# Principles and Practical Implementation of Farming Systems Research and Farmer Participatory Research

## Including Vulindlela District and Sobantu Village Case studies

Materials developed during courses given as part of the project "Support to the Institute of Natural Resources for Institutional Development in South Africa".

DFID Department for International Development

INR

Natural Resources Institute

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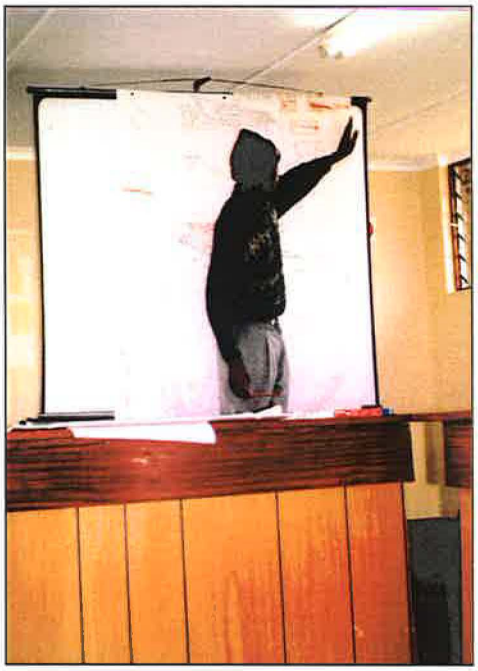
Young women in Vulindlela District collect water from an unprotected spring.

PRA team on transect walk with farmers in Vulindlela District.

Community groups display their map and their analysis of local problems developed using PRA methods.

Group of men and women from a community in Vulindlela District present a ranked set of community priorities.

A lively dialogue precedes the drawing of a community map of Sobantu town by local inhabitants.



The artist describes the map to fellow members of Sobantu community.

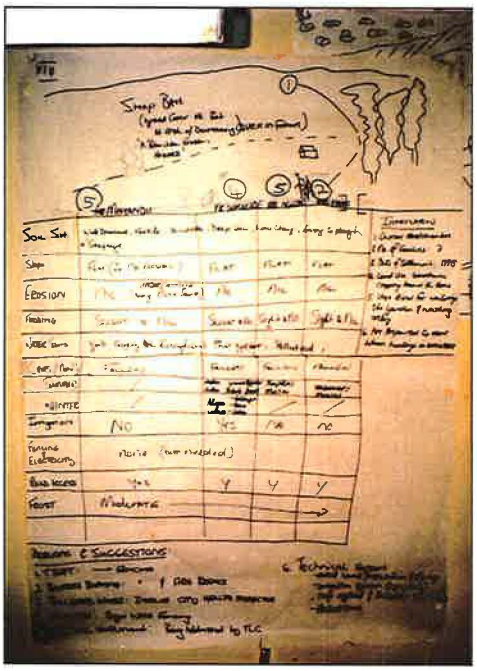


Diagram from a transect walk of potential urban vegetable gardens in Sobantu.

A mixed meeting of local interest groups and external institutions discusses action plans using PRA and workshopping techniques.

## LIST OF ACRONYMS

| | |
|---|---|
| ACAT | Africa Coop Action Trust |
| AFSR(E) | Association for Farming Systems Research and Extension |
| ARC | Agricultural Research Council |
| CBO | Community Bbased Organisation |
| CDR | Complex, Diverse and Risk prone |
| CGIAR | Consultative Group for International Agricultural Research |
| CORDEP | Community Oriented Development Project |
| DFID | Department of International Development (UK) |
| FPR | Farmer Participatory Research |
| FSR | Farming Sytems Research |
| IIED | International Institute for Environment and Development |
| INR | Institute of Natural Resources (Pietermaritzburg, South Africa) |
| IRDP | Integrated Rural Development Programme |
| IT | Intermediate Technology |
| KTT | KwaZulu-Natal Training Trust. |
| KZN | KwaZulu-Natal |
| LEISA | Low external input sustainable agriculture |
| MoA | Ministry of Agriculture |
| NARS | National Agricultural Research System |
| NGO | Non Governmental Organisation |
| NPB | Natal Parks Board |
| NRI | Natural Resources Institute (University of Greenwich, UK) |
| PRA | Participatory Rural Appraisal |
| PTD | Participatory Technology Development |
| R & D | Research and Development |
| RCBD | Randomised Complete Block Design |
| RRA | Rapid Rural Appraisal |
| SASA | South Africa Sugar Association |
| SSA | Sub Saharan Africa |
| T and V | Training and Visit |
| UoN | University of Natal |

## ACKNOWLEDGEMENTS

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The excellent organisation and logistical support provided by the Institute of Natural Resources is acknowledged, particularly that of Professor John Erskine, B. J. Njokwe, Hugh Hastings, Tom Mackenzie, Goodness Ngcobo and Rachel Barnard.

The fieldwork during the training course was made possible through the kind co-operation of community members of Vulindlela District, who gave freely of their time and knowledge.

Much of the material presented here is a result of discussion and hard work by the course participants, whose names appear in Appendix Two.

The successful implementation of the Sobantu workshop was due to the initiative and organisation of the Agricultural Co-operative Committee and members, and the participation of Sobantu residents.

# SUMMARY

## Background

This publication integrates theory and practical work arising from courses in Farming Systems and Farmer Participatory Research held at the Institute of Natural Resources and associated institutions in KwaZulu-Natal during 1996 and 1997. The courses were conducted as part of a project supported by the UK Government's Department for International Development and managed by the UK Natural Resources Institute (NRI).

### Objectives of this publication

- To provide reference material in Farming Systems and Farmer Participatory Research for interested audiences in KwaZulu-Natal and elsewhere.
- By integrating theory and practice, to demonstrate how the principles, approaches and methods of FSR/FPR can be applied to real situations.
- To record the situation, suggestions and priorities of rural and peri-urban families in Vulindlela District, as recorded by course participants.
- To provide a springboard of information for further development initiatives in Vulindlela and elsewhere in KwaZulu-Natal.
- To present the Urban Agriculture workshop held in Sobantu Village as a case study of participatory workshop methods.

### Participants

Participants in the course were from the following institutions:

Institute of Natural Resources

KZN Department of Agriculture

Agricultural Research Council of South Africa

Natal Parks Board

University of Natal

South Africa Sugar Association

Africa Co-operative Action Trust

KZN Training Trust

Participants in the Sobantu Urban Agriculture workshop were interest groups from Sobantu Village, INR, DoA and NRI

External course consultants were from the Natural Resources Institute (UK).

## Outline

The materials reported here cover the following:

a) The concepts, characteristics and development of Farming Systems Research/Extension and Farmer Participatory Research approaches and methods

b) Analysis of the present organisations for agricultural research and development in KwaZulu-Natal, and the implications of adopting FSR/FPR approaches in these institutions

c) Methods used, and results of practical interaction with the communities of three selected sub-wards of Vulindlela District in order to apply classroom theory, carry out farming systems analysis, identify constraints to agricultural productivity and explore possibilities for participatory research and development

d) Report on a workshop held with the Sobantu community, INR and Department of Agriculture staff, to identify organisational, social, technical and financial issues and the processes and activities necessary to initiate an urban agriculture project.

These activities have been integrated in the account that follows so that the field practicals become examples of how to **apply** the principles, approaches, tools and methods of FSR/FPR to real situations with rural/peri-urban communities.

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# 1. INTRODUCTION

## Background

The project "Support to the Institute of Natural Resources for Institutional Development in South Africa" is part of a wider programme of DfID bilateral support for strengthening the capability of South African institutions to carry out effective research and development programmes to benefit disadvantaged communities in South Africa.

The project purpose is to "*Develop skills and institutional capacity of INR in order to meet the agricultural, environmental and technology development needs of local rural and peri-urban communities.*"

Project outputs relevant to the course materials given in this publication are:-

1. *INR and associated institutions staff trained in needs assessment and PRA methodologies appropriate to South Africa, using the Indonsa community in Vulindlela as a practical case study;*

2. *INR and associated institutions staff trained in methods of studying local knowledge, attitudes, technical practices and NR management and utilisation;*

3. *INR and associated institutions staff trained in methods of understanding local socio-economic and political context;*

4. *INR and associated institutions staff trained in analysis and integration of gender issues into the rural/peri-urban development programme;*

5. *INR capability in farming systems research strengthened.*

The courses described in this publication were conducted during September/October 1996 and April 1997. The Sobantu workshop was held in June 1998.

## Objectives of this publication

- Provide reference material in Farming Systems and Farmer Participatory Research for interested audiences in KwaZulu-Natal and elsewhere.

- By integrating theory and practice, demonstrate how the principles, approaches and methods of FSR/FPR can be applied to real situations.

- Record the situation, suggestions and priorities of rural and peri-urban families in Vulindlela District, as recorded by course participants.

- Provide a springboard of information for further development initiatives in Vulindlela and elsewhere in KwaZulu-Natal.

**This publication does not pretend to be a comprehensive treatment of Farming Systems or Farmer Participatory Research. Rather it hopes to introduce the main principles of these approaches, and use case studies to illustrate their application.**

# 2. AIMS AND EXPECTATIONS OF THE TRAINING

## Overall objective

The overall objective of the course was to raise the capacity of the Institute of Natural Resources and other research and development institutions in KwaZulu-Natal to use farming systems and farmer participatory research approaches.

## Specific objectives

The specific objectives of the courses given in 1996/7 were to provide an understanding of:

(a) the concepts, approaches and methods of farming systems and farmer participatory research.

(b) the institutional implications of these approaches.

(c) methods for practical interaction with rural and peri-urban communities, aimed at exploring the social context, systems and technologies that can be used by households to improve the productivity of small-scale farming (part-time/sideline as well as full-time).

## Course participants perception of the aims of the course at the start

A brainstorming session was held at the start of the course to determine what participants felt they would gain from it. The overall perceived aim was to improve standards of living amongst rural communities. Table 2.1 shows the specific anticipated outcomes.

## Definition of key concepts by participants at start of course

In order to make relevant the direction and content of the course, the first step was to explore participants' understanding of the key concepts. Participants were asked to write single words or short phrases that they associated with these onto cards. The cards were then stuck randomly onto the white board and arranged into clusters (Table 2.2). They therefore represent the participants' view of these concepts at the *start* of the course.

## Table 2.1 Participants expectations

| NETWORKING | CONCEPTS AND METHODS | PRACTICAL TOOLS AND METHODS | INSTITUTIONAL |
|---|---|---|---|
| • How to build linkages; FSR/Extension/Farmer<br>• Useful interaction/contacts<br>• To network with Farming Systems people<br>• Networking<br>• Contact with others in like work<br>• To link training and research | • FSR methodology<br>• What is FSR<br>• Concept definitions<br>• FSR/FPR; How to engage and disengage<br>• Understanding participation in farming<br>• FS for small farmers - a better understanding of farmer's needs<br>• Difference between FSR and FPR<br>• Understanding of methodology<br>• In-depth definitions<br>• Understanding of FPR<br>• Theory on FSR<br>• Theory and methods of PRA | • Effective techniques and skills for agric./rural development<br>• Knowledge in regard to problem solving in small-scale farming<br>• Communicate effectively with other people<br>• Skills development in planning, evaluation, communication, FSR, FPR, community development<br>• Practical aspects<br>• FSR and PRA in practice<br>• Ability to use skills<br>• How to practice sustainable agric. with rural farmers<br>• Approaches and methods of FSR<br>• New tools for development<br>• How to involve new practices in our work<br>• How to transfer highly technical knowledge to largely uneducated people | • How to institutionalise FSR/FPR approaches<br><br>**OTHER**<br>• Relevant extension programmes<br>• Development of small scale farming<br>• Gaining information on farming methods<br>• Identification of FS in KwaZulu-Natal<br>• Improve the economy; Research on marketing agricultural products<br>• Assist community with knowledge learnt from the course<br>• Build confidence<br>• Meaningful training<br>• Learn from international experiences |

## Table 2.2 Participants definition of key concepts

### A. "Farming systems research"

| TECHNOLOGY DEVELOPMENT | IMPROVED METHODS | PROCESS | OTHER |
|---|---|---|---|
| • Establishing ways of farming in a particular farm<br>• Improved farming methods<br>• Experiment/development of new technology<br>• New technology (information)<br>• Using farming methods for improvements<br>• Finding out new methods of doing things<br>• Appropriate technology<br>• Discovery of new ways<br>• Developing applicable technologies<br>• Better farming systems<br>• Solving of problems | • New approach to agriculture<br>• Implementation of new ways of farming<br>• Economics: Minimum inputs for maximum outputs<br>• To find way of better service<br>• Improve problem solving | • Analysing farmer methods<br>• Asking people what about their needs<br>• New ideas, but whose?<br>• Participate<br>• Finding ways of improving existing farming methods<br>• Combining old and new skills of farming<br>• To find the answer to a problem<br>• To find out what people know<br>• Assess sustainability<br>• Understand<br>• Suggest<br>• Compare statistically<br>• Evaluate according to performance<br>• Assess in terms of (and with) farmer requirements<br>• Method of getting hidden knowledge about a particular aspect<br>• To find if the correct idea and information was given through FS<br>• By conducting farmers field days<br>• Introduce and interpret new practices (crops, techniques etc.)<br>To involve, to demonstrate, to convince farmers | • Adaptive research<br>• Basic research: proven positive results<br>• Technology transfer; understanding<br>• Appropriate technology transfer |

**B. "farming system".**

- Extensive or intensive system
- Subsistence farmers, small scale farmers and possibilities for improvement
- Ways of farming
- Planning, budgeting and managerial skills
- The total of farming methods used by person or group of people rather than particular aspects.

**C. "participatory research"**

- Researcher, extension officer and farmer working at grassroots level
- Researching the ways of farming
- Research involving farmers to reach viable and useful solutions: on-farm with farmers own stock. Farmers appreciate what is happening and why.
- Deciding with the farmers what needs to be done and how.

**D. "participation"**

- Responsibility, Expectation, Commitment
- Involvement, Stakeholders, Sharing, Partnership, Democratic
- Learning, Trust, Communication, Co-operation, Listening, Contribution, Friendship
- Bottom-up
- Active, Management, Motivation/planning

**E. "modern agriculture"**

- Old ideas/new situation
- Mechanisation
- Scientific, high tech., Specialisation
- Profit at expense of sustainability
- High input/High output, Fossil fuel dependent, Use of chemicals, Capital intensive
- Capping of pollution, Environmental degradation, Dumping
- Simplified farming systems, Monoculture, Less risk
- Fighting nature
- BMW/Mercedes
- Economic/ Over production
- More job opportunities/Less job opportunities
- Less erosion/More erosion

## F. "sustainability"

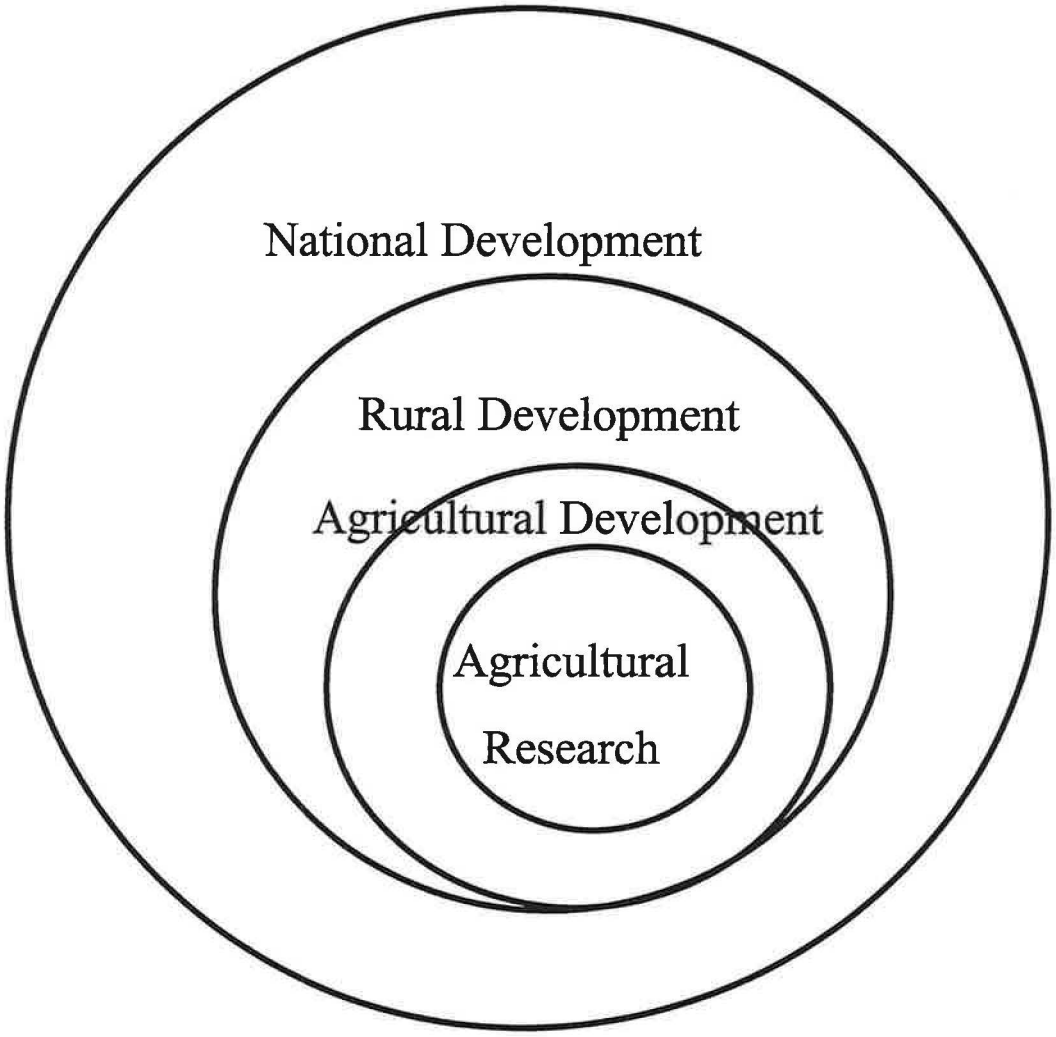
- Resource conservation, Ecologically sound
- Re-cycling, Non-degrading, Environmentally friendly
- Bio-diversity
- Surviving over time, perpetual/on-going
- Holistic approach, Initiative, Effective
- Capable of generating profits, Financially rewarding, Economically viable
- Meeting needs not wants
- Family building / socially viable
- Long term benefits
- Balanced lifestyle, Unselfish
- Practically achievable
- Common understanding
- Scientific and Indigenous knowledge

# 3. THE DEVELOPMENT OF AGRICULTURAL RESEARCH FROM COLONIAL TIMES TO THE PRESENT

## The Development Context

Agricultural research does not happen in isolation. It is part of a Regional and National effort to promote development in order to improve local and national economies and standards of living. This context is represented diagrammatically in Figure 3.1.

**Figure 3.1: The context within which agricultural research operates**




## The development of agriculture in Africa from the colonial period

**Colonial Period (to early 1960s);** during this period farming was characterised by:

- Focus on primary commodities for export (tobacco, sugar, coffee, cocoa, tea, sisal, oil palm, etc.)
- Focus on estate/plantation production
- Large scale
- Support by colonial Government
- Service by specialised research institutes

**Post-Independence (1960s and early 1970s)** saw the acceptance of "developed" country agriculture. The main features of this were:

- Scientific/reductionist approach
- The "control of nature", through use of chemical inputs, irrigation
- High input/High output
- Monocropping
- Economies of scale
- Mechanisation
- Resources (land, labour, capital) provided according to need
- Focus on productivity
- Development and use of new varieties

During the mid 1960s, fear of global food insecurity and the desire of newly independent States to be more food self-sufficient led to a change in focus from primary commodities to food staples.

To support these efforts the CGIAR (Consultative Group for International Agricultural Research) was established, which now include:

| | | |
|---|---|---|
| **IITA** - International Institute for Tropical Agriculture, Ibadan, Nigeria | **ICRISAT** - International Centre for Research in Semi-Arid Tropics, Hyderabad, India | **ICARDA** - International Centre for Agricultural Research in Dry Areas, Aleppo, Syria |
| **IBPGR** - International Bureau for Plant Genetic Resources, Rome, Italy | **IRRI** - International Rice Research, Los Baños, Philippines | **ICRAF** - International Centre for Research into Agro-forestry, Nairobi, Kenya |
| **ICIPE** - International Centre for Insect Pest Ecology, Nairobi, Kenya. | **CIP** - International Potato Centre, Lima, Peru. | **CIMMYT** - International Centre for the Improvement of Maize and Wheat, Mexico |
| **ICLARM** - International Centre for Living Aquatic Resources Management. | **ISNAR** - International Service for National Agricultural Research, The Hague, Netherlands. | **CIAT** - International Centre for Tropical Agriculture, Cali, Colombia. |
| **IFPRI** - International Food Policy Research Institute, Washington, US. | **ILRI** - International Livestock Research Institute, Nairobi | **IIMI**- International Irrigation Management Institute, Colombo, Sri Lanka. |

## Green revolution

The Green Revolution made new varieties of food crops available to developing country farmers in association with "packages" of recommendations on their cultivation and (usually) credit or subsidy schemes to enable farmers to follow the recommended practices.

In many areas productivity increased enormously (especially for rice, wheat and maize) and this success established the "transfer of technology" approach, still widely promoted today.

## Limitations of the Green Revolution

In many situations, however, it proved difficult to replicate the green revolution successes. Productivity increases were not obtained. Farmers did not adopt recommended practices. Initially there was a tendency to believe that the farmers were the problem, but other explanations emerged. One of these was that the green revolution packages were not appropriate for situations characterised by complexity, diversity and risk.

## The 1970s; exciting developments in agricultural research and development

During the 1970's there was a realisation that adoption of technologies was low for some categories of farming households. Responses to this were:

- Questioning of conventional research
- Questioning of the transfer of technology model
- Top-down v Bottom-up debate
- Increased involvement of social sciences in agricultural research
- Development of "Cropping Systems"
- Development of Sondeos and Samuhik Brahmin (types of rapid rural appraisal)
- Development of early Farming Systems Research
- Development of RRA and FPR methods

The CGIAR centres were influential in these changes.

The period was also characterised by a focus on strengthening of the National Agricultural Research Systems (NARS), and major public investment projects (such as the Integrated Rural Development Projects).

## The 1980's;

By the mid-1980s there was:

- A cadre of researchers spending much of their time on-farm
- Initial recognition by the researcher that the farmer had something to offer, and that he/she need not simply be the receiver of wisdom, but had his/her own wisdom
- Recognition of the value of local knowledge, especially in CDR conditions. This acknowledgement led to the development of participatory methods
- Far greater understanding of farmer realities

Contact between researchers and farmers gradually led to a crucial change in their relationship. However, the changes had limited impact because:

- Interventions were still based on packages, with the principal objective of improving productivity
- Packages took a long time to develop and were not widely adopted

There was disappointment on the part of donors (e.g. USAID), who had hoped FSR would do for complex systems what green revolution had done for simple systems

**During the 1990s there were further developments of FSR and FPR, as follows:**

- FSR changes to a problem-solving approach (e.g. watershed management)
- Action research evolves
- Participatory Rural Appraisal (PRA) develops
- Participatory Technology Development (PTD) evolves
- Focus on combination of local knowledge and external knowledge
- Focus on action-oriented, problem-specific research to address locally identified (location specific) concerns or opportunities.
- Focus on community development, rather than regional or national policy targets (e.g. food self-sufficiency/export earnings)
- Empowerment - of individuals and communities to identify and implement their own priorities and development agenda.

**Figure 3.2 "Time Line" showing evolution of FSR and FPR approaches**

| TIME | RESEARCH & EXTENSION METHODS | LEVELS OF PARTICIPATION | INSTITUTIONAL ROLES | WIDER ISSUES<br>DONOR POLICIES |
|---|---|---|---|---|
| 1970s | "Top Down" | Low | "CG" System started | Major Public Investment projects |
| | Transfer of technology, "one way flow" (research to farmers) | | Dominated by public sector | Subsidisation |
| | "Cropping Systems" | Involvement of social scientists | Focus on strengthening of NARS | Direct Government support for small farmers |
| | Sondeos / Samuhik Brahmin | | | IRDPs |
| | Early FSR | Contractual | Growing role of NGOs | Structural Adjustment |
| 1980s | RRA | Consultative | | |
| | On-farm trials | | Public sector cut backs | Basic Needs |
| | Move towards focus on problem solving<br>FPR | Collaborative | Privatisation | Self Help |
| | "Action Research" | Collegiate | | Community Development |
| 1990s | PRA | Empowering | | Democratisation<br>Good Governance<br>Decentralisation |
| | PTD | | Partnerships | Empowerment<br>Poverty elimination<br>Sustainable livelihoods. |

| | |
|---|---|
| CG | Consultative Group (for International Agricultural Research) |
| FPR | Farmer Participatory Research |
| FSR | Farming Systems Research |
| IRDP | Integrated Rural Development Project |
| NARS | National Agricultural Research System |
| PRA | Participatory Rural Appraisal |
| PTD | Participatory Technology Development |
| RRA | Rapid Rural Appraisal |

## The need for a new type of research for CDR situations

CDR (complex, diverse and risk-prone) has become a description of areas in which farming is characterised by some or all of the characteristics shown in the box below. Green revolution approaches are more suited to uniform conditions in which inputs are easily accessible and therefore have limited relevance to CDR situations.

**Complexity**

Farm enterprises include a wide range of activities and components which are interlinked.

**Diversity**

Environmental conditions (soils, slopes, climate) vary widely over short distances. Farmers access to resources also varies widely. Culture, gender, and wealth affect farming approaches.

**Risk**

Farms operate with high levels of risk:

- Physical - climatic variation, wind, drought, flood etc.
- Social - e.g. health, security

The "technical packages" promoted under the Green Revolution took little account of risks, assuming yields would be obtained. Little was understood about risk coping strategies - e.g. diversification, delayed decision making, off farm activities etc.

**Appropriate agricultural models.**

It became apparent that different types of agriculture were appropriate for different situations, as detailed by Table 3.3.

**Table 3.3. Three types of agriculture**

| | INDUSTRIAL | GREEN REV. | CDR** |
|---|---|---|---|
| Location | Industrialised countries | High potential areas in 3rd world | Rainfed areas (SSA) |
| Climate | Temperate | Tropical | Tropical |
| Farmer type | High capital | Large and small | Small, poor |
| External inputs | Very high | High | Low |
| Farming system | Simple | Simple | Complex |
| Diversity | Uniform | Uniform | Diverse |
| Production stability | Moderate risk | Moderate. risk | High risk |
| Production as proportion of potential | Very high | Near limit | Low |
| Priority | Reduce production | Maintain production | Raise production |

From: Chambers, R., Pacey, A. and Thrupp, L.A. 1989 Farmer First: Farmer Innovation and Agricultural Research. Intermediate Technology Publication, UK, London.

** CDR = Complex, Diverse and Risk-Prone

## Transfer of technology

Top-down modes of technology transfer were effective for Green Revolution and high external input types of agriculture. These were characterised by a **sequential methodology** as detailed below:

**Top-down transfer of technology**

⇓

Problem Identification (e.g. yields of maize too low)

⇓

Research to develop "package" (variety, management, inputs)

⇓

Extension of package to farmers (demonstrations)

⇓

Evaluation through assessment of adoption rates

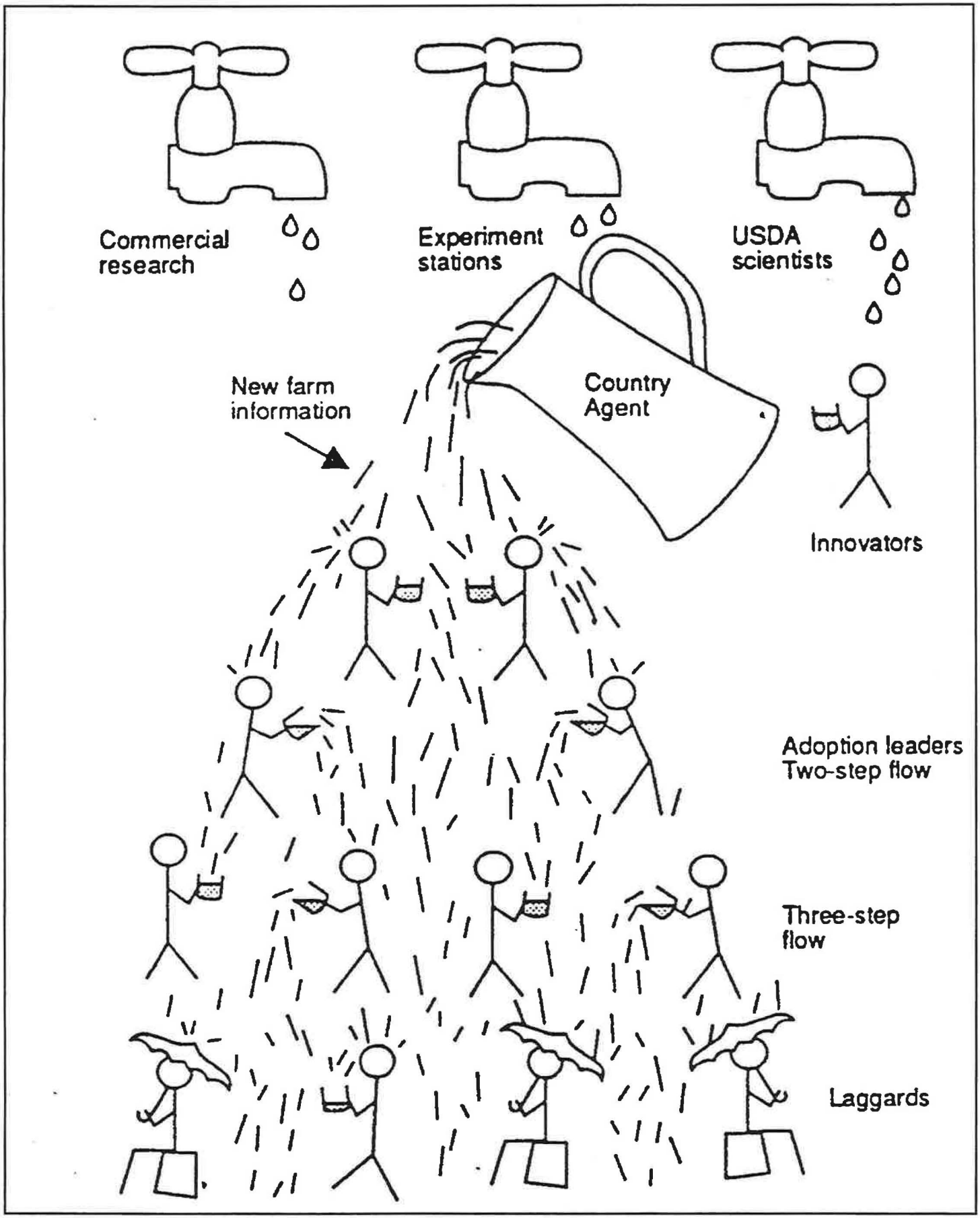



**Figure 3.4**

The "trickle-down process" by which new farm technology is diffused from scientists to farmers. The innovators often receive their new farm ideas directly from agricultural scientists. The farmer adoption leaders receive their new ideas from the country agent, and then, in turn, pass these new practices along to their neighbours and friends. Research studies indicate, however that the new ideas often do not trickle down all the way to the low-income laggards. And the new technical information may not be as accurate as when it was first passed along by the country agent.

**Key characteristics**

- developed by researchers
- monocrop
- fixed package
- based on physical factors only
- no account taken of variation in farmer circumstances

The "Trickle-down" model shown in Figure 3.4 was part of the theory behind top-down technology transfer. "Leader" or "master" farmers chosen by the extension services were supposed to demonstrate the benefits of new technology to their neighbours, who would then adopt them. As the diagram shows, many farmers resisted the new technology for one reason or another.

**The impact of top-down extension.**

The Training-and-Visit extension system adopted by the World Bank and, consequently, by many developing country national extension services was an example of a top-down extension methodology suited to green revolution conditions. The box below documents the lack of success of this methodology in different countries.

## The impact of training and visit extension in a range of contexts

- In Somalia, only one non-contact farmer adopted a high-input package for each contact farmer, a ratio much lower than the 10:1 expected; this was despite the fact that maize and sorghum yields were 40-45% greater on contact farmer fields.
- In Kerala, India, non-contact farmers have been found to have very little contact with contact farmers, preferring to consult a wide range of alternative information sources, such as newspapers and the mass media, and fellow farmers.
- In Andhra Pradesh, T and V was found to have had no effect on agricultural productivity.
- In West Bengal, Bihar, Maharashtra, and Tamil Nadu, all of which have had T and V for at least ten years, no causal connection was found between incremental investment in T and V and incremental changes in agricultural production.
- In Nepal, ten years of T and V in the Terai was found to have had no impact on wheat yields.
- In Bangladesh, T and V was not successful in achieving any positive changes in the orientation of extension towards local people, despite this being a major objective when introduced.
- In Indonesia, T and V made no impact on non-rice dryland crops.
- In Pakistan, T and V had no impact in Punjab province, focusing too little on increasing the relevance of technology for farmers.

**Sources: Antholt, 1992, using various World Bank evaluations; Axinn, 1988; Mullen, 1989; Chapman, 1988.**

A great number of innovations in farming practices have occurred without interference from outside agents. Braidwood (1967) refers to the "atmosphere of experimentation" which has characterised even the Neolithic farmer since the earliest stages of agriculture. One may call this "*indigenous technology development*".

Modern times have brought us institutes intended to specialise in parts of the agricultural technology development process such as research and extension. Innovations were to be developed at the research institutes, transferred to the farmers through the extension service, after which the farmers only had to adopt them. We refer to "*transfer-of-technology*" to indicate this model of technology development.

As a reaction to major problems with the latter, a third approach is gaining importance which again stresses the importance of farmers' role in technology development, only complemented by formal research: referred to as the "*participatory technology development*" approach, a generic term indicating a collection of methods and approaches. The main characteristics of these 3 technology development approaches may be summarised as follows:

| **Criteria** | **Indigenous Technology Development** | **Transfer -of-Technology** | **Participatory Technology Development** |
|---|---|---|---|
| Objectives | Secure living, risk reduction | Maximise yield | Farmers' agricultural. self management |
| Source of innovations | Farmers | Research organisations | Farmers complemented by research organisations |
| Nature of knowledge | Holistic | Particularistic | Creative tension between holistic and particularistic |
| Experimental approach | Largely unknown | Scientific procedures | Farmers methods complemented by simple scientific procedures |
| Channel of communicating knowledge | Farmer to farmer | Extension service | Multiple system; farmers, NGO, extension service, etc. |
| Process of communication | Informal, horizontal | Formal, vertical, top-down | Semi-formal |
| Role of farmers | Generator of knowledge, communicator, user | Receiver and adopter | Generator, communicator, evaluator of outside ideas, user |
| Role of field staff | None | Teacher, control compliance with regulations | Multiple: moderator, resource-person, co-researcher, teacher |

**Alternatives to top-down technology transfer**

A bottom-up approach, termed "Farmer First" by Chambers et al (1989), is seen as a viable alternative model for research and development, which is more appropriate for CDR situation. Table 3.4 compares the philosophy and mode of action of the two approaches.

**Table 3.4. Transfer-of-technology and farmer-first compared**

| | Transfer of Technology | Farmer First |
|---|---|---|
| **Main objective** | Transfer technology | Empower farmers |
| **Who analyses needs/priorities** | Outsiders | Farmers assisted by outsiders |
| **Primary R&D location** | Experimental station | Farmers' fields |
| **How transferred** | Precepts, messages package of practices | Principles, methods, basket of choices |
| **The "menu"** | Fixed | A la carte |
| **Farmer's behaviour** | Hear messages<br>Act on, adopt, adapt or reject | Use methods<br>Apply principles<br>Chose options |
| **Outsiders' aim** | Widespread adoption | Wider choice<br>Enhanced farmer capacity |
| **Mode of extension** | Agent to farmer | Farmer to farmer |
| **Role of extension agent** | Teacher/trainer | Facilitator |

Farmer First. Chambers et al, 1989 with modifications by Gibbon.

**Are experimental stations the best location for research for small farmer situations?**

In the preceding pages, we have seen how the circumstances of farmers vary between the comparatively uniform and accessible situations that saw the major advances in productivity of the Green Revolution, and the complex, diverse and risk-prone conditions of many small farmers. The research stations that had been set up to further the aims of colonial powers or national governments seeking national food self-sufficiency or export substitution, were usually sited on the best soils, and used husbandry practices that were unavailable to most small farmers. This resulted in wide discrepancy between conditions on experimental stations and on farmer's fields, and particularly the low-input situations of resource-poor farmers. These differences are shown in Table 3.5 and beg the question as to the suitability of developing technology on research stations for small farmer conditions.

**Table 3.5. Physical, social and economic conditions for research stations, resource-rich and resource-poor farms**

| Characteristic | Research station | Resource-rich farms | Resource-poor farms |
|---|---|---|---|
| Soils | Deep and fertile, few constraints | Few effective constraints | Shallow, infertile, often several constraints |
| Macro and micro nutrient deficiencies | Rare remedial | Occasional | Quite common |
| Plot size and nature | Large, square | Large | Small, irregular |
| Hazards | Nil or few | Few, usually controllable | More common - floods, droughts, etc. |
| Irrigation | Usually available | Usually available | Often non-existent |
| Size of management unit | Large, contiguous | Large or medium, contiguous | Small, often scattered and fragmented |
| Natural vegetation | Eliminated | Eliminated or highly controlled | Used or controlled at micro-level |
| Access to purchased inputs | Unlimited, reliable | High, reliable | Low, unreliable |
| Source of seed | Foundation stocks and breeders' seed of high quality | Purchased, high quality | Own seed |
| Access to credit when needed | Unlimited | Good access | Poor access; seasonal shortages of cash |
| Irrigation, where facilities exist | Fully controlled by research station | Controlled by farmers or by others on whom she can rely | Controlled by others, less reliable |
| Labour | Unlimited, no constraint | Hired, few constraints | Family, constraining at seasonal peaks |
| Prices | Irrelevant | Lower than for RPF for inputs. Higher than RPF for outputs | Higher than for RRF for inputs. Lower than RRF for outputs |
| Priority food prod. | Neutral | Low | High |
| Access to extension services | Good, but one sided | Good, almost all material designed for this category | Poor access, little relevant material |

Source: Chambers and Jiggins (1986), adapted from Chambers and Ghildyal (1985)

# 4. THE DEVELOPMENT OF FARMING SYSTEMS RESEARCH

As we have seen, there was a realisation from the 1970s onwards that the adoption of technologies was low for some categories of households, and especially for Complex, Diverse and Risk-prone situations.

***Farming Systems Research developed as a means of handling the complexity of these situations, and the interactions between the components (biological, economic and social) of the systems found there.***

The increased involvement of social scientists in agricultural research questioned:

- Conventional (on-station) research
- Productivity-driven research
- The "Transfer of Technology" model

Social and economic considerations were now considered vital to the understanding of farmers' circumstances[1], and in the evaluation of technologies for those circumstances. In the early days of FSR, the following were introduced into research practice:

- Development of rapid rural appraisals (Sondeos, Samuhik brahman)
- Understanding of farmer reality: e.g. diversity, risk and resources
- Descriptions of farming systems and diagnosis of research needs
- Farmer classification into recommendation domains (agro-ecological)
- Early on-farm trials to extend conditions under which technologies could be tested
- On-farm trials controlled and managed by researchers - usually with farmers' co-operation.

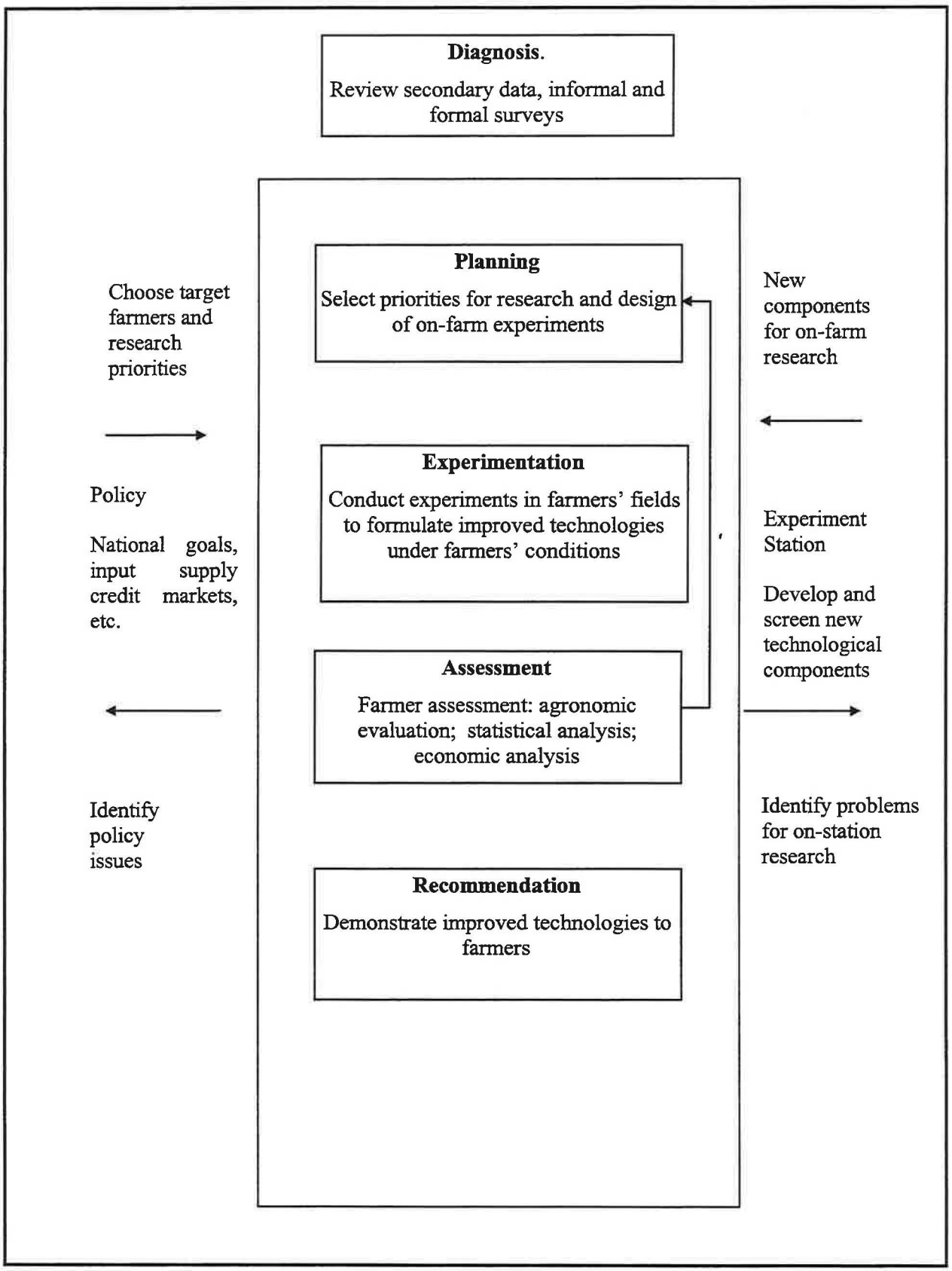
Figure 4.1 shows how Farming Systems Research was envisaged in the mid-1980s.

---

[1] Ison et al highlight two strands of systems approaches in natural resources research and development; farming systems research and systems learning -

'FSR acknowledges that both natural and socio-economic science are necessary to natural resource management, but has had limited success in synthesising them. Political and institutional analysis has also been neglected. .....The systems learning strand is increasingly apparent. It stresses the socially constructed nature of systems - systems is an approach rather than an objective entity that is the same to everyone. Each sees a resource through their own "coloured spectacles" which may seem irrelevant through someone else's. This awareness is important to guide participatory, people-centred R&D. So is capacity to engage in dialogue and build relationships because problems and solutions are formulated as a collaborative exercise specific to the socio-economic situation.' (Ison et al, 1996)

**Figure 4.1. The CIMMYT model of on-farm research. (Source: CIMMYT (1988))**



## Farming systems evolution

Initially the emphasis of research was on the interactions between the different crops in a system, and how altering one component might affect the others in terms of economic return, labour requirements, soil fertility, competition etc. Thus ***cropping systems research*** was a forerunner of ***farming systems research***. Figure 4.2 is an example of the interactions between crops and their physical environment.

