HOW DO WATER USERS PERCEIVE THE QUALITY OF THEIR IRRIGATION SERVICES

Report on a Training Course in the Use of Participatory Rural Appraisal for Irrigation Management Research

by

Paul Gosselink
Abdul Hamid
Anouk Hoeberichts
Mohammad Ishaq
Rafiq Khan
Saeed-ur-Rehman
Khalid Riaz
Pierre Strosser
Robina Wahaj
Waheed-uz-Zahman

International Irrigation Management Institute, Pakistan

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TABLE OF CONTENTS

INTRODUCTION

A research proposal titled *How do farmers perceive the quality of their irrigation services ?* was formalized in May 1994 (IIMI, 1994b), in order to answer specific research questions that had arisen in the context of two research programs undertaken in Pakistan:

> **(i)** as part of the research collaboration between the International Irrigation Management Institute (IIMI) and the Centre National du Génie Rural, des Eaux et des Forêts (CEMAGREF), to understand water users' perceptions of irrigation water supply for specifying water supply constraints within economic models;
>
> **(ii)** as part of the IIMI's Performance program, to identify performance indicators specifically used by the users of irrigation services, i.e. the farmers, and identify actions undertaken by farmers for improving/modifying the performance of their irrigation water supply.

Although IIMI's Performance Program documents identifies three users of performance indicators, the farmers, the system managers and the policy makers, the analysis of irrigation system performance from the end-users' perspective (the farmers) remains rather superficial. As an example, two farmers' indicators only, i.e. predictability and profitability, are cited in IIMI (1994a).

However, to know whether these indicators are the appropriate ones effectively used by farmers for assessing the performance of their irrigation water supply has never been investigated. As the assessment of the performance of an irrigation system leads eventually to the identification and implementation of management interventions, to use inappropriate farmers' indicators at the performance assessment stage could lead to the selection of inappropriate interventions with potential negative impacts on farmers' essential performance indicators.

A distinctive aspect of the study on farmers' perception of the quality of their irrigation services is the choice of the research methodology itself, i.e. the use of **Participatory Rural Appraisal (PRA)** to facilitate water users to provide information on the performance of their irrigation water supply.

Because IIMI-Pakistan researchers had little experience with participatory approaches and techniques, the first activity planned under this research was a one week training on the use of PRA techniques. The facilitator of this training was Paul Gosselink from IIMI-Headquarters (Research Group). The involvement of local PRA practitioners in the training was also expected. However, the contacted persons had to cancel their participation in the training at the last moment and could not be replaced.

The present report summarizes the experience of ten IIMI staff involved in the training. Although the report may appear too detailed for people with a long experience in PRA

techniques, we feel that the detailed and narrative descriptions of the training activities provide useful information for people interested in using the PRA approach for irrigation management research in Pakistan and elsewhere.

The report focuses on two aspects of the training: (i) the use of the PRA approach, and (ii) the identification of performance indicators from water users' perspectives. The field reports of two study teams practicing PRA in two irrigation communities constitute a significant part of this report.

As the research activities under the study are still in their preparatory phase, readers' comments on the report are invited to refine the approach and the research methodology.

RESEARCH TO EXPLORE WATER USERS' PERCEPTIONS OF THEIR IRRIGATION WATER SUPPLY

The basis for developing research on water users' perceptions of the quality of their irrigation water supply and for including it in on-going IIMI research activities in the Fordwah Branch irrigation system of Pakistan is explained below.

The study proposes to address issues related to water users' perceptions of irrigation services. The two issues addressed by this study are summarized in the following questions (IIMI, 1994b):

1. **How do water users perceive irrigation water services?**

and,

2. **How do water markets modify/improve the quality of irrigation services?**

To understand the irrigation environment and the way this environment affects water users' decision making is part of the answer to the first question. Simultaneously, there is a need to identify performance indicators used by farmers for describing and monitoring the characteristics of their water supply.

The second point focuses on specific actions taken by water users to improve or modify the quality (performance) of their irrigation services. The following questions are addressed: Why are (some) water users involved in water transaction ? Which aspects of performance are affected and by which type of transaction? What are the constraints which are not removed by participating in water markets?

A distinctive aspect of this study is the choice of the research methodology. **Participatory Rural Appraisal (PRA)** approaches will be used to gather information on the quality of water supply, performance criteria from water users' perspectives and the impact of water transactions on these criteria. PRA has been widely used in natural resource and agricultural research, but in irrigation

management research and performance assessment studies the experiences are limited. Thus, the study also addresses the usefulness and cost-effectiveness of PRA techniques. PRA techniques will be compared with other (more conventional) data collection methodologies used for assessing the performance of irrigation systems (flow measurements, formal questionnaires, etc).

