holes by trained dogs, and then shot on emergence. In the Shang area about 10 were shot last year.

- We met an orchard grower in Shahpur who felt that orchards were profitable, but there still remained an obligation to supply fruit to family, friends and neighbours free of charge. There was some evidence of pests and diseases, but as no extension officer has ever visited him, he does not take any precautionary plant protection measures.

- We visited one farmer close to the top of Kandao pass, at about 7000 ft, and asked about his major problems - they were stability of fruit production, pests on maize, and fuelwood. We asked about all

Source: RRA Notes (1988), Issue 3, pp.21–22, IIED London

the nearby pine, did he not use this for wood? He said no, even though all those nearby belonged to him. He had first to receive written permission from the forest department before he could cut his own trees. So he walked long distances up into the hills, well away from the road, to chop pine. Unusually for the area, he was also growing poplar on field boundaries for fuelwood.

- A farmer with 2 acres in Martung, 1 under wheat followed by maize and the other under rice, had recently planted 6 fruit trees near his house, consisting of apple, apricot and plum. They were purchased as seedlings in Mingora and are flourishing. Over the past three years he has planted 20 trees. Some time back a commercial nursery brought about 500 fruit tree seedlings to Martung but they were too dry and died. So the farmer went to Mingora to buy his plants. He first began to appreciate fruits during his visit to Mingora when he saw them in the shops.

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Source: RRA Notes (1988), Issue 3, pp.21–22, IIED London