Another term in use is ***commodity systems research***, which refers to research into all aspects of production and marketing of a particular commodity (which could be a crop, livestock or forestry product). Input supply, marketing and processing systems are included, together with the production aspects. Figure 4.3 shows the relationship between farming systems and commodity systems.

A more modern term used in the literature is ***livelihood systems.*** This refers to all aspects of a household's livelihood, whether on-farm or off-farm derived. It represents all activities carried out by all members of the farming family. (Refer to Chapter 9 Farming Systems Analysis)

## System scale

Interactions can be studied at various levels, some of which are given in the box below. Figures 4.4 to 4.8 that follow are examples of each scale.

**Sub-systems (e.g. soil sub-system) See Figure 4.4**

**Farm systems. See Figures 4.5 and 4.6**

**Community systems. See Figure 4.7**

**Regional/national systems. See Figure 4.8**

**Global system**

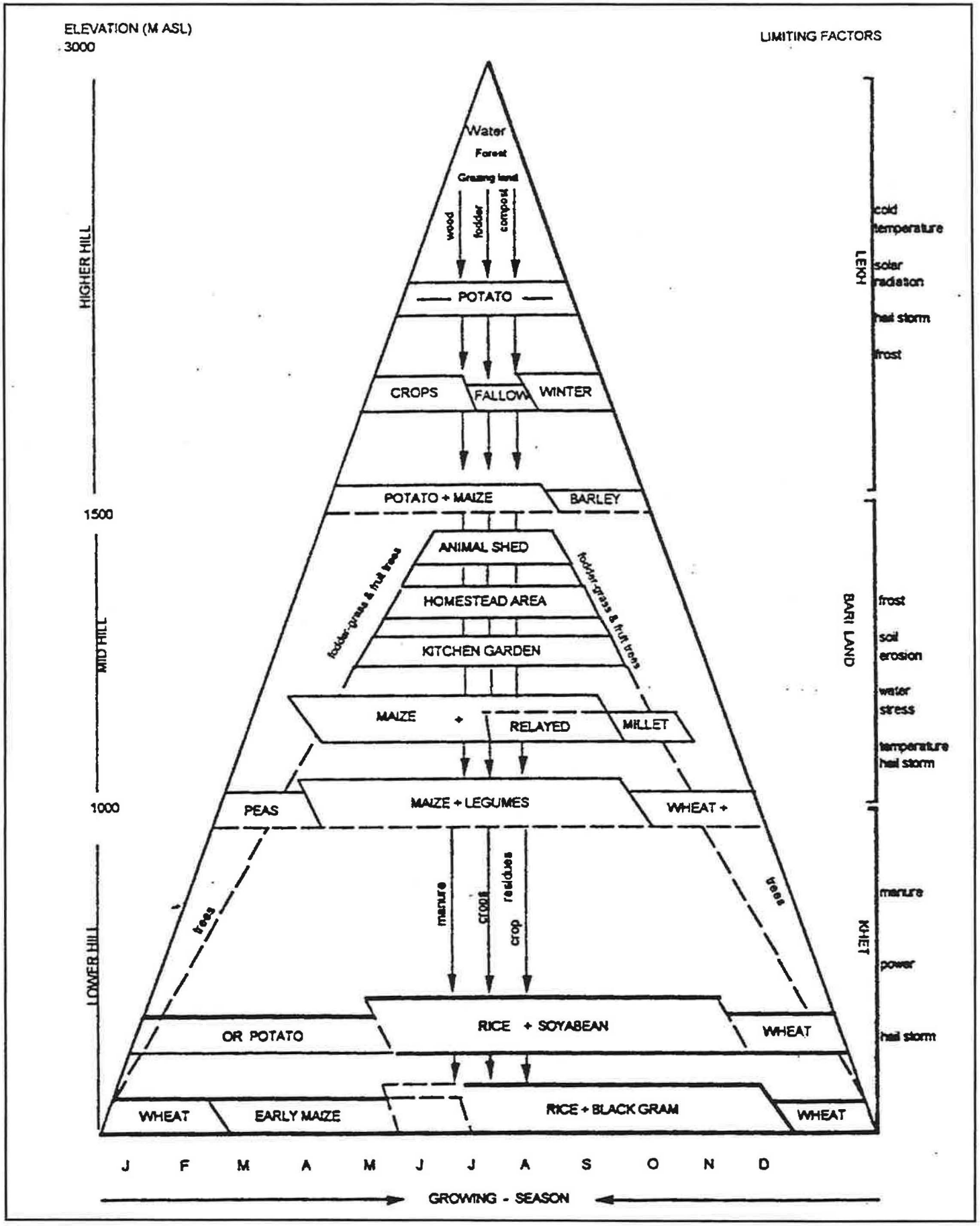



**Figure 4.2**. The pattern of cropping systems in the hills of Nepal resulting from an interaction between altitude and land type (Source: Sthapit, 1983)

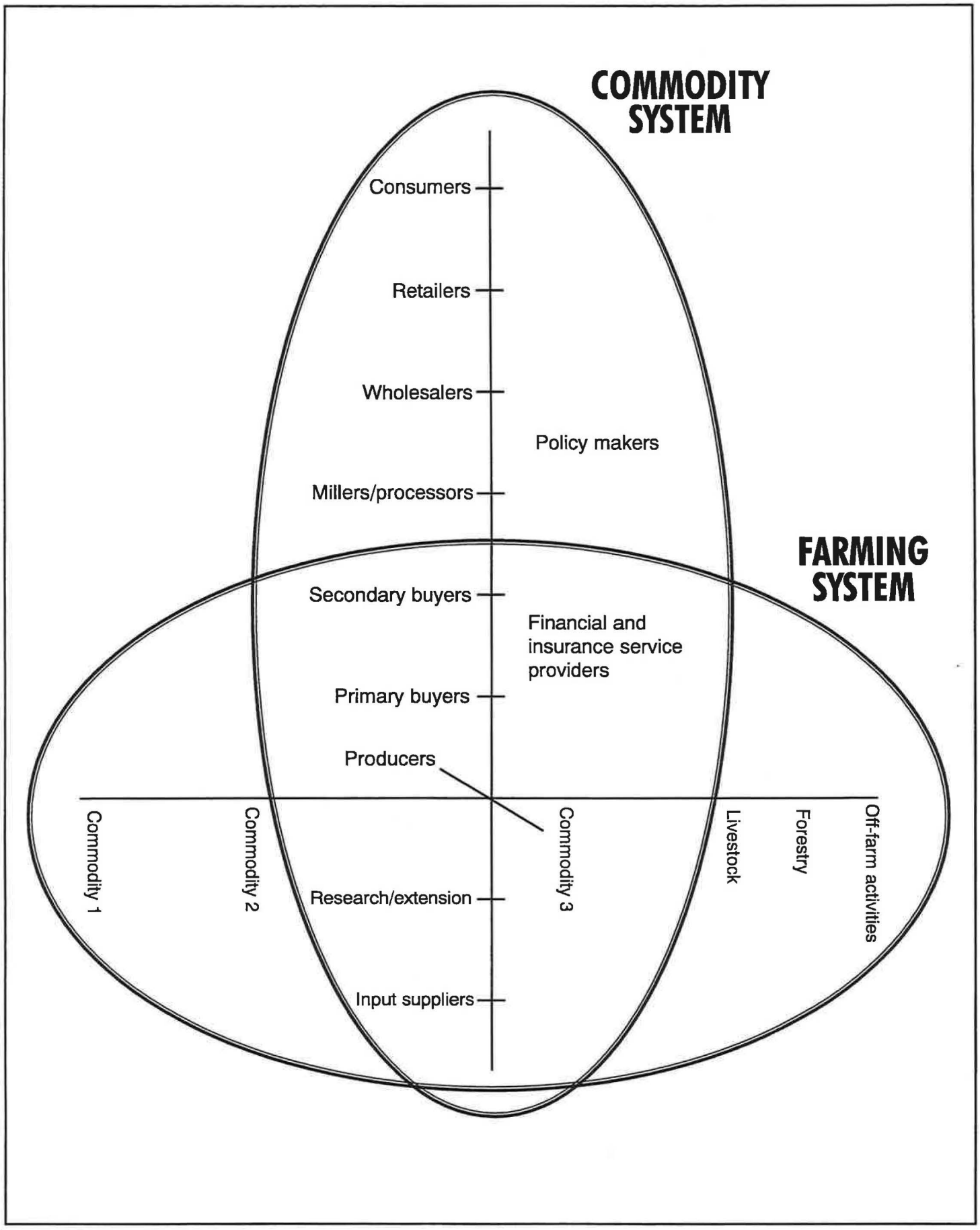
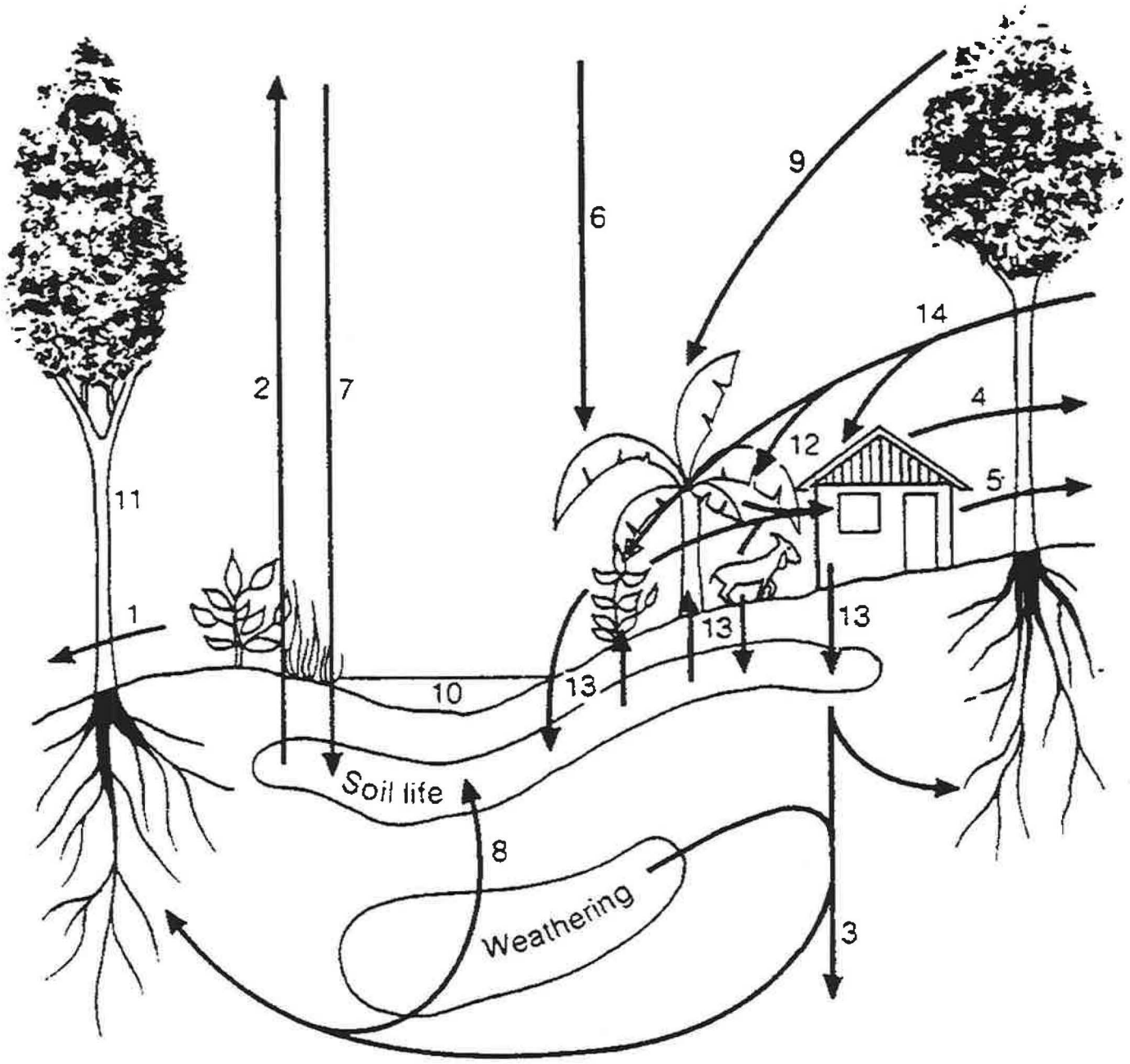



**Figure 4.3**

Systems can be analysed on two axes: firstly, there is the ***farming system***, where farmers allocate their scarce time and resources between a range of different activities. Secondly there are ***commodity systems***, linking farmers to the wider through chains involving a range of players in the outside world, including seed suppliers, traders and millers.




**Possible Losses**

1 Erosion

2 Volatilisation

3 Leaching

4 Export (market/gifts)

5 Removal of wastes

**Natural gains**

6 Rain

7 N fixation

8 Weathering

9 Sediment/dust

10 Blue/green algae

**Management options**

11 Woody species

12 Feeding concentrates/ minerals

13 Recycling (via livestock, compost, biogas, slurry etc.)

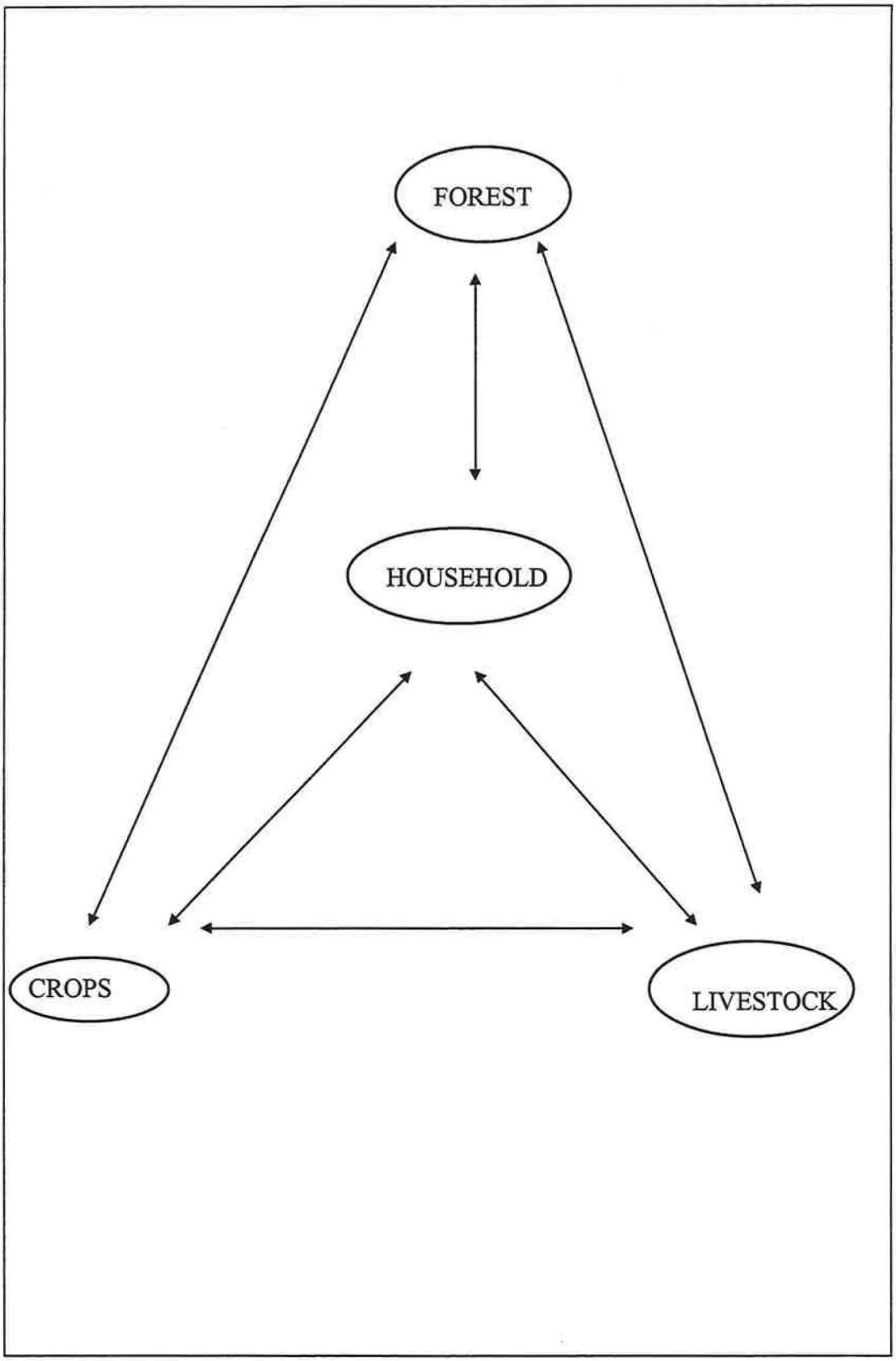
14 External inputs

**Figure 4.4**

***Soil nutrient flows.***

Source: ETC Foundation (1992) Learning for Participatory Technology Development: a training guide ETC Foundation Leusden, The Netherlands.

Figure 4.5 The generalised Nepal hill farming system



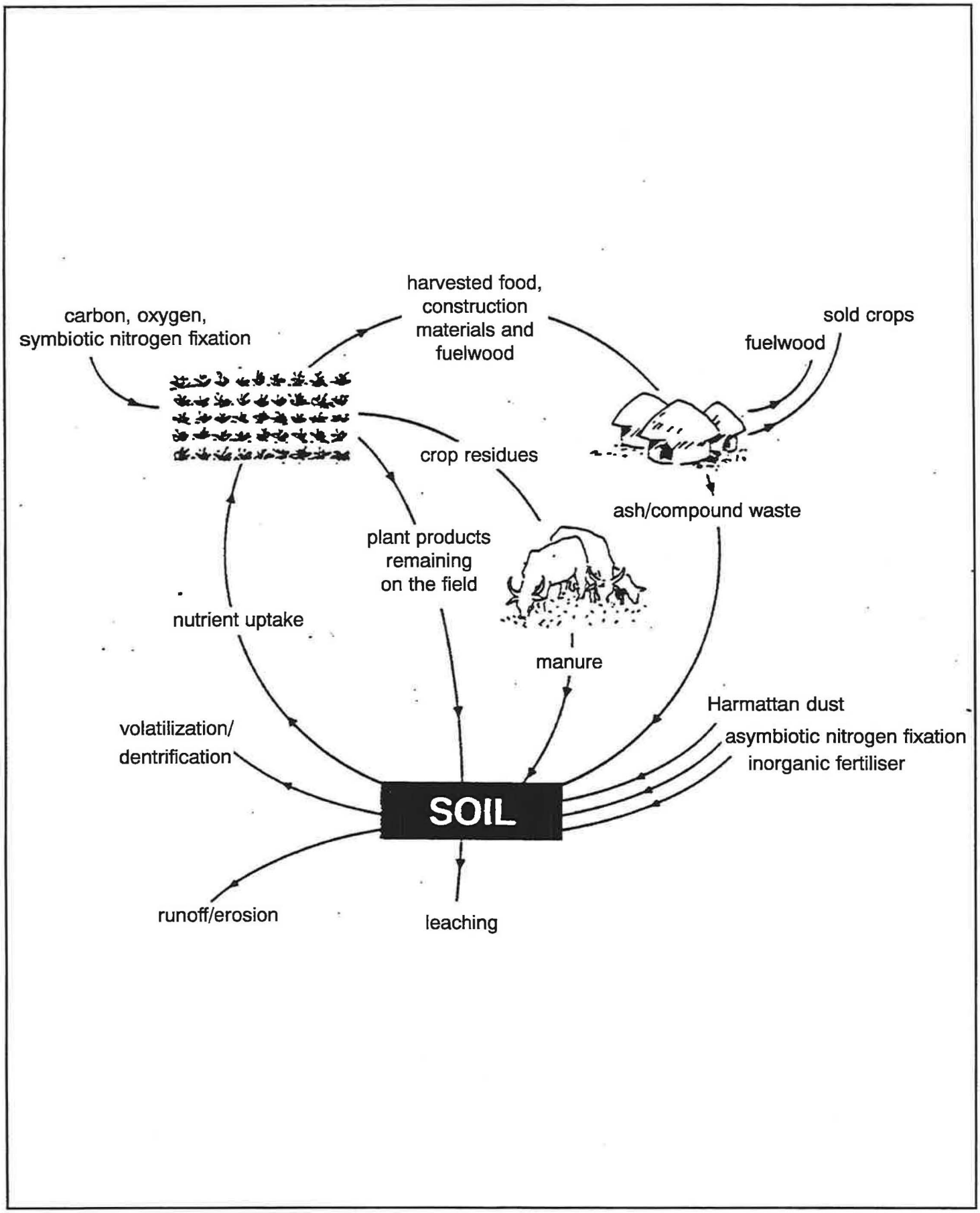



**Figure 4.6. *Nutrient cycling*** in the Kano close-settled zone.

Source: Harris, F (1996). Intensification of Agriculture in Semi-Arid Areas: Lessons from the Kano Close-Settled Zone, Nigeria. Gatekeeper series No. 59. London., IIED.

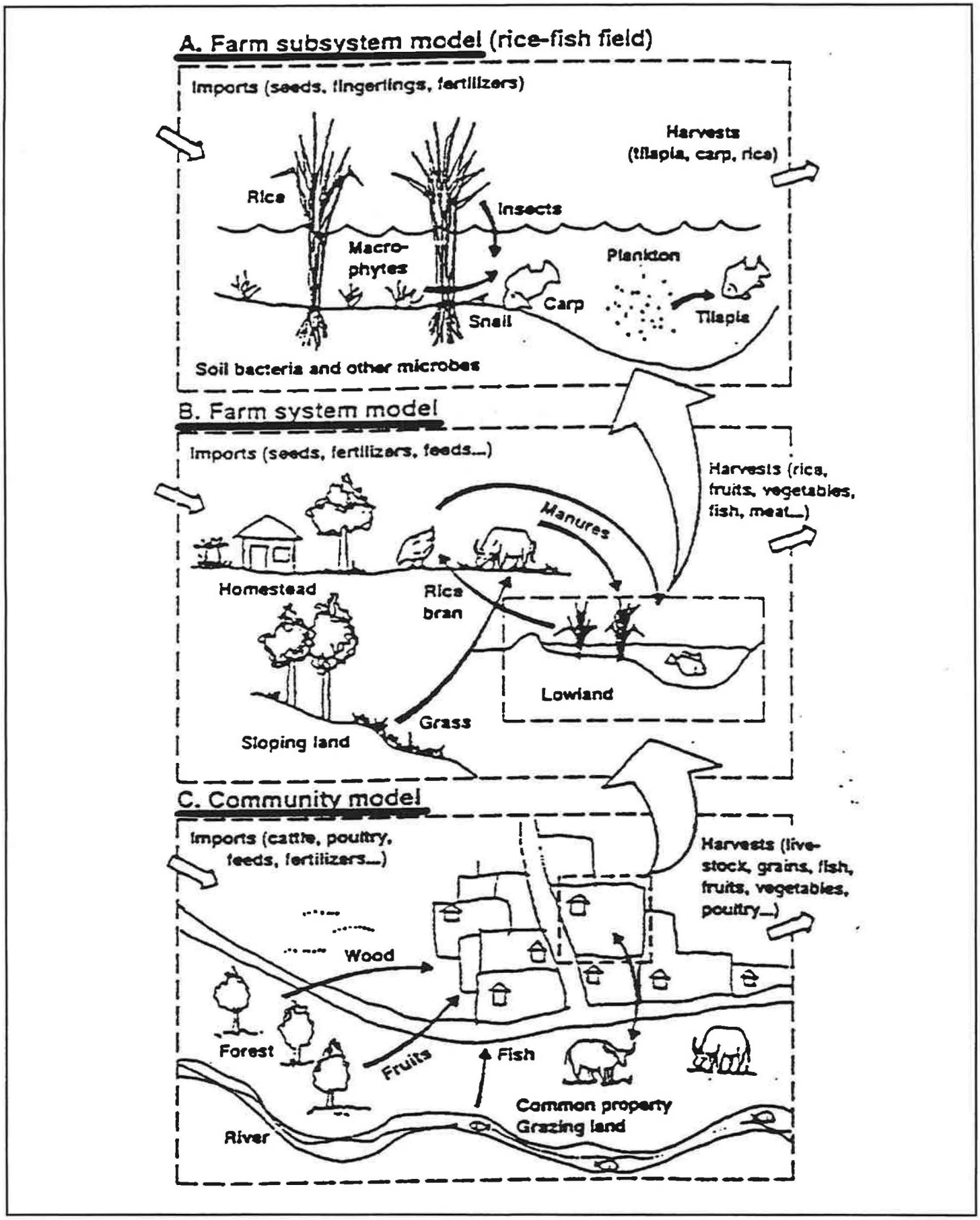



**Figure 4.7.** A hierarchical framework for steady-state agroecological analysis (stocks and flows are quantified).
Source: Dalsgaard, JPT and Oficial, RT (1995). Insights into Ecological Performance of Agrosystems with ECOPATH II. In NAGA, the ICLARM quarterly. April 1995.

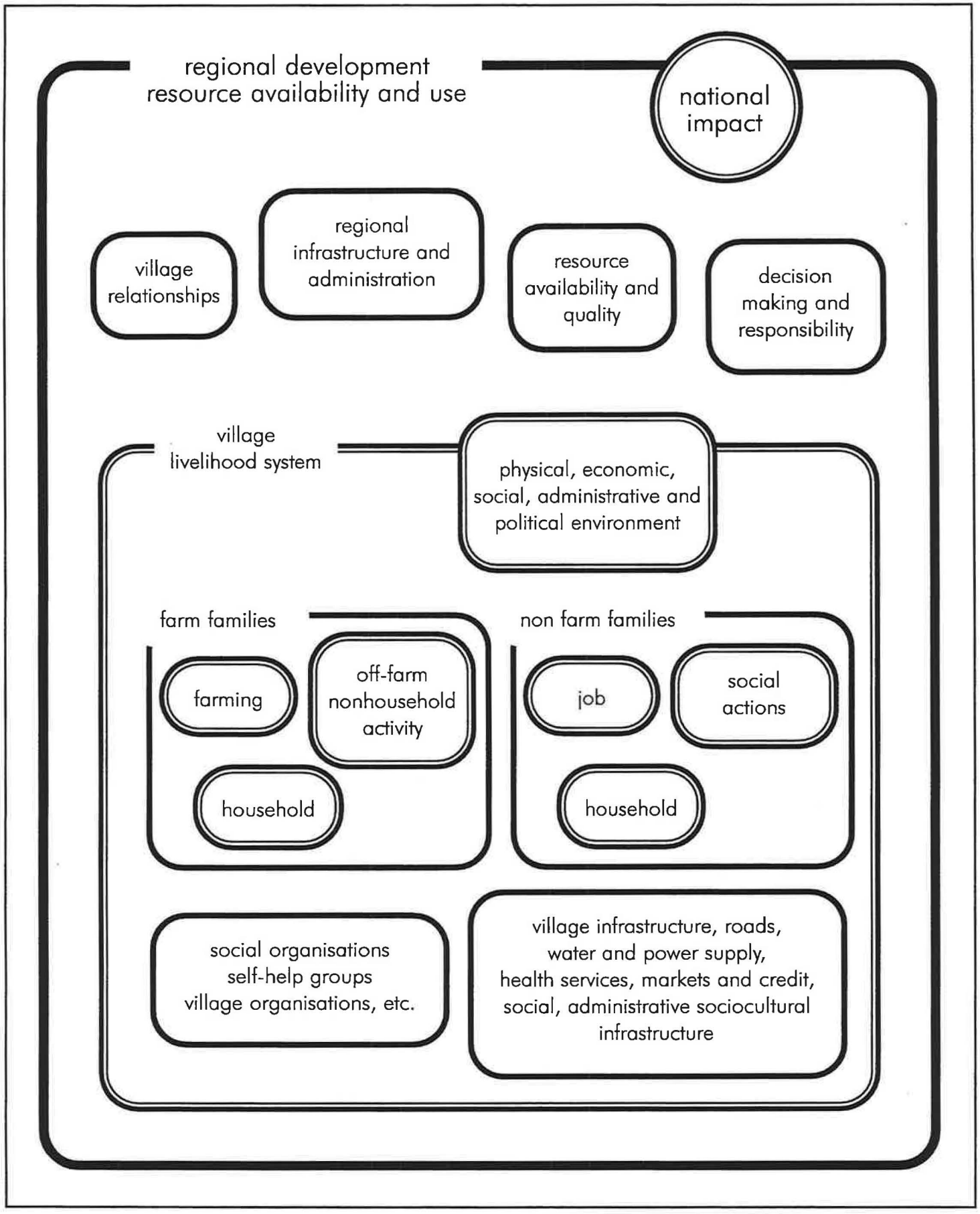



**Figure 4.8.** Components and hierarchy of systems in rural development.

Source: Doppler W (1994). The Role of Quantitative Methods in integrating farm, village, and regional systems approaches in proceedings of the International AFSR (E) Symposium on systems - Oriented Research in agriculture and rural development, Montpellier, France; November 1994.

## Characteristics of farming systems approaches

- Farmer-centred (client-oriented) - Relates to farmers' conditions, needs and aspirations.
- Location specific. Recognises heterogeneity and dynamism of local conditions (physical, social, economic, policy environment, institutional).
- Values local knowledge
- Researchers interact directly with farmers and extensionists.
- On-farm. Faces up to reality.
- Interdisciplinary. Reflects multi-enterprise nature of farms.
- Holistic perspective.
- Problem solving approach complementary to "conventional research".
- Natural sciences/social sciences partnership
- Particularly relevant to Low External-Input situations
- Influences research and policy agenda at local, national/international levels
- Flexible, dynamic and evolving. Simultaneous technology, methodology and institutional development.
- Most suitable for diverse, risk-prone and resource-poor situations.

**FARMING SYSTEM: A DEFINITION**

**A farming system may be defined as a complex, inter-related matrix of soils, plants, animals, power, labour, capital and other inputs controlled, in part, by farming families and influenced, to varying degrees, by political, economic, institutional and social factors that operate at many levels.**

**Gibbon, 1996**

The definition of farming systems research then becomes:

> **research that explores and takes account of the complex, inter-related matrix of soils, climate, plants, animals, power, labour, capital and other inputs controlled, in part, by political, economic, institutional and social factors that operate at many levels, in order to produce outputs that are relevant to the circumstances of farming households.**

As noted by Biggs and Farrington (1991) *"Agricultural research is not a neutral, technical activity, but is fundamentally integrated over time with political, economic and institutional events".*

# 5. FARMER PARTICIPATORY RESEARCH

## How Farmer Participatory Research evolved

In Chapter Three we saw that by the mid-1980s there was a greater understanding of farmer realities, and researchers were spending more time on-farm. Despite this, adoption was still poor. FSR had stimulated new holistic approaches to understanding farm situations and farm decision-making through direct contact with farmers, but had not led to the development of interventions that achieved major impact.

What led to the development of participatory methods?

- Gradually, contact between researchers and farmers led to a recognition of the value of local knowledge, especially in CDR conditions.
- A search for approaches and methodologies to facilitate involvement of farmers and to explore their knowledge and judgement
- A recognition that farmers' ownership of research can lead to more rapid adoption and sustainability.
- An interest in the contribution of participatory approaches to empowering individuals and communities to take charge of their own livelihoods.

During the 1990s Participatory Rural Appraisal (PRA) methods developed out of Rapid Rural Appraisal, and Participatory Technology Development (PTD) evolved.

The focus of participatory approaches is now to *combine* local knowledge and external knowledge, in initiatives that are action-oriented and problem-specific, and which address locally identified concerns or opportunities.

### Empowerment

The extent to which different participatory initiatives are aimed at community empowerment depends very much on the particular mission of the organisation involved. Empowerment can be understood as **the gaining of confidence and capacity of individuals and communities to take charge of their own development.**

In order to build this confidence, a number of areas must be addressed - institutional development at the local level, development of capacity of community groups and local leadership; the acquisition of (or access to) technical and management skills and an enabling political environment.

Empowerment is often a central concern for NGOs concerned with broader development goals, whereas agricultural research and extension organisations focus more on technology testing and development.

### What is participatory research?

The consequence of these perspectives for agricultural research is a radical shift away from researchers using farms as sites for their experiments, to farmers deciding when and how to use researchers to assist them address *their* priority needs. Priority setting, planning, implementation and monitoring is conducted by communities.

Farmer participatory research (FPR) is an approach designed to allow the active contribution of farmers in the decisions and activities of planning and implementing the generation of agricultural technologies relevant to their circumstances.

**Why do FPR?**

1. Failure of conventional research to provide technologies relevant to the needs of resource-poor farmers in complex and risk-prone situations.
2. FPR benefits from the knowledge, perceptions and opinions of farming family members.
3. FPR allows the generation and/or validation and dissemination of technologies to proceed at the same time, and under local conditions thereby providing the opportunity for discarding inappropriate technologies early in the evaluation process, and allowing the early adoption of promising technologies ( i.e. removes the major obstacles to adoption inherent in the conventional technology transfer model).
4. Participatory research allows the involvement of users at an early stage of technology generation, and the early discard of inappropriate technology.
5. It gives information on the characteristics of a technology that farmers consider important; how farmers order their technology preferences; why farmers prefer one option to another and whether farmers are likely to adopt a new technology.

## WHO, WHERE AND WHEN?

| | |
|---|---|
| **WHO PARTICIPATES?** | Men and women farmers |
| | Natural resource users and processers |
| | Their families |
| | The community |
| | Extensionists |
| | Researchers |
| **WHERE?** | On farmers fields |
| | At the experiment station |
| | In workshops |
| | In field days |
| | In training courses |
| **WHEN?** | At all stages of the research process |

**What is the contribution of farmers in FPR?**

- Technology selection criteria
- Local knowledge
- Real conditions (physical conditions and socio-economic circumstances)
- Understanding of the relationship between the technologies under test and the other activities being undertaken on the farm
- Land and labour
- Involvement or leadership in decision making at all stages of the research cycle
- Communication with neighbours and visitors

The drawing (Figure 5.1) shows a family harvesting and threshing a new variety. Each family member is assessing the variety according to those features that are important to him or her.

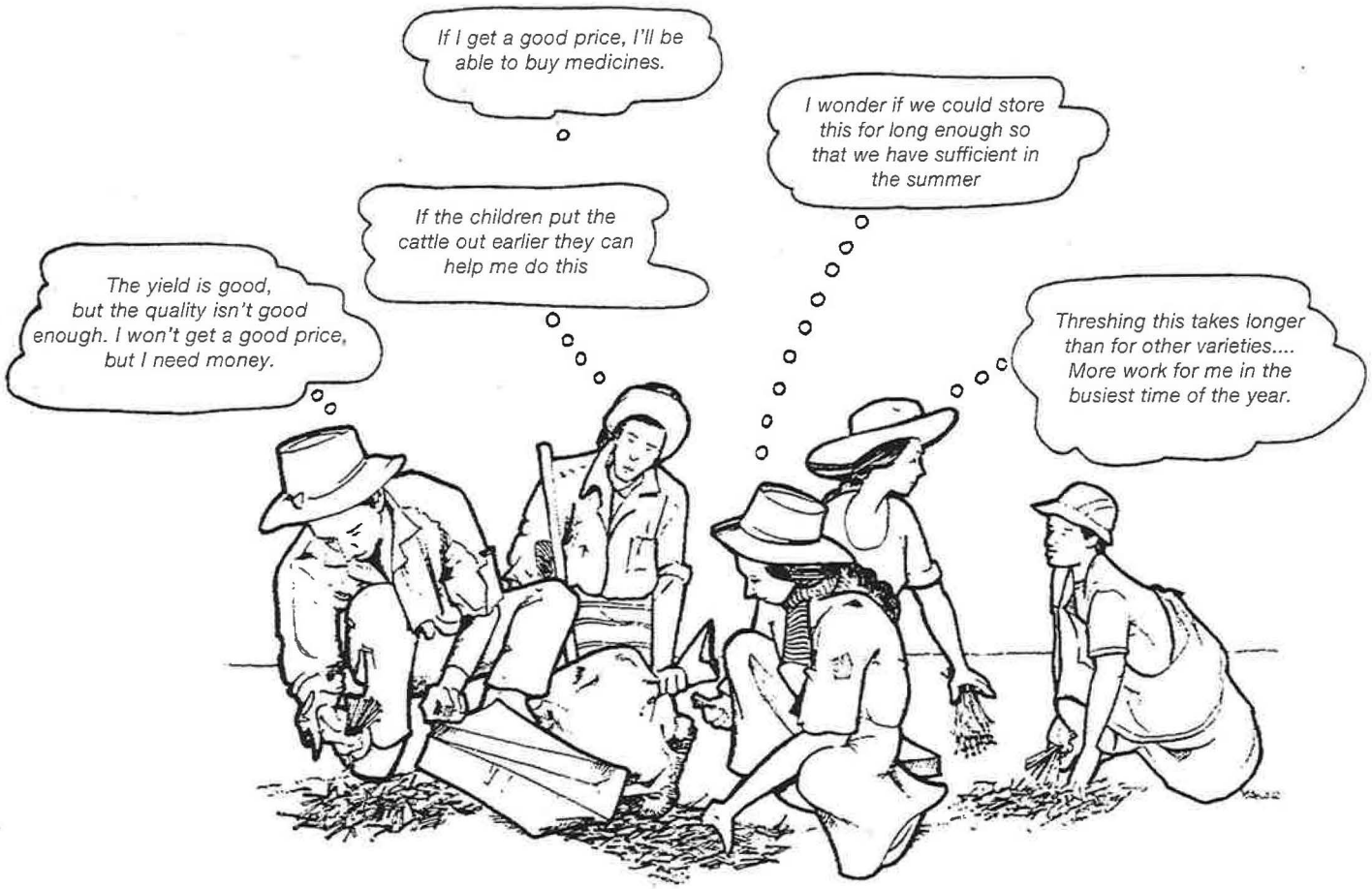



**Figure 5.1. *Whose Criteria*** Source: CIAT. Manual para la evaluación de tecnologicía con productores. Cali, Colombia, CIAT

**Outputs of FPR**

1. A desired output of successful participatory research is a clear idea of the preferences that farmers have for one technology compared to others, and the reasons for those preferences.
2. A second output might be an increased capacity on the part of farmers and their communities to carry out their own research, and apply the chosen technologies arising from research to their own circumstances.
3. A third output might be that farmers understand the principles behind the technology sufficiently to be able to adapt it to new situations, and advise others on its application.

## SUMMARY OF CHARACTERISTICS OF FPR

- mainly on-farm
- joint activity between research, extension and farmers
- unites farmer and scientist knowledge
- values local knowledge (refer to chapter 6, section A)
- gives priority to farmers evaluation criteria
- is gender sensitive (refer to chapter 6, section B)
- recognises agenda of different stakeholders and the problems of bias (e.g. age, gender, wealth, ethnicity. Refer to chapter 6, section C)
- ownership of the research process is shared between farmers, field workers and researchers
- involves the farmer in decisions throughout the research cycle
- shared learning between farmer, field worker and researcher
- is a continuous overlapping process of technology generation, technology dissemination and monitoring.
- is based on a knowledge of farming systems
- often emphasises the collection and evaluation of qualitative information, using triangulation for cross-checking.
- uses research methods (surveys, trial designs, analyses) that are different from
- those used for experiment station or formal research
- local capacity is developed to initiate and implement actions relevant to local priorities
- research and development is a dynamic and flexible process recognising that circumstances and needs of farming families are constantly changing
- the importance of local institutions in development is recognised.

## Stages in the farmer participatory research process

Figure 5.2 shows the stages in the research process. Note that in participatory research this is a circular process, not a linear one, and that farmers participate in the decisions made at each stage. The main stages are as follows:

**Diagnosis:** Identification of objectives, needs, opportunities and constraints

**Planning:** Establishment of priorities and strategies for providing solutions or capitalising on opportunities

**Experimentation:** Comparative evaluation of options

**Validation/adaptation:** Testing in different locations, and modifying as necessary to suit local conditions

**Monitoring:** Studies of adoption and adaptation. Identification of constraints to adoption, and needs for further research.