As the PRA approach has never been used extensively by IIMI-Pakistan researchers, the first activity under this study was a training course on **PRA techniques for irrigation management research in general, and more specifically for the analysis of irrigation water supply performance from water users' perspectives**, organized in Lahore in November 1994. The objectives, content and organization of this training are presented in the following section of the report.

TRAINING COURSE IN THE USE OF THE PRA APPROACH FOR IRRIGATION MANAGEMENT RESEARCH

1. Introduction

Since PRA was selected as the key research methodology to capture the way water users perceive their irrigation water supply, an eight-day PRA training workshop was organized at IIMI-Pakistan, Lahore. As the experience of the workshop participants with participatory and other semi-structured methods of inquiry was diverse, it was agreed to implement a full-fledged training course (to the extent this was possible in eight days).

The present chapter provides an overview of the PRA training course. Considerable time during the training course was given to the participants for reflection and evaluation of the previous days' experiences. On the one hand this was essential to review the application of PRA methods compared to other methodologies, and on the other to assess its value for understanding water users' perceptions of the performance of their irrigation water supply.

2. Objectives

IIMI's staff has been partially exposed to RRA and PRA principles during their activities at IIMI. However, to make these staff members fully aware of the potential of PRA and to be able to assess its utility in irrigation management research, a more structured exposure to PRA was required.

Thus, the objectives of the PRA training organized for IIMI-Pakistan staff were:

- to train staff in the principles, processes and methods of PRA;
- to apply PRA tools and techniques in two irrigation communities;
- to elicit water users' indicators of irrigation performance through the use of PRA;

- to obtain a preliminary assessment of the utility of PRA in irrigation management research in general and its applicability in developing water users' indicators of irrigation performance in Pakistan; and,

- to explore further use of PRA in IIMI-Pakistan research activities.

The PRA training took place at IIMI-Pakistan from November 23 to November 30, 1994. The facilitator of the training was Paul Gosselink from IIMI Headquarters (Research Group). The training was attended by 9 IIMI-Pakistan staff: Abdul Hamid (Senior Field Assistant), Anouk Hoeberichts (communication-extension sciences), Mohammad Ishaq (Field Assistant), Rafiq Khan (Senior Field Assistant), Saeed-ur-Rehman (Agricultural Economist), Khalid Riaz (Agricultural Economist), Pierre Strosser (Agricultural Economist), Robina Wahaj (Agricultural Engineer), Waheed-uz-Zahman (Agricultural Engineer). During the field work, the group was divided into two groups of 5 persons (including the trainer). The field work was implemented in the Mananwala distributary command area where IIMI-Pakistan had research activities for more than 6 years.

3. The training process

This section summarizes the training program and the process, while the key lessons of this activity are presented in the following chapter of this report. Appendix 1 and Appendix 2 present the detailed field program of the two groups. Table 1 presented on page 5 summarizes the activities undertaken during this short training.

This PRA workshop was conducted in four stages over an eight-day period. Phase I was the introduction to PRA and was meant to grasp the principles of PRA and to practice a selected number of PRA tools and techniques. The main hand-outs used during the training are presented in Appendix III of this report.

Phase II consisted of field work for two groups of 5 persons. The first group spent three afternoons in the field and the second group four afternoons, which included a presentation by farmers. Both groups had two objectives for their field work: (i) to apply PRA tools, and (ii) to understand irrigation performance from water users' perspectives and possibly identify performance indicators. During this phase, ample time was given to review daily field experiences of each group. The procedure after each afternoon of field work was to discuss findings the next morning, present them to the other group, plan the next day's field activities and have a plenary discussion.

Phase III of the training course was to write up of the field work process and to document it carefully. The outcome of these processes is presented for each group in Appendix I and Appendix II of this report. While one group focused more on the general application of the PRA tools in irrigation management research, the other group more specifically applied the tools to identify performance indicators from water users' perspectives.

Table 1 Components of PRA Training Course at IIMI-Pakistan

Day	Activity/process
Day 1	. Research overview of performance program and performance indicators . Introduction to PRA, objectives of the workshop . Orientation to PRA, why the need for PRA, core principles of PRA, definition of PRA, PRA versus other methods . Exercises on the types of research methodologies applied, their problems, limitations and potentials . Semi-structured interviews: principles, do's and don'ts, guidelines, 6 helpers, saboteurs, exercises . Participatory mapping, applications, topical maps, transects . Seasonal calendars, time trends, historical profile . Daily routine diagram, daily activity profile . Livelihood analysis
Day 2	. Venn (Chapati) diagram and flow diagram . Preparation of field activities . Field work
Day 3	. Reflection and analysis of information collected . Presentation of findings and lessons . Discussion and conclusions
Day 4	. Preparation of field activities . Field work
Day 5	. Reflection and analysis of information collected . Presentation of findings and lessons . Discussion and conclusions . Preparation of field activities . Field work
Day 6	. Reflection and analysis of information collected . Presentation of findings and lessons . Discussion and conclusions . Preparation for reporting
Day 7	. Ranking and scoring (matrix, preference, wealth) . Matrix scoring exercise . Report writing . Village presentation (group 2 only)
Day 8	. Reporting . Seminar preparation . Seminar (IIMI-Pakistan, Lahore)