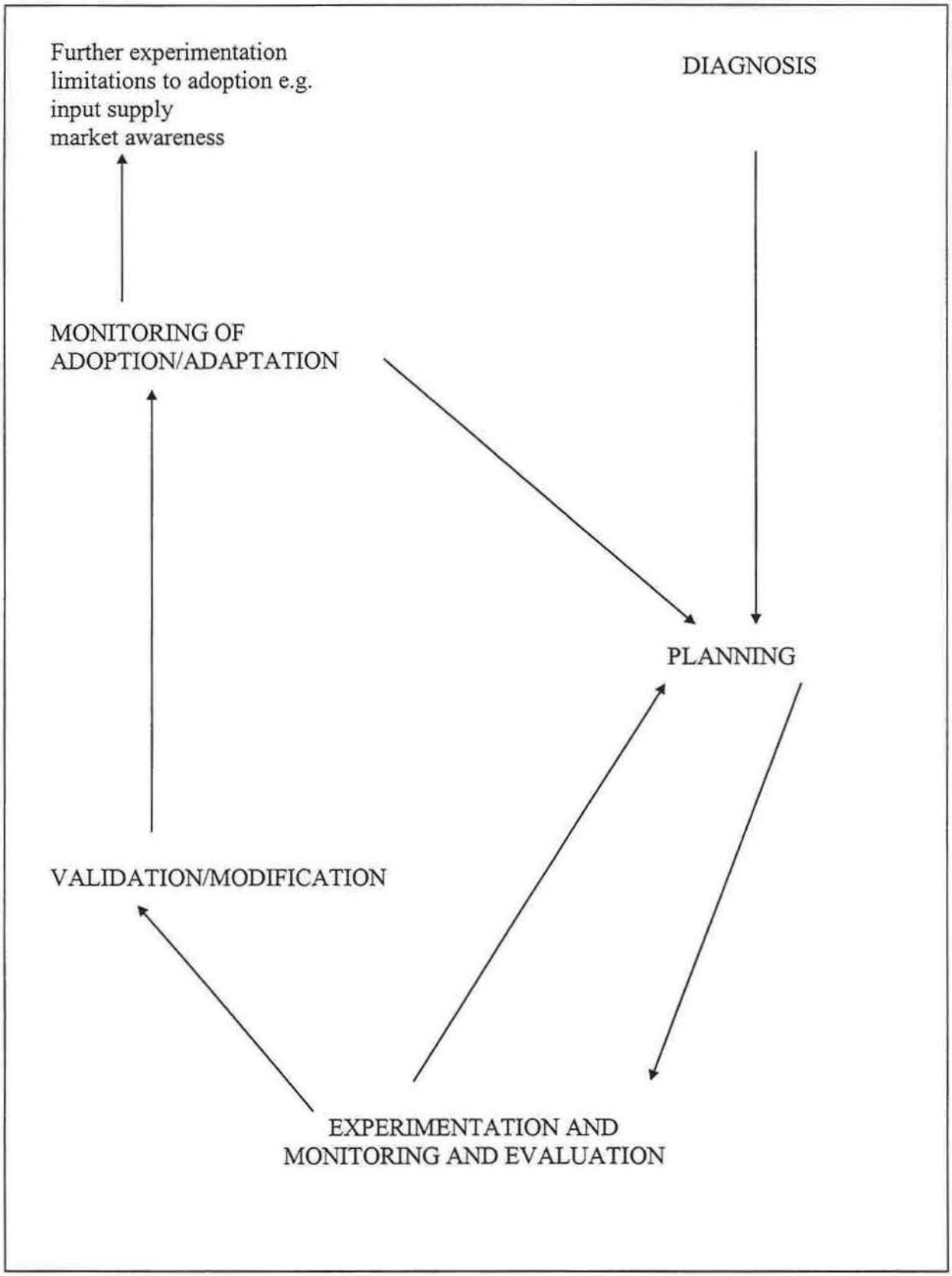
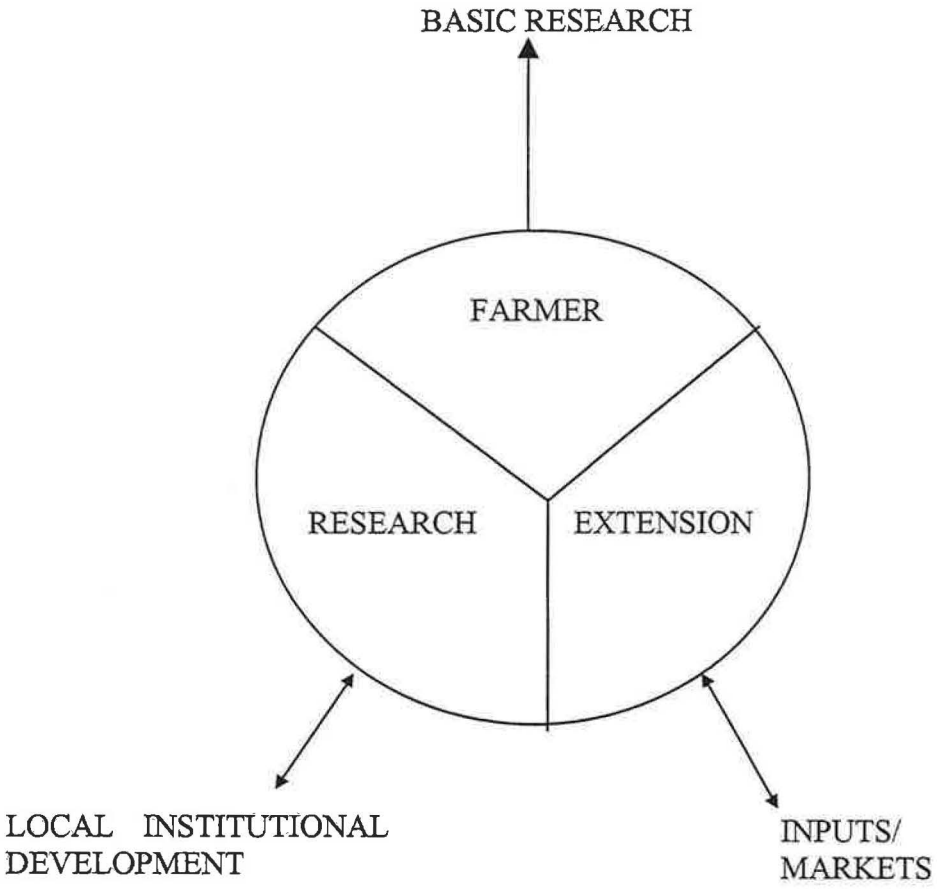



**Figure 5.2** The Research Cycle

**Figure 5.3 Vital Links for successful farmer participatory research.**



## The relationship between researcher and farmer

In order to achieve good results from participatory research, a special relationship of confidence, trust and mutual respect must develop between farmer and researcher. This is based on the understanding that:

- Researcher, field staff and farmer are each expert in their respective fields of experience and knowledge
- Both practical and academic knowledge merit respect
- Farmers' agricultural practices, and indeed the whole of their lifestyles are respected and valued by researchers and field staff
- The farmer must understand the technology under test, and therefore have the right to question and expect full explanations that justify the experimentation
- The researcher is motivated to learn from the farmer, who in turn should be prepared to teach

In order to understand the different relationships that can exist between researchers and farmers, Stephen Biggs developed a classification with four categories, as given in table 5.1.

**Table 5.1 Characteristics of four modes of farmer participation in agricultural research**

| | Mode of participation | | | |
|---|---|---|---|---|
| | **Contract** | **Consultative** | **Collaborative** | **Collegial** |
| **Type of relationship** | Farmers, land and services are hired or borrowed, e.g., the researcher contracts the farmer to provide specific types of land | There is a "doctor-patient" relationship. Researchers consult farmers, diagnose their problems and try to find solutions | Researchers and farmers are partners in the research process and continuously collaborate in activities | Researchers actively encourage the informal R & D system in rural areas |

Source: Biggs (1989)

**Figure 5.4 Degree of Participation**

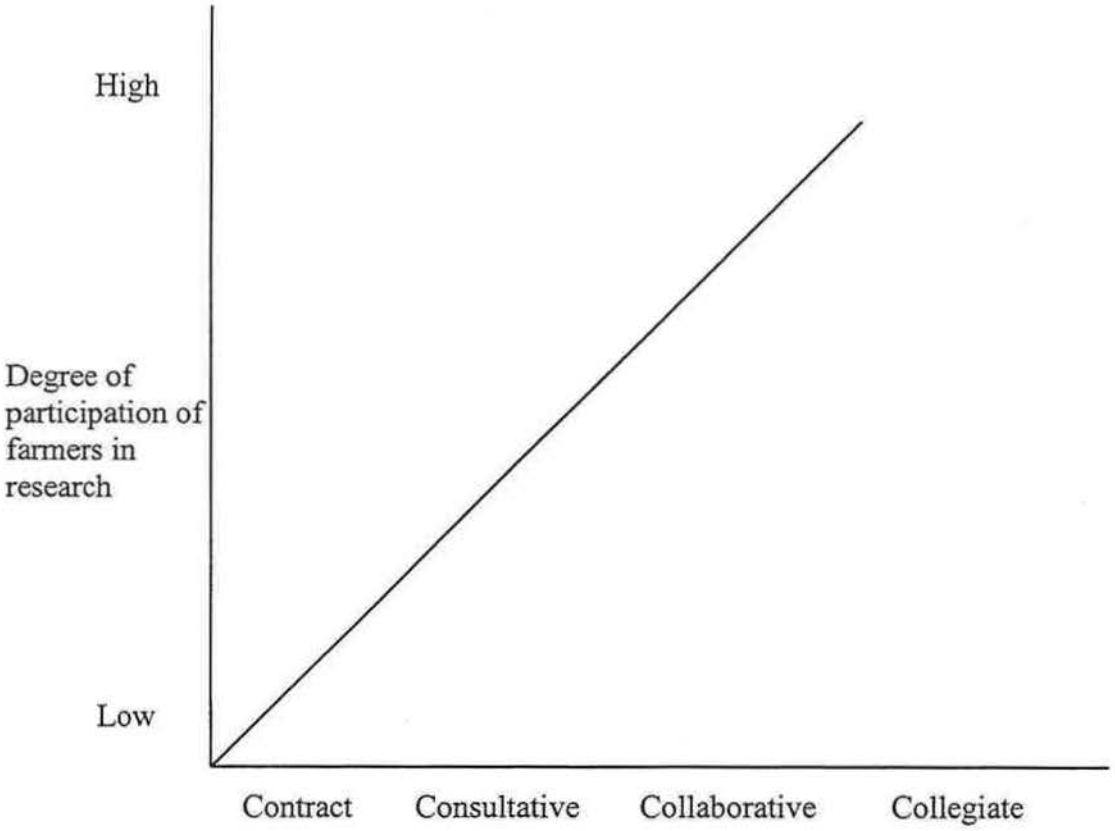


**Table 5.2 A TYPOLOGY OF PARTICIPATION: HOW PEOPLE PARTICIPATE IN DEVELOPMENT PROGRAMMES AND PROJECTS**

| Typology | Characteristics of each type |
|---|---|
| 1. Passive participation | People participate by being told what is going to happen or has already happened. It is a unilateral announcement by an administration or project management without any listening to people's responses. The information being shared belongs only to external professionals. |
| 2. Participation in information giving | People participate by answering questions posed by extractive researchers using questionnaire surveys or similar approaches. People do not have the opportunity to influence proceedings, as the findings are neither shared, nor checked for accuracy. |
| 3. Participation by consultation | People participate by being consulted and external agents listen to views. These external agencies define both problems and solutions, and may modify these in the light of people's responses. Such a consultative process does not concede any share in decision making and professionals are under no obligation to take on board people's views. |
| 4. Participation for material incentives | People participate by providing resources, for example labour, in return for food, cash or other material incentives. Much on-farm research falls in this category, as farmers provide the fields but are not involved in experimentation or the process of learning. It is very common to see this called participation, yet people have no stake in prolonging activities when the incentives end. |
| 5. Functional participation | People participate by forming groups to meet predetermined objectives related to the project, which can involve the development or promotion of externally initiated social organisation. Such involvement does not tend to be at early stages of project cycles or planning, but rather after major decisions have been made. These institutions tend to be dependent on external initiators and facilitators, but may become self-dependent. |
| 6. Interactive participation | People participate in joint analysis, which leads to action plans and the formation of new local institutions or the strengthening of existing ones. It tends to involve interdisciplinary methodologies that seek multiple perspectives and make use of systematic and structured learning processes. These groups take control over local decisions and so people have a stake in maintaining structures or practices. |
| 7. Self-mobilisation | People participate by taking initiatives independent of external institutions to change systems. They develop contacts with external institutions for resources and technical advice they need, but retain control over how resources are used. Such self-initiated mobilisation and collective action may or may not challenge existing inequitable distributions of wealth and power. |

Source : Pretty, 1994, adapted from Adnan et al, 1992

Table 5.3 relates to the different extent to which local communities take decisions about their actions. Note that this is not a hierarchical presentation. The appropriate level of participation depends on the type of project and the socio-economic environment in which it is being implemented.

**Table 5.3 Indicators of Participation**

| Stage | Indicator |
|---|---|
| Information sharing | Beneficiaries receive information about project aims and how it will affect them. Helps facilitate action. |
| Consultation | People are not only informed but are also consulted on key issues. Beneficiaries may provide feedback to project managers who may use the information to influence project design and implementation. |
| Decision-making | Beneficiaries involved in decision-making about project design and implementation. |
| Initiating action | Beneficiaries propose their own action |

Source: Paul (1986)

## The need to value farmer's and scientist's knowledge

Evaluation of technologies by and with farmers is not a substitute for careful biological, social and economic testing of technologies; rather the two sets of information should be regarded as complementary. Farmer evaluation mostly provides qualitative information, whereas scientist's evaluations mostly provide quantitative data.

**Table 5.4 Difference in attitudes towards information gathering**

| Inappropriate Attitude | Appropriate Attitude |
|---|---|
| Farmers are reluctant to adopt, 'lazy' and 'stupid' | Farmers have good reasons for non-adoption |
| We know best | Farmers know their own working environment |
| Farmers should learn from us | Learning is a two-way process with ourselves and the farmers |
| We must tell farmers | We must listen to farmers |
| 'Modern' methods must be superior to 'traditional' | 'Traditional' methods can be as good as 'modern' methods |
| Over-emphasis on quantitative data | Emphasises use of qualitative data or indicators |

**Limitations of FPR**

1. Requires complementary basic research and access to inputs/markets
2. Perception that FPR is "not good science"
3. Need for supportive institutional/policy environment
4. Training and staffing implications
5. Operational resources
6. Scaling-up difficulties from pilot area to large scale
7. Measurement of impact

**Ownership of the research**

Answering the following questions will help to define who is the owner of the research.

1. Who initiated the project?
2. What do the farmers who are directly involved know about the project, (its origin, objectives and expected outputs?)
3. What do other community members know about the project?
4. Who selected the collaborating farmers?
5. Who decided on the research priorities?
6. Who evaluates the trials? Whose criteria are used?
7. Are the farmers/communities in a position to initiate their own research?

## The variety of terms for participatory approaches to learning and action

■ Agroecosystems Analysis (AEA) ■ Beneficiary Assessment ■ Development Education Leadership Teams (DELTA) ■Diagnosis and Design (D & D) ■ Diagnóstico Rural Participativo (DRP) ■ Farmer Participatory Research ■ Groupe de Recherche et d'Appui pour l'Auto-promotion Paysanne (GRAAP)

■ Méthode Active de Recherche et de Planification Participative (MARP) ■ Participatory Analysis and Learning Methods (PALM) ■ Participatory Action Research (PAR) ■ Participatory Research Methodology (PRM) ■ Participatory Rural Appraisal (PRA) ■ Participatory Rural Appraisal and Planning (PRAP)

■ Participatory Technology Development (PTD) ■ Participatory Urban Appraisal (PUA) ■ Planning for Real ■ Process Documentation ■ Rapid Assessment Procedures (RAP) ■ Rapid Assessment Techniques (RAT) ■ Rapid Catchment Analysis (RCA) ■ Rapid Ethnographic Assessment (REA) ■ Rapid Food Security Assessment (RFSA) ■ Rapid Multi-perspective Appraisal (RMA) ■ Rapid Organisational Assessment (ROA) ■ Rapid Rural Appraisal (RRA) ■ Samuhik Brahman (Joint trek) ■ Soft Systems Methodology SSM) ■ Theatre for Development ■ Training for Transformation ■ Visualisation in Participatory Programmes (VIPP)

# 6. INDIGENOUS/LOCAL TECHNICAL KNOWLEDGE, GENDER AND BIAS

## A) Indigenous/local technical knowledge

The growing interest over the last ten years in farmers' knowledge has led to a re-evaluation of indigenous knowledge and a concern with local value systems.

### Characteristics of local knowledge

- Local knowledge is based on practice and past experience.
- It is passed from generation to generation, farmer to farmer
- It is not static, but changes, adapts and assimilates new ideas
- It varies according to opportunities to build up expertise, influenced by:
  - length of residence/farming experience
  - stability of social and physical environment. Local knowledge may break down in a crisis
- It is not evenly distributed between individuals and different social groups - young/old, men/women, rich/poor, labourers/land owners etc. may have different kinds of knowledge and experience
- Local knowledge may have a moral or religious dimension.
- Knowledge of alternatives may be limited to locally accessible options. It may be based on wrong hypotheses.

### How does farmers' knowledge relate to scientific knowledge?

- There are some areas in which farmers have more knowledge and researchers have less. It is therefore important to learn from farmers.
- It is important to explore what farmers know and what they do NOT know. Innovations are more effective if they build on local knowledge
- The depth and detail of local knowledge can be related to visibility and significance. Can a problem be easily observed? Is it important in the farming system and does it affect livelihoods?
- Local categories and farmers concepts should be explored - particularly key concepts of soil fertility, plant disease etc., but note that explanations may be context specific.

**Table 6.1 Farmers perceptions and knowledge of problems**

| | EASE OF OBSERVATION | |
|---|---|---|
| | **Visible** | **Invisible** |
| **Important** | A. Detailed knowledge of problem or item, e.g. knowledge of wild medicinal plants | B limited knowledge of characteristics e.g. viral diseases in plants, nematodes. |
| **Not important** | C knowledge exists but is not detailed | D little knowledge or action |

Adapted from J Bentley.

- in (A) farmers experience and knowledge can contribute relatively easily to the research process. Researchers can learn from farmers.
- In (B) sharing of knowledge is important. New concepts and information from researchers may challenge farmers existing beliefs. Researchers need to understand farmers' ways of explaining problems.
- In (C) researchers can increase farmers knowledge by observation and explanation.
- In (D) researchers can introduce new information - unlikely to conflict with existing beliefs.

## B) Gender and development

### What gender means

It is important to understand the difference between the biological differences between women and men, and gender - the socially created definitions of what it means to be male or female. Gender is part of the social relationship between men and women which shape male and female identities. The definitions of male and female roles and appropriate behaviour vary in different cultures and socio-economic groups and can change over time.

Work in any society is divided and allocated to people in different ways according to social roles. This is termed the division of labour. Different groups may do manual, intellectual, political or artistic work. Specialisation can lead to greater efficiency and overall production, although not all work is rewarded equally. Gender is important as it is one of the main bases for the social division of labour. The gender division of labour is the allocation of work roles, responsibilities, opportunities and rewards on the basis of gender.

**Table 6.2 What is gender**

| |
|---|
| • Gender refers to the *social* relationship between women and men, not the biological differences. |
| • Gender is a basis for the division of labour which is variable according to context and culture. |
| • The lives of men and women in the household and the wider economy are closely interlinked- changes affecting men affect women and vice versa. |
| • Roles may be complementary, but they can involve an unequal exchange (e.g. of work time, resources of money). |
| • Women often have less access to resources, rewards and power., (lower incomes, less political and social influence, less control over personal and reproductive lives). |

**Table 6.3 The distribution of labour by gender**

| | % of total labour hours | |
|---|---|---|
| | Men | Women |
| Cuts forest, stakes fields | 95 | 5 |
| Turns the soil | 70 | 30 |
| Plants seeds and cuttings | 50 | 50 |
| Hoes and weeds | 30 | 70 |
| Harvests | 40 | 60 |
| Transports crops home | 20 | 80 |
| Stores crops | 20 | 80 |
| Processes food crops | 10 | 90 |
| Markets crops | 40 | 60 |
| Carries water and fuel | 10 | 90 |
| Cares for domestic animals | 50 | 50 |
| Trims tree crops | 90 | 10 |
| Hunts | 90 | 10 |
| Feeds and cares for the young, the men and the aged | 5 | 95 |

Source: UN Economic Commission for Africa - Women of Africa, Today and Tomorrow, Addis Ababa, UNECA, 1975, p.6.

**Why is gender a development issue?**

Gender is a valuable concept; it helps us to identify social structures, practices and beliefs that maintain the unequal positions of women and men. By understanding these we can start to develop strategies to tackle these inequalities.

- Development policies and research outputs often have a different impact on men and women.
- If male experience is regarded as the norm in planning, it can result in the exclusion of women's interests.
- Limited female access to education, land and resources affects women's gender needs.
- An understanding of gender relationships can help to identify and address social practices and structures that perpetuate inequality.
- The analysis of gender relationships can help to formulate more realistic, effective and equitable development policies.

A lack of knowledge about the role played by women has sometimes led to their exclusion in development and research projects. Where they are included, a limited understanding of gender roles can result in a failure to provide appropriate technologies or training services to women as producers. In most countries the majority of extension staff are men. Direct contact between these extension officers and women is often less

frequent than with male farmers. Male extension officers often assume that men speak for women in their community (see figure 6.1) and communicate messages back to them, although this is by no means always the case.

**CASE STUDY**

**IMPROVED TECHNOLOGY FOR SMALL-SCALE COCONUT PROCESSING IN TANZANIA.**

This project aimed to -

- redress the bias against women in the development of intermediate technology
- produce a technology which would be affordable to rural women

A preliminary socio-economic investigation found that extracting oil from coconut was;

- an important income source for rural women, particularly women heads of household
- a daily food processing activity in the coastal area.

Based on rural women's analysis of the problems with the oil extraction process, which was time-consuming and painful, the project developed a new grater which was -

- considerably faster
- less arduous and painful to operate
- produced finer coconut gratings which lead to more oil being extracted and creamier milk which contains more protein

The project had to overcome a critical constraint; that women could not afford to buy the graters unless they could pay in instalments

The project recommended that the Tanzanian organisation implementing the project, the National Coconut Development Programme, link with credit organisations to solve this constraint.

**Figure 6.1 Men speaking for Women**

## Gender needs

Everyone has needs, but gender needs refer to the different needs of men and women arising because of the division of labour and women's limited access to power and resources. Broadly two types of gender needs can be distinguished:

a. Practical gender needs.
   - to meet inadequacies in living conditions.
   - to assist women to perform their existing roles

b. Strategic gender needs.
   - To challenge or change existing gender roles – to promote women's equality, access to resources and control over their own lives

**Table 6.4 Addressing women's gender needs**

| Examples of Actions that Address Women's Practical Needs | Examples of Actions that Address Women's Strategic Needs |
|---|---|
| • Reducing their workload, for example the convenient location of stand-pipes and hand-pumps; providing grinding mills; developing fuel-efficient stoves.<br>• Improving health, for example primary health centres; child spacing/family planning advice; clean water supply.<br>• Improving services, for example primary schools; transport facilities; housing infrastructure.<br>• Improving income, for example skills training, credit groups; access to markets | • Improving education opportunities, for example adult literacy classes; female teachers provided as role models; gender neutral text books.<br>• Improving access to productive assets, for example legal status on land ownership; rights to use common property; bank accounts.<br>• Allowing women to take part in decision making, for example local committee membership; participation in elections; establishing and supporting women's groups<br>• Allowing equal opportunities for employment, for example access to jobs traditionally done by men; equal pay for comparative jobs even if there is a gender division of labour |

## Gender roles

Awareness of gender roles is important because technology needs, and their impact may be different for men and women. For example, the same technology which can increase production and men's incomes could increase the labour burden on women. It is therefore important for people working in technology development to have an understanding of gender roles at household and community level, including the different

responsibilities in the household, decision making, control and the distribution of benefits.

Because of the division of labour and the different roles of men and women and boys and girls within the household, care should be taken when talking of "household" characteristics and needs. Assumptions around the "household" can be challenged from a gender perspective. Households in different countries and cultures have different structures (e.g. polygamous, extended etc.). They divide tasks in different ways and have different norms regarding access to and control over resources and decision making.

One method of analysing gender roles is to distinguish three different types of roles; a reproductive role, a productive role and a community management role (see table 6.5)

**Table 6.5 Triple Roles**

| Productive Role | Reproductive Role | Community Management Role |
|---|---|---|
| Activities that generate income for the household:<br>• Paid employment, e.g. labouring jobs; management or professional positions<br>• Income in kind, e.g. work on family farm | Domestic activities that increase household resources:<br>• Creative role, e.g. bearing, looking after and education children<br>• Maintenance role, e.g. cooking food, washing clothes, growing food for home use. | Provision and allocation of community resources:<br>• Creation and distribution of items for collective consumption, for example clean water; medical services<br>• Membership of committees, but positions of leadership and influence are frequently occupied by men |

These can be used in a more thorough gender analysis of activities, access to resources, benefits and incentives and development needs, which should precede the planning of a development or research programme.

- *Activity profile*: - Explore time allocation and task analysis by gender, describing patterns of labour, locations and hours. Work relating to the reproductive role –time spent in childcare, fetching water, cooking etc. and tasks related to the productive role - growing food and cash crops, processing products, looking after livestock, and marketing. What demands do men make on women's labour?
- *Access to resources* - control and access to land (inheritance, purchase, customary allocation etc), implements, cash, credit, livestock, etc.

- *Benefits and incentives* - control over products. Who earns what, who pays for what, who decides on purchases and sales, who controls the money?
- *Needs analysis* - prioritisation of problems and interests by gender

It is useful to bear in mind that men and women often have different perspectives about their responsibilities. When discussing gender roles, men often estimate women's contribution, particularly to decision making, at a lower level than women describe for themselves.

A second caution is that women are not a homogeneous group. It is important to explore variations in roles and needs, according to wealth and status, age and stage of family development.

**The broader context**

The wider social context is important in influencing outcomes of gender roles. Among these factors are:

- market conditions and economic opportunities
- institutional structures (community and service providers)
- cultural and religious beliefs
- legal rights
- training and education opportunities
- Government policies

**Table 6.6 Problems to Avoid**

| Projects that Ignore Gender Roles | Projects that Ignore Women's Practical Gender Needs | Projects that Ignore Women's Strategic Gender Needs |
|---|---|---|
| • Urban housing schemes which assume that all heads of households are men<br>• Job creation schemes that ignore women's role in child care<br>• Agricultural extension projects that assume only men are responsible for food production | • Mechanised agriculture that puts women out of work and deprives them of cash income<br>• Cash crops that generate cash which is controlled by men and take over land use for food crops which are the responsibility of women<br>• Standpipes located to suit engineers rather than the women who use them | • Community-based projects that are designed to respond to men's needs rather than women's<br>• Credit schemes that demand land titles as security, thereby excluding women as they don't have access to land ownership<br>• Projects that employ women but at lower rates of pay than men |

## Participatory research with women farmers – video.

The video showed a process of participatory research with women farmers in India, working with ICRISAT scientists to develop pigeon pea varieties appropriate for their needs.

**Diagnosis:**

- Observations were made on farmers fields, through farm walks and informal discussions between researchers and farmers to discuss problems.
- Researchers looked for possible 'solutions' – they tried to identify varieties of pigeon pea which matched farmers criteria.

**Planning of on-farm trials**

- Farmers and scientists planned trials together
- Varieties were compared in 'split plot' on farm trials
- The trials were repeated with several farmers per village and in several villages

**Experiment**

- The trials were under farmers own management practices (no pesticides on tested varieties)
- Plots were monitored to observe pests and diseases

**Evaluation**

- Observations and farm walks before harvest, and group meetings, involving farmers, researchers and local NGO facilitators.
- Farmers criteria were: storability, production, marketability, disease resistance, taste after cooking, suitability of stalks for building etc.
- Methods used for evaluation were: pairwise ranking, matrix ranking, 'triangulation' - comparing results and information from three villages

Note that selections were made according to farmers' priorities - taste, pest resistance etc., which in some cases were more important than yield.

**Conclusions:**

- Farmers selected their preferred varieties
- Local knowledge was important
- Local varieties were maintained, not replaced by the new varieties
- Farmers can express their demands to scientists
- Options and choices of varieties were provided, not single variety
- Maintaining and range of varieties conserves biodiversity
- Scientists learned from farmers. Experience led to ideas for experimentation to explore the pest control benefits of diversity.

## C) Bias

It is important to avoid biases when gathering information from rural people. In general the way to do this is to ensure that all sections of the community are heard (correct identification of stakeholder groups), that information is checked (triangulation) and that check lists are used to minimise bias.

**Table 6.7 Exploring problems with farmers - common sources of bias**

| |
|---|
| • Spatial - Village selection is often biased towards accessibility, more distant villages may be ignored. |
| • Season - farmers tend to emphasise current concerns. Problems in other seasons may be missed in a one-off survey |
| • Social status – the opinions of the wealthy and community leaders may dominate over the views of the resource poor. |
| • Gender – men consulted and women ignored |
| • Norms of politeness may prevent problems and issues from being openly expressed |
| • Expectations of farmers |
| • Professional - researchers specialised interests may dominate |
| • Project pre-defined agenda may influence outcomes |
| • Time constraints force conclusions |

A number of factors influence the process of reaching mutual understanding.

- Poor listening "cultural mishearing"
- Misunderstanding of questions and wrong interpretation of farmers' answers by researchers
- Farmers' responses may be based on limited knowledge of biological processes
- Researchers interpretations are often based on a limited understanding of local situation and farmers' priorities
- Unfamiliar units of measurement
- Farmers' responses address underlying social and political concerns. Fears and suspicion may give rise to deliberate misleading

It is important when participating in such discussions to identify exactly who is making the statements recorded and the social context of the exchange. Otherwise it will not be clear exactly whose concerns are being recorded or whose agenda embodied in plans for action (Figure 6.2

Figure 6.2 Whose plans and whose needs


**PLANNER**


**RESEARCHER**


**DONOR**

**COMMUNITY NEEDS**

# 7. ON-FARM TRIALS

## Introduction to on-farm trials

The chapters on the Development of Farming Systems Research (Chapter 4) and Farmer Participatory Research (Chapter 5) have presented the case for close interaction between farmers, field staff and researchers. In the research cycle, on-farm trials normally follow participatory diagnostic and planning stages so that the priorities for research are jointly agreed between farmers and researchers.

Chapter 5 outlined a classification of different types of participatory research (contract, consultative, collaborative and collegiate). On-farm trials can form a component of any of those four categories, with farmers taking an increasingly active role as one goes from contract towards collegiate modes.

In contract mode, farmers' fields are hired by researchers, and the on-farm trials are in this case an extension of on-station trials, with all decisions being taken by researchers, but with some assistance from farmers in providing labour and land.

At the collegiate end of the spectrum, farmers take the major decisions, such as on what, where, with whom and how the trials will be conducted. The trials in this case may be seen more as an extension of farmer's own experimentation, but with some assistance from researchers and/or extension staff or community facilitators.

The box below lists the main features of farmer experimentation.

**FARMERS' EXPERIMENTATION**

- farmers carry out informal experimentation in most farming systems
- farmers learn from experience and observations, but can improve the objectivity of this learning process by introducing more deliberate comparisons.
- farmers experimentation is a source of innovation in farming systems.
- different cultures have different ways of explaining this learning process - "trying things out", "playing", experimenting", "exploring", "adapting" etc.
- farmers' experimentation may be done independently of research/extension although it can draw on advice and information from these sources as well as others
- some research projects encourage farmers experimentation to be more like formal experiments, others support farmers experimentation by encouraging sharing of experience, critical evaluation and confidence building.

## Principles of on-farm trials

*Relevance:* The topic(s) under test should be relevant to the priorities of local communities. These **may** also be of wider (e.g. regional or national) importance.

*Simplicity:* Trial designs should be simple enough for farmers directly involved to understand. If evaluation by neighbouring farmers is envisaged, then they should also be able to understand the layout and treatments easily.

*Management and ownership:* As with other considerations, this varies between participatory modes. For contract research the ownership is with researchers, although farmers may contribute to day-to-day management. At the collegiate extreme, ownership of the trials should rest squarely with farmers and/or their community, with researchers inputs being made only with the full agreement of the primary stakeholders.

*Clear objectives:* It is vital to clarify between participants who the trial is for, and what its aims and expected outputs are. Only then can the appropriate ownership, methodologies and management decisions be made (by the appropriate people).

*Description of site and participants' characteristics:* The results of trials are a function of the environment in which they are conducted (e.g. yield of crops is affected by soil fertility and rainfall). Also a farmer's comments about a trial will be coloured by that farmers financial circumstance and experience, as well as other factors (see section 6c on "bias").

*Recording system:* A recording system that is relevant to the objectives of the trial will need to be agreed between participants. The proportion of qualitative (e.g. farmer comments) and quantitative (e.g. milk yield in litres/day) information to be recorded will depend on the objectives of the trial and the resources available. In some cases the farmer will be the main recorder of information, and in other cases researchers or extension field staff might visit to take data. It is important that each person involved is clear about their respective roles.

*Training in methods/concepts:*. For both farmer-led and researcher-led trials, the main objective is to make meaningful comparisons between alternatives (treatments). Whether the evaluation is to be carried out by farmers or researchers, confidence in the results of the experiment will be increased is basic experimentation principles are followed. These will usually include the use of uniform conditions across the trial, the use of control treatments (comparison against a known standard; e.g. local variety), and the use of replications (repeating treatments several times). Field staff and farmers may need training in these concepts, and in the methods to be used in conducting the trial and collecting data. This is especially important if the trial is to be conducted in different communities, so that standard practice can be observed between communities (and, if necessary repeated in different seasons, enabling comparisons to be made between them.

*Uniformity of site and operations:* As mentioned above it is important that the experimental site is selected carefully to be as uniform as field conditions allow, and that all operations (e.g. planting, weeding, harvesting etc.) are done in the same way, and on the same date, for each treatment.

*Comparisons with control:* "Control" treatments are a reference point against which other treatments can be compared. In the case of variety trials, this is often a local

variety. In the case of fertiliser trials it might be a treatment without any fertiliser added - or it might be the recommended fertiliser rate.

*Replication:* If a treatment is only tried in one place, then its performance may be good or bad because of the special conditions of that place (e.g. a good or bad water supply). It is therefore good experimental practice to repeat the experimental treatments in several places and find the average response of each treatment across several different sets of conditions.

*Randomisation:* This refers to the way treatment plots are arranged within the trial. If the arrangement is always the same, then this might build in an advantage or a disadvantage to some plots. An example might be a set of maize trials in which a certain treatment was always next to the road. This might suffer from loss of cobs to cattle or humans, which would affect its recorded yield. Therefore it is better to allocate each treatment in a random way (using random number tables) to reduce the risk of introducing this sort of bias.

*Plot size and shape:* The size of plots is governed by many factors. From the farmer's point of view these may include:

- availability of suitable land, planting materials or labour;
- the size of plot that farmers consider adequate to give a realistic assessment of performance;
- the minimum size that can be managed effectively (e.g. where draft animals are used)

From an experimental point of view it is also important that the plot should be big enough to ensure that the treatments used in any one plot do not affect neighbouring plots (e.g. where a sprayed insecticide is used, or where numbers of irrigations are different between plots).

*Analysis:* Before starting any trial, it is important to have thought through *who* is going to analyse the results, *how* they will be analysed and *when*. This may be, for example, by researchers using statistical analysis, or it may be by farmers in a group workshop.

**STAGES IN ON FARM TRIALS***

1. Farmer selection (see below)
2. Site selection
3. Design and treatment selection
4. Monitoring and data collection
5. Data recording, storage, analysis, reporting and feedback.
6. Evaluation of data and information

* Usually on-farm trials are preceded by the diagnosis and planning stages of the research cycle. Thus the priorities for research, and the "mode" of research (degree of farmer participation) will already have been set.

## Principles of Representational Selection

The selection of trial sites and participants can have a great influence on the validity and transferability of research results.

Trial sites should reflect the conditions under which the results from the trials will be used. It may be necessary to select a number of contrasting conditions (e.g. different soil types or rainfall situations) in order to determine the robustness of technologies across different conditions.

For those experiments that are to be analysed using statistical techniques, it is important that the variability between sites is kept within limits that do not violate statistical assumptions.

When designing the experimental programme it is a good idea to ask what variables are important, and how these vary across the project area. This will allow ou to include these in site selection criteria on a **systematic** basis.

Similarly socio-economic variables, such as distance from markets or wealth rank, should be taken into account when selecting participants. The resource status of a participant will colour their response to a technology, so it is important to know that status in order to be able to interpret their comments and evaluations.

The key tool in the selection of representative participants is **stratification,** which means division into layers (e.g. rich, medium and poor for wealth ranking). Stratification of chosen communities is best done before participant selection, so that these can be chosen on a **systematic basis against carefully defined criteria.** For some trial s it may be important to have strong representation from one group only, for others the trial objectives may require representation from all three groups.

**Participant selection**

The strategy for selection of those to be involved relates to the objectives of the trial and whether contract/collaborative/consultative/collegiate. Options are:

**Volunteer individual participants.**

- Advantage in that it involves those who are willing.
- Assumes that volunteers find the trial relevant, but they may be motivated by expectations of other benefits (inputs, prestige, first chance to exploit the benefits arising from the research etc.)
- Suits contract/collaborative research if the plot is physically appropriate.
- Farmers' interest and commitment is necessary if trial is consultative or collegiate.

**Extension workers select willing individual participants, often on the basis of personal contact with 'progressive farmers'.**

- Compared with the option above, the extension worker can judge whether commitment exists.
- 'Progressive' may be an indication of a better resource base, and such farmers may not be representative of the circumstances of the majority of small farmers.

- The illiterate, women and the poor risk being excluded.
- If the technology is sensitive to resource levels, the results from the progressive farmers may be of limited applicability.

**Purposely chosen participants**

- Chosen from categories of farmers for whom the problem/trial is relevant as shown through the farming systems problem analysis, mapping, gender analysis and wealth ranking.
- Their agreement is necessary.

**Selection by farmers, farmers groups or co-operatives.**

- Invite farmers themselves to nominate trial participants.
- Gives ready access to an organised group and facilitates information sharing on trial.
- Better results from individual trial management and group discussion and evaluation rather than group management of trial.
- Risks excluding non-members.

It is important to specify criteria of selection and to consider consequences for non-participating groups (also see box below).

**WORKING WITH GROUPS**

It is possible to work with groups (e.g. through workshops or community meetings):

1. In exploratory research, when the preferences of farmers is relatively unknown.
2. To gauge the reaction of farmers to a relatively large number of alternatives (too many to be assessed by individuals).
3. In the follow-up or interpretation of results obtained from previous individual evaluations (e.g. during field days or open days)

**INFORMATION NEEDED IN TRIAL PLOT/PARTICIPANT SELECTION**

**Plot information:** Plot history, rotation, inputs, soil type and variation and map through discussion with farmers

**Status of the plot and owner:** Tenure disputes and competing claims, other users of the land. Social acceptability and contact of the owner

**Security of the plot:** Proximity to the house, road, risk of animal damage, theft

**Decision maker**: is the participant the person who makes decisions about the plot? Possible conflicting interests inside the household

**Presence**: Is the person involved going to be around or working away from the village?

**Recommendation Domains:** If there is already a useful set of recommendation domains for the area, it is usually useful to allocate participants into their respective domain. If no such classification exists, it may be worthwhile devising one (based on socio-economic and physical factors).

**Clear agreement**: On roles and responsibilities of all parties (see box following).

**POINTS FOR FARMERS AND RESEARCHERS TO CLARIFY**

1. What is the purpose of the trial?
2. What information or other benefits could result from the trial that would be of use to the farmer?
3. What commitments are required:

- on the part of the farmer?
- on the part of the researcher?

4. What is the trial procedure: how will the farmer take part?
5. What has been agreed between farmer and researcher:

- site selection?
- treatment selection?
- dates and times for key activities (planting, weeding, etc.)? which activities the farmer is responsible for, and which activities will the researcher carry out?
- appropriate times for evaluation (by the farmer, by researchers?)
- access to the trial by others (local and external)

## On-farm trial designs

One of the key principles of on-farm trials is that there should be *clear objectives.* When the objectives have been set, and it is also clear who the trial is for, then choosing the trial design will be relatively easy. Generally speaking, trials whose principal objective is to inform researchers tend to be more complex, and rely more on quantitative data, whilst those designed by farmers to identify improved solutions to local problems tend to be simpler - with subjective evaluation being more important than actual measurements. However, most situations benefit from a complementary mix of quantitative and qualitative information.

The different categories of relationships that can exist between researchers and farmers has been previously described. For each category, there tends to be a different type of trial design. A suggested scheme for these is set out below (although it should be borne in mind that this classification is only indicative).

## Table 7.1 TRIAL DESIGNS FOR DIFFERENT MODES OF PARTICIPATORY RESEARCH

| | |
|---|---|
| **Contract** | |
| Design complexity | Complex; e.g. Randomised Complete Block Design (RCBD) |
| Data type | Quantitative |
| Decisions | Researcher |
| Management | Researcher layout and key operations; farmer labour on contract |
| **Consultative** | |
| Design complexity | Varies; usually 2-6 treatments<br>May be replicated on same farm |
| Data type | Mixed; quantitative, with some farmer information |
| Decisions | Researcher, after consulting farmer |
| Management | Researcher layout and key operations; farmer labour under researcher instructions |
| **Collaborative** | |
| Design complexity | Simple; usually 2-4 plots |
| Data type | Mixed, with emphasis on farmer evaluation |
| Decisions | Made jointly between researcher and farmer |
| Management | Farmer management |
| **Collegiate** | |
| Design complexity | Simple |
| Data type | Qualitative e.g. Pairwise comparisons using farmer's criteria |
| Decisions | Farmer |
| Management | Farmer management |

**Examples of on-farm trial designs**

The figures below (Figures 7.1 (a)-(e)) show a few examples of on-farm trial designs.

Figure 7.1a is about as simple a design as possible, in which an area is planted to a new variety and this is compared to the local variety growing all around it. This may be similar to farmer's own experimentation. There is no replication, unless this same experiment is repeated in other farmer's fields.

In Figure 7.1b the layout has been refined a little, so that the new variety (or varieties) and the local variety are in plots.

In Figure 7.1c the layout known as a "diamond design" has been used. This allows two variables to be compared, and the interaction between the two variables studied, giving a large amount of useful information from a small area. In this case the two variable are variety (new and local) and fertiliser type (fertiliser and local manure). This layout is simple enough for experimenting farmers and their neighbours to understand and evaluate.

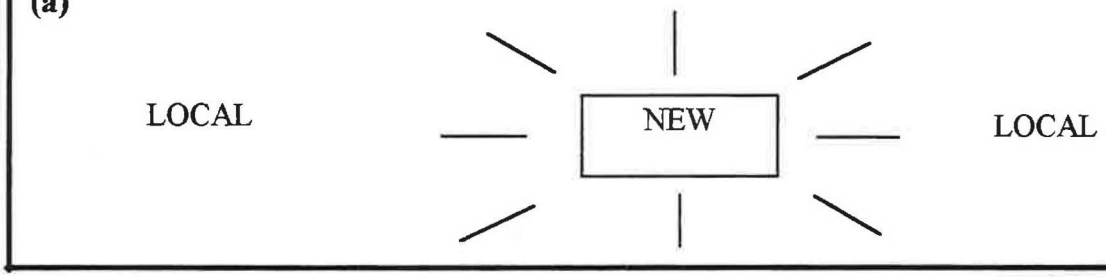
Figure 7.1d is an example of a varietal trial comparing six varieties. Normally one of these would be the "control" variety against which the performance of the others would be compared. In many cases this control variety would be the local variety used and well known by farmers, or the variety recommended by the extension services. Normally this trial would be repeated on several farmer's fields in order to be sure that the performance of each variety was not due to favourable conditions in one or two places. Six varieties is usually about the maximum for easy comparison using farmer evaluation (e.g. at farmer's field days using ranking methods).

Figure 7.1e is a much more complex design. It is a randomised complete block design. The treatments (A-F) are repeated three times (in replications or blocks). In each block the treatments have been allocated randomly to their plots using random number tables. This type of design requires careful statistical analysis, and is too complex for farmer evaluation without careful explanation (perhaps to a small group of experimentally-minded farmers).

These are just a few examples of the wide range of possible trial designs. The design must be relevant to the objectives of the trial, be easily evaluated by those doing the evaluation and suit the conditions under which it is carried out. For instance a plot of land that is very variable (e.g. small mountain terraces) may require a different type of design to a uniform piece of valley land.

**Figure 7.1 a to e EXAMPLES OF ON- FARM TRIAL DESIGN**

**(a)**




**(b)**

| NEW | LOCAL |
|---|---|

| NEW (1) | LOCAL | NEW (2) |
|---|---|---|

**(c) "Diamond design"**

| NEW VAR. LOCAL MANURE | NEW VAR. FERTILISER |
|---|---|
| LOCAL VAR LOCAL MANURE | LOCAL VAR FERTILISER |

**(d)**

| VAR (1) | VAR (2) | VAR (3) | VAR (4) | VAR (5) | VAR (6) |
|---|---|---|---|---|---|

**(e) RCBD**

| | | | | | |
|---|---|---|---|---|---|
| A | C | F | B | D | H |
| H | F | G | C | A | E |
| D | B | A | E | B | C |
| G | E | D | H | F | G |

Block1 Block 2 Block 3

**An example of simple and effective on-farm, farmer-managed research**

The box below is an example of the results of a farmers' observation in Nepal.

**FARMERS EXPERIMENTING IN THE HILLS OF NEPAL AND PROVIDING NEW INFORMATION FOR RESEARCHERS.**

A farmer who received 500g of lentil seed in package from Pakhribas Agricultural Centre research station planted one-third of the seed on *khet* land and on paddy bunds in July. He thought it would grow well on the paddy bund, as do other legumes such as soybean and black gram. Unfortunately, the farmer discovered that lentils cannot be grown during the summer; his crop was heavily infested with summer weeds and his plants did not grow well in heavy summer rain. The farmer then intercropped one-third seed with potato during January in a high-altitude maize system. The crop did not grow well again, this time because of the cold and, at a later stage, damage by pre-monsoon rain.

The farmer continued his experimentation and planted the remaining seed during the first week of September, after harvesting potato in a potato-maize cropping pattern. The growth of the lentil was good and the crop utilised residual moisture for its development. The farmer thus was able to harvest lentil successfully during February. In this way, the farmer not only discovered the proper planting time for lentil, he also provided feedback to the researchers that lentil can be grown successfully at high altitudes where a potato-maize system is practised and land is kept fallow during the winter season.

Farmers growing lentil also learned to mix lentil biomass with kitchen waste to feed to cattle and buffaloes, the milk yields of which increased by 20%.

Source: Chand and Gurung. 1991.

## Monitoring and evaluation of on-farm trials

Monitoring and evaluation of the performance of on-farm trials can be carried out by farmers, extension staff, researchers or any combination of these three groups, depending on the objectives of the trial and the arrangements that have been agreed.

Often data is collected throughout the duration of the trial, and then this is complemented by an open day or field day to which neighbours and other researchers might be invited. These open days are a good opportunity to record, in a systematic way, the opinions of different groups of visitors (e.g. men and women, richer and poorer farmers, farmers and technicians).

There is scope for inviting farmers to evaluate researcher-managed trials as long as the trial's components are carefully explained. Farmers should be treated as visiting experts. Under these conditions these visits often result in carefully thought out and useful suggestions being offered by farmers.

On farm trials can be an important focus for discussion and exchange of information between extension and farmers over the growing season.

Discussions and monitoring of performance can guide planning for the next stages of on-farm research and dissemination

It is important to match the scale of data collection and observations to the capacity of farmers and research/extension staff to record and analyse the information.

Exchange and discussion of results is important in all research 'modes'. Thus the results from all on-farm trials should be shared with the collaborating farmers, and also with the communities in which they are living.

The box below gives some ways in which farmers can be involved in the evaluation of on-farm trials.

**METHODS FOR EXPLORING FARMERS' EVALUATIONS**

- discussions between researchers and farmers on trial sites
- farmers workshops
- farmer to farmer visits - farmers present trials to other farmers and extension/researchers
- farmers visit the research station - for early indication of farmers opinions
- focus group discussions with local 'experts' - good for specialised areas e.g. processing, marketing.
- consumer testing - taste panels and ranking of scores
- preference ranking - chooses between paired alternatives, then all options are ranked
- matrix analysis - choices or comparisons are ranked against valued characteristics.

**Criteria for the evaluation of on-farm trials**

Conventional agricultural research has used biological and physical criteria (e.g. yield of grain or milk, percentage infection or numbers of days to harvest) for the comparison of different treatments (e.g. varieties or breeds or the effectiveness of different pesticides). These criteria are still valid, but often the decisions that farming families take are also based on social, cultural and economic factors. Some of these are given in the box below.

**EXAMPLES OF SMALL FARMERS' OBJECTIVES WHICH DETERMINE HOW THEY EVALUATE NEW TECHNOLOGIES**

- Provision of food for the family over the whole year
- Elimination of serious losses
- Better yield for a given amount of land, labour or capital
- Diversification of income
- Contribution to the social life of the community
- Shared resources with other members of the community
- Provides for short-term family expenses
- Provides for longer-term family needs (e.g. education)

**Tools for evaluation with farmers**

Three of the different ways in which the opinions of farmers can be systematically compared are given here. Others can also be found in the chapter on Farming System Analysis (Chapter 9).

**1. Absolute evaluation**

In this method, each alternative is judged on its merits, and it is decided whether or not to continue with the treatment or to discard it. This method is best used in preliminary testing, when one is trying to reduce the range of possible treatments to a manageable number.

For example, where 12 new varieties are being tested against a local variety, the interviewer (after a period of open questioning) might ask of the farmer:

- Do you think it is worth planting this variety next season?
- Shall we continue testing this one?
- Do you think we should take this treatment out of the next trial?

**2. Paired comparisons**

Each technological option is judged as being better or worse than one or more other options. This is best done with a reduced number (<6) of options.

In this example there are 3 options (A, B, and C). Each is compared to all of the others separately (i.e. A with B, A with C and B with C). This is done in a matrix:

| | | | |
|---|---|---|---|
| A | X | A | C |
| B | A | X | C |
| C | C | C | X |

Thus although A is judged better than B, C is judged better than A. Also in comparing C with B, C is judged to be the better. Overall C is judged the best. The **reason** for this judgement should be explored.

Alternatively several new alternatives could be judged against the present technology used by a farmer. In the example below, three new technologies (A, B and C) are compared to the farmers technology (T).

| | | | |
|---|---|---|---|
| | A | B | C |
| T | T | T | C |

Thus in this example the farmers technology is judged to be superior to A and B, but C is judged to be an improvement on the farmer practice. Again it is important to know why this is thought to be so.

### 3. Ranking

This is a process of putting a number of alternatives in order of preference. Farmers (may be different members of the household, or different interest groups separately) can do this according to their own criteria.

These criteria should be identified; encourage the participants to "think aloud" when they are doing the ranking. A small number of alternatives (<6) should be attempted at any one time. It is important to give farmers the chance to classify, order and re-order. Allow sufficient time.

The ranking can be done as a matrix with a general ranking, and ranking according to a number of specific criteria, e.g.

| Variety | General order | Yield | Pest resistance | Taste |
|---|---|---|---|---|
| A | 1 | 1 | 2 | 1 |
| B | 2 | 3 | 1 | 2 |
| C | 3 | 2 | 3 | 3 |

**THE IMPACT OF RESEARCH-ORIENTED AND EXTENSION-ORIENTED FARMER GROUPS IN BOTSWANA**

- The strong and sustained dialogue between farmers and researchers has:
- given greater flexibility to the research process, as technology options can easily be moved into the testing phase, and researchers respond rapidly to needs and interests of farmers;
- increased the range of topics under joint examination, so increased diversity of options open to farmers;
- led to attitude change in scientists, as they appreciated the benefits to all that could be achieved and enjoyed the personal success;
- developed improved linkages between on-station commodity researchers and FSR teams, as demand for their technologies and feedback from farmers grew;
- increased the total research capacity beyond the available research resources;
- increased linkages with NGOs, as they became involved with the groups;
- led to significant increases in grain (sorghum and millet) yields with low external input technologies - increases over 3 years were 71% for double ploughing, 23% for row planting and 56% for small applications of phosphorous (20g/ha).

Sources: Heinrich et al, 1991: Norman et al. 1989

# 8. PARTICIPATORY RURAL APPRAISAL

Rapid Rural Appraisal (RRA) developed in the 1970s and 1980s as a method for researchers and development workers to gain a rapid understanding of rural situations without lengthy and expensive formal surveys or case studies which were difficult to interpret. The motivation was for more efficient collection of information and more comprehensive descriptions for use in development or research planning by the "experts".

In contrast, in the 1980s and 1990s, Participatory Rural Appraisal approaches developed as a way to facilitate more equitable and active participation of local people in defining their own development objectives.

PRA evolved out of RRA, which had drawn on elements from applied anthropology, farming systems research and agro-ecosystem analysis. PRA also drew on thinking in applied anthropology and participatory action research (Figure 8.1).

In PRA, information belongs to and is for the use of local communities. It uses tools that help to encourage expression of the viewpoints and priorities of community members rather than predetermined and often irrelevant questionnaires (figure 8.2). It assists researchers, extensionists and others to understand the situation in an area through close interaction with rural people. This understanding forms the basis of decisions for further action by, or with, the community.

However, despite the different philosophies of PRA and RRA, the term PRA has largely come to replace RRA. While PRA has retained its participatory emphasis, it has acquired the concern with data quality, originally part of the RRA concerns.

The techniques and tools of PRA can be used at any point in the research cycle (diagnosis, planning, monitoring, evaluation, adaptation and adoption). Often the establishment of a farming systems or participatory research programme is preceded by one or more PRAs that help to describe the study area and identify its priority problems and opportunities.

PRA synthesises information collected through discussion with local people with other relevant information ("secondary data" e.g. maps, population statistics, studies and previous formal surveys etc.).

Information is collected by a variety of methods so that it can be cross checked. This cross checking is known as "triangulation" (figure 8.3).

The information gathered during PRAs is a mixture of qualitative and quantitative. Qualitative information is that which is not collected in numerical form, and which is not easily quantified. Often this information provides an assessment based on a range of criteria. Quantitative data are the result of measurement, usually of a limited number of discreet parameters.

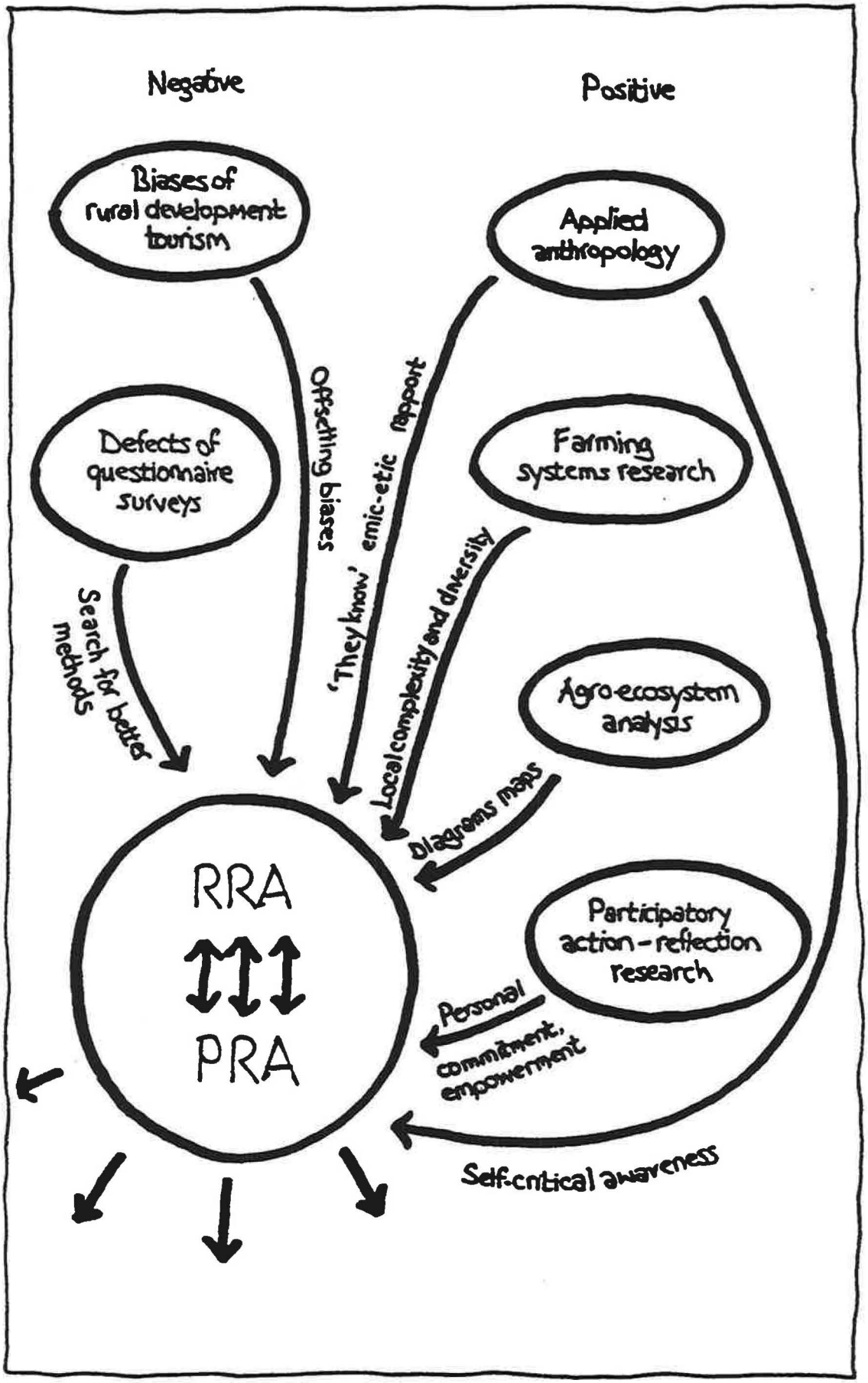



**Figure 8.1 Some sources and relatives of RRA and PRA.**

**Source: Chambers, Robert 1997, Whose Reality Counts? IT Publications Ltd. London.**

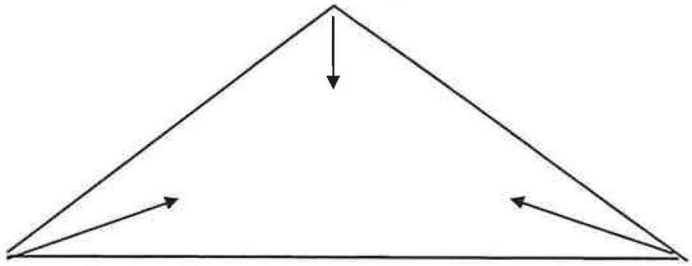

**Figure 8.2 Local Perceptions of Outsider Researchers**

Source: Pretty, JN, Guijt, I, Thomson, J and Scoones, I 1995. Participatory Learning and Action: A trainer's Guide . IIED. Participatory Methodology Series, London IIED.

Much information that was previously used for description, and classified as qualitative, can now be used in a more systematic way and in some cases subjected to statistical analysis. Thus farmer's responses to questions posed in semi-structured interviews can be coded, and the frequency of different responses analysed using special software packages such as SPSS. Similarly farmer's opinions can be ranked or scored so that qualitative information is organised in such a way that it can be analysed.

While each method appears to be informal in operation, the whole exercise has its own discipline in terms of careful preparation, teamworking and recording.

**Figure 8.3 TRIANGULATION**




Source: Guijt 1992 IIED

PRA is based on three key aspects (see Figure 8.4 "The three pillars of PRA"). The first is that we change our behaviour and attitudes towards rural people, and give them the time and facilities to teach us about their environment. The second is that we freely share our knowledge with them, and respect the knowledge, cultural beliefs and lifestyle that they have. The third is that we chose from a set of (constantly evolving) methods or tools for discussing, visualising, recording and analysing the focus of the PRA.

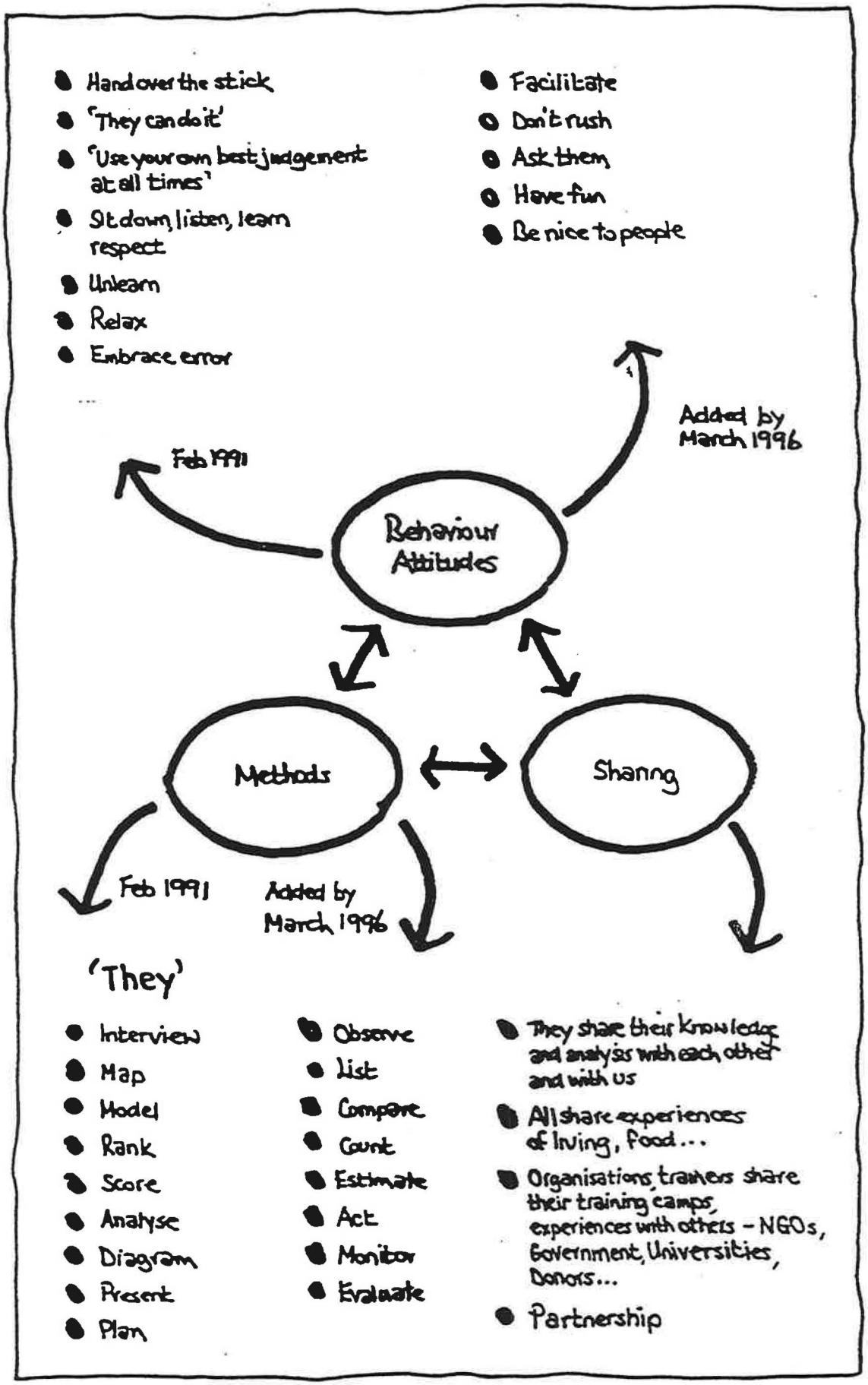



**Figure 8.4 The three pillars of PRA**

**Source: Chambers, Robert 1997, Whose Reality Counts? IT Publications Ltd. London.**

PRAs can be a useful tool at any point in the research cycle. Their general sequence of actions is as below, although these might be modified to suit the specific circumstances of the study.

## PRA: SEQUENCE OF ACTIVITIES

**Defining the PRA study objectives**

↓

**Defining the study area**

↓

**Reviewing secondary data**

(and making direct observations)

↓

**Selection of a team to conduct the PRA exercise**

↓

**Discussion and selection of information to be collected**

drafting of checklist (based on study objectives,

review of data and direct observations)

↓

**Discussion of timing and PRA technique(s) to use**

↓

**Allocation of PRA team duties during exercise**

↓

**Arrival at site**

When planning a project, a new activity or going into a new area, the following steps might be appropriate. These can be assisted by PRA tools:

- **Identify problems**
- **Rank problems**
- **Identify causes and root causes**
- **Identify effects of problems**
- **Identify possible solutions**

Once a number of alternative possible solutions have been identified, these can be tested or implemented through one or more of the following:

- **On-farm research**
- **On-station research**
- **Community development**

## PRA Methods

**Are characterised by:**

- A relatively quick identification of problems and move toward action compared with formal surveys. (There may be a role later for formal surveys in quantification of particular issues)
- A different style of enquiry, based on farmers point of view and ways of explanation.
- listening and dialogue
- Recognition of the difference and diversity of social groups

There are important differences between conventional data collection and survey work and participatory rural appraisal. In **conventional approaches** - e.g. formal questionnaires, surveys were carried out by enumerators who took information away.

**PRA** - is about learning WITH people and is carried out by those who are going to use the information. Information is left with participants.

# SOME PARTICIPATORY RURAL APPRAISAL TECHNIQUES

**Diagramming, mapping and modelling.**

- participants make a village diagram, map or model (figure 8.5). Social resource mapping may show aspects of social relations and household distribution. Maps are useful to stimulate discussion and to explore farmers understanding of their physical and social environment.
- diagram seasonal activity changes by month. E.g. Seasonal calendars for agricultural activities, rainfall, income and expenditure
- daily routines and gender roles charting the activities of different groups.
- Venn diagrams to describe perceived relationships within the community and linkages to other institutions (see figure 8.6)
- Diagrams and visualisation are an important part of the participatory activity in PRA, although such activity may be more readily undertaken in some cultures than others

**Transect walks.**

- systematic walks to explore local practices; researchers observe, ask questions, and listen and the farmers talk and describe their land, farms and how and why they do things.

**Local histories and biographies**

- local histories and timelines are useful to provide a time related context for discussions.
- Biographies, songs and stories give insights into local culture and values.

**Wealth ranking of individuals.**

**Pairwise ranking and scoring of different criteria.**

**Slide shows, video and shared presentations.**

- show what is happening elsewhere and enable discussion of problems not seen by everyone. A good opportunity for cross checking and feedback, criticism and comment.
- Use of video by communities to present own experience.

**Reviewing any secondary data.**

- village census records, maps etc. (Too much can be misleading).

**Direct observation.**

- what do farmers use? When, how, where and why?
- giving credence to indigenous practices and beliefs.

**"Do-it-yourself".**

- farmers teach the researcher different practices. The researcher learns how much skill is needed and this leads to a change in attitude.

**Interviewing.**

- either by the researchers themselves, or by recruiting local teachers, students etc. to collect data after an initial training and orientation period, usually later on in the process of problem appraisal.
- guided interviewing and listening. Interviews are informal and conversational, with only a few questions being pre-determined.
- sequencing and chains of interviews using key-informants or having group interviews.

**Night halts.**

- if researchers overnight in the village, farmers' suspicions about them will change.

**Report writing (in the field)**

- essential whilst the information is "fresh".
- keep self correcting notes and diaries.

**Integration of tools into the research process.**

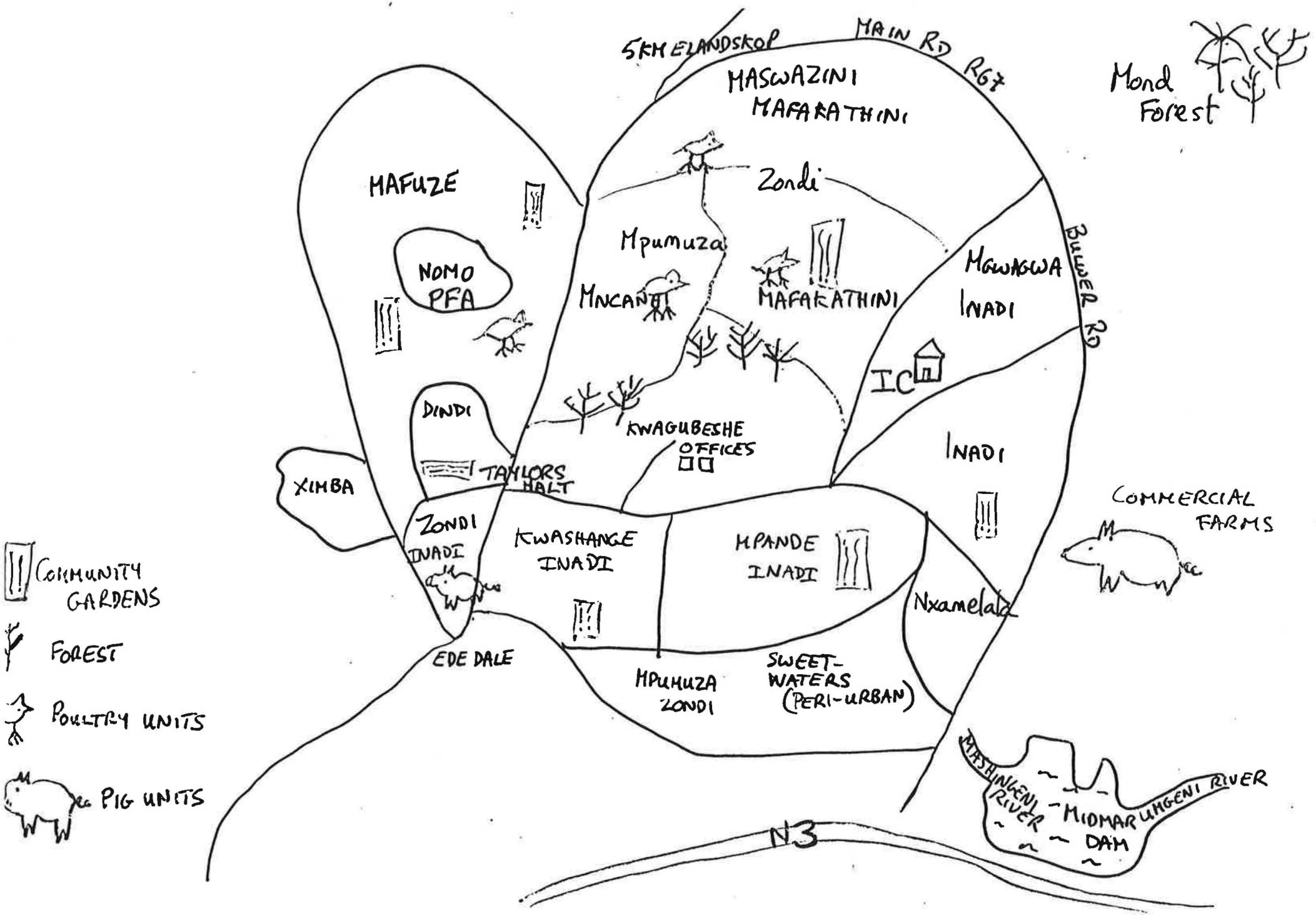
- Different tools are appropriate for different stages - exploration of the farming system, understanding of social groups, problem identification, problem investigation and analysis and identification of possible solutions
- Some tools are appropriate for use in group situations, others for individual use.
- Household case studies are useful for understanding decision making processes.

**The advantages of RRA/PRA are in:**

- **Time reduction**. The approaches rely on rapid identification and analysis in comparison to lengthy farming systems formal surveys.
- **Different style**. The more participatory forms of appraisal are concerned with the farmers point of view and the categories they use to explain their environment rather than with pre-structured questions. The techniques include the use of narrative and biography, drawing on farmers' perceptions of changes and trends.
- **Listening and dialogue**. Scientists do not take a dominant role, but encourage open dialogue and exploratory discussion.
- **Difference and diversity within local community are recognised**. Different social groups have different interests and experience based on gender, wealth, status and ethnicity etc.
- **Group and individual interaction** - discussion takes place in different contexts, with individuals, groups and local "experts". Care is needed to ensure groups do not exclude the resource-poor, and women. Groups may be purposefully chosen. Knowledge is socially validated through group discussion and debate.

A participatory rural appraisal may be exploratory at the early stages of contact with villages. This is a variant of the interdisciplinary diagnostic survey. Later on, it may be focused on a particular topic.

**Figure 8.5 Sketch map of Vulindlela District, KwaZulu-Natal, South Africa.**



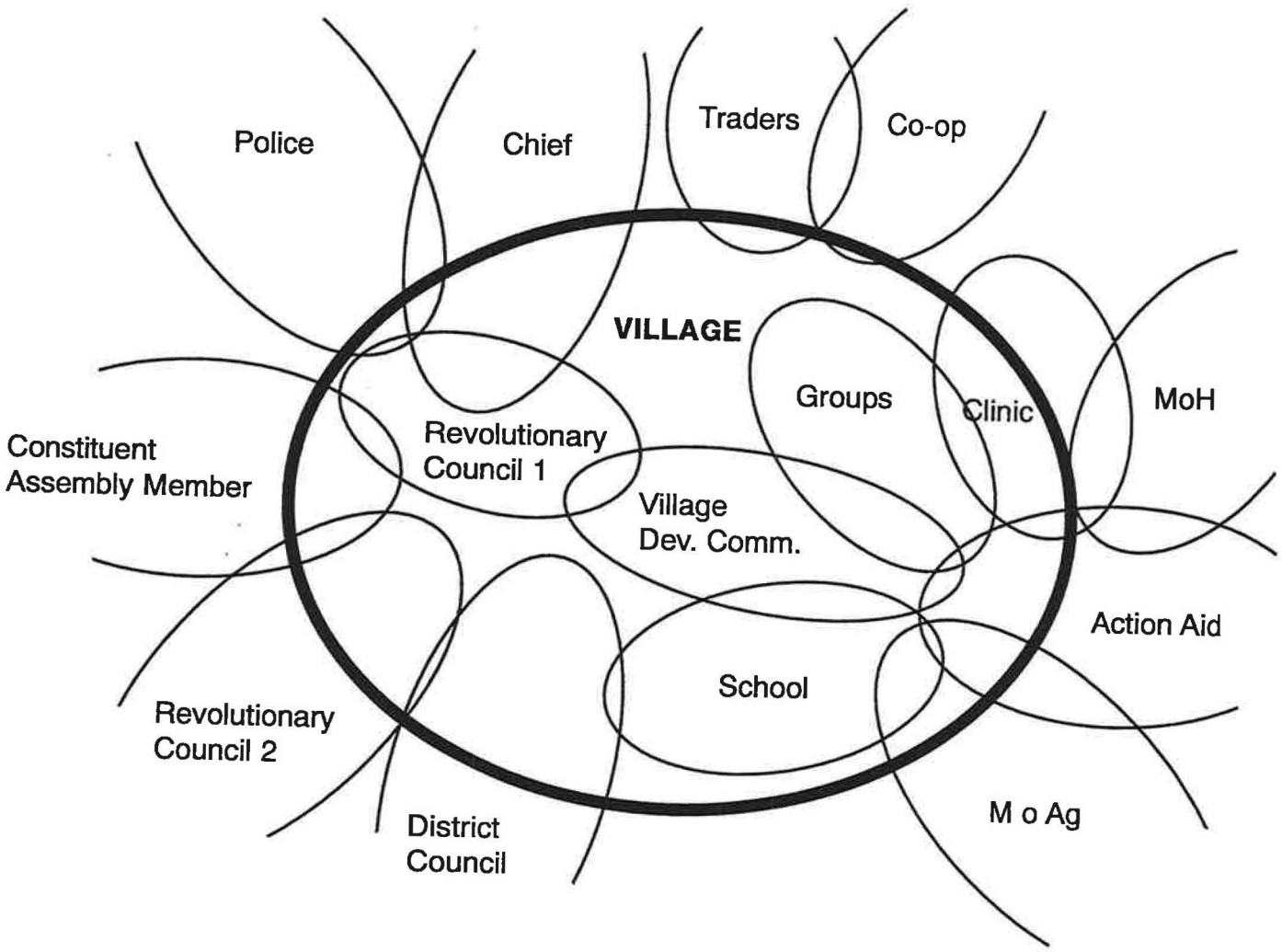



**Figure 8.6 Venn diagram showing linkages within a community near Mityana, Uganda**

PRA techniques used by ACTIONAID farmer participatory research unit in Uganda to identify researchable issues were as follows:

**Joint understanding of the farming system**
Transect walks/direct observation
Seasonal calendars
Social and resource mapping
↓

**Identification of target population**
Social mapping
Wealth ranking
↓

**Problem identification**
Pairwise/problem ranking
↓

**Investigate nature of problem**
Semi-structured interviews
Transect walks/direct observation
Mapping
↓

**Identify possible solutions**
Semi-structured interviews
Direct observation

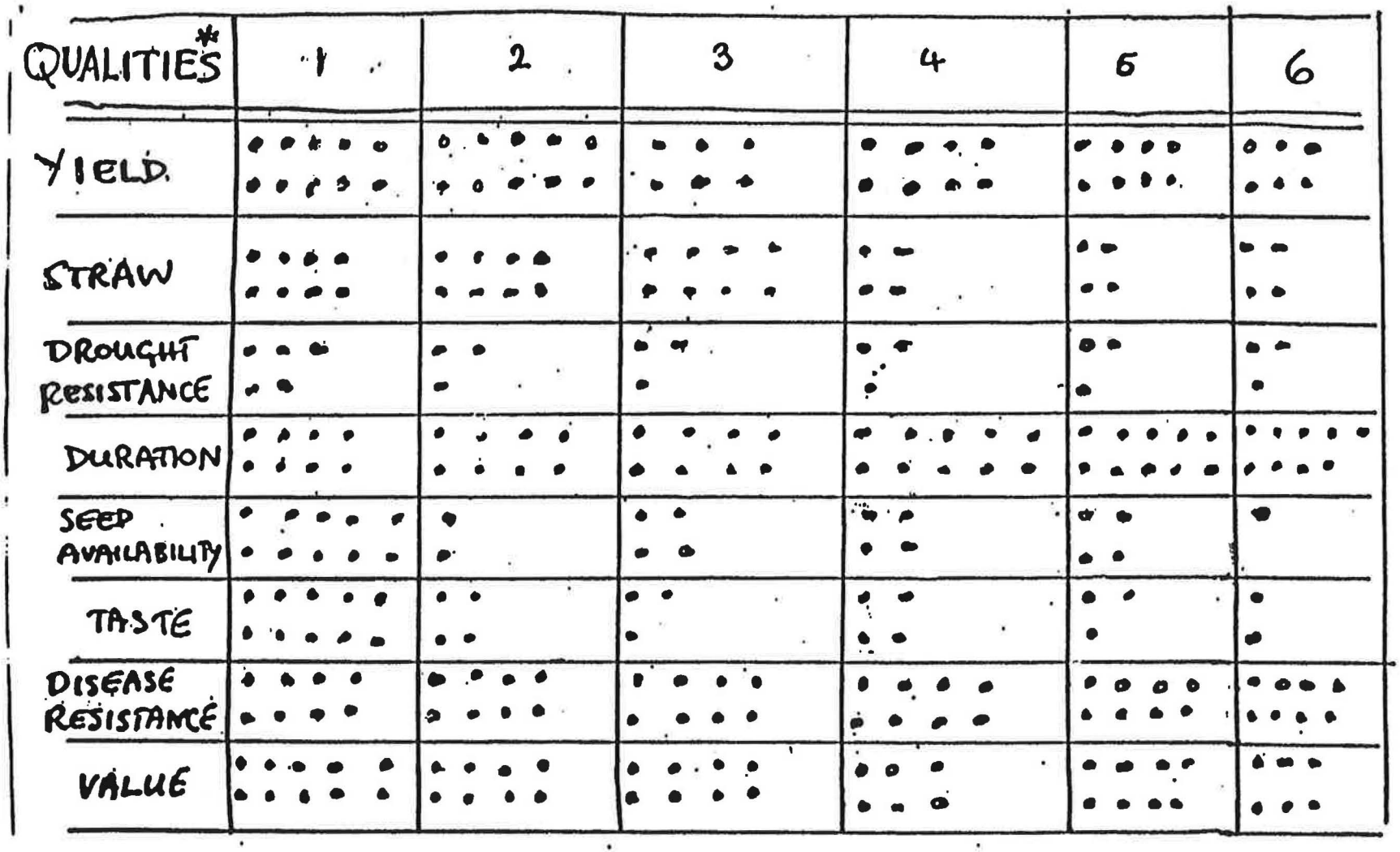
Source: Nabasa, J et al 1995

Two examples of the results from using two different PRA tools are given below. These are:

a) matrix ranking to evaluate farmer preference for millet varieties during the on-farm experimentation phase of the research cycle (figure 8.7). Farmers own criteria are listed in the left hand column, then the attributes of the different varieties discussed. Local materials, such as stones were used for scoring, providing a quantititative expression of preferences.

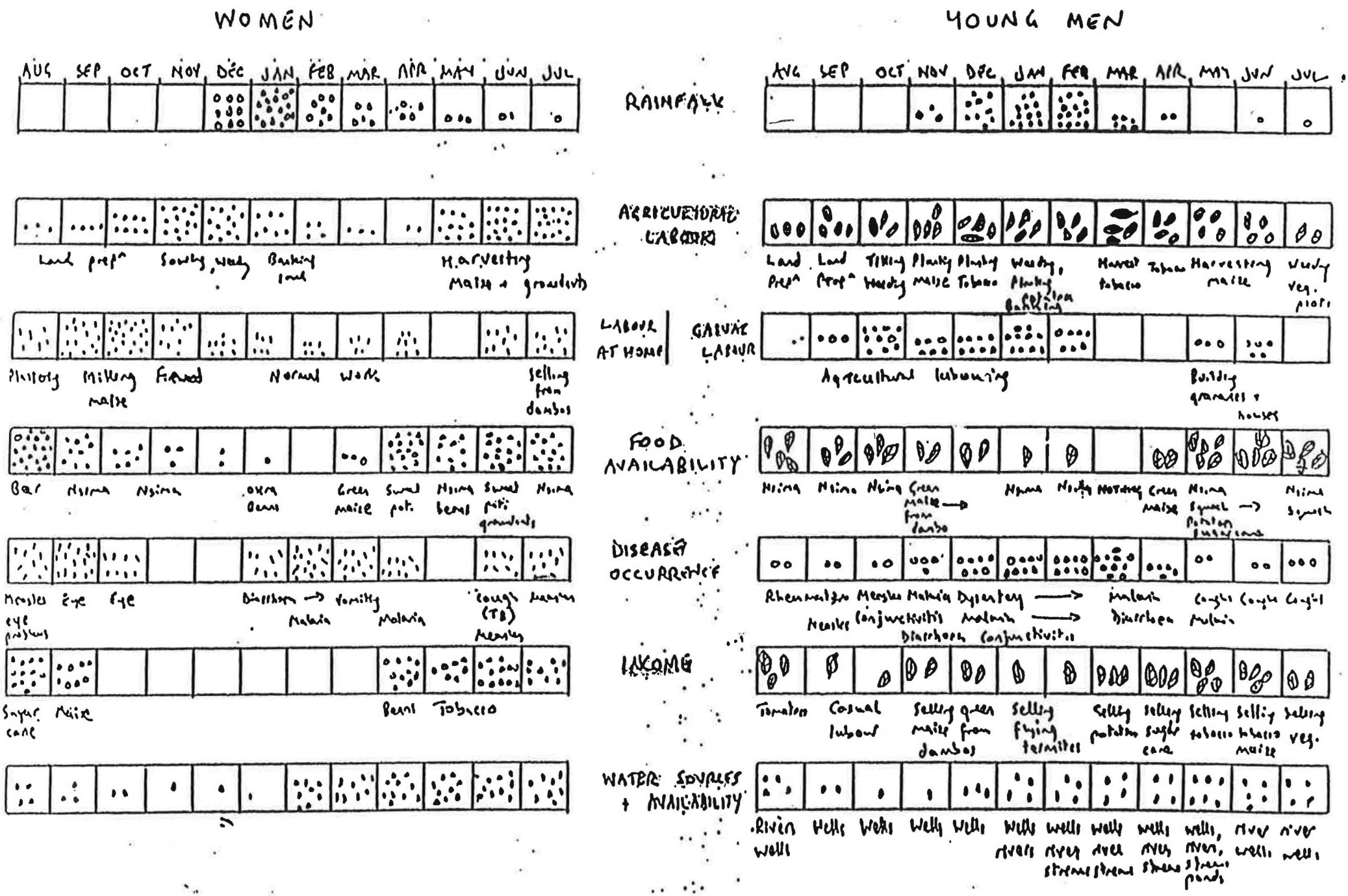
b) a seasonal calendar - often used during the early stages of forming a joint understanding (between farmers, field workers and researchers) of farming and livelihood systems in a community (figure 8.8). The calendar shows differences between the views of women and young men and their different patterns of labour and income. Such calendars can generates a great deal of information useful to analyse constraints which are not directly agricultural, but can affect agricultural production, for example disease occurrence.

**Figure 8.7 Farmers matrix ranking of finger millet varieties**




More Stones Means Better Quality (Except for duration)
From: IIED RRA training notes.

Figure 8.8 SEASONAL CALENDARS FOR PEMBA VILLAGE MALAWI



## Interaction with local people.

Communication between researchers and local people is greatly facilitated by appropriate attitudes on the part of the researchers.

**DIFFERENCES IN ATTITUDES TOWARDS INFORMATION GATHERING**

| Inappropriate Attitude | Appropriate Attitude |
|---|---|
| Farmers are reluctant to adopt, 'lazy' and 'stupid' | Farmers have good reasons for non-adoption |
| We know best | Farmers know their own working environment |
| Farmers should learn from us | Learning is a two-way process with ourselves and the farmers |
| We must tell farmers | We must listen to farmers |
| 'Modern' methods must be superior to 'traditional' | 'Traditional' methods can be as good as 'modern' methods |
| Over-emphasis on quantitative data | Emphasises use of qualitative data or indicators |

**THE SIX LITTLE HELPERS**

The six little helpers are used for **probing**. Probing is very important in gaining a fuller understanding of explanations given by participants. The helpers are:

**Who?**

**Why?**

**What?**

**When?**

**Where?**

**How?**

## Semi structured interviewing

Semi structured interviewing is a major tool of PRA. It is guided interviewing where only some of the topics are predetermined, and and new questions or insights arise as a result of the discussion. The interviews appear informal and conventional, but are actually carefully controlled and structured. Using a guide or checklist the multidisciplinary team poses open-ended questions and probes topics as they arise. New avenues of questioning are pursued as the interview develops. The output is usually in the form of hypotheses and propositions, but can also be in quantitative form.

It is important to avoid ambiguous and leading questions which suggest an answer.

### WHAT'S WRONG WITH THE QUESTION?

- Is it true that it is difficult to get your cattle to the veterinary clinic? (LEADING)
- How do you get your medicine (AMBIGUOUS)
- Wouldn't you prefer to grow improved maize varieties? (LEADING)
- What do you do as a local extension agent? (AMBIGUOUS)
- Isn't the new clinic improving child health? (LEADING)
- Do you sow seeds in a straight row? (LEADING)
- How do you find the school (AMBIGUOUS)
- Shouldn't; you cover your water storage pot? (LEADING)

Leading questions lead the respondent to say yes or no, whereas an open-ended question that uses what? when? where? who? why? or how? opens up the conversation. There may, however, be occasions when closed questions are correct and necessary. There is no absolutely correct or incorrect question; it depends on the stage of the interview, the topic and the context.

**Table 8.1 Do's and don't of Semi-structured Interviewing**

| DO | DON'T |
|---|---|
| • do spend time preparing a comprehensive interview guide or checklist. Write it in for guidance during interviews | • don't interrupt each other |
| • do remember the interview is structured by the team for a purpose | • don't debate issues within the PRA team and not with farmers |
| • do be relaxed and intense (body relaxed but mind in gear) | • don't accept the first answer - probe all topics |
| • do explain clearly who you are | • don't ask leading questions. Any question that can be answered with a 'yes' or 'no' is a leading question. |
| • do let each team member finish their line of questioning | • don't interrupt or pressurise informants |
| • do probe a topic by using the 6 helpers, what, when, where, who, why and how. Also use the key probes :<br>- how do you mean?<br>- tell me more about that.<br>- anything else?<br>- but why? | • don't blame, suggest or promise |
| | • don't side with opinion leaders or agitate |
| | • don't supply answers for an informant who is hesitating. |
| • Also probe by asking informants to role play - "suppose .....! | • Don't switch or drop subtopics |
| • Listen closely | • Don't interview the translator |
| • Record information and write up notes | • Don't repeat questions asked by somebody else |
| • Review progress between interviews. | • Don't ask vague or insensitive questions |
| • Arrange visits beforehand. Work through appropriate authorities and local structures | • Don't violate taboos and norms |
| • Make clear introductions and explanations of working approach – community, groups and individuals | • Don't concentrate on your own interests |
| | • Don't manipulate or create needs. |
| • Choose appropriate locations for individual interviews (privacy) or group discussions – somewhere to sit comfortably. Appropriate time that fits with people's work hours (men and women) | • don't dominate proceedings by using inappropriate non-verbal behaviour. |
| | • don't take up too much time of an informant who is busy. |
| • Use everyday language | • don't show disapproval or distaste about local conditions or drinks or food offered. |
| • Use analogy | • don't indicate disbelief by criticising or even just smiling. |
| • Build up a dialogue | |
| • Learn from what is not said | |
| • Find out about taboos and norms | |
| • Be neutral and objective | |
| • Be creative, adaptable and innovative | |
| • Learn from errors | |
| • Use a variety of PRA techniques | |
| • Cross check information | |
| • Respect farmers perceptions and knowledge | |

## LISTENING TECHNIQUES

| Types | Purpose | Possible Responses |
|---|---|---|
| *Clarifying* | To get at additional facts<br>To help the person explore all sides of a problem | Can you clarify this?'<br>'Do you mean this?'<br>'Is this the problem as you see it now? |
| *Restatement* | To check our meaning and interpretation with the other<br>To show you are listening and that you understand what the other has said. | 'As I understand it, your plan is .....'<br>'Is this what you have decided to do ... and the reasons are ...' |
| *Neutral* | To convey that you are interested and listening<br>To encourage the person to continue talking. | 'I see'<br>'I understand.'<br>'That is a good point'. |
| *Reflective* | To show that you understand how the other feels about what (s)he is saying.<br>To help the person to evaluate and temper his or her own feelings as expressed by someone else. | 'You feel that...'<br>'It was shocking as you saw it.'<br>'You felt you didn't get a fair hearing.' |
| *Summarising* | To bring all the discussion into focus in terms of a summary.<br>To serve as a spring board to discussion of new aspects of the problem. | 'These are the key ideas you have expressed.....'<br>'If I understand how you feel about the situation...' |

# 9. FARMING SYSTEMS ANALYSIS

Farming systems analysis uses a number of PRA tools to understand the nature, problems and opportunities of farming systems in a particular area. Steps in the process might be as follows:

- Visit to community leaders
- Drawing of community map by community members
- Drawing of farm maps by farming families
- Walking farm transects with community members
- Social/institutional mapping of the community (eg wealth ranking, Venn diagrams etc)
- Collating information into a farming systems diagram
- Problem ranking by community members
- Problem tree and solution tree analysis
- Identification of researchable opportunities
- Development of a research programme

**Systems diagnosis** is the process by which farmers and others draw out or diagram the interactions between the farmer's bio-physical and socio-economic situation.

**A systems diagram** is a simplified pictorial representation of how biophysical and socio-economic conditions interact. There are different ways in which these interactions can be represented.

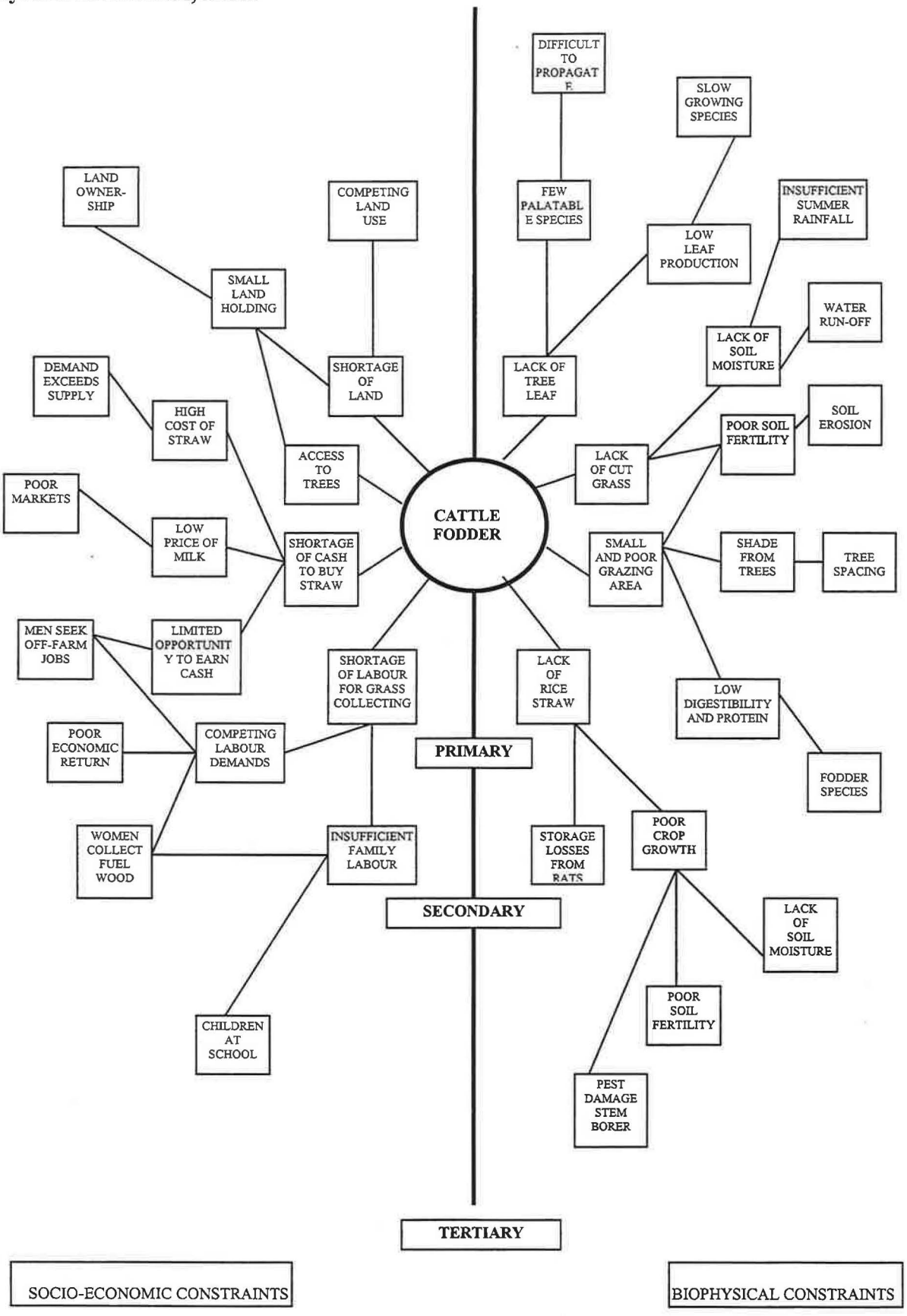
In figure 9.1, a method is demonstrated in which a systems diagram is constructed by following five steps:

1. Placing the farmer's problem in the centre
2. Assigning each primary biophysical cause of that problem to a box and linking that to the right-hand side of the central box.
3. Assigning each secondary cause a box and linking that to with the appropriate primary cause
4. Following the same procedure for each socio-economic constraint.
5. Arranging primary and secondary causes and constraints into a circle surrounding the central problem into a circle surrounding the central problem with bio-physical causes on the right-hand side and socio-economic constraints on the left. The size of each segment is determined by the number of responses.

Similarly, the problems, causes and effects of decreasing yield in pearl millet can be developed through the use of PRA tools, and might be represented diagramatically as in Figure 9.2.

Discussion between farmers, researchers and field staff might then develop a similar diagram setting out potential solutions, their effects and the actions required to bring them about, as shown in Figure 9.3.

**Figure 9.1. Representation of the interaction of causes and problems in a farming system in Baraudi, India**



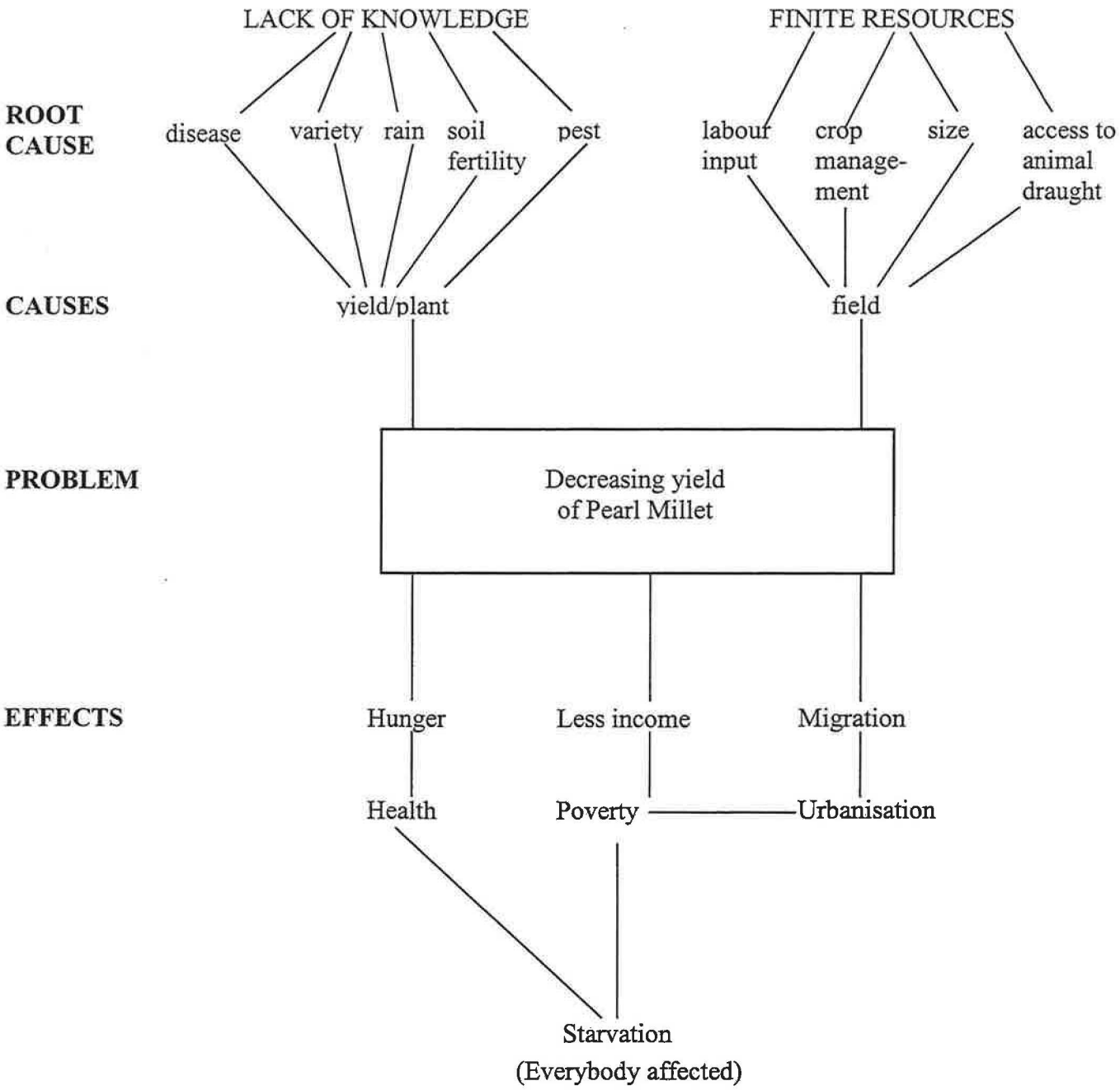



**Figure 9.2 Problem analysis for constraints on millet yields**

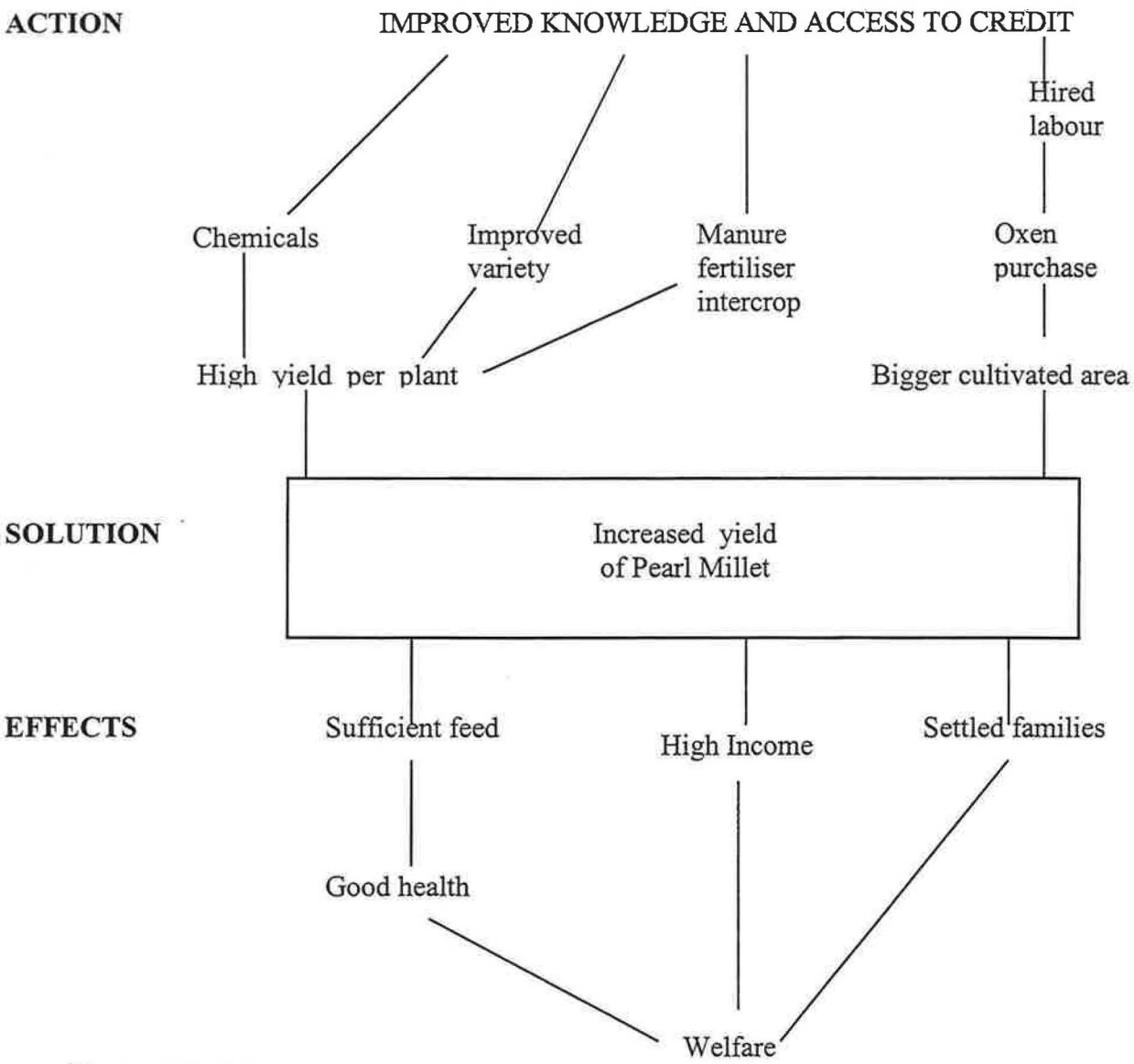



**Figure 9.3 Solution analysis for constraints facing millet.**

**Inter-relationships and interactions between components of livelihood systems.**

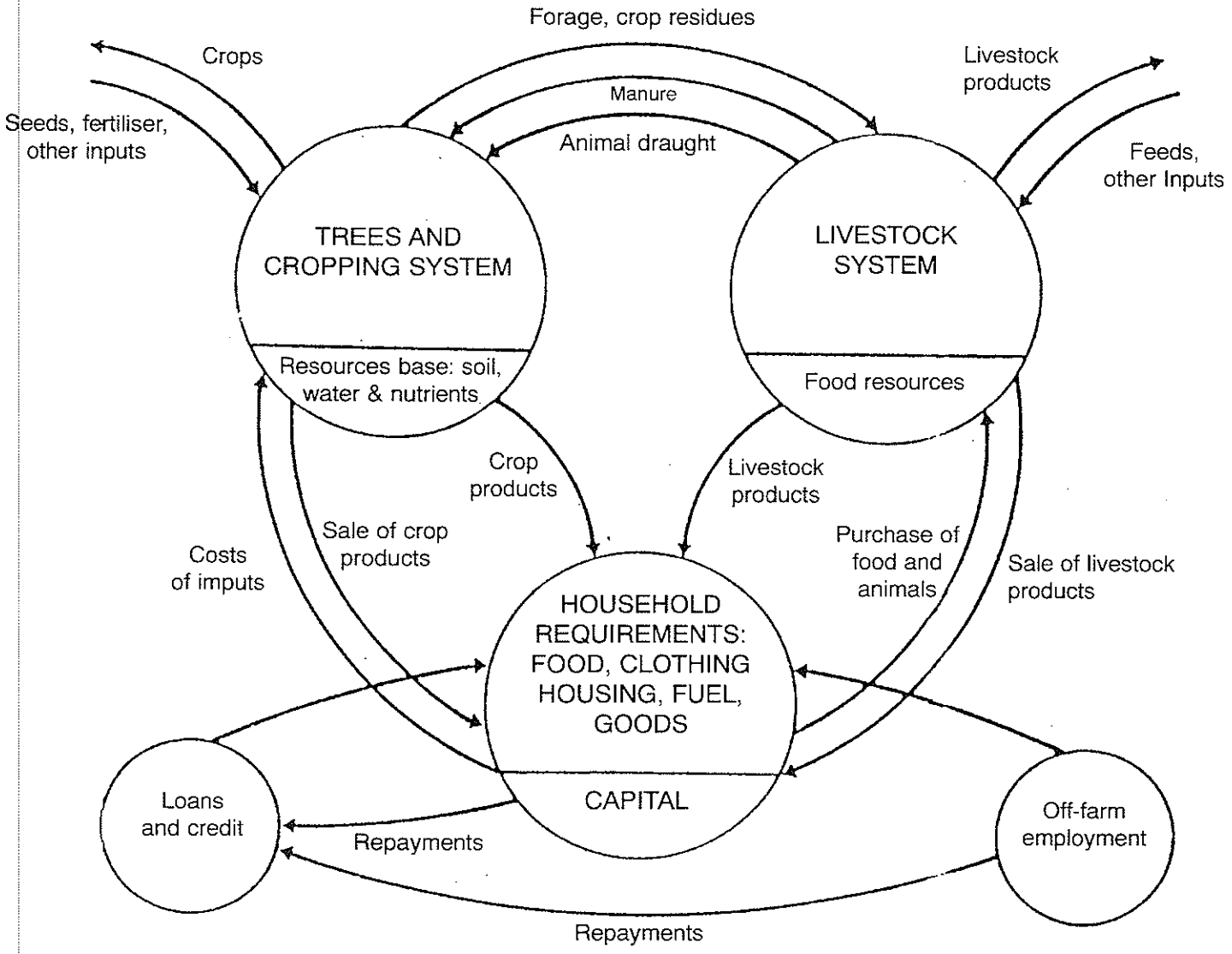
There follows a series of diagrams showing examples of the many possible ways in which one might represent the inter-relationships of components of farming, or livelihood systems.

In Figure 9.4 the main components of the system are represented as circles and the flows of products (inputs and outputs) are shown between them. Note that no quantities are given to these flows in this example.

Figure 9.5 shows a bio-resource flow model. This is similar in principle to Figure 9.4, but a first attempt has been made to quantify the elements of the diagram (but not the flows).

Figure 9.6 is a Venn diagram which shows the different local and external institutions that are influential on community life for a village. Note that some are wholly within the village, some link with village institutions and others have an independent influence on the village.

**Figure 9.4 Some Farm System Inter-relationships**



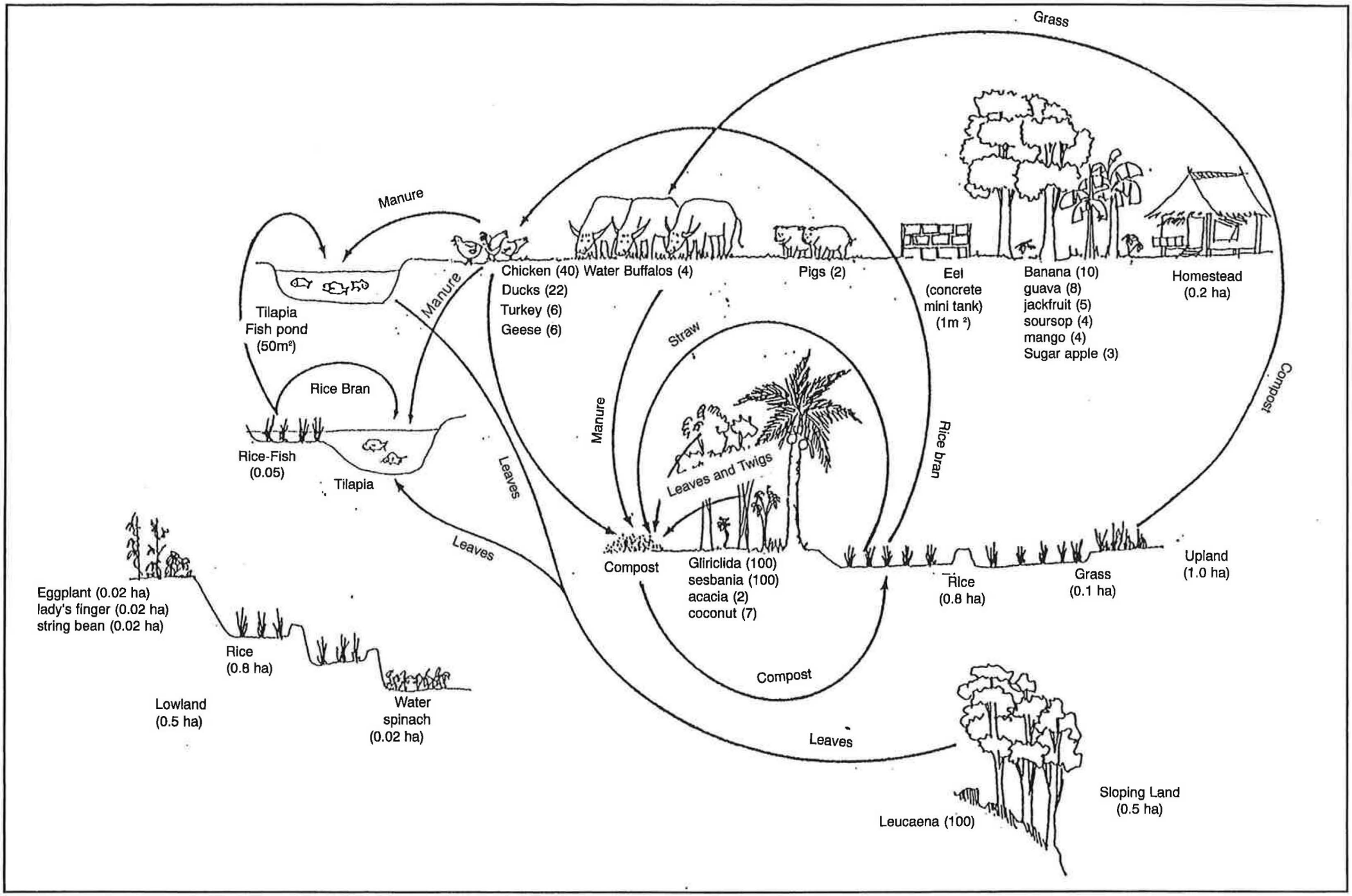



**Figure 9.5 Biosphere resource flow model**

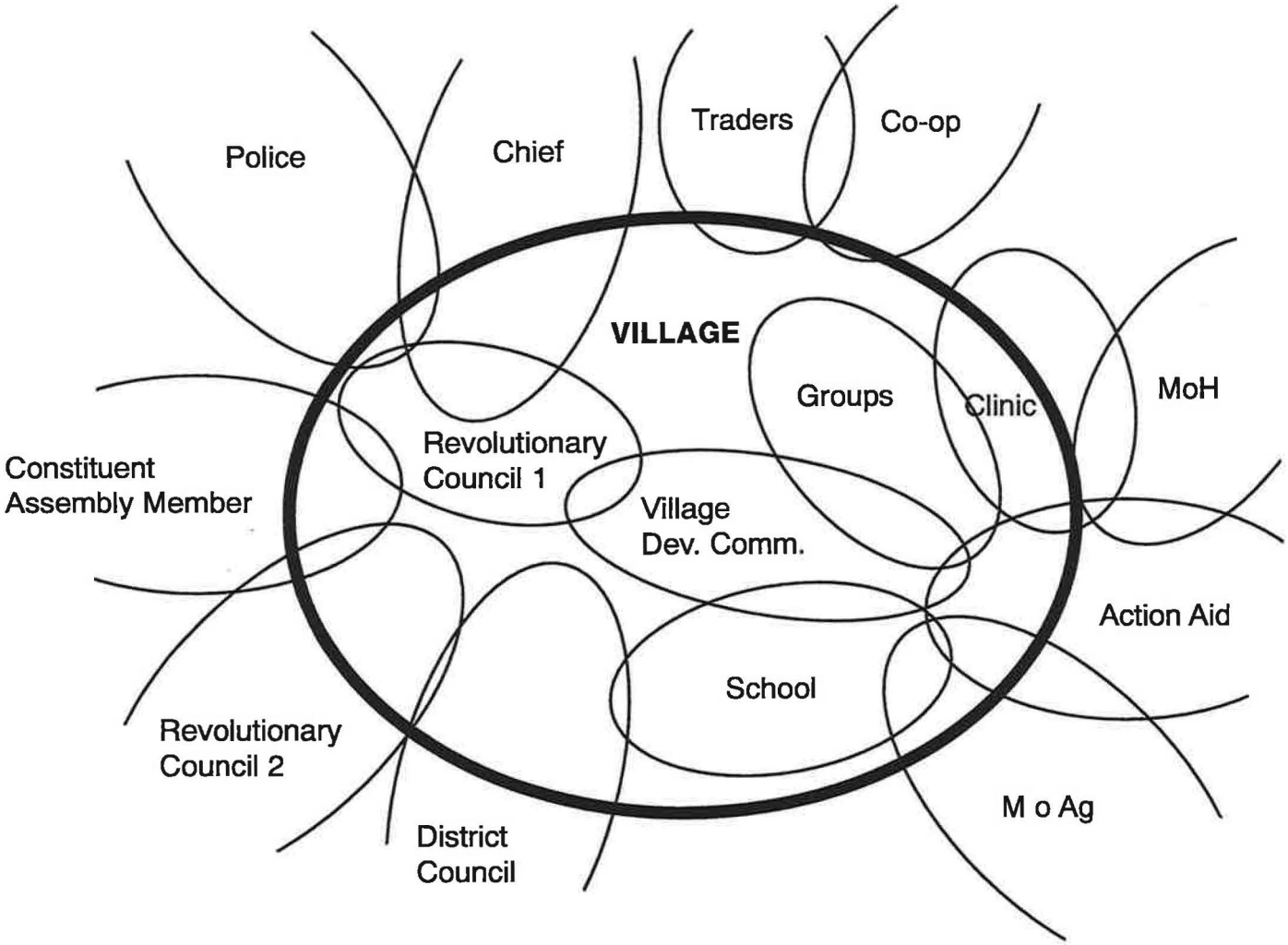



**Figure 9.6 Venn Diagram**

Figure 9.7 is a completely different way of representing the characteristics of a farming system. In this instance the system has been analysed for four parameters (diversity, capacity, net income and recycling) that help to describe the sustainability and productivity of the system. The different shape of the kite before and after the integration of the components of the farming system help us to understand the trade-off between environmental, productivity and income-generation effects.

Figure 9.8 is from Vulindlela in South Africa. At first sight the diagram is complex, but if it is followed through line by line, the logical inter-relationships (interdependencies) can be appreciated. An understanding of these helps us to develop technologies or strategies that don't upset the balance of these inter-relationships. That can easily happen if we look at elements of the farming system in isolation, without considering the overall bio-physical and socio-economic picture.

**Conclusion**

Farming systems analysis helps us to represent the complex inter-relationships that exist between components of the farming system. This in turn can assist researchers, extensionists and farming families to identify constraints or opportunities for direct intervention, support or research.

Farming systems diagrams, such as those shown in Figures 9.4 to 9.8, show the close dependencies between socio-economic and bio-physical components of families' livelihood systems and biological production systems.

Farming systems diagrams such as the one from Vulindlela (Figure 9.8) is a summary of information collected using several different PRA tools. It is a generalised picture, but could equally have been developed for a single farm or a whole community. It could be further enhanced by putting values on the various flows represented by lines

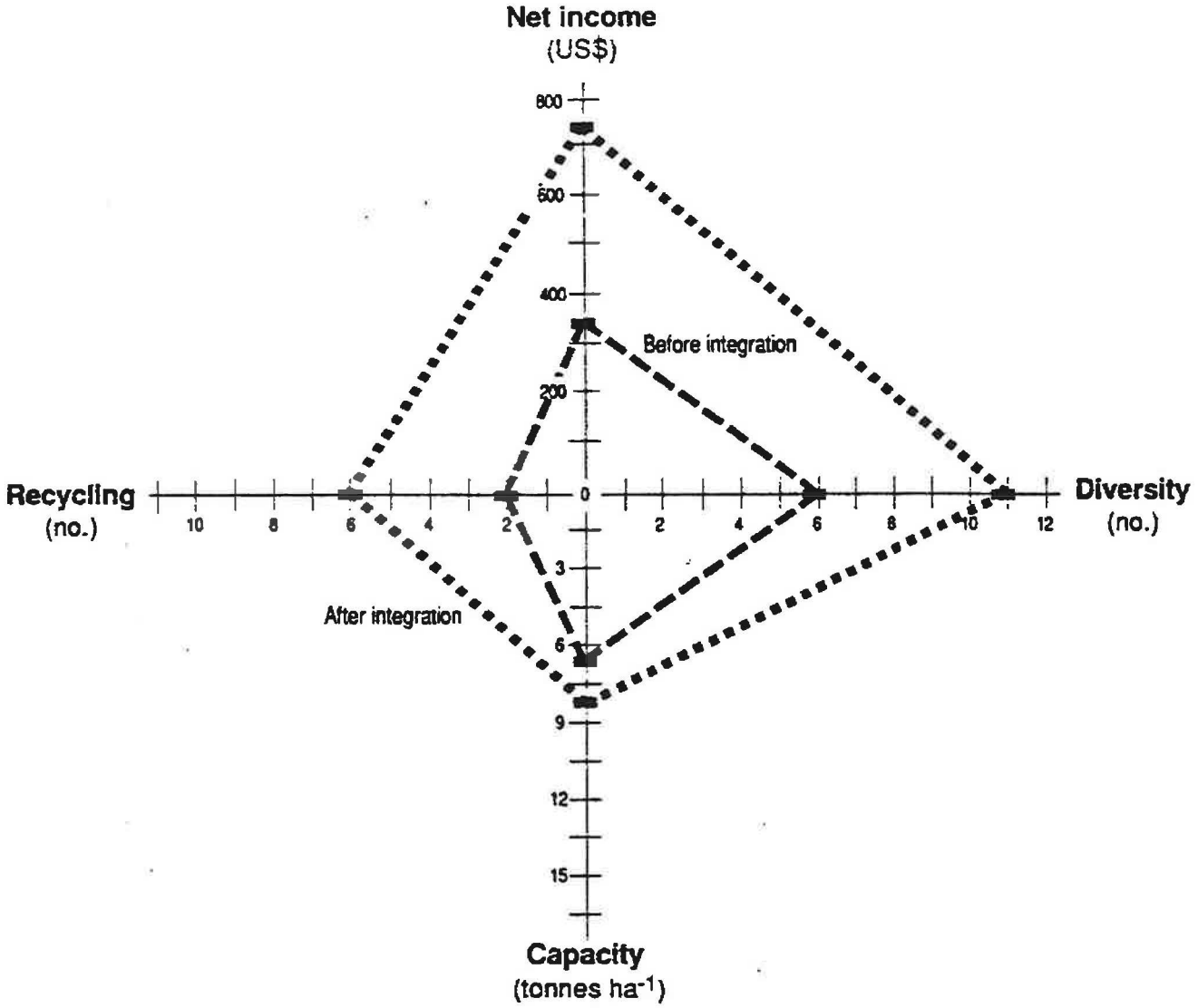
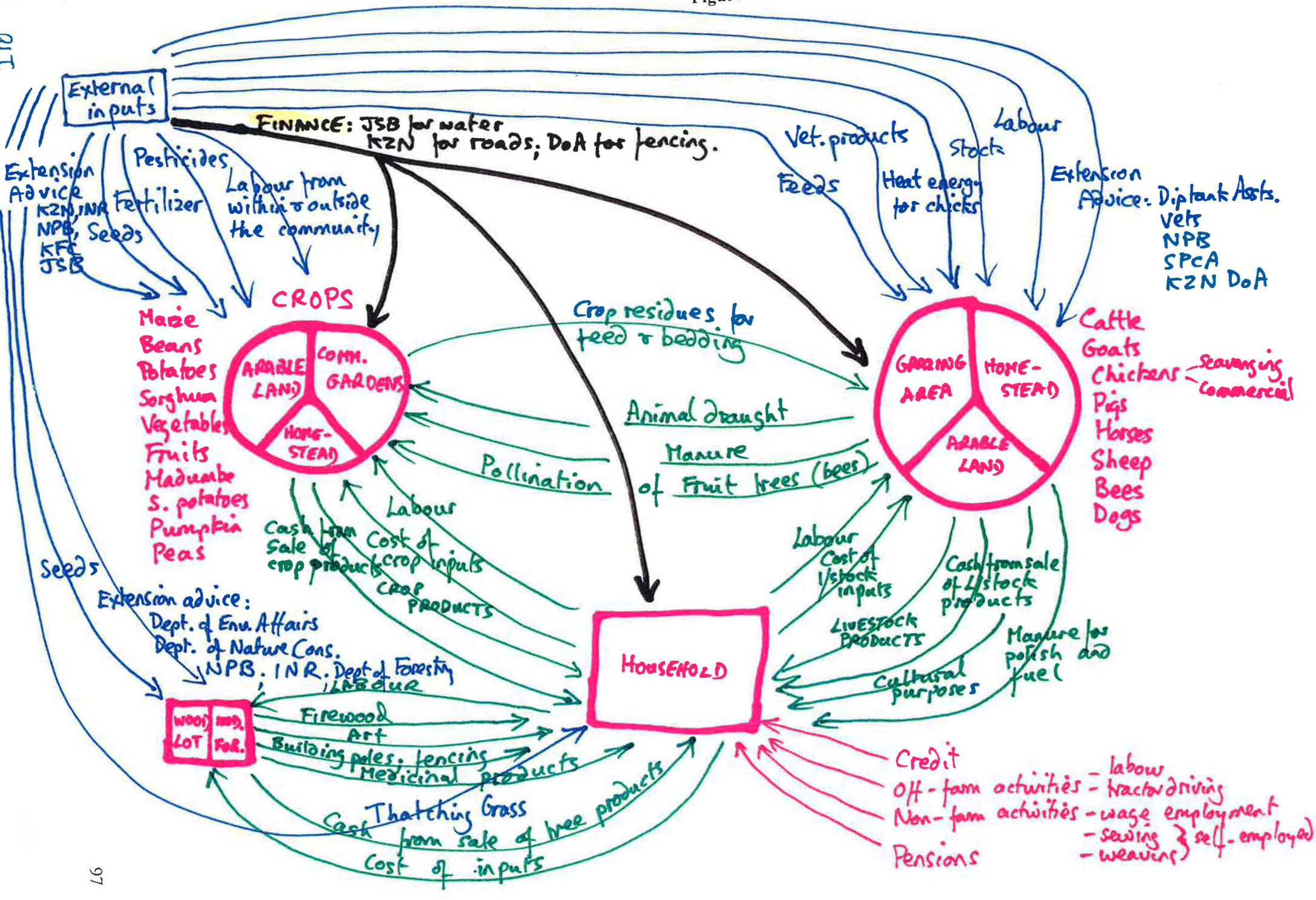



**Figure 9.7** ***Farming systems performance indicator kites*** before and after integration, Phillipines.
Source: Lightfoot , C Bimbao, MA Dalsgaard JPT and Pullin RSV (1993). Aquaculture and sustainability through intergrated Resources management. ICLARM Contribution No. 948; Manila, Philippines; ICLARM.

Figure 9.8 Vulindlela generalised Farming System Diagram



# 10. SOCIAL ANALYSIS

## Some tools for social analysis

### Social mapping:

Social mapping is part of community mapping, using symbols and pictures to indicate the differences between different parts of the town/village or between different households in terms of their SOCIAL and ECONOMIC status.

### Wealth ranking:

A technique for understanding the distribution of wealth in a community. It explores what communities themselves understand by 'wealth'. Wealth ranking analysis is easier to manage if the social unit is less than 50 households. The steps to follow are:

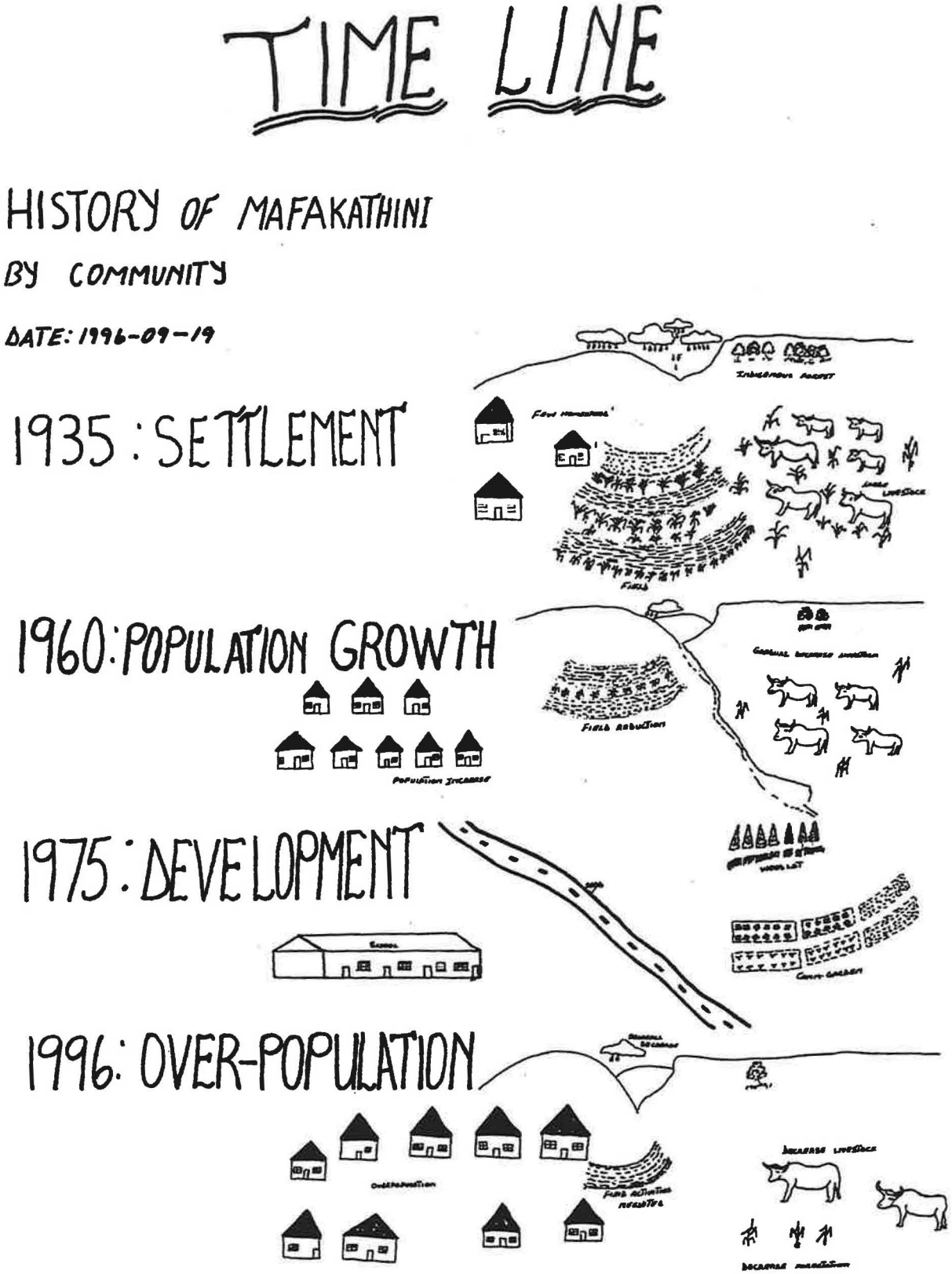
1. With advice from community leaders, choose 3 people (men and women) with detailed knowledge of the community (or section of the community/village).
2. Discuss their criteria for judging whether someone is better off or poor. For example, differences between a rich and poor household might be seen as related to:
    - having cattle
    - having employment
    - participating in social occasions
    - owning a business
    - what the house is built of
    - owning fancy stuff - cars, equipment etc.
    - Family size
    - size of farm
3. With the 3 participants, list the names of the households heads on cards or small pieces of paper. (Remember to include women headed households). If lists are not available in the community, these might be drawn up from memory.
4. Ask the participants to group the households according to wealth. (Usually 3 - 6 groups are defined).
5. Discuss in detail what makes a difference in wealth between the groups. Try to distinguish between the **signs** and the **causes** of wealth/poverty.

The wealth ranked groups can be used to sample households for particular studies or individual interviews, where it is important to cover all types of household in the village.

### Time lines

- Time lines show the history and sequence of events, e.g. Figure 10.1 History of Mafakatini.
- Developing time lines with a group of young and old community members (men and women) can be a learning experience which reinforces respect for the knowledge of older people. The time line produced helps the group to identify problems that have arisen in the past and to look into the future.

**Figure 10.1 Time Line-History of Mafakatini**



**Group discussions**

At the outset of a discussion meeting it is important to decide whether the numbers of people present are manageable for one group discussion or whether to divide the group.

**To encourage participation: -**

- use visuals - flip chart, pens, post-its. Leave the original with the group and take a copy.
- try to bring people into the discussion, both men and women, young and old.
- try to keep the discussion informal - sitting rather than standing.
- Use every day language not scientific paper language.
- take care with "body language"
- be sensitive to the level of interest by the group
- watch out for sensitive subjects. Concentration on personal questions is likely to give incorrect information
- listen, learn, don't write except for note takers who should first ask permission
- time management - allow sufficient time for people to discuss questions. Observe when the group gets restless or tired
- ask if any community workers are present
- ask if any special groups present - e.g. gardens, sewing groups etc.
- Don't jump to conclusions on solutions.

**Procedures in group discussions**

- Need to work through local structures and tribal authorities.
- Need for clear introductions and explanation of working approach.
- Recognition of the community - not just individuals. Solutions have to be worked out on basis of community.
- Recognise other change agents in the area.
- Important to recognise the range of community needs.

**Lessons arising from role play of farmers group discussions on community gardens and maize varieties**

- Interview strategies should be thought out.
- Introductions and establishing credentials and objectives should be agreed before hand. Clarify how information will be used
- Start interview with positive comments
- Need to spend time before launching into questions. Time is needed to interact and understand one another. More sensitive questions need longer time.
- Probing farmers' answers, can extend the discussion within the group.
- Do not allow one farmer to dominate. Discussion and exclusive body language between the facilitator and one participant can restrict the participation of others.

- Try and answer farmers' questions – do not ignore them. If farmers questions require specialist knowledge, record the questions and arrange for responses to be supplied later.
- Do not use jargon which farmers may not understand, e.g. "hybrid"
- Stay calm and confident
- If follow up action is proposed, establish the date, time, place and who is responsible
- Avoid leading questions.
- Recognise multiple interests, views and needs among community. Women farmers gave a different perspective.
- A nice face (smiling) is better than an unfriendly face.
- Don't promise what you can't deliver.
- Be flexible within an overall strategy as things may change in the field.

**Discussion:**

It is important to discuss a strategy to find out women's concerns and establish procedures for contacting women. There is a need for female extension staff, but the view was expressed that to work with women, a change in attitude and approach of the existing male extensionists is important. They should be aware of cultural practices and the constraints imposed by the division of labour and women's responsibilities.

It is useful to explore opportunities rather than problems/constraints in order to develop a vision of what is possible. However, one should be careful in what is presented as there are often problems with ready-made solutions. It is important to recognise that the needs which are articulated in group discussions, depend on to whom you are talking and in what context. There is considerable scope for developing role play and game approaches which may help to explore solutions and skills.

Participants should be cautious over making judgements or bringing pre-conceived notions of right and wrong, e.g. judgements on polygamous households without understanding household interactions and economic advantages and different responsibilities

The use of secondary information sources should be maximised to avoid duplication of questioning and burdening of communities. There is a need for more information sharing.

The need for assessing problems with communities through joint partnership is not always easily reconciled with the way organisations are structured. Projects, reports, are time bound and short term, whereas time is needed for getting to know and understand community.

Issues of empowerment, accountability, responsibility and making less dependent are important to discuss when considering the provision of services to farming communities. It is recognised that much development is constrained by infrastructure and policies. There is a need for information to reach policy makers for transformation into action.

# 11. INSTITUTIONAL ASPECTS OF INTRODUCING FARMING SYSTEMS AND FARMER PARTICIPATORY RESEARCH APPROACHES INTO RESEARCH AND DEVELOPMENT ORGANISATIONS.

## The Institutional issues

Up to now we have been looking at the methodological, socio-economic and technical aspects of FSR and FPR. However there are also a number of institutional considerations to be analysed and, if necessary, addressed.

Institutions include both **formal institutions** (governmental and non-governmental) that are involved in agricultural research and development and local (community/village) level institutions that have a formal structure (perhaps a committee or a constitution), and **informal institutions** (e.g. unstructured interest groups).

This chapter deals mostly with formal institutions, but the identification and involvement of informal institutions is very important when carrying out RRA/PRA and in the planning and implementation of on-farm research. Sometimes informal institutions are absent or weak, and it may be a key part of the development process to assist their formation or strengthening.

For any formal institution to be able to carry out effective and sustainable FSR/FPR it must be: **adequately structured, oriented and resourced.**

In order to determine whether a particular institution complies with those requirements, one should study the following:

- Wider objectives/mission statements/policy of the organisation
- Structure/internal linkages/management characteristics
- External linkages with other organisations
- Funding/budgets (amount, management, timeliness, flexibility)
- Leadership at various levels
- Transparency. How easy is it for an outsider to determine what is being done, how it is being done and who it is answerable to.
- Resource use (mobility/equipment/operational versus capital)
- Human resources (staff balance [discipline/levels]/career development/personnel management/appraisal/training/experience/attitudes)
- Organisation of work (discipline/commodity/geographic/people)
- Client focus (who do they serve; their boss, the farmer or themselves)
- Bottom up or top down in their approach to rural communities.

The **types of organisations** involved in agricultural research and development include the following:

**International**

UN - multi-lateral
CGIAR system
International NGOs
Bilateral donors
Private sector

**National**

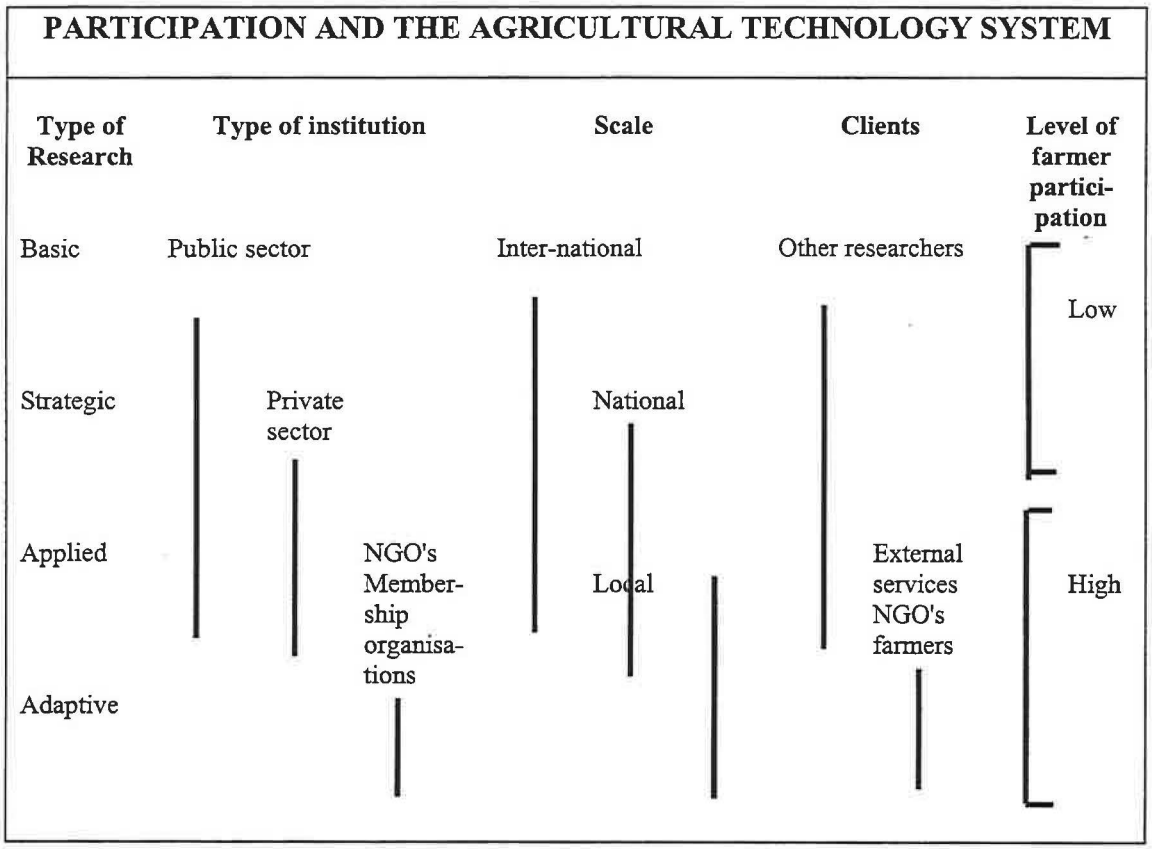
GOVERNMENT:Agric; Health; Education; Water; Lands; Forests; Roads; Credit organisations
NGOs/QUANGOs: Growers Associations; Unions
PARASTATALS: Research; Universities
PRIVATE SECTOR: Commodity Associations; Agribusiness; Finance Institutions

**Local**

CBOs: Farmer organisations; Unions
NGOs: Training Organisations
Local Government
Traditional Government
Private Sector

Because of their different roles and structures, different types of research and development organisation tend to have different levels of farmer participation. Figure 11.1 below is an attempt to categorise institutions according to their roles and level of farmer participation.

**Figure 11.1**


PARTICIPATION AND THE AGRICULTURAL TECHNOLOGY SYSTEM
Type of Research
Type of institution
Scale
Clients
Level of farmer partici-pation
Basic
Strategic
Applied
Adaptive
Public sector
Private sector
NGO's Member-ship organisa-tions
Inter-national
National
Local
Other researchers
External services
NGO's
farmers
Low
High

**Issues concerning external relations**

Most development NGOs will not be able to implement PTD approaches without co-operation with and support and input from other agencies.

- **Co-operation with agricultural research institutes**

  An NGO may look to research institutes in its area or country for:

  - co-operation to obtain information on technologies and new options;
  - guidance on set up and monitoring of farmers' tests;
  - doing basic research and re-testing on generated options;
  - possibility to influence the institutes' research agenda;
  - provision of specialist services (entomology, virology);
  - participation in fieldwork in diagnosis stage and identification of "best bets".

- **Co-operation with government extension services**

  This co-operation may provide the NGO with:

  - technical guidance and extension on certain technologies;
  - training/extension materials on those technologies;
  - training/extension materials on those technologies;
  - guidance in setting up of farmers' tests?
  - provision of secondary data (soils, climate, prices);
  - possibility to influence government extension policy.

  Co-operation with research organisations and government extension services may not be a precondition for starting PTD but may be useful at any early stage and will be important for continuity of the process. To permit closer co-operation between government services and NGOs, the professional of the NGOs may have to be raised, and PTD approaches must be legitimised in government circles.

- **Farmers organisations**

  In many cases local farmers organisations may be one of the main NGO's partners in the PTD process at farmers' level. While there may be need for caution as to whom these organisations really represent, farmers' organisations have important roles to play:

  - identification and articulation of felt needs and actual problems;
  - co-ordination of setting up experiments, monitoring and evaluation;
  - organisation of farmer-to-farmer visits and exchange, both within its own area, and to areas further away;
  - may take over the responsibility for the continuation of the PTD process in their area.

## Local organisations

Stability, effectiveness and sustainability are key requirements for local organisations such as farmers' interest groups, farmers' research groups or farmers' co-operatives if they are to play a useful role in local development. Much experience has been gained from studying and working with farmer's organisations in other countries. There follow distillations of experiences from three sources:

**Characteristics of successful self-organisation of a programme of participatory technology development**

- Common interest and focus
- Start informal, become more formal
- Start small and grow as necessary
- Group-selected co-ordinator
- Periodic meetings
- Group-organisation of joint activities
- Well prepared meetings
- Documentation and sharing
- Periodic self-evaluation by the Group

Source: Developing Technology with Farmers : a trainer's guide for participatory learning. L.van Veldhuizen, A. Waters-Bayer and H. de Zeeuw. Zed Books, London.

**Community-oriented Rural Development Project, Farm-Africa, Ethiopia: conditions for sustainability of community initiatives**

- The identification of initiatives should be through a careful diagnosis and prioritisation of community needs, in which all sectors of the community participate.
- The community should participate in all stages of planning, implementation, monitoring and evaluation.
- The community should decide on the rules and regulations governing the use of the facility (e.g. number of tree seedlings per household, price of seedlings, etc.)
- Initiatives should be financially sustainable without outside assistance (establishment of revolving funds managed by a community-appointed treasurer accountable to the community authorities).
- Within the community institutions there should be individuals with sufficient specialised knowledge to solve problems, and, if necessary, get assistance from support agencies.
- Government extension services should be involved from the start, and included in workshops and trainings.
- Developing sustainable initiatives through a participatory process is very time consuming.

Examples: CORDEP paravet service; CORDEP fodder nurseries; CORDEP women's goat groups.

**Important lessons from farmer controlled enterprises**

- Groups need strong internal cohesion and a clear agenda agreed by members, linked to participatory decision making.
- Small groups of people in similar circumstances are more likely to have these features than larger groups.
- Groups receiving free or subsidised equipment, tend to have problems with the operation and management of these joint assets which undermine group performance.
- Self-reliance, savings and cost recovery mechanisms should be emphasised.
- Political independence is crucial for successful group activity.
- Previous experience of group or co-operative activity can make an important contribution to the development of unified groups.
- Match new joint activities to the organisational and management capacity, skills, experience and resources already existing in smallholder enterprises.
- Focus on a single activity in early stages. Groups should not be overloaded with too many or too complex functions.
- Group must have a strong business rationale if it is to develop successfully.
- Effective structures of accountability, financial transparency and record keeping are needed.
- External training inputs have played an important role in ensuring success of many groups.
- The process of group formation and the spending of funds should not be rushed. Ways of measuring progress are needed other than expenditure.
- Groups should explore linkages with the wider economy, including private sector rather than trying to develop complex activities themselves.
- Training in negotiation skills and the development of risk-sharing arrangements are needed.
- Flexibility in planning and allocation of resources.
- Reflection and group evaluation of activities and progress.

(Summarised from case studies from Ghana, Uganda, Zimbabwe, Mali and Burkina Faso)

## Case study: Research and development institutions in KwaZulu-Natal.

A case study to determine the characteristics of different organisations involved in agricultural R&D was carried out using the experience of a group drawn from the Institute of Natural Resources, the KwaZulu Natal Department of Agriculture, the Agricultural Research Council, the Natal Parks Board, the KwaZulu Training Trust, the South Africa Sugar Association and Africa Co-op Action Atrust ACAT (an NGO). After this analysis, an exercise (Force Field Analysis) was conducted to see what steps might be taken to improve each organisation's effectiveness.

**Research Involvement**

The first step in the analysis was to determine the present involvement of each organisation in research, and how this is organised. Examples are given below for the Institute of Natural Resources (INR) and the KZN Department of Agriculture.

**INR/NPB**

*What activities in farming systems participatory research has your institution carried out (past and present)?*

- Researched the performance of maize varieties, potatoes and beans.
- Small scale business development via PRA designed pit toilet technology as a result of participatory research
- Researched over-utilisation of indigenous plants and we are initiating medicinal plant nursery as a participatory research.
- On going research on broiler production
- On going research on fruit production
- Pesticides

*How are research activities identified and priorities chosen?*

- Develop relationship with the farmers and they share the problems with us and the needs (PRA)
- Farmers identify the priorities and the activities to be researched.

*What locations and target group?*

- On farmers fields- emerging farmers group, subsistence farmers/ community members
- Traditional healers/nature reserves/state forest.

*What type of research relationship do you have with farmers (contract, consultative, collaborative, collegiate)?*

- Collaborative, collegiate and contract

*What training if any has your institution had in FSR/FPR?*

- PRA. Propagation of medicinal plants.

*What other institutions do you link with in research?*

- KZN, Meadow Feeds, Agrelek, Pannar seed, Cedara, INR, Environmental Justice Network Forum, Parks Recreation Division (City Council).

*What resources are available*

- Transport, knowledge, training centre, Botanic garden, Shell Net

*What are the main problems and constraints in developing FS/participatory approaches in your institution?*

- Financial constraints
- Staff shortage.

**KZN Dept Agriculture-Extension**

*What activities in farming systems participatory research has your institution carried out (past and present)?*

- Community gardens
- Demonstration plots for field crops
- Field trials.

*How are research activities identified and priorities chosen?*

- looks at the history of the garden with farmers
- identify problems and needs
- get and share the views with farmers on how problems can be solved
- activities are prioritised according to their importance (farmers)

*What locations and target group?*

- Community and interest groups

*What type of research relationship do you have with farmers (contract, consultative, collaborative, collegiate)?*

- Consultative and Collaborative

*What training if any has your institution had in FSR/FPR?*

- Test of herbicide with farmers and INR.

*What other institutions do you link with in research?*

- Nansindlela, Agrelek, INR

*What resources are available*

- Training centres for AT and farmers, transport, interest groups

*What are the main problems and constraints in developing FS/participatory approaches in your institution?*

- Working facilities to carry out FSR
- funds
- transport problems

**Institutions in KZN involved in agricultural development for small farmers.**

Using the experience of the group, a list was then drawn up of all the institutions working in agricultural research and development in KwaZulu Natal. In Table 11.1 these have been arranged under different headings. It is also possible from the Table to determine whether the organisations are government, NGO, private or parastatal. Such a listing and categorisation is very helpful in understanding the diversity of organisations and their agendas.

**Institutional roles for agricultural research and extension for small scale farmers in KwaZulu-Natal**

Table 11.2 was developed by the group as a means of categorising the different local and international actors in agricultural R&D.

**TABLE 11.1 Institutions in KZN involved in small farmer development**

| | | ***SMALL FARMERS*** *(KZN Farmers Union)* | | | |
|---|---|---|---|---|---|
| | | **Dept. of Agric** | | | |
| | | **ARC** | | | |
| INFORMAL TRAINING | FORMAL TRG. | NETWORKS | DONORS | EXTENSION | SUPPLIERS |
| *SASA* | **Cedara College** | Univ of Natal Dev. Forum | **ODA** | Farmers Support Group (FSG) | *Feed Co's* |
| LIMA | **OSCA** | Midnet | Int NGOs | *Agro-chemical Co's* | *Fertiliser Co's* |
| KTT | Univ. of Natal | | **DANIDA** | Peace | *Seed Co's* |
| INR | School of Rural Comm. Dev. (UoN) | | *Ford Foundation* | Agrelek | **Agric. Credit Board** |
| Turn-Table Trust | School of Env. (UoN) | *Farming Publications* | **Other Bilateral Donors** | *Stock Owners* | *Chick Suppliers* |
| ACAT | **MAN. TEC.** | *NuFarmers* | *Kellog* | **Parks Board** | **RDP** |
| Valley Trust | | | | *BKB* | KZN Finance Corp |
| *KZN Poultry Inst* | | | | | *FAF* |
| Baynesfield | | | | | IDT |
| Boskop | | | | | Umgeni water |
| | | | | | *Commercial Banks* |

NB: Dept of Agric. has formal links to SASA, UoN, ARC, Agrelek, Stockowners, NPB, BKB, Cedara, OSCA, INR.

Organisations in Bold are Government; Organisations in normal script are NGOs, Organisations in Italics are private; Organisations underlined are parastatals

**Table 11.2 Actors in agricultural research and development in KZN**

| Institution | Basic Research | Strategic Research | Applied Research | Adaptive Research | Extension | Support |
|---|---|---|---|---|---|---|
| DoA | Yes | Yes | A(p)** | A | Yes | Yes |
| ARC | Yes | Yes | A(p) | A(p) | (yes) | |
| INR | Yes | Yes | AP*** | AP | Yes | Yes |
| SASA* | Yes | Yes | AP | AP | Yes | Yes |
| ACAT | | | | | Yes | Yes |
| KTT | | | | | Yes | Yes |
| UoN | Yes | Yes | AP | AP | Yes | Yes |
| Donors | | | | | | Yes |
| Int. NGOs | | | | | | Yes |
| Private sector | Yes | Yes | | A | | Yes |

* SASA has a commodity focus on sugar only

** (p) beside a letter signifies that participatory approaches have been implemented to a limited extent

*** P signifies that participatory approaches are fully integrated into the work.

### Matrix of institutional characteristics

Using the information from the previous steps it was then possible to make some preliminary judgements about the characteristics of the different organisations represented in the group. These are presented in Table 11.3. Big differences can be discerned, especially in terms of transparency and client focus.

**Table 11.3 Organisational characteristics for institutions involved in agricultural research and development in KZN**

| Institution | Client | Transpar -ency | Bottom-up/Top-down | Career Development | Funding |
|---|---|---|---|---|---|
| **Dept. of Agric** | Farmer | Not very | Top down | Unclear structure Mixed | Tax payer |
| **ACAT** | Rural H/h + farmer | Very | Both | Encouragement in place for individual initiative | Donors for core and project |
| **INR** | Rural H/h + farmer | Fairly | Both (more B/U) | No ladder/ short ladder Up to the individual, with encouragement for personal initiative | Donors for projects |
| **SASA** | Sugar farmer | Very | Both | Ladder there, but progression is slow | Levies on millers and growers |
| **ARC** | Farmer/Dpt of Agric. | Murky | Top down | Mixed | Tax payer + donors + contracts |
| **KTT** | Rural H/h + farmer | Transpare nt | Both | Opportunity to develop oneself; very short ladder | Donors |
| **NRI** | Donors NARS Other Insts. | Very murky | Mainly top down | Limited access to training; short ladder | Donors |

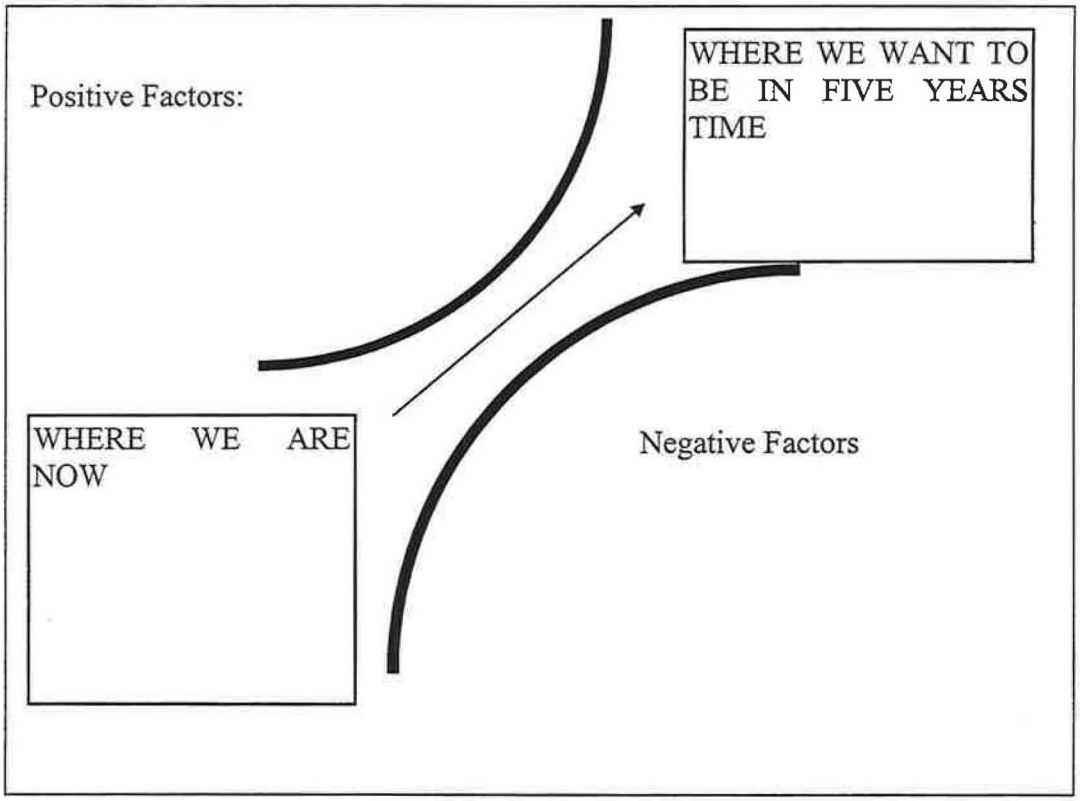
### Force field analysis

Given the present situation, as expressed in Table 11.3 above, what does one do about it? One way of discussing the possibilities in groups is through the use of "Force Field Analysis". This has four distinct stages:

1. To discuss and write down, in a few short sentences, what the situation is now and put them in the box (shown in Figure 11.2) marked "Where are we now".
2. To do the same for the box "Where we want to be in five years time"
3. Think of all the factors that assist the process of getting from where we are now to where we want to be, and write in the space under "+ve factors"
4. To do the same for those factors that you feel will constrain or impede the process, and write these in he area marked "-ve factors"

The generalised diagram for Force Field Analysis is given in Figure 11.2. This is followed by some examples, drawn from the group work conducted during the training course held at INR in April 1997 (Figures 11.3-11.7)

**Figure 11.2. "Force-field" analysis**



**ARC 'Force Field' Analysis**

**TO BE IN 5 YEARS TIME**

1. Directorate - exposed, positive and supportive of participatory methods

2. Funding for participatory work
core ≅ 40%, donor ≅ 75%

3. Personnel
Involved with farmers ≅ 80%
Know about participatory approaches ≅ 100%
Involved in participatory Res/Ext ≅ 60%
Time involved ≅ 50%
Trained in participatory methods ≅ 60%

4. ARC PRA facilitators trained and certified

5. ARC involvement in participatory methodology development ≅ 5%

**+ve INFLUENCES FOR CHANGE**

1. Minister & Directors of National Government and Department of Agriculture

2. International Donors

3. New Board

4. Government putting funds in hands of the communities

5. Good relations with Department of Agriculture at grass roots

**-ve INFLUENCES AGAINST CHANGE**

1. Lack f clear formal relations with provinces
2. Old guard
3. Low commitment to affirmative action
4. Few black linguists, technicians & professionals
5. No social scientists
6. No small scale farmer strategy
7. insufficient personnel for in-depth involvement
8. Resistance to Multi-institutional projects
9. No participatory training courses
10. Lack of understanding & relationships with multi-disciplinary partners (RISMAC)

**SITUATION NOW**

1. Directorate - 'negatively tolerant' of participatory methods

2. Funding for participatory work
core ≅ 2%, donor ≅ 15%

3. Personnel
Involved with farmers ≅ 3%
Know about participatory approaches ≅ 15%
Involved in participatory Res/Ext ≅ 3%
Time involved ≅ 25%
Trained in participatory methods ≅ 2%

4. ARC PRA facilitators uncertain and unconvinced

5. ARC involvement in participatory methodology development ≅ 0%

**SA Sugar Assoc. / KTT 'Force Field' Analysis**

**TO BE IN 5 YEARS TIME**

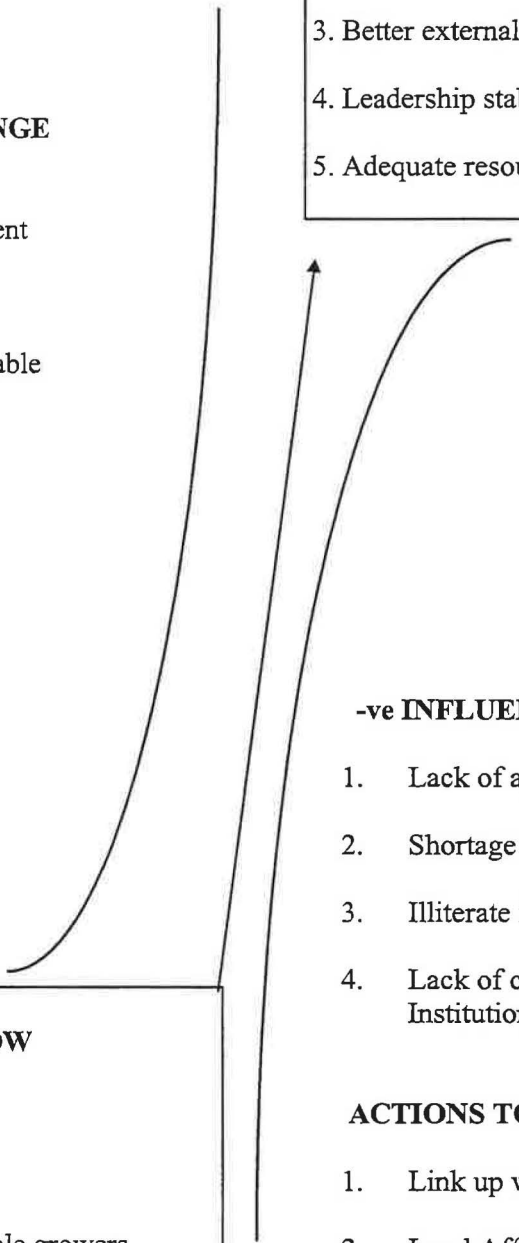
1. Structure to be re-constructed
2. Better chance of advancement
3. Better external linkages with other Institutions
4. Leadership stabilised and well organised
5. Adequate resources available at all times

**+ve INFLUENCES FOR CHANGE**

1. Politics in favour of development
2. Financing Institutions helpful
3. Training material readily available
4. Donors available

**ACTIONS IN SUPPORT**

1. Develop good relationships



**-ve INFLUENCES AGAINST CHANGE**

1. Lack of appropriate research
2. Shortage of farming land
3. Illiterate farmers i.e. no record keeping
4. Lack of co-operation among agricultural Institutions

**ACTIONS TO REDUCE EFFECTS**

1. Link up with research experts
2. Land Affairs Department to improve land issue
3. Basic adult education centres

**SITUATION NOW**

1. No external linkages
2. Leadership unfair
3. Transparency clear to small scale growers
4. Equipment and resources not enough
5. Human resource development - very slow pace
6. Focus on small scale growers
7. Objective : training

**Dept. of Agriculture 'Force Field' Analysis**

**TO BE IN 5 YEARS TIME**

1. Stable Ministry
2. Efficient organisation
3. Basic research relevant
4. Improved extension service
5. Research/extension/management/administration/ training co-operation
6. Commitment
7. Basic needs focus
8. Demand pull
9. Improved practical/development knowledge

**+ve INFLUENCES FOR CHANGE**

1. Serve commercial and small scale farmers
2. One Department of Agriculture
3. United Farmers' Union
4. Holistic approach (res/ext/training)
5. Good infrastructure
6. Valuable human resources

**ACTIONS IN SUPPORT**

1. Improve working relations
2. Improve interaction and linkages
3. Look after people (e.g. system of promotion

**-ve INFLUENCES AGAINST CHANGE**

1. Lack of co-operation
2. System of promotion
3. Lack of transparency
4. Top down approach
5. Red tape
6. Lack of trust
7. Practical knowledge
8. Declining funds
9. Lack of understanding and communication
10. Inefficiency
11. Fraud

**ACTIONS TO REDUCE EFFECTS**

1. Management
   - Professional managers
   - Commitment of all
   - Delegation

**SITUATION NOW**

1. Infrastructure and post structure in place
2. Manpower
3. Funds
4. Policies (Ministry)
5. Focus
6. Knowledge base

**ACAT 'Force Field' Analysis**

**TO BE IN 5 YEARS TIME**

1. Have well trained staff
2. Include communities in decision making
3. To facilitate self development of the people
4. Education and training through ABET
5. Good funding sources
6. Implementing a good sustainable agriculture programme

**+ve INFLUENCES FOR CHANGE**

1. Ability of staff to come through the ranks
2. We are transparent in all issues
3. Good management/organisational structure
4. Good community relationship
5. Have confidence of funders due to good stewardship
6. We are pro-active on gender and race issues
7. Using balanced management tools, bottom up/top down
8. Strong missionary base

**-ve INFLUENCES AGAINST CHANGE**

1. Small organisation with limited capacity
2. Limited resources
3. Working limits are too wide for too few staff
4. Due to transparency we take too long to make decisions
5. Staff are under-trained
6. Few external linkages

**ACTIONS TO REDUCE EFFECTS**

1. Employ P.R. Officer

**SITUATION NOW**

1. Restructuring (organisation)
2. Leadership training
3. Extension work in communities
4. Staff training

**INR 'Force Field' Analysis**

**TO BE IN 5 YEARS TIME**

1. Practising PR and FPR methods as an INR accepted and promoted tool of rural development, supported by management, clients, funders. Having donors willing to fund projects within INR that have a definite PR base

2. Being, through (1.) above an organisation that is contributing to real and visible rural development and empowerment of rural farmers to change to economically viable enterprises

3. Become a 'bottom up' organisation

**+ve INFLUENCES FOR CHANGE**

1. Have expertise
2. Have Infrastructure
3. Have External linkages
4. Have pro-active management
5. Have freedom of choice of modus operandi
6. Have received training in participatory methods
7. Have good farmer contact

**ACTIONS IN SUPPORT**
(numbers related to above)

1. Practice/gain experience
2. Re-development of INR (on line)
3. Develop more, re-write contact list every six months
4. Encourage management with +ve results
5. Exercise to the maximum
6. Practice and add to base
7. Expand and develop through giving them +ve results in exchange for their time and contact

**-ve INFLUENCES AGAINST CHANGE**

1. Limited funding
2. Limited job security, promotion/job advancement
3. Some colleagues don't understand/trust PR systems/methods (pure researchers)
4. Funders not keen to risk funding where a measurable result can't be assured
5. Reluctance of donors to fund INR directly, but through CBOs but want INR to invest risk funding in pre-project research
6. Short contracts and budgets for project staff (large and quick staff turnover)

**ACTIONS TO REDUCE EFFECTS**
(numbers related to above)

1. Improved expertise in proposal preparation and business planning
2. Will come from a positive (1.) and longer contracts
3. Expose these to PR via effective field results. Offer to help them in their projects with PR inputs
4. as for (3.), modified for donors
5. Be so good at what we do, so as to strengthen our bargaining base to the extent that when a donor wants INR to take a project, we can state terms
6. Directly relates to (5.)

**SITUATION NOW**

1. Have clear and effective mission statement

2. Have training and materials

3. Have client focus

4. Are transparent

5. Have external linkages

6. Have client contact and good relationships

7. Not much practice/experience

8. Very little funding

**Suggestions for action by organisations working for Agricultural development in KwaZulu Natal**

The force-field analysis and the other exercises used in this case study led to a number of suggestions for action by the group. These are listed below.

Of course this is only the start of the process of implementing the changes suggested, and they need to be followed up with conviction and energy.

- Training/practical experience in FSR/FPR (including social sciences)
- Funding
- Linkages/networking/joint programmes
- Human resource development: recognition of FSR/FPR work as valuable
- Restructuring
- Leadership
- Conducive political "climate"
- Small scale farmer strategy formulation
- Definition of institutional roles

## Recent thinking about institutions and attitudes

Tables 11.4 and 11.5 set out some new thinking about organisations and the changes that are necessary in order to make them responsive and effective. They are particularly relevant to larger, more formal institutions, such as governmental and parastatal institutions.

**TABLE 11.4. Comparison between old and new institutional settings**

| | From the old institutional setting | To the new institutional setting |
|---|---|---|
| **Mode of decision making** | Centralised and standardised | Decentralised, flexible and participatory |
| **Mode of planning and delivery of technologies or services** | Single design, fixed packages, supply-push | Evolving design, wide choice, demand-pull |
| **Response to external change** | Collect more data before acting | Act immediately and monitor consequences |
| **Mode of field learning** | Field learning by 'rural development tourism' and questionnaire surveys; error concealed or ignored | Learning by dialogue and systems of participatory learning; errors not punished |
| **Mode of internal learning** | Single-loop learning at best; misleading feedback from peripheries gives falsely favourable impressions of impact | Double-loop learning with time for reflection on experience; use of participatory monitoring and self-evaluations |
| **Importance of creativity** | Suppressed if a threat to existing structures and procedures | Experimentation encouraged and original mistakes not punished |
| **Connectivity, linkages and alliances** | Institutions work in isolation; individuals in institutions work alone | Institutions linked formally and informally to each other; individuals linked in task forces and informal groups |

**TABLE 11.5. Changing professionalism from the old to the new.**

| | From the old professionalism | To the new professionalism |
|---|---|---|
| **Assumptions about reality** | Assumption of singular, tangible reality | Assumption of multiple realities that are socially constructed |
| **Scientific method** | Scientific method is reductionist and positivist; complex world split into independent variables and cause-effect relationships; researchers' perceptions are central | Scientific method holistic and post-positivist; local categories and perceptions are central; subject-object and method-data distinctions are blurred |
| **Strategy and context of inquiry** | Investigators know what they want; pre-specified research plan or design. Information is extracted from respondents or derived from controlled experiments; context is independent and controlled | Investigators do not know where research will lead; it is an open-ended learning process. Understanding and focus emerges through inter-action; context of inquiry is fundamental |
| **Who sets priorities?** | Professionals set priorities | Local people and professions set priorities together |
| **Relationship between all actors in the process** | Professionals control and motivate clients from a distance; they tend not to trust people (farmers, rural people etc.,) who are simply the object of the inquiry | Professionals enable and empower in close dialogue; they attempt to build trust through joint analyses and negotiation; understanding arises through this engagement, resulting in inevitable interactions between the investigator and the 'objects' of research |
| **Mode of working** | Single disciplinary - working alone | Multi-disciplinary - working in groups |
| **Technology or services** | Rejected technology or services assumed to be fault of local people or local conditions | Rejected technology or service is a failed technology |
| **Career development** | Careers are inwards and upwards - as practitioners get better, they become promoted and take on more administration | Careers include outward and downward movement; professionals stay in touch with action at all levels |

Source: Pretty and Chambers. 1993 a.b.

**A people centred approach?**

Finally, Table 11.6 presents the contrasts in orientation of those organisations that are interested in "Things", and those that see "People" as being at the centre of development.

The integration of a Participatory Research Approach requires a wholesale change of attitude on the part of many research and development organisations from a "Things"-oriented attitude to a "People"-centred attitude.

**TABLE 11.6. TWO PARADIGMS - OF THINGS AND PEOPLE***

| Point of departure and reference | Things | People |
|---|---|---|
| **Mode** | Blueprint | Process |
| **Keyword** | Planning | Participation |
| **Goals** | Pre-set, closed | Evolving, open |
| **Decision-making** | Centralised | Decentralised |
| **Analytical assumptions** | Reductionist | Systems, holistic |
| **Methods, rules** | Standardised, universal | Diverse, local |
| **Technology** | Fixed package (table d'hôte) | Varied basket (à la carte) |
| **Professionals' interactions with local people** | Instructing, 'motivating' | Enabling, empowering |
| **Local people seen as** | Beneficiaries | Partners, actors |
| **Force flow** | Supply-push | Demand-pull |
| **Outputs** | Uniform Infrastructure | Diverse capabilities |
| **Planning and action** | Top-down | Bottom-up |

*This table has been adapted from the work of David Korten

The message of Table 11.6 is supported by Gibbon, who argues that there is a polarisation between:

'the "modern-technology/control of nature school" which is concerned primarily with basic problem solving, physical yield potential, optimisation of resource use, commoditisation and commercialisation and a world in which the natural scientist is supreme' .... and others who 'feel that scientific thought is but one component of dynamic life systems in which human values, beliefs and political action all influence how technology evolves' (Gibbon, 1991)

# 12. CASE STUDY: USE OF PRA METHODS IN VULINDLELA, KWAZULA-NATAL[2]

## Objectives of the case study:

(a) To understand the farming systems (as a component of the livelihood system) in Vulindlela District.

(b) To learn how to use a selection of PRA tools.

## Outputs hoped for from the study:

- Increased knowledge and use of new methods
- New ideas for agriculture/technology/small business development. Opportunities identified
- Modification, development of existing work
- Generation of proposals for new work (collaboration among stakeholders)
- Clarification of roles/responsibilities of different institutions and potential for collaborative work.

## Planning of fieldwork,

**PRA requires careful planning**. It is important to define, and communicate to all PRA team members, **what** the arrangements are, **who** the key individuals and institutions are that have an interest in the study area (stakeholders), **where** the boundaries of the study area lie and **how** the study will be carried out (PAR tools and methods for their use).

In the case study these were defined as follows:

**WHEN?** 16 September - 3 October, 1996

**WHO?** Course participants.

Key individuals and institutions were defined as the following:

- KZN - Dept. of Agriculture - Home economists, Subject matter specialists, researchers.
  KZN - Dept. of Health - community workers.
- INR - Nansindlela, Roy, Miles Mander, Dr Hastings, Dr Lea
- AGRILEK
- ACAT (subsistence agriculture, savings clubs etc.)
- Midlands Community College
- ARC
- Indonsa co-operative
- Phumulanga Farmers Association
- Community Garden Groups

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[2] This case study is a summary of field work done in 1996

- District Farmers Union
- Tribal Authorities
- Women's Club

**WHERE**? Vulindlela District, KZN. See sketch map done by course participants **(Figure 12.1).**

| WARD | Sub ward |
|---|---|
| Inadi | Mgwagwa<br>Mafakathini |
| Mafuze | Dindi |

**WHAT AND HOW?**

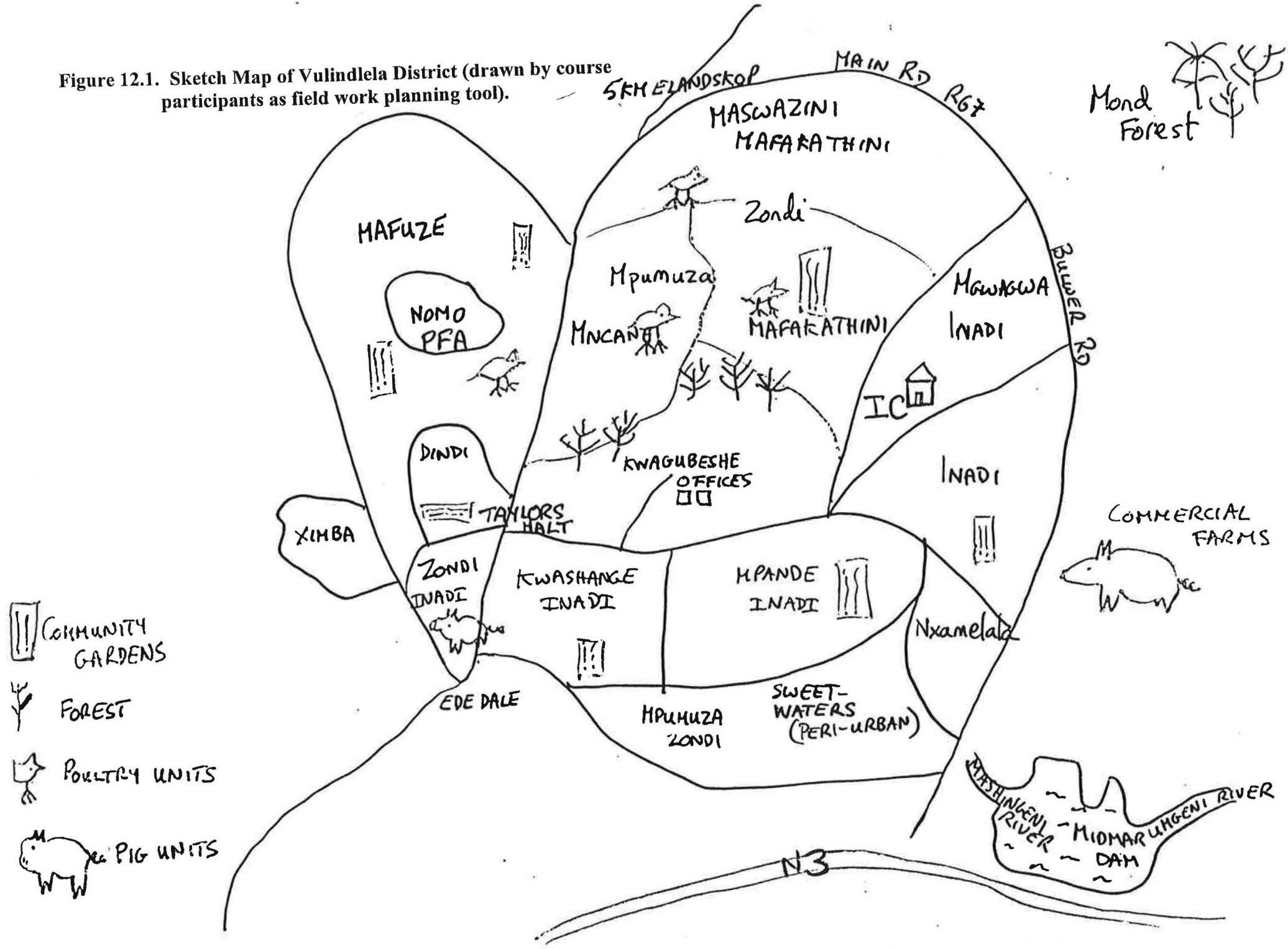
**Options for methods to be used during the study:**

- Review of secondary data - reports, studies, soil analyses, maps, population census etc.
- Review on-going activities; trials, demonstrations, community gardens etc. Potential for modification and development
- Stakeholder analysis
- Use of participatory rural appraisal (PRA) tools to understand farming, social and economic systems in the area.:
- Semi-structured interviews (using pre-prepared check lists)
- Community mapping
- Time Lines
- Transect walks
- Study of community institutions and local organisations
- Workshops, group meetings, discussions (depending on availability and interest of people)
- Problem/solution analysis
- Farming systems diagram

**Preparation before entering the study area as a team:**

- Definition of study area
- Study the limited available secondary data
- Share the team's previous knowledge of the area
- Identification of representative villages using selected criteria
- Selection of methods to employ in the PRA, and practice of these methods
- Allocation of responsibilities (repeated each evening)
- Obtain authorisation from the relevant local authorities to conduct the PRA in their area before the team travelled to the site.

**Figure 12.1. Sketch Map of Vulindlela District (drawn by course participants as field work planning tool).**



**Secondary data:**

Very little relevant secondary data was found. Table 12.1 shows data on land use in Vulindlela District.

**TABLE 12.1. INSTITUTE OF NATURAL RESOURCES UNIVERSITY OF NATAL. LAND USE, VULINDELELA DISTRICT**

| Category | Area (hectares) | % |
|---|---|---|
| **Residential (homesteads)** | | |
| Buildings, roads | 5985 | 21.2 |
| Garden Crops | 1847 | 6.5 |
| **TOTAL** | **7832** | **27.7** |
| **Arable (lands)** | | |
| Cultivated (crops) | 1844 | 6.6 |
| Fallow (grass) | 614 | 2.2 |
| **TOTAL** | **2458** | **8.8** |
| **Community vegetable garden** | 85 | 0.3 |
| **Grazing (grassland)** | 14273 | 50.5 |
| **Wattle groves** | 1005 | 3.6 |
| **Forest and plantations** | 2126 | 7.5 |
| **Umngeni Water (Henly)** | 477 | 1.7 |
| **TOTAL** | **28256** | **100** |

TOTAL NUMBER OF HOMESTEADS 18740 (of which 93% grow crops)

**Criteria for selection of villages**

- Agricultural activity
- Agricultural potential
- Contrast between richer and poorer
- Covering a range of farming enterprises
- Contrasts in ages of settlement
- Contrasts between rural and peri-urban

**Objectives of initial visit**

- to obtain the permission from the headmen and Chiefs to work with the community
- to introduce the purpose of working with the community
- to agree dates for subsequent visits to the community

**Check list for introductions**

- Greetings
- Introduce yourself
- Introduce the group members (or they introduce themselves)
- Introduce the purpose of the visit (emphasise what the visit is not about; in our case we have not come with money or a development proposal)
- Introduce the specific objectives of the visit; what will be the activities to be undertaken during the visit
- Make an estimate of how long the visit should last

## Semi-structured interviews

A check list was developed for semi-structured Interviews conducted during visits to Ward chiefs or councillors and community members in Vulindlela District. The group constructed their check list by brainstorming, writing on 'post-its', followed by grouping into categories. After testing in the field, the list was refined to the version used in the example below.

**Results of the semi-structured group interview**

Group discussions were held with:

a) Mr Mnikati (councillor ) and 20 women from Ward 12, Mafakathini.

b) Mr Mbanjwa (Indonsa Cooperative), Mgwagwa

c) A group of 8 men and 4 women from Wards 10 and 11, Mafakathini.

d) The Induna, 2 councillors, 6 men and 7 women from Dindi

The discussion from Dindi ((d), above) has been chosen as an example of semi-structured interviewing, and is given below.

## INTERVIEW WITH THE INDUNA, 2 COUNCILLORS, MEN (6) AND WOMEN (7) FROM DINDI, 20/9/96.

### History of the place

1. **When were settlements established?** - We were born here, but houses were very few.
2. **Where did people come from?** - From about 1975, people came from nearby white farms to reside in the area.
3. **How have human population numbers changed?** - Population has changed from low to high, dramatically.
4. **Changes in climate over 20 years?** - The climate has also changed; a long time ago there were enough rains, but today rains are scarce. Sometimes we experience severe drought , floods and hailstorms which were not common in the olden days.
5. **Have there been changes in importance/use of trees over time?** - A long time ago there were patches of natural forests here and there but today there is nothing left. They were all used as firewood and for building purposes.
6. **Have there been changes in livestock number species and management over time?** - There are grazing areas, but very small and overgrazed and burnt. For that reason our livestock condition is deteriorating year after year.
7. **Has there been any development in your area?** - Unfortunately all long we were neglected, but lately schools (1985), crèches (1996) community garden, sewing projects (Thukhukani)), roads.

### Agricultural potential

8. **Livestock conditions/management?**
9. **Who controls communal grazing and can you describe how it is allocated**
10. **Who can have access to grazing land?**
11. **The role of agriculture in the area?** The role of agriculture is the production of crops for consumption, e.g. potatoes.
12. **Soil fertility?** Soils in Dindi area: - red soil, white clay

Soil fertility status of these soils depends on the type of fertilisers used.

13. **Who controls arable land and can you describe how it is allocated?** Available lands are allocated by the headman, 1 acre per household.
14. **Who can have access to arable land?** All local people have access to arable land. The current garden project includes fields of individual households.
15. **What crops are produced in the area?** - Crops produced; potatoes, beans, cabbages, madumbes (cocoyam), maize.
16. **What varieties are planted?** - Varieties planted; umzumbe (sugar bean), beans - khahla (kidney bean), maize - their own seed.
17. **Where do they get seed?**
18. **How far do they go to get seed?**
19. **Are they using hybrid seed?**
20. **Crop yields -** Yield varies according to year's climate changes.

21. **Describe the sources and uses of water** - Natural springs (protected and stored in tanks).
22. **Describe the different types of farmers in this area** - Vegetable producers, e.g. Mr Zondi and Mr Zungu - commercial farmer. Field crops producers. Livestock producers.

**Economy**

23. **Sources of income?** - farming, e.g. Mr Thabethe Employment in towns. Old age pension fund.
24. **How many families have a wage earner?** People who are employed/not employed are 50:50.
25. **What proportion of wage earners are men / women?** Among those who are employed, men are higher in number.
26. **Among those farming, what is the proportion of men to women?** In Dindi, men are the ones mostly working in farming. It is a pity the youth do not participate in farming.
27. **Are there farmers who farm to sell**? There are farmers who farm to sell.
28. **What agricultural products do farmers sell?** Vegetables, beans, potatoes
29. **What markets are there for farm produce?** - Mkondeni municipal market in PMB and local market.
30. **Do you do any form of processing in your area?** - There is no form of processing in the area.
31. **Access to credit**? There is no access to credit in the area. There is no information about where credit is accessed.
32. **Are any companies helping with funds?** No companies are helping with funds, except one which helps with inputs e.g. seeds and fertilisers from the Department of Agriculture as drought relief, and JSB who gave us irrigation pipes, tanks and engine.
33. **How would you classify the living standards of people in your community?** - The living standard of people in this area is low although there is a noticeable development in the area such as schools, crèches etc. But we cannot eat all these things. One might talk about electricity in the area - but it is installed in houses that are about to fall anytime.

**Organisations working in the area**

34. **Institutions assisting agriculture** - Department of Agriculture, JSB (although it has disappeared)
35. **Is any agricultural officer helping them** - Yes, Mr Khusi
36. **What are the existing agricultural projects** - Irrigation scheme
37. **Are there any farmers associations in the area** - Dindi association established in 1995 and initiated by the headman. Members are 24 but currently 20. The headman had a vision to organise people to make use of the land to produce crops to fight poverty in the area. He is also a member of the association.
38. **Any women's clubs** - there is one women's club
39. **Any other community organisations - committees etc.?** - There are committees, development committee, road committee, irrigation scheme.

40. **What agricultural training is available and for whom?** - there is training on crop production and sewing provided by Dpt of agriculture.

41. **Health services** - there is a mobile unit. Health people have suggested building of a permanent clinic as it seems as if their unit can no longer cope with the number of people in the area who come for medicines.

42. **Education** - There is a new high school in the area which has aided in the raising he standard of education in the area. There are more people educated in the area compared to uneducated ones.

43. **What are the main problems from the community.**

- No tractors - one tractor for KZN Dpt Agriculture.
- no oxen
- no money
- no business plan
- no water for irrigation
- goats that are grazing in their crops because it is not properly fenced (irrigation scheme)
- We need knowledge on how to plant and produce our crops, e.g. maize
- We cannot afford to buy seeds in such a way that we have approached Mcdonald seed to give seeds and other inputs on credit, but that is only for our irrigation scheme - not individual farmers.
- Stock, crops and fencing poles theft
- Community does not want to come together to do things co-operatively or together and they do not see things the same way.

**Problems**

fencing (*ukubiya*), tractor (*ugandaganda*), employment (*umsebenzi*), stock theft (*ukwebiwa kwemfuyo*), water (*amanzi*), clinic (*ikiliniki*) community hall (*iholo lomphakathi*), shed/depot (*igushede*), sewing workshop/house (*indlu yokuthunga*), benches and tables (*amabhentshi namatafula*), chicken shelter (*indlu yezinkukhu*), chickens (*izinkukhu*), field and home access road (*umgwago wabalimi*), irrigation system ( *ukunisela*), pig shelter (*indlu yezingulube*).

**Community problems**

1. sewing house/shelter & furniture
2. Hall
3. Clinic
4. Roads (access)
5. Employment
6. Stock theft
7. Water

**Farmers problems**

1. Fencing
2. Tractor
3. Shed/Depot
4. Irrigation system
5. Chicken houses
6. pig shelter

**Figure 12.2 History of the Place – Umgwagwa. Drawn by Mr.Madlala.**

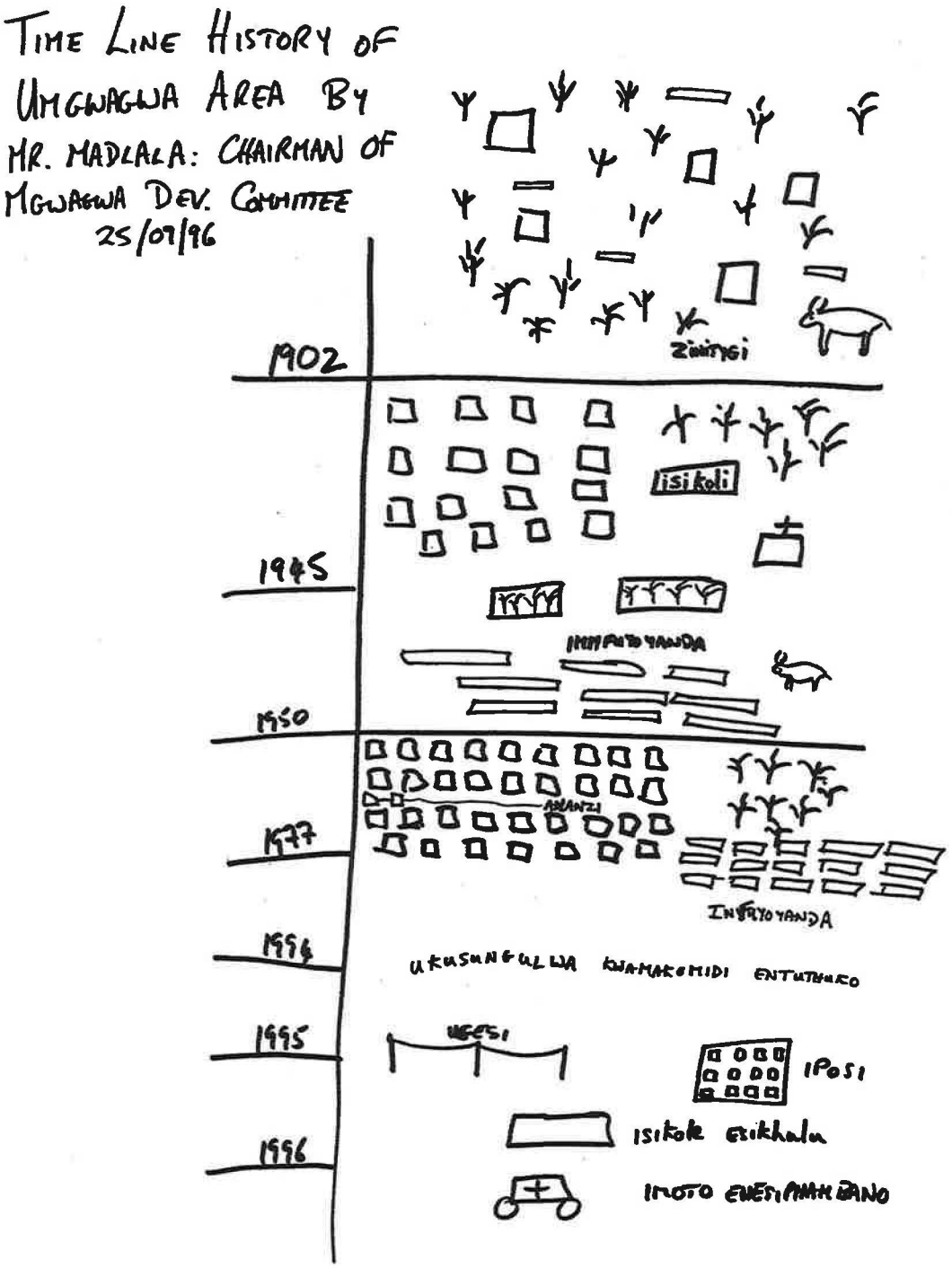
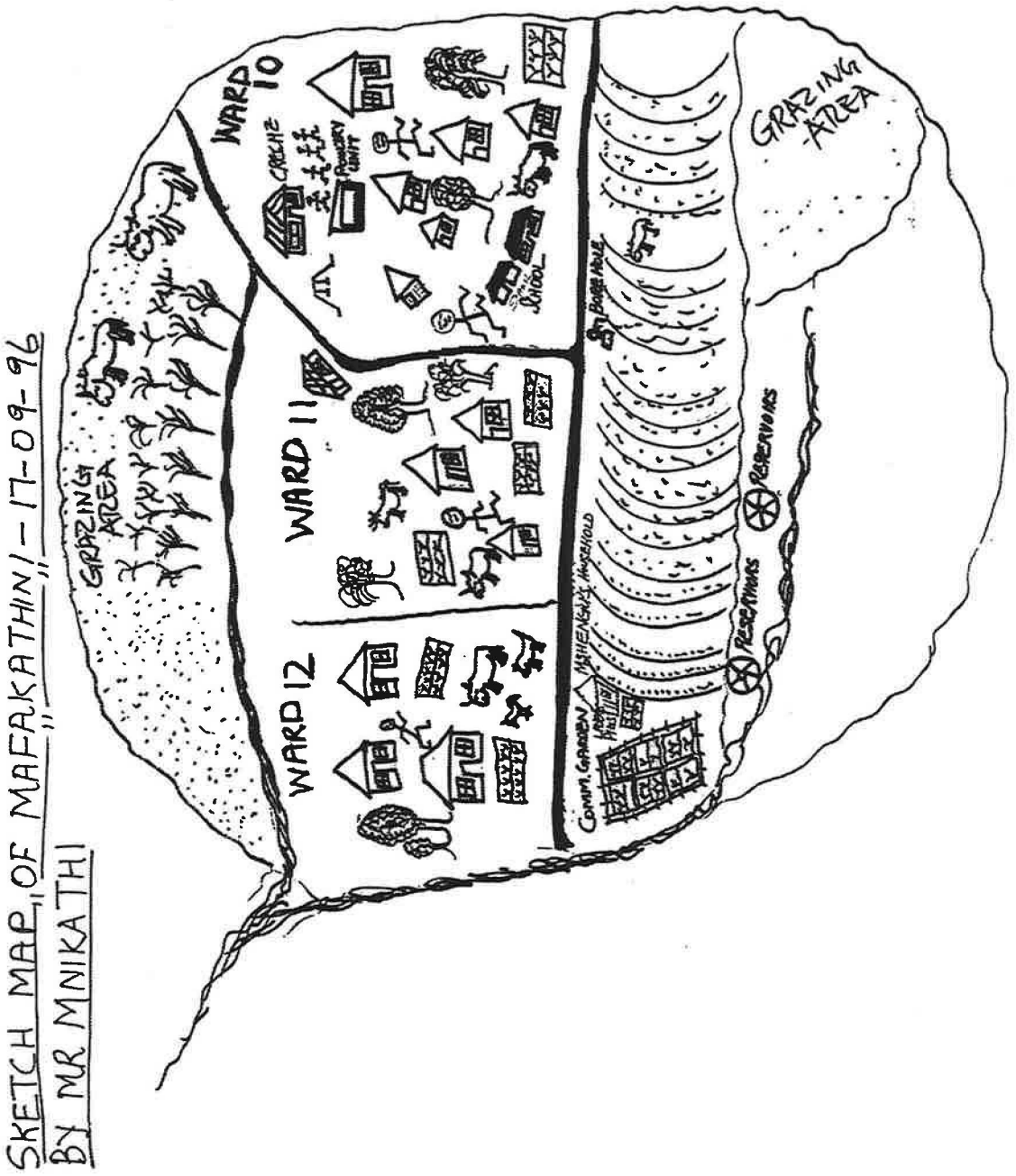


**Figure 12.3 Community maps of Mafakatini.**



**Timelines**

During some of the semi-stuctured interviews, timelines were drawn as a way of capturing some of the information on paper in a way that community members and course participants could understand. Figure 12.2 illustrates a timeline for Mafakathini.

**Community Maps**

Community maps are a useful way to focus attention and discussions on the community. They can also be used for planning transect walks and visits to individual households, or in identifying interesting or important aspects of resource use. The example given in Figure 12.3 is from Mafakatini.

## Individual interviews with socially differentiated households

**Aim:**

- to obtain agricultural, social, historical and economic information that will represent the community as a whole (rich and poor), without being biased towards an agriculturally progressive minority.

**How was it done?**

- the Mafakathini ward councillors were asked to select families from the community that represented the rich and poor households in the community.
- a check list was developed by our team for semi-structured interviews with the selected individual households
    - we asked the councillors to give us someone to accompany us when visiting the selected households so as to introduce us.
- what were the results?

**Results:**

Individual household visits were made to Mr Zondi, Dindi Ward; Mr Twenty Zunga, Dindi Ward; Mrs Hleda, Mafakatini; Mr Ndela, Mafakatini and Mrs Ndlovu, Mafakatini. The visit to Mrs Hlela is used as the example for this exercise.

# HOUSEHOLD VISIT TO MRS HLELA, MAFAKATINI, WARD 12. 26/9/96

1. **History of family settlement** - The (husband's ) family were born and bred here.
2. **Size of land, arable field plus home garden** - Mrs Hlela is a member of the community garden called Vukani. She does not know her land size. She has a field in the arable land but is not using it since the area is not fenced. Her home garden contains a grazing area for the goats. (See transect diagram)
3. **Family members** - She has eight children, 2 are at school, 2 girls are employed in the town 2 boys are at home unemployed and 2 children are not at school (young). There are 5 girls and 3 boys. The two boys not employed assist in farming
4. **Sources of income by each family member** - The two girls that are employed earn about R70 per week and R90 per week respectively. The head of the family earns less than R300 per week, a very low wage for a man like him who has been working for the same firm for years (25+years).
5. **What do they produce**? - Potatoes, beans, maize, cabbage, carrot. Wattle woodlot for firewood. 8 cattle and 8 goats. Goats are slaughtered for cultural use. After the stealing of fencing, the number of livestock decreased. Maize is processed into maize meal by grinding it using stones at home.
6. **Sale of produce** - Potatoes (BP1) are sold locally 1x20 litre paraffin tin full of potatoes = R10.
7. **Planting method/land preparation etc.** - Broadcasting of manure, ploughing harrowing, opening lines, fertiliser application and planting.

To plough - oxen are used

To plant - they use handhoes

To weed - they use cultivator (ox drawn) and handhoes

To harvest (potatoes) they use a potato ridger. Maize is hand harvested

**Planting potatoes:**

- When planting potatoes at home, fertiliser is not mixed with the soil whereas in the community garden it is mixed, but there is no difference regarding yield. (But mixing requires more work).
- Planting time is in August or sometimes in July (but not usual).
- Potatoes are interplanted with maize
- after germination potatoes are ridged twice
- maize is weeded once

Problems in potatoes - the tubers get rotten in the soil. Moles are a problem.

**Soil type**: Near the kraal the soil is very rich and dark red in colour whereas the soil away from the kraal is not rich and light red in colour - the reason is not known.

8. **Changes in yield over time** - Yield does change according to the climate - if there is enough rain the yield is high, for example last year the potato yield was high.
9. **Sources of information** - No one is teaching them, the man was only told by his father how to plant. No one told them the type of fertiliser to use. No advice from AT or any other source. Has no knowledge, only got it from the father.

10. **Membership of groups/associations/societies** - She is a member of Vukani community garden, no one else in the household. Also Burial Club (Qhubekela phambill) and food stokvel.

In the *burial club* the joining fee is R20, the head of the household is the one who joined. If a family member passes away, R1500 is paid, A child is close to R1000. The membership is around 250 people. The money is put into the bank. They meet once a month for fees collection.

The *food stokvel*, they pay R45 a month from January to December and divide the food among the members, up to R540.00. Only ladies belong, poor and rich. This was established by Mrs Mahlase. The community garden was initiated by Mr Mnikathi.

11. **Problems**

- The father has a problem of wages.
- The water is too far away.
- The road is not is good condition
- mole rats and cutworm
- fertiliser shortage
- water for irrigation
- theft of fence in community garden

12. **Level and upkeep of household kraal** - Electricity was installed 2 years ago and they use it for light, cooking, ironing, TV.

## Semi structured interview with special groups

Following the interviews with community groups and socially differentiated families, special interest groups were identified and interviewed. The groups interviewed were:

a) Dindi Farmers Association community garden
b) Masakhane womens group
c) Masakhane garden
d) Banaleni parden

The Masakhane garden group is taken as an example:

### Masakhane garden, Nxamalala

1. **History**: The community garden was established in 1994. The objective of establishing the community garden was to work as a team and to get more knowledge in agriculture so that they will in future practice agriculture in larger areas (individual farms). At first there was no plot division amongst the members. They divided the plots because they started planting vegetables. If one has to harvest her vegetable produce then she has got no need to contact other members. There are no men in the garden, may be they are afraid of women working in the garden, for they are lazy. They might try to take over and dominate. R20 joining fee. 30 members.
2. **How did they get land** - they talked with the headman for land. 100x50m
3. **What crops and varieties are grown** - spinach, potatoes (BP1), cabbage, pepper
4. **Irrigation water** - there is no water for irrigation
5. **Soil types, fertility** - red soil. 2:3:2 (22) fertiliser used, 2:3:4 (30) for potatoes.
6. **Inputs** - they get seeds through extension officers.
7. **Implements and machinery** - they use tractors. Have no tractor problem

8. **Labour** - in the garden they have their own labour
9. **Market** - they sell their produce near the local households.
10. **Credit**
11. **Management and decision making** - decision making is by all the members of the garden after discussion. Book keeping is well done - bank book, cash book, register book.
12. **Benefits** - There is no problem with the money from the produce since our husbands do not mind if we buy inputs and material for sewing. If it happens that we get some money they we will then show it to the husband and then after that we can use that money for our needs. The household money is mostly controlled by women.
13. **Problems** - (Livestock is not a problem - well constructed fence. Rainfall is well distributed) Problem of land tenure - some people do not use their fields but they refuse to give that piece of land to the interested people.

**Problems**

1. Amanzi asinowo
2. Indawo yokufakela amazambane
3. Imithi yokubulala izifo nezinambuzane
4. Umuthi wemuukuzane
5. Inolu yamathuluzi
6. Umanyolo
7. Imishini yokuchela
8. Izinto zokusebenza engadini

## Transect walk

**What is a transect walk?**

It is a method for gaining information about an area by walking through it with members of the community, and getting information by asking questions and also through observation.

**What is the purpose?**

To get in-depth information about past and present land-use for the different land units of the area.

**How was it done?**

By walking over the area with members of Mafakatini community. One person from the team asked questions according to a pre-determined format, while another took notes of the responses.

A transect walk observation matrix (Figure 12.4 below) was used to order the observations made.

**Figure 12.4 TRANSECT WALK OBSERVATIONS MATRIX**

| | **UPLAND GRAZING** | **MIDLAND HOME GARDEN** | **LOWLAND HOME GARDEN** | **UPLAND ARABLE** |
|---|---|---|---|---|
| SOIL TYPE | | | | |
| CROPS | | | | |
| LIVESTOCK | | | | |
| WATER | | | | |
| TREES | | | | |
| | | | | |
| PROBLEMS | | | | |
| POSSIBLE SOLUTIONS | | | | |

**Results**

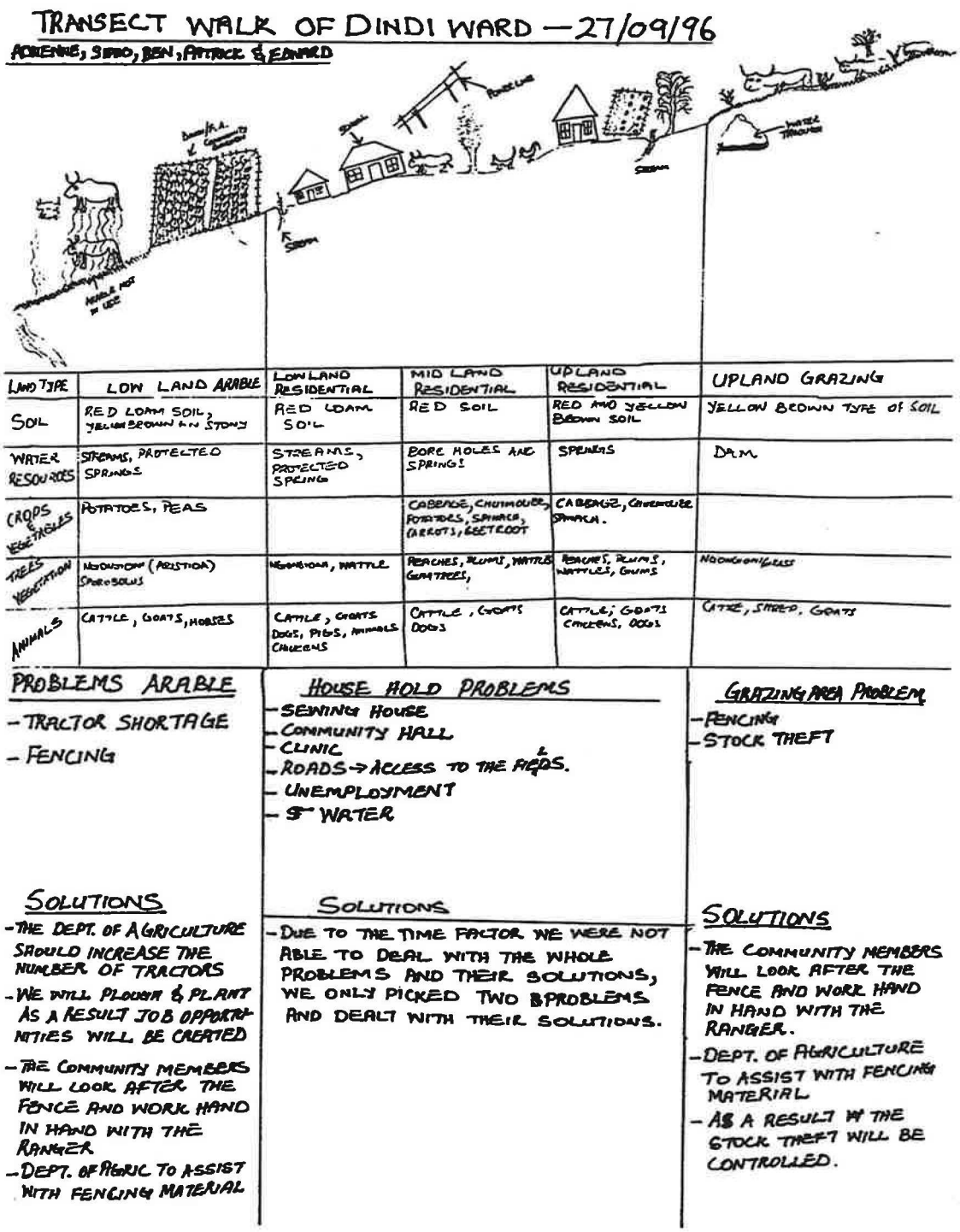
Several transect walks were made. One example is given in Figure 12.5.

**Analysis of the use of transects as a tool for gathering information about farming systems**

Course participants developed this analysis of what they had learned from the field application of the transect walk.

1. Gave good cross section of village activities and land use
2. Learned new things by **observation** and **questions**
3. It is necessary to organise local people to accompany the group (the right people at the right time)
4. Follow through questions even if you think you know the answer (don't take things for granted)
5. Analyse secondary data before starting
6. Transects, like other participatory methods, takes time and effort, but it brings farmers, extensionists and researchers together
7. Best to do some observations together before making a map
8. Ensure that the transect(s) is representative of the area
9. Transects allow us to see what is there, which then makes it easier to find out about problems and possible solutions

**Figure 12.5 Transect walk diagram for area around houses.**



TRANSECT WALK OF DINDI WARD — 27/09/96

ADRIENNE, SIBBO, BEN, ATTACK & EDWARD



| LAND TYPE | LOW LAND ARABLE | LOW LAND RESIDENTIAL | MID LAND RESIDENTIAL | UPLAND RESIDENTIAL | UPLAND GRAZING |
|---|---|---|---|---|---|
| SOIL | RED LOAM SOIL, YELLOW BROWN AN STONY | RED LOAM SOIL | RED SOIL | RED AND YELLOW BROWN SOIL | YELLOW BROWN TYPE OF SOIL |
| WATER RESOURCES | STREAMS, PROTECTED SPRINGS | STREAMS, PROTECTED SPRING | BORE HOLES AND SPRINGS | SPRINGS | DAM |
| CROPS & VEGETABLES | POTATOES, PEAS | | CABBAGE, CHOMOLIER, POTATOES, SPINACH, CARROTS, BEETROOT | CABBAGE, CHOMOLIER SPINACH. | |
| TREES VEGETATION | NEEM TREE (PRISTINA) SPECIES | NEEM TREE, WATTLE | PEACHES, PLUMS, WATTLE GUM TREES, | PEACHES, PLUMS, WATTLES, GUMS | NEEM TREE/GRASS |
| ANIMALS | CATTLE, GOATS, HORSES | CATTLE, GOATS DOGS, PIGS, RABBITS CHICKENS | CATTLE, GOATS DOGS | CATTLE, GOATS CHICKENS, DOGS | CATTLE, SHEEP, GOATS |

**PROBLEMS ARABLE**

- TRACTOR SHORTAGE
- FENCING

**SOLUTIONS**

- THE DEPT. OF AGRICULTURE SHOULD INCREASE THE NUMBER OF TRACTORS
- WE WILL PLOUGH & PLANT AS A RESULT JOB OPPORTUNITIES WILL BE CREATED
- THE COMMUNITY MEMBERS WILL LOOK AFTER THE FENCE AND WORK HAND IN HAND WITH THE RANGER
- DEPT. OF AGRIC TO ASSIST WITH FENCING MATERIAL

**HOUSE HOLD PROBLEMS**

- SEWING HOUSE
- COMMUNITY HALL
- CLINIC
- ROADS → ACCESS TO THE FIELDS.
- UNEMPLOYMENT
- S^T WATER

**SOLUTIONS**

- DUE TO THE TIME FACTOR WE WERE NOT ABLE TO DEAL WITH THE WHOLE PROBLEMS AND THEIR SOLUTIONS, WE ONLY PICKED TWO PROBLEMS AND DEALT WITH THEIR SOLUTIONS.

**GRAZING AREA PROBLEM**

- FENCING
- STOCK THEFT

**SOLUTIONS**

- THE COMMUNITY MEMBERS WILL LOOK AFTER THE FENCE AND WORK HAND IN HAND WITH THE RANGER.
- DEPT. OF AGRICULTURE TO ASSIST WITH FENCING MATERIAL
- AS A RESULT W^H THE STOCK THEFT WILL BE CONTROLLED.

## Problem/solution analysis with the community

### Starting point

After the first and second group discussions and the transect walk, the community had identified and ranked their priority problems.

### Method

First the immediate, and then the root causes of the problem are identified. Then the effects and long-term consequences of the problem are identified. Once this is complete, each root cause, cause and effect is turned into a possible solution.

A group of men and women took one problem that had been previously identified as a priority by them and, through discussion facilitated by two of our team members, analysed the causes, root causes and effects of that problem.

It is important to note that the identification of the problems, causes, root causes, effects and solutions was from the community, and not from our own thinking or influence.

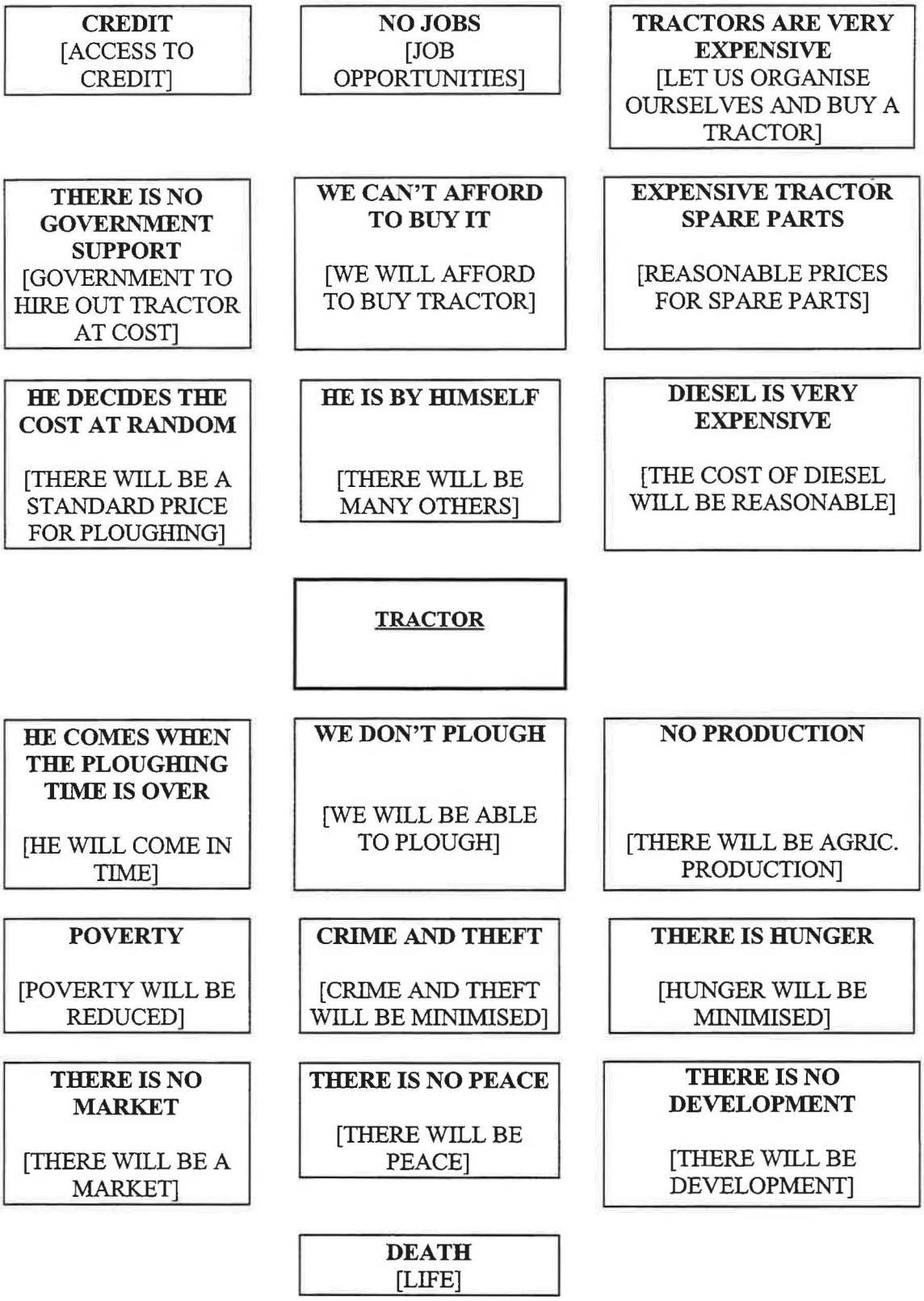
From these causes and potential solutions we can develop strategies and programmes to address the priority problems raise by the community. The example below comes from Mgwagwa.

**MGWAGWA PROBLEM IDENTIFICATION AND RANKING 27/09/96**

| COMMUNITY PROBLEMS | AGRICULTURAL PROBLEMS |
|---|---|
| 1. Community hall | 1. Tractor |
| 2. Clinic | 2. Markets |
| 3. Creche | 3. Fertiliser |
| 4. Credit | 4. Sewing machines |
| 5. Jobs | 4. Fencing wire |
| 6. Adult education | 5. Wild pig |
| 7. Schools | 6. Sewing machines |
| 8. Roads | 7. Seeds |
| 9. Bridges | 8. training |
| | 9. Water for irrigation |
| | 10. Stock theft |
| | 11. Transport (agricultural) |
| | 12. Pesticides |
| | 13. Burning |

The first priority of the community, a tractor, was then taken and used in a problem analysis. After the problem analysis has been completed, the community identified ways in which a solution might be found to each problem (a solution analysis). In Figure 12.6 below, the problems and solutions are both given on the same diagram.

**Figure 12.6 Problem/Solution Analysis, Mgwagwa**



## Farming systems inter-relationship diagram for Vulindlela District.

### What is it?

A diagram that represents the inter-relationships between farming activities, the household and external influences.

### Why is it necessary?

In order for us to develop balanced research and extension programmes based on an understanding of the whole farming system.

### How did we develop it?

The diagram overleaf (Figure 12.7) arose from knowledge gained from the community using different methods used during the field studies such as group discussions, transects and individual farm visits.

### What does it demonstrate?

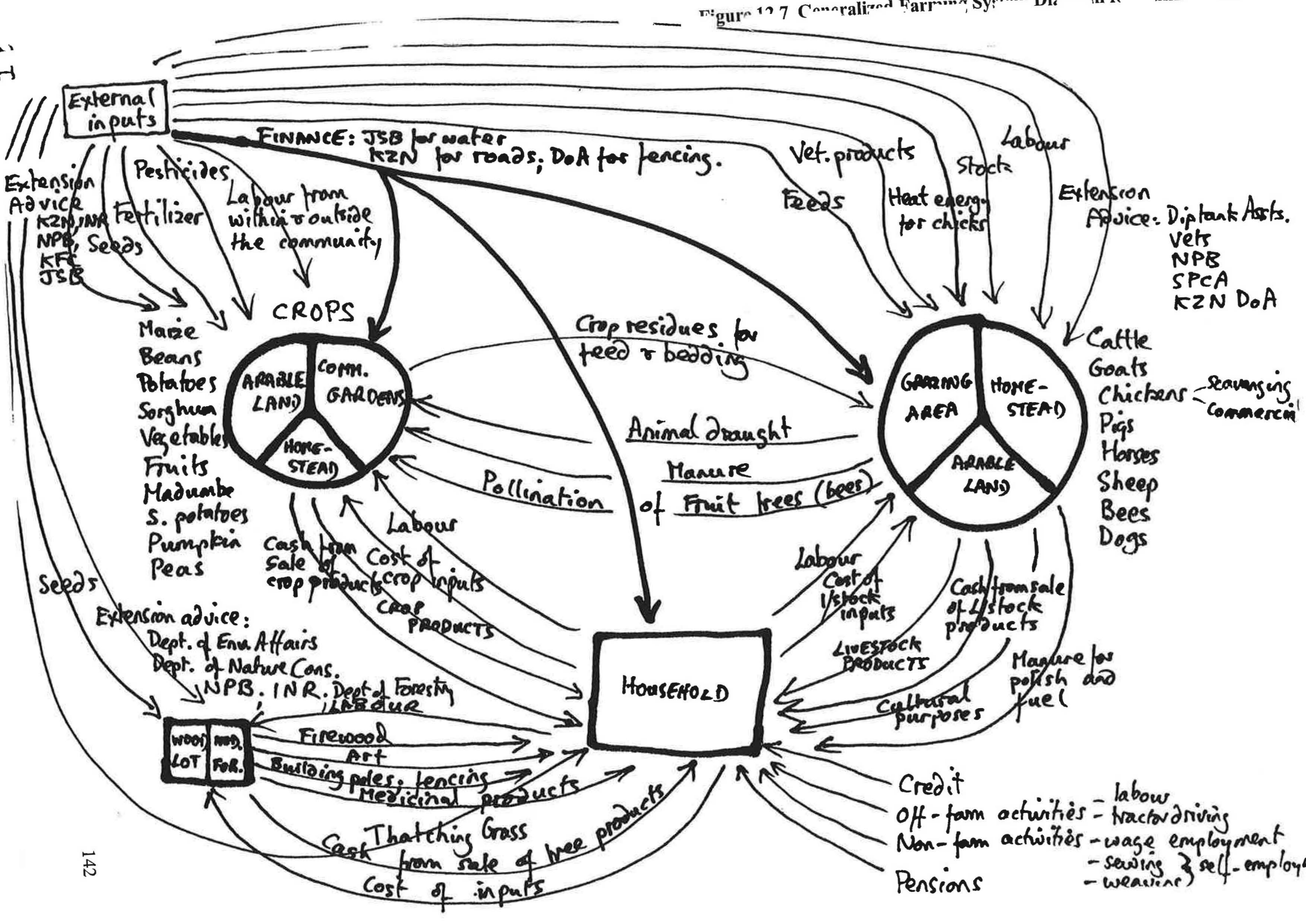
**A. There are 5 main elements to the diagram:**

crops
livestock
trees
household
external inputs

**B. There are flows between all of these elements, in both directions:**

- Flows of labour from the household to crops
- Cash sales of livestock products to the household
- Extension advice to the woodlots
- Use of crop by-products for livestock feed and bedding
- Flow of cash from off-farm and non-farming activities to support the household.

Farming systems diagrams provide an appreciation of the complexity of the farming system, and the inter-dependence of its elements.


External inputs
FINANCE: JSB for water
KZN for roads; DoA for fencing.
Extension Advice
KZN, INR
NPB, Seeds
KFC
JSB
Pesticides
Fertilizer
Labour from within & outside the community
Vet. products
Feeds
Heat energy for chicks
Stock
Labour
Extension Advice: Diptank Asstts.
Vets
NPB
SPCA
KZN DoA
CROPS
Maize
Beans
Potatoes
Sorghum
Vegetables
Fruits
Maduumbe
S. potatoes
Pumpkin
Peas
ARABLE LAND
COMM. GARDENS
HOME-STEAD
Crop residues for feed & bedding
Animal draught
Manure
Pollination
of Fruit trees (bees)
GRAZING AREA
HOME-STEAD
ARABLE LAND
Cattle
Goats
Chickens – Scavenging
Commercial
Pigs
Horses
Sheep
Bees
Dogs
Labour
Cash from sale of crop products
Cost of crop inputs
CROP PRODUCTS
Seeds
Extension advice:
Dept. of Env. Affairs
Dept. of Nature Cons.
NPB. INR. Dept of Forestry
Labour
Labour
Cost of l/stock inputs
Cash from sale of L/stock products
LIVESTOCK PRODUCTS
Manure for polish and fuel
Cultural purposes
HOUSEHOLD
WOOD LOT
WOOD FOR.
Firewood
Art
Building poles, fencing
Medicinal products
Thatching Grass
Cash from sale of tree products
Cost of inputs
Credit
Off-farm activities – labour
– tractor driving
Non-farm activities – wage employment
– sewing } self-employ
– weaving }
Pensions

# 13. CASE STUDY: A PARTICIPATORY WORKSHOP FOR AN URBAN AGRICULTURE PROJECT IN SOBANTU VILLAGE, KWAZULU NATAL.

## Objective

With the Sobantu community and INR/DoA staff, facilitate a participatory workshop to identify organisational/institutional, social, technical and financial issues and the processes and activities necessary to initiate an urban agriculture project.

## Background

Sobantu Village is a well established former black township of 35,000 people outside Pietermaritzburg in KwaZulu-Natal Province. Two rivers run through the township, and there are a number of floodplains associated with these rivers. Informal settlement on the floodplains has led to loss of life in times of severe flooding. The spontaneous interest of community members to use the floodplains for commercial agriculture, and the interest of INR in the sustainable management of the watershed of the major river, has led to their collaboration in an initiative to develop the agricultural potential of the floodplains. This project has obtained funding for one year, totalling 249,000 Rand (approx. £30,000) from an NGO-cum private enterprise called Kagiso Khulani Supervision Food Services (KKS).

The need was identified to develop the project in a participatory way that would also result in good management and technical achievement. Particular concerns were the capacity of the Sobantu agricultural co-operative in relation to agricultural, business and marketing planning, issues of access and exclusion and the social impact of the project, the group's constitution and roles and the management of communal and individual inputs and benefits.

It was decided to address these concerns through a 3-day workshop, involving Sobantu Village interest groups, INR/DoA development scientists and NRI consultants.

## Process

The Workshop was held in the Sobantu Village Hall, and attended by 36 community members, as well as by INR and DoA staff. About half the participants were women. Among the Community members, some 12 were members of the Sobantu Agricultural Co-operative, which will be the implementing group and main beneficiary of the project being developed. The workshop was conducted in both Zulu and English languages, and emphasised the need for fluency in Zulu by those that would be directly involved in the project.

A wide range of established and novel workshop techniques were used to draw on the knowledge and analytical potential of the participants, to generate both ownership and self-belief in their ability to confront problems without outside help. One day was spent in setting up, conducting and analysing field visits using PRA methods (mapping, transects, semi-structured interviews, direct observation and time lines).

The workshop followed a number of stages:

- Introductions and expectations
- History, background and present status of the Sobantu Agricultural Cooperative and the Project
- Definition of objectives of different stakeholders
- Stakeholder analysis
- Exploration of the technical, institutional, organisational and financial issues
- Presentation of experiences with agricultural co-operatives elsewhere (reasons for success or failure)
- Classification and prioritisation of issues
- Field work
- Analysis of issues
- Development of an action plan (who is responsible for what and by when)

**Outputs**

The main outputs of the workshop were:

- a large amount of information on flipcharts (maps, matrices, diagrams and bullet points) that will provide the basis for focus discussions in the future
- exposure of the main issues related to the establishment and implementation of a participatory urban agricultural development project
- a transparent planning process that explored and defined delicate issues such as who would benefit from the project
- an action plan to guide the Sobantu Cooperative and its support institutions (especially INR and DoA).

The Workshop was successful in its objectives, and the tangible outputs considerable. Additionally, both the Sobantu Community members and the INR/DoA staff also felt that the Workshop methods provided a good example for application (and adaptation) in other situations. On enquiry, they also felt that they would be able to use many of the methods without further outside assistance.

The materials generated by the Workshop are given in the following pages. All originals of materials generated were left with the Community. A list of participants and the timetable of the workshop are given at the end of the Case Study.

## EXPECTATIONS

**Institutional issues** **Technical Issues**

| | | | | | | |
|---|---|---|---|---|---|---|
| The action plan with the responsible people appointed to carry out plan | Everyone knows what the project can achieve and when | How does a co-op work especially in a small scale status. | To know how to implement the project successfully, and to keep the project going | To understand basic urban agricultural concepts | More knowledge about agriculture. | Add knowledge of skills and technology |
| Practical methodology for establishing agribusiness in developing communities | | How to plan projects<br><br>How to sustain a project. | Understanding of agricultural organisation (structure, roles, aims and objectives) | Know more about urban agriculture and how to manage it. The steps to take. | To know more on using the land for ploughing | What soils suitable for what. |
| To learn from the community what they want to achieve, what they expect from INR and how INR can help community to go forward. | | At the end of the workshop I expect to know how to initiate urban agricultural projects. | Organised structures to run the project<br><br>Coop members know they must plan to run the project almost on their own after 1 year. | I'd like to have experience on how to help other people on what to plough so that we can survive. | I will learn how to care for the soil<br><br>Vegetables<br><br>Want to know more on how to care for gardens. | Want to know on what soils to plant and how to make lines. |
| My personal contribution<br><br>Everyone understands their roles in the project Roles of different parties. | Training needs. | | Marketing our agricultural products.<br><br>Want to know more about what you can earn out of the work on the project. | Keeping our environment and nature clean. | How to plant vegetables, flowers and fruits.<br><br>How to till the soil | Want to know about flowers and soils suitable for them |

## TIME LINE

| | | | |
|---|---|---|---|
| 1928<br>Sobantu established | People came with agricultural skills | | |
| Small farmers within village met to discuss problems but did not raise funds. 1960's | | | |
| 1989<br>Community gardens competition | | | |
| 1994<br>After elections discussed ideas for development | Needs for skills and training | | |
| Development Committee<br>1996 | Sub-Committees | To improve social situation of Sobantu people<br>Agricultural group to Change from subsistence to commercial farming<br>Members are those using lands + others<br>15-20 | Child care community<br>10 year plan |
| Negotiate with TLC for land<br>Feb 1997 | | | |
| Meetings with INR 1997<br>Agriculture & Environment | | | |
| Developing understanding between 3 organizations<br>1998 | Joint organisation | Siyathuthuka Agricultural Co-operative<br>Sobantu Environmental Club<br>Sobantu Environmental Desk '96 Network | Environmental issues investigated by environmental club problem of river (pollution) partnership with local factories? |
| Partnership with INR to raise funds. KKS Grant 1998 under process | Training courses attended May 1998 | 12 June 1998<br>Project launch | |

## SOBANTU AGRICULTURAL DEVELOPMENT OBJECTIVES

| | INR/DoA | SOBANTU COOP MEMBERS | SOBANTU RESIDENTS (non coop members) |
|---|---|---|---|
| **TECHNICAL OBJECTIVES** | • Identify technological problems ( e.g. pollution, flooding, crop rotation, production, markets) | • Small-scale commercial farming<br>• To use organic waste for compost<br>• To gain agricultural skills | • To educate more people about commercial farming and encourage home gardens. |
| **SOCIAL/ COMMUNITY WELFARE OBJECTIVES** | | • Increase nutritional level<br>• Create job opportunities<br>• To minimise diseases<br>• To prevent informal settlement near the river<br>• Long term aim to lessen crime. | • To improve the peoples' lives health wise - combat hunger<br>• To prevent and keep our environment in a clean and healthy condition (nature conservation) |
| **INSTITUTIONAL/ ORGANISATIONAL** | • Develop sound business principles (includes crops and markets)<br>• An active and successful farmers' cooperative within 1 year<br>• Identify roles of all stakeholders (financial administrative etc.<br>• Selection criteria for further membership<br>• Identify land for development with official approval. | | |
| **LONG TERM SUSTAINABILITY OBJECTIVES** | | • To make the community self reliant<br>• To make the project an example to the next generation<br>• Project to act as an example for other initiatives | • Sustainability of the project. |

## STAKEHOLDER ANALYSIS

## SOBANTU RESIDENTS

| STAKEHOLDER | INTEREST | POSITIVE +/NEGATIVE X |
|---|---|---|
| 1. Umgeni Water Amanzi | Conservation and utilisation of clean water | + Community involvement |
| 2. Joint Environmental Project (Club and Desk '96) | Creation of environmental awareness | +More community involvement |
| 3. TLC | Proper utilisation of land | +Community in the process of establishing urban agriculture |
| 4. Neighbouring factories | Pollution of water | X Establish links between the Co-operative and the factories |
| 5. Community | Community buying products at affordable prices – job opportunities | + |
| 6. IDT and INR | Community development | + |
| 7. Kagiso Khulani Supervision Food Services | Upliftment and sustainability of the project | + |

## SOBANTU CO-OPERATIVE

| STAKEHOLDER | INTEREST | POSITIVE +/NEGATIVE |
|---|---|---|
| SISACO | Produce and money skills | + |
| Sobantu Community | Affordable prices, lessen diseases, job Opportunities, Social upliftment | + |
| TLC | Land | + |
| Sobantu Environmental Club | Cleanliness | + |
| Sobantu Environmental Desk '96 | Floodplain management | + |
| Development Committee | Socio-economic development | + |
| INR | Extension and training | + |
| Department of Agriculture | Training and assistance of implements | + |
| Department of Health | Improve nutritional level | + |
| GREEN | Networking | + |
| University of Natal | Training | + |
| Nansindlela Farm | Extension and training | + |
| NRI | Facilitating and training | + |
| Factories | Polluting the river | - |
| KKS | Funds | + |

**STAKEHOLDER ANALYSIS**
**INSTITUTE OF NATURAL RESOURCES/DEPARTMENT OF AGRICULTURE**

| ORGANIZATION | INTERESTS | + / X |
|---|---|---|
| Sobantu Farmers Co-op | Tenure, production, sustainability, drivers, profit, self-employment, gaining skills – business and agriculture in all other stakeholders | + |
| KKS (funders) | Success, self-promotion, business relationship, social upliftment | + |
| TLC | Voters, community benefits, good governance | + X? |
| Environmental Groups | Sustainability, functional links, responsible use of natural resources | + X? |
| Informal Settlers | Land | X |
| Factories (pollution) | Image, good neighbour relations, environmental issues | + or X |
| INR | Business interests = service provider thus = success, organization technical, credibility | + |
| Department of Agriculture | Service provider (technical)<br>Developing strategies, credibility | + |
| Traders (Sobantu) | Income generation, access to markets | + |
| Schools | Market (food supply), convenience (good price) affordable | + |
| DWAF | Water rights, quality, flood control | + X |
| Criminals | Theft of produce? | X |
| General Sobantu Community<br>Department of Health | Increased economic activity and social upliftment (health) | + |
| NRI | Success of project | + |

## IMPORTANT LESSONS FROM FARMER CONTROLLED ENTERPRISES

*(Summarised from case studies from Ghana, Uganda, Zimbabwe, Mali and Burkina Faso.)*

- Groups need strong internal cohesion and a clear agenda agreed by members, linked to participatory decision making.

- Small groups of people in similar circumstances are more likely to have these features than larger groups.

- Groups receiving free or subsidised equipment, tend to have problems with the operation and management of these joint assets which undermine group performance.

- Self-reliance, savings and cost recovery mechanisms should be emphasised.

- Political independence is crucial for successful group activity.

- Previous experience of group or cooperative activity can make an important contribution to the development of unified groups.

- Match new joint activities to the organisational and management capacity, skills, experience and resources already existing in smallholder enterprises.

- Focus on a single activity in early stages. Groups should not be overloaded with too many or too complex functions.

- Group must have a strong business rationale if it is to develop successfully.

- Effective structures of accountability, financial transparency and record keeping are needed.

- External training inputs have played an important role in ensuring success of many groups.

- The process of group formation and the spending of funds should not be rushed. Ways of measuring progress are needed other than expenditure.

- Groups should explore linkages with the wider economy, including private sector rather than trying to develop complex activities themselves.

- Training in negotiation skills and the development of risk-sharing arrangements are needed.

- Flexibility in planning and allocation of resources.

- Reflection and group evaluation of activities and progress

## CHARACTERISTICS OF SUCCESSFUL SELF-ORGANISATION OF A PROGRAMME OF PARTICIPATORY TECHNOLOGY DEVELOPMENT

- Common interest and focus
- Start informal, become more formal
- Start small and grow as necessary
- Group-selected coordinator
- Periodic meetings
- Group-organisation of joint activities
- Well prepared meetings
- Documentation and sharing
- Periodic self-evaluation by the group

**Source**: Developing Technology with Farmers

**EXPERIENCE OF INITIATING SUSTAINABLE AGRICULTURAL DEVELOPMENT IN MALI;**

**Phases in capacity strengthening:**

| | |
|---|---|
| Initiation and growth phase | 1986-1991 |
| Co-management phase | 1992-1993 |
| Autonomy phase | 1993-1996 |

Source: Peter Gubbels (World Neighbours). In Farmers' Research in Practice

## CORDEP; ETHIOPIA: CONDITIONS FOR SUSTAINABILITY OF COMMUNITY INITIATIVES

- The identification of initiatives should be through a careful diagnosis and prioritisation of community needs, in which all sectors of the community participate
- The community should participate in all stages of planning, implementation, monitoring and evaluation
- The community should decide on the rules and regulations governing the use of the facility (e.g. number of tree seedlings per household, price of seedlings etc.)
- Initiatives should be financially sustainable without outside assistance (establishment of revolving funds managed by a community-appointed treasurer accountable to the community authorities)
- Within the community institutions there should be individuals with sufficient specialised knowledge to solve problems, and, if necessary, get assistance from support agencies
- Government extension services should be involved from the start, and included in workshops and trainings
- Developing sustainable initiatives through a participatory process is very time consuming.

(Examples: CORDEP paravet service; CORDEP fodder nurseries; CORDEP women's goat groups.)

| | ISSUES |
|---|---|
| | **SOCIAL** |
| A | ∃ Differences of interest affecting group? |
| A/C | ∃ Linkages between group and other organizations |
| A/B | ∃ Impact of project on current or potential land users. Who would be disadvantaged? |
| A | ∃ Who are the poor? How to target for social benefit? CC + Health + Creche. |
| | **TECHNICAL** |
| B/A | ∃ Present land use |
| A | ∃ Conditions of use on land from TLC? |
| B/C | ∃ Limitations and potential of area |
| C/A | ∃ Development of appropriate products and methods for different scales of production |
| C | ∃ Economic evaluation of alternatives |
| | **MONITORING** |
| A | ∃ Reflection and learning and feedback to planning |
| A | ∃ Evaluation |
| A/C | ∃ Sharing experience |
| | **ORGANIZATIONAL / INSTITUTIONAL** |
| A | ∃ Constitution? - Co-operative or less formal structure? Membership criteria, rules, office holders (how chosen?) |
| A | ∃ Who is included/excluded? |
| A | ∃ Steering Committee? |
| A/C | ∃ Relations with other bodies (village, factory, TLC, etc.) |
| A/C | ∃ What conditions needed to operate viable business? |
| A/C | ∃ What conditions needed to address social welfare objectives? |
| A/C | ∃ Capacity for planning. |
| A/C | ∃ What time frame? |
| A/C | ∃ Group resource allocation – land, plots, inputs, labour, income |
| A/C | ∃ Markets – niche or mainstream? Continuity, scale, quality, price |
| A/C | ∃ Management support/training |
| | **FINANCE** |
| A | ∃ Conditions of funding |
| A | ∃ Time limits of funding |
| A/C | ∃ How to ensure financial sustainability |
| A | ∃ Risks – (How are risks and benefits shared?) |
| A | ∃ Financial transparency |
| A/C | ∃ Sources of financial advice/training |

**NOTE:**

**A: ISSUES WORKSHOP IN HALL**

**B: FIELD VISITS**

**C: TO ACTION PLAN**

## INFORMATION TO COLLECT ON FIELD VISITS

### WHAT

Soil suitability for agriculture

Soil erosion

Size of land available

Topography (slope of land)

Distance from potential users

Accessibility for transport

How far is river from Production areas

How much damage does flooding do

Who is using the land for settlement

What the land is being used for (Now, and in other seasons)

In Home Gardens:

- What is being grown now, including flowers, lawns, fruit
- What practices (spacing, fertiliser etc.)
- Chickens

### HOW

Observation

Talk to: Councillor, Committee of Cooperative, those who are already farming there

Soil analysis

Posing questions to household growers

Transect

Maps

### WHERE

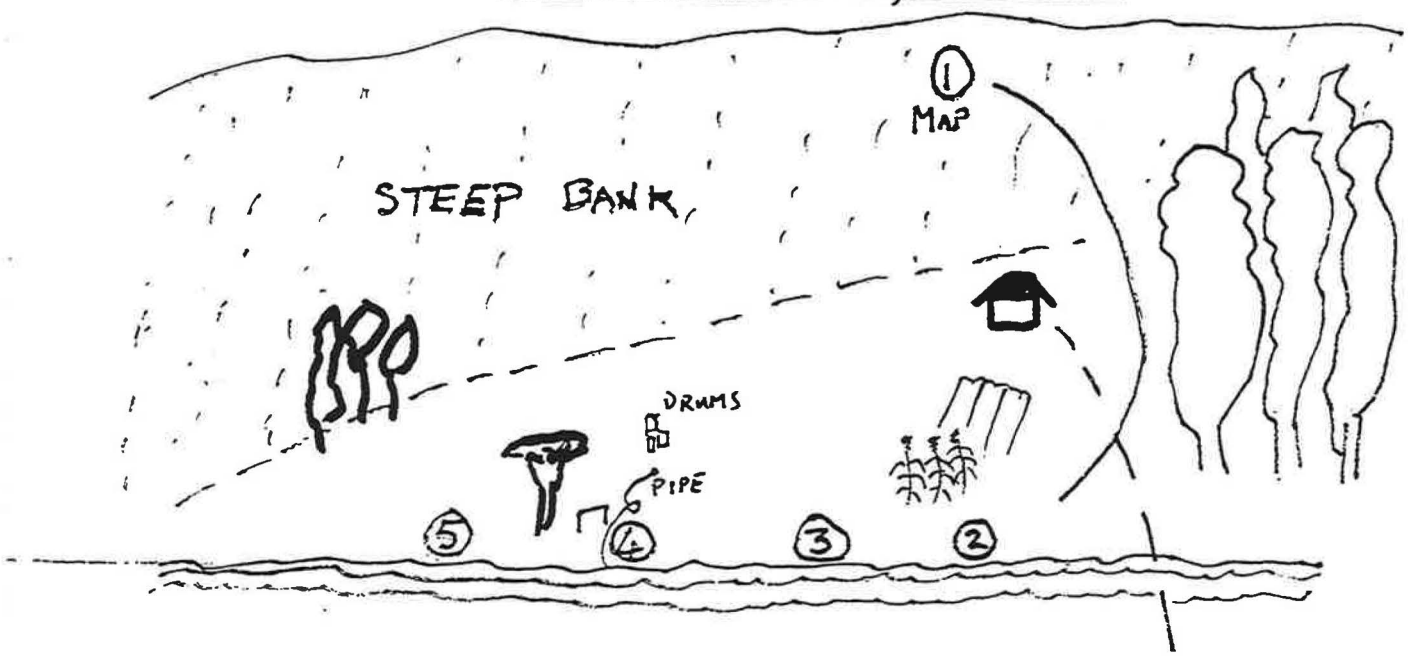
Three flood plains (different) - suggested we visit Phase I and Phase II

Homegardens in different parts of the Village

### WHO

3 groups - one to Phase I; one to Phase II and one to Home gardens.

# TRANSECT WALK, PHASE II




| | 5. Mr Mnyanda | 4. Mr Dumakude | 3. Mrs Ngcobo | 2. Mrs Mkhize |
|---|---|---|---|---|
| **Soil suitability** | Well drained, fertile, allivial, deep soil, low clay, easy to plough + seepage | | | |
| **Slope** | Flat, no erosion | Flat | Flat | Flat |
| **Erosion** | Nil (undercutting along river bank) | Nil | Nil | Nil |
| **Flooding** | Slight to nil | Slight to nil | Slight to nil | Slight to nil |
| **Water Source** | Good supply throughout the year, polluted. | | | |
| **Crops (now)** | Fallow | Fallow | Fallow | Fallow |
| **Summer** | - | Mealies, green pepper, chillies, potato, | Pumpkins Mealies | Madumbes Mealies |
| **Winter** | - | Lettuce, cabbage, peas, cauliflower | - | - |
| **Irrigation** | No | Yes | No | No |
| **Fencing & electricity** | None – but needed | | | |
| **Road access** | Yes | Yes | Yes | Yes |
| **Frost** | Moderate | Moderate | Moderate | Moderate |

**Interview**
1..Owner Mr Mthembu
2. No of families 7
3. Date of settlement 1995
4. Land use: subsistnece cropping around the home
5. Use river for watering the garden & washing only
6. Are prepared to move when housing is available

**Problems and suggestions**

1. Theft – fencing
2. Hunters burning – fencing and fire breaks
3. Polluted water: involve city health inspector
4. Monkeys – razor wire fencing
5. Informal settlement: being addressed by TLC

## SUMMARY OF TOWNSHIP SMALL GARDENS

1. Soil is suitable for planting
2. The plots are small, e.g. 12x19m
3. The skills of agriculture are there
4. They need encouragement, e.g. garden competitions, advice to fight pests
5. They buy seeds from Macdonald's
6. Some of them sell seedlings to the community
7. Women are more involved than men
8. Most use compost to fertilize the soil
9. Mr. Zimu learnt agricultural skills from other community members
10. Most of them are unemployed
11. They grow the following plants and trees

| Vegetables | Trees | Animals |
|---|---|---|
| Cabbage | Avocado | Chickens |
| Spinach | Lemons | |
| Carrots | Oranges | |
| Beetroot | Naartjies | |
| Lettuce | Bananas | |
| Chillies | Loquat | |
| Maize | | |
| Onions | | |
| Potatoes | | |
| Madumbes | | |
| Peas | | |

**DEFINITIONS**
Participatory Rural/Urban Appraisal - PRA

**Tools**

- Maps
- Timeline
- Transect walks
- Interviews
- Flow diagrams.

**Stakeholders**
These include participants, beneficiaries, all those whose interests can be touched by the project, and those who can influence the project.

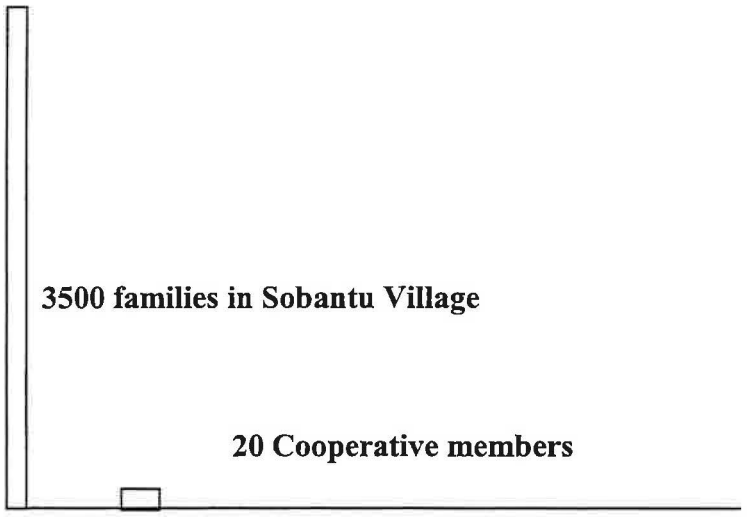
**Steering committee**

Suggested functions could include:

- Policy
- Orientation of the project
- Relationships with external agencies
- Review of progress against objectives

It was strongly recommended that the Steering Committee is not involved in the day-to day implementation of the project, as there will be many occasions when the Cooperative needs to take rapid decisions. However the Cooperative should be accountable to the Steering Committee and its funders. There will need to be a good mechanism for communicating the decisions and recommendations of the Steering Committee to the members of the Cooperative.

# GROUP ACTIVITY




As this diagram suggests, a small proportion of the Community (the Cooperative members) is using a large part of the valuable Community Resource which is the TLC owned floodplain lands.

The task of the 3 groups was to decide if this situation is acceptable, and if so how it can be justified.

## Group 1 presentation

**Reasons why the situation is acceptable:**

1. Formerly the land was used on an individual basis. Now it has become a Community project (before Agricultural Committee was formed).
2. Land potential: Subsistence/household use is changing to commercial use.
3. Lack of funds and organisation
4. There are farmers who have farmed and are farming (Dark City) who are not organised
5. Size of land is too small to split between 3500 families
6. Interest group (i.e. farmers) have initiated the project. Many Sobantu residents who do not want to farm
7. The community would benefit with farming business (fresh vegetables)
8. There might be other Community members in Sobantu who have the resources (money, transport, implements) who might want to farm. They would have to join the Cooperative if they want to farm
9. It is the desire of the Coop. to see more members added with time. Open membership. Not all of the land is used, and as members are added more land will be used
10. In the past the lands have been used for summer crops and subsistence only; land is under-utilised.

## Group 2 presentation

| Outputs | (A) Coop. members | (B) Non members | Wider than Sobantu |
|---|---|---|---|
| Lower cost produce | x | x | |
| Higher quality fresh produce | | x | x |
| Income from produce sale | x | | |
| Jobs for unemployed | | x | |
| Business opportunities (farming) | x | | |
| Opportunities for processing | x | x | x |
| School feeding scheme | | x | |
| Supply of inputs | | x | x |
| Informal traders | x | | x |
| Training skills (transfer to others) | x | x | x |
| Organic waste management/disposal | x | x | |
| Service of equipment | x | x | x |
| Supply of equipment | x | x | x |
| Transport | x | x | |
| Reduction of crime | x | x | x |
| Improved nutrition levels | x | x | x |
| Improved public health | x | x | x |
| Developing individual business skills | x | x | |
| Life skills; education of the young (how to feed yourself) | x | x | |
| Promotion of the image of Sobantu people | x | x | x |
| Wealth creation | x | x | x |
| Unification of Sobantu community | x | x | |
| Secondary animal production using crop residues | x | | |
| Home industries based on agric outputs | x | x | |
| Clean up water in rivers by negotiation/pressure on polluters | x | x | x |

## Group 3 presentation

1. The Agricultural Cooperative is part of a bigger Sobantu Development Committee - others are learning from the Workshop.
2. Small membership of S.A.C. is OK because:

   a) Too many people will cause confusion and conflict

   b) Only the current members have shown interest in the past (pamphlets about the project have been distributed)

   c) Rest of Community sees this project as providing cheaper vegetables in the future.

## TASK 2 FOR DISCUSSION GROUPS.

**Discussion Group 1.**

**How far will the cooperative's activities and functions be conducted on a communal basis?**

*Consider:*

- Land holding
- Farming operations
- Acquisition of inputs
- Use and maintenance of equipment
- Marketing
- Income
- Risk.

**Discussion Groups 2 and 3**

**What will be the scenario in 12 months time?**

Think about the cooperative in 12 months time. The funding period has ENDED.

1) What management structures should be in place?

- For policy
- For finance
- Administration
- Marketing
- Planning
- Infrastructure
- Networking.

Group 2 to produce an organogram, Group 3 to present as a matrix.

**GROUP 1 DISCUSSION.**

**How far will the cooperative's activities and functions be conducted on a communal basis?**

**Land holding** - The land will be cooperative and plots allocated to farmers

**Farming operations** - The planning committee will plan operations, and coordinator according to the farmers needs and market assessment.

**Acquisition of inputs** -The cooperative in charge of organising inputs

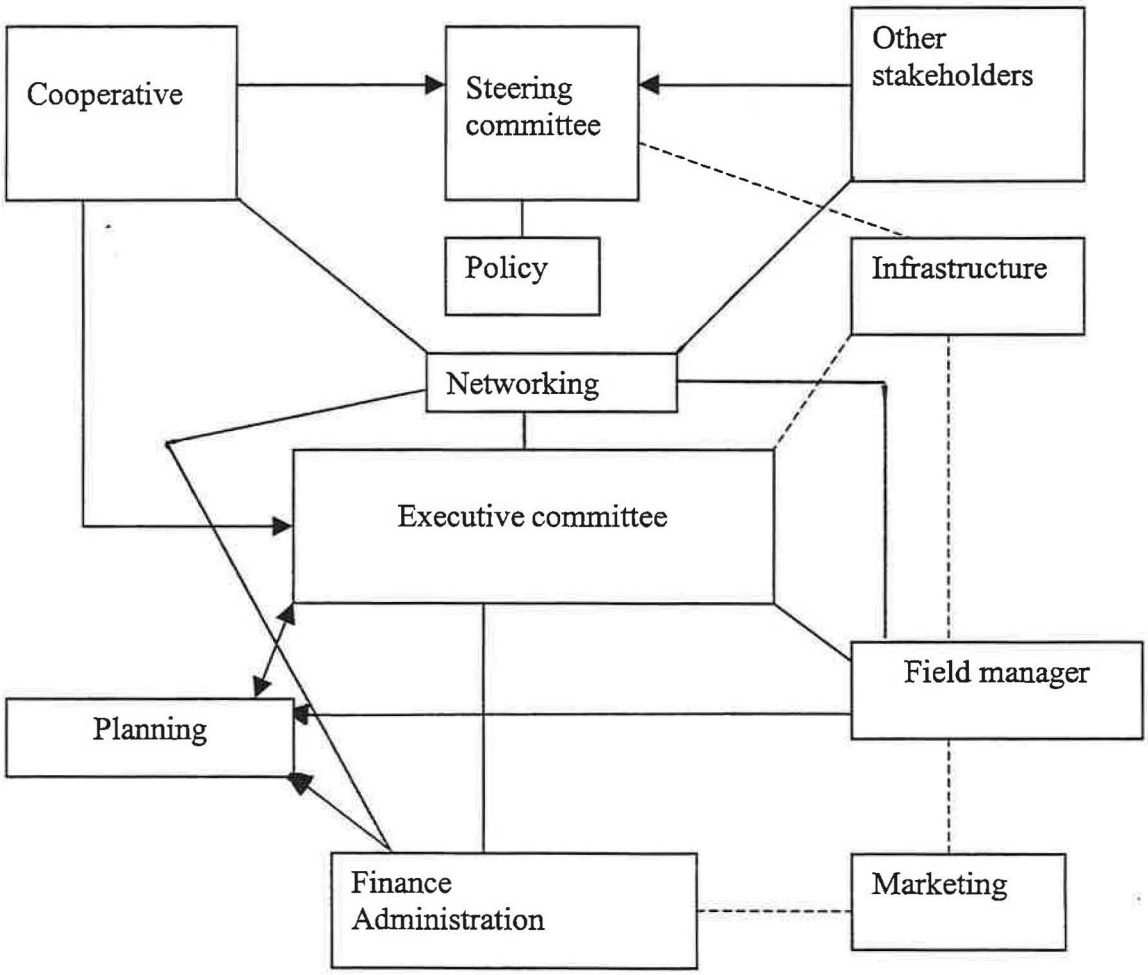
**Use and maintenance of equipment** -Somebody in charge of the storage of equipment. The cooperative in charge of the equipment

**Marketing** -Cooperative will be responsible for marketing.

**Income** -Cooperative account - to profit and reserve

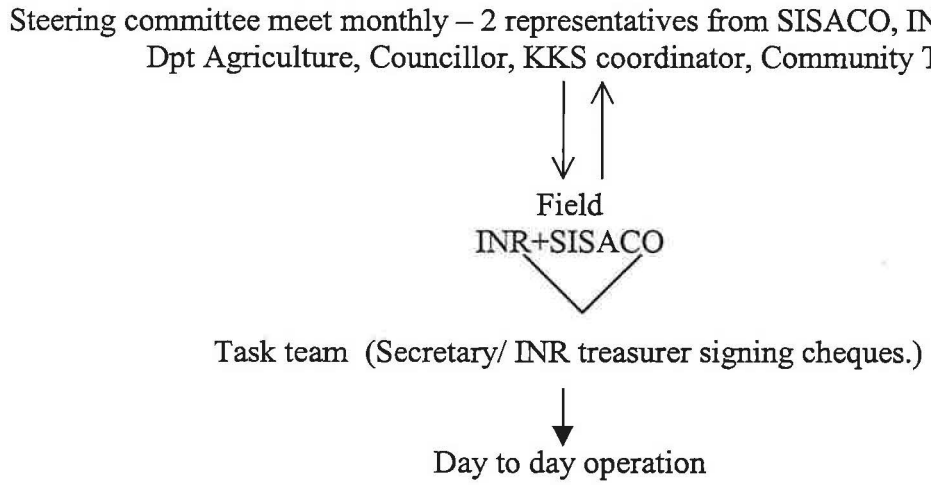
**Risk** -Cooperative.

**Group 2 – Diagram of organisational structure.**



**DISCUSSION GROUP 3 - Matrix -**

| Type of structure in 12 months | Structure | What it will do | How will it be sustainable |
|---|---|---|---|
| **Policy** | e.g. steering committee | Monthly meeting<br>Problems monitoring<br>Operational guidelines | Policy must come from the constitution |
| **Marketing** | Steering committee and task team | Advert. is important<br>Investigate market quantity and quality | Reasonable prices<br>Quality producing |
| **Financial** | Steering committee for financial report<br>Task team | Day to day operation | Transparency and accountability |
| **Planning** | Steering committee and task team | Plan | Good planning |
| **Infrastructure** | Task team nominate tool keepers | Hire security | Containers or sheds for tools |
| **Networking** | Steering committee and task team | Networking with other stakeholders. | |



**Thursday 25 June**

**Selection of Scale and Degree of Specialisation and Intensification**

The members of the co-operative observed by the rest of the workshop participants, selected from a number of alternative technology options written on "post-its", as follows,

**Marketing**
Home consumption
Marketing outlets within Sobantu
Schools and Hospital
Markets outside Sobantu

**Soil Fertility Maintenance**
Compost
Inorganic fertiliser

**Job specialisation**
Coop members are full time farmers – farming only source of income

**Production**
Year round production

**Land Preparation**
Contract hire of tractor

**Crop Protection**
Intensive use of pesticides

**Labour**
Employed casual labour

**Crop Specialisation**
Wide range of crops produced

**Irrigation**
Irrigation scheme at each flood plain

**Transport**
Contract hire from outside the co-operative

**Horticultural infrastructure**
Shade netting

**Rejected Options**
Market – No options rejected
Soil fertility – No options rejected
Specialisation – coop members farm part time as one source of income among others
Production – summer season only
Crop protection – non chemical control methods
Land preparation – tractor owned by co-operative, hand hoes, and animal draft
Labour – family labour, permanent employed labour
Irrigation – individually owned pumps
Crop specialisation – concentrate on one or few crops
Transport – individually owned by coop members and coop owned
Horticulture infrastructure – plastic tunnels and greenhouses.

**ACTION PLANNING.**

For discussion in 2 mixed groups to define the left hand column. This was followed by a plenary session to combine the results and to construct the rest of the matrix.

| Task | By whom | By when | Additional skills/training/support needed |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

Define needs for knowledge and skills and support - sources internal to the community and external sources with other organisations.

## COMMUNITY-DRIVEN AGRICULTURAL DEVELOPMENT IN SOBANTU VILLAGE

### WORKSHOP TIMETABLE
### Monday 22nd June - Thursday 25th June, 1998

**Monday 22nd June (Sobantu Village Hall)**

| | |
|---|---|
| 9.00 - 9.20 | Introductions |
| 9.20 - 9.35 | Participants expectations from workshop |
| 9.35 - 10.05 | History, background and present status of Cooperative and Project |
| 10.05 - 10.20 | Refreshments |
| 10.20 - 11.20 | Definition of objectives |
| 11.20 - 12.05 | Stakeholder analysis |
| 12.05 - 12.30 | Are stakeholder interests covered by the stated objectives? |
| 12.30 - 2.00 pm | LUNCH |
| 2.00 - 2.30 | Presentation of issues |
| 2.30 - 2.50 | Experience from elsewhere |
| 2.50 - 3.00 | Refreshments |
| 3.00 - 4.00 | Classification and prioritisation of issues |
| 4.00 - 5.00 | Preparation for field work |

**Tuesday 23rd June**

| | |
|---|---|
| 9 - 10 am. | Meet at Sobantu Village Hall. Decide methods and logistics for field visits |
| 10 am - 3 pm | Field investigations |
| 3 - 5 pm | Presentation of findings (Sobantu Village Hall). |

**Wednesday 24th June (Sobantu Village Hall)**

| | |
|---|---|
| All day | Analysis of institutional, technical and organisational issues. Definition of roles and responsibilities |

**Thursday 25th June (Sobantu Village Hall)**

| | |
|---|---|
| 9 am - 12.00 pm | Draw up Project Action Plan for next 12 months |
| 12.00 - 12.30 | Conclusions |

**List of Workshop Participants**

| NAME | ORGANISATION | CONTACT ADDRESS / TELEPHONE NUMBER |
|---|---|---|
| David Blanks | Dept of Agriculture | 431897 ext 219 |
| Nkanyezi Buthelezi | | 191 Mendi Street, Sobantu, Tel: 902826 |
| Muriel Cele | Sobantu Child Care | 902267, 798 Sobantu Village |
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| Roy Dandala | Institute of Natural Resources | Private Bag X01, Scottsville, 3209, Tel: 460796 |
| Wilhem Dlomo | Sobantu Organization | 278 Mngeni Street |
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| Mary-Jane Q. Hadebe | Sobantu Child Care Committee | 902430. 316 Main Road, Sobantu |
| Hugh Hastings | Institute of Natural Resources | Private Bag X01, Scottsville, 3209, Tel: 460796 / 0828046005 / (H) 3261543 |
| Nompumelelo Khumalo | Health | 797 Skhosana Street, Tel: 901091 |
| T.B. Labane | SISACO | 1107 Nxele Street, Sobantu, Tel: 901976 |
| Mirriam Mabaso | Kulima | 1058 Zenzele, Sobantu |
| Tom Mackenzie | Institute of Natural Resources | Private Bag X01, Scottsville, 3209, Tel: 460796 |
| Senzo Madondo | Sobantu Environmental Club | 130 Msunduzi Street, Sobantu, Tel: 901686 |
| Thulani Magoso | Siyathuthuka Agricultural Co-operative | 1148 Nxele Street, Sobantu, Tel: 903640 |
| Mr M.W. Mahlanze | Sobantu Environmental Unit | 212 Mende Street, P.O. Sobantu Village, Tel: 902755 |
| Boy Majozi | Sobantu Creche | 287 Mngeni Street, Tel: 902586 |
| Mlungisi Makhathini | | 49 Gardiner Street, Sobantu |
| Mantombiza Manzi | Sobantu Organization | 1010 Zenzele Street, Sobantu |
| Adrienne Martin | NRI | NRI, Chatham, Kent, ME44TB, United Kingdom |
| Arthur Maseko | Sobantu Joint Environmental Project | 269 Mngeni Street, Sobantu |
| Bhekisisa Matiwane | | 19 West End, Sobantu |

**Participants (continued)**

| | | |
|---|---|---|
| Michael L. Mbambo | | 882 Khumbula Drive, Sobantu |
| Edward Mfakadolo | Institute of Natural Resources | Private Bag X01, Scottsville, 3209, Tel: 460796 |
| Mike Mingay | Institute of Natural Resources | Nansindlela Farm 0325-34301 |
| Maida Mkhize | Sobantu | |
| Dennis Mnawabe | SISACO | 1042 Zenzele Street, Sobantu |
| Irine Mncwabe | SISACO | 1042 Zenzele Street, Sobantu |
| Hendrietta Mngadi | Sobantu Child Care Committee | 264 Mpande Street, Sobantu, Tel: 903103 |
| Kwazi Mngadi | Sobantu Development Committee & Sobantu Environmental Desk '96 Network | 564 Smith Drive, P.O. Box 20276, Sobantu, Tel: 902403 |
| Margaret Mzimela | Sobantu Creche | Thuthuka Road, Tel: 902919 |
| Mrs Lindiwe Ndlovu | | 224 Mpande Street, Sobantu, Tel: 903399 |
| Maritha Ngcobo | Agricultural Dept. | 313 Mngeni Street, Sobantu, Tel: 902730 |
| Mr D.M. Ngwane | | 878 Khumbula Road, Sobantu |
| Mrs L.N. Nkosi | | 1068 Nxele Street, Sobantu, Tel: 901950 |
| Mrs T.N. Nkosi | Sobantu | 1053 Zenzele Street, Sobantu |
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| Barry Pound | NRI | NRI, Chatham, Kent, ME44TB, United Kingdom |
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| Lungile Zimu | | 1415 Suncrush Extension, Sobantu |
| Mandla Zondi | IDEAA Fellowship | Private Bag 9053, Pietermaritzburg, 3200, Tel: 452484 |

# 14. CONCLUSIONS AND RECOMMENDATIONS

From the training we have drawn the following conclusions and recommendations:

- from this course we've gained new knowledge of the Vulindlela area; e.g. better understanding of the history of the area, its agricultural potential, the socio-economic conditions and the organisations working in the area.
- as a group we've learned about the concepts and application of tools, methods and techniques to use to get a better understanding of the above mentioned problems and needs of the community.
- we have learned that if the community is not involved in decision making about development programmes in the community, then that programme would be a failure.
- we recommend that all department of agriculture extension staff be given a 2-5 week course in farming systems and participatory research so that they can be equipped to understand the problems in their communities before they start any development programmes.
- this group feels so strongly about statement one above that, should it be necessary to effect a departmental policy change in order to both fund and accomodate such training, we recommend that this takes place.
- rather than subjecting the communities to pre-conceived ideas, without fully understanding their needs/problems, we recommend a bottom-up approach.
- in addition, we recommend that, should there be any need for similar research in the region, the team should be used with the full support of their respective institutions.

**Suggestions arising from the course**

The following were suggestions made by participants for maintaining the momentum engendered by the courses detailed in this publication:

a) 2-3 day course for DoA senior management (extension and research) in the development of FSA/FPR concepts, present status and institutional implications.

b) Course in FPR research methods (including on-farm trials) for researchers and extensionists from DoA and other institutions.

c) Practical experience in PRA methods - could be run by local trainers, and could consist of several short-term inputs. Needs to be part of an ongoing process that builds confidence in a community. Could be as focused PRAs taking the Vulindlela experience forward.

d) Development of a multidisciplinary and inter-institutional (INR, DoA, ARC and others) project proposal for Community Development through agriculture in Vulindlela District.

e) Short article(s) on new methods and approaches for popular farming publications. Could be an output from the proposed DoA-led FSR forum in KwaZulu-Natal.

f) Department of Agriculture to co-ordinate FSR Forum (Co-ordinating Committee)

- provide links for better communication
- co-ordinate organisations
- define working strategy

g) Use of local consultants as trainers in DFID-supported projects (they are here; there is potential for more continuity of input; more economically viable/sustainable in long term).

h) Decentralisation of decision making political environment should help the adoption of participatory approaches

i) Restructuring of organisations - must allow for the inclusion of these processes and an in-built flexibility to respond to the dynamic needs of communities

j) There is an urgent need to clarify the roles of the main institutions involved in agricultural development in KZN to avoid duplication and confusion, and to promote complementarity and collaboration.

k) There is a need to define strategies for working with small scale farmers; these draft strategies can form the basis for dialogue with top management

l) The strategies for work with small-scale farming should start with small pilot projects as part of a learning and demonstration process. Projects should be "process" projects that define wider objectives and long-term outputs at the start, but where specific activities are defined on a rolling year on year basis as the result of interaction with communities.

m) Videos are a powerful tool that can be used to bring field experience to top management

**Suggestions for action by organisations working for agricultural development in KwaZulu-Natal**

- Training/practical experience
- Funding
- Linkages/networking/joint programmes
- Human resource development: recognition of FS/FP work as valuable
- Restructuring
- Leadership
- Conducive political "climate"
- Small scale farmer strategy formulation
- Definition of institutional roles

# APPENDIX ONE

## Evaluation of the course

Each course was evaluated by the course participants using a mixture of written and discussion methods. They were asked to answer nine written questions, giving a score against each of 1 (poor) to 5 (very good).

Scores given in the evaluation were as follows (averages of all responses):

**First course:**

| QUESTION | SCORE |
|---|---|
| 1. How relevant was the course to your work? | 4.25 |
| 2. How relevant was the course to the development of rural and peri-urban agriculture in disadvantaged areas? | 4.25 |
| 3. How clearly were the concepts of FSR/FPR explained? | 4.6 |
| 4. How good were the course handouts? | 4.6 |
| 5. To what extent have you gained new knowledge or skills during the course? | 4.6 |
| 6. To what extent have you gained new knowledge of the Vulindlela area through the application of methods from the course? | 4.6 |
| 7. To what extent are you now confident to apply new concepts/methods in the community? | 4.3 |
| 8. How appropriate was the length of the course? | 3.5 |
| 9. How appropriate was the proportion of theory:practical content of the course? | 4.25 |
| **Overall average** | **4.33** |

**Second course:**

| | SCORE* |
|---|---|
| 1. How relevant was the course to your work? | 4.53 |
| 2. How clearly were the concepts of FSR/FPR explained? | 4.24 |
| 3. How good were the course handouts? | 4.29 |
| 4. To what extent have you gained new knowledge or skills during the course? | 4.12 |
| 5. To what extent are you now confident to apply new concepts/methods? | 3.82 |
| 6. How appropriate was the length of the course? | 3.32 |
| 7. To what extent has your understanding of the institutional implications of adopting the FS/FP Approaches been improved as a result of the course? | 4.06 |
| 8. How good were the logistical arrangements made for the course? | 4.35 |
| **Overall average** | **4.09** |

***These are averages of 19 participants scores.**

Participants of the course were also asked to give one weak point and one good point each as part of the course evaluation. These are given below:

| GOOD POINTS OF THE COURSE | WEAK POINTS OF THE COURSE |
|---|---|
| | |
| 1. Sharing of ideas and expertise both within the group and between group and instructors. | 1. Course was far too long - it is difficult to set aside a whole month. |
| 2. Has given tools to get an in-depth understanding of what is happening in field situations. | 2. Difficulties with continuity of attendance due to various factors. |
| 3. Unbelievable that in such a short period of time one can get so much information, and learn new things about a community where we have been working for 15 years. | 3. Very short notice given to DoA staff, despite fact that INR sent invitations long before. |
| 4. As an extension officer it is v. difficult to get the real problems of a community, but through this course we have been able to understand the problems in a short period of time. I recommend that it should be DoA policy that other DoA extension staff should be given 2-5 week course so that they can understand the problems in their communities. | 4. Lack of support from DoA advisers for those on the course. |
| 5. Very educative. Gained a lot, and feel confident to apply knowledge in the field. | |
| 6. The "bottom-up" approach of working with, and gaining from, the community was appreciated. (It was commented that much of what has been introduced (imposed) by the government has been rejected by the community). | |
| 7. The community is participating in our work | |
| 8. Learned a lot from the course. Previously had worked with the community without approaching it and doing research on their problems. We were spoonfeeding them without understanding their needs. Now we know we have to ask the community. | |

## Additional comments from course participants

1. We have learned a lot, but need SUPPORT (from our own institutions and from outside).

2. We feel that group participants should work together to develop strategic plans for selected areas (Vulindlela and Hlanganani).

# APPENDIX TWO: COURSE PARTICIPANTS AND RESOURCE PERSONS

| | NAME | ORGANISATION | ADDRESS FOR CORRESPONDENCE | TELEPHONE | FAX | EMAIL |
|---|---|---|---|---|---|---|
| 1 | Brigid Letty | FSR Unit, Dept. of Agric. | KZN Dept of Agric. P/Bag X9059 P/Maritzburg 3200 | 0331 433371Ext 256 | | BALetty@Cedara1.Agric.ZA |
| 2 | Martin Eweg | S.A. Sugar Association /Seconded toDept. of Agric. | SASA Experiment Station, PO Box 40, Eshowe, 3815 | (0354)42163<br>Cell 082 655 0357 | (031) 595406<br>(0354) 74917 | |
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# APPENDIX THREE

## READING LIST FOR FSR/FPR COURSE


**Chambers, R, Pacey, A, & Thrupp**, L A, eds, 1989 'Farmer First', Intermediate Technology Publications

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**Journals**

PLA Notes, IIED, 3 Endsleigh St., London, WC1 H0DD, UK

PTD Circular, ETC, PO Box 64, NL-3830 AB Leusden, Netherlands

Slash and Burn: Update on Alternatives. ICRAF, PO Box 30677, Nairobi, Kenya

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