The final phase of the workshop was the presentation of the findings. A presentation for, and partly by, farmers was organized by one of the groups. In addition, a seminar was organized for

a wider group of IIMI-Pakistan researchers. The preparation of the seminar was done in a rather short period of time and 6 persons of the two teams led the discussions.

Plate 1 **Farmers' Presentation**

The following section presents the main output of the training, i.e. the PRA tools used and the performance indicators identified. An attempt is then made, based on the limited experience of 10 persons, to assess the effectiveness of PRA tools for analyzing the performance of irrigation systems from water users' perspectives.

MAIN OUTPUT OF THE TRAINING

1. Use of PRA tools

Several PRA tools and principles were used in this training exercise to obtain information on water supply from a water user's point of view. This subsection will describe which tools were used, how they were used and what the results were. More detailed information is given in the team reports included in Appendix I and Appendix II.

The following tools were used during the field activities: Semi-structured interviews (SSI), map of the watercourse command area, walk along the watercourse, field walk, trend line, pie chart, preference ranking, and flow chart.

Plate 2 PRA Session

Aside from these tools, certain PRA principles were emphasized in this field exercise. These were team work, multi-disciplinary team composition, farmer participation, regular cross-checking of the information collected, discussion among farmers and facilitation by the field team. The effectiveness of these principles became clear when the above mentioned tools were exercised in the field. The experience with each tool is briefly described in the following sections.

Description of tools used

The map, trend line and pie chart were either drafted directly on paper or first on the ground using local materials such as stones and branches. When the drawing was finished, it was copied on paper by either a farmer or a team member.

In the case of ranking and flow chart, the material (cards, markers) was provided by the team. Since most of the farmers were illiterate, one farmer took the lead in writing the statements of other farmers during a discussion in which all farmers participated. The written statements were then cross-checked again with other farmers.

(i) Semi-structured interviews (SSI): Semi-structured interviews were used to discuss topics related to irrigation water supply with groups of farmers. A checklist was used to guide the interviews, as well as to probe some of the answers given by farmers.

(ii) Map of the watercourse command area: The map was drawn by farmers and, as such, is a reflection of the watercourse command area from their perspective. The main problem areas were indicated by farmers on the map.

Plate 3 **Mapping of the watercourse command area**

(iii) Trend line: Trend lines were drawn by farmers to understand the pattern of water supply in days/volume per month during agricultural seasons (rabi and kharif), and to identify months with higher water-table depth or high private tubewell operation.

(iv) Pie chart: Pie charts helped: (i) to quantify the water supply at a given point along the watercourse as a percentage of the water supply at the head of the watercourse; (ii) to identify the importance of private tubewell use for different seasons; (iii) to understand changes in cropping pattern due to a specific event (for example, abandonment of the Salinity Control and Reclamation Project (SCARP) tubewell).

Plate 4 Discussion about a trend line

Plate 5 Development of a flow chart

(v) Walk along the watercourse, field walk with farmers: The walk provided more insight into the problems mentioned by farmers and helped to identify and locate additional problems with farmers.

(vi) Preference ranking: Preference ranking was done with farmers to identify and prioritize problems which different groups of farmers face in irrigated agriculture.

(vii) Flow chart: A flow chart was made to visualize cause-effect relationships and to identify responses and solutions identified by farmers to solve their problems.

Plate 6 Flow chart depicting causes and effects

How did we use these tools?

Each team consisted of five people of whom one was facilitator backed up by another person during the process, and the other team members were involved as observers and note takers. The effectiveness of SSI is largely dependent on team interaction and being critically aware of one's own actions and behavior. The main technique to get the process started was the use of SSI. Although the use of SSI was not an objective in itself, it occurred naturally and unintentionally. However, shifts from SSI to a more focussed way of interviewing were observed several times. This happened especially towards the end of the field visit, when more precise information was required for progressing into the search of performance indicators.

The objective set for the first day was to facilitate farmers to draw a map of the watercourse. The team functioned as facilitator. However, both teams wanted to have this map so badly that soon there was a shift from letting the farmers do it their way to getting the map finished. The basic principle in using PRA tools (the researcher to sit back and the farmer to lead the process) was forgotten in order to achieve the objective. In other words, the map itself was seen as the objective and not anymore as a means for farmers to share information for further discussion and identification of problems and solutions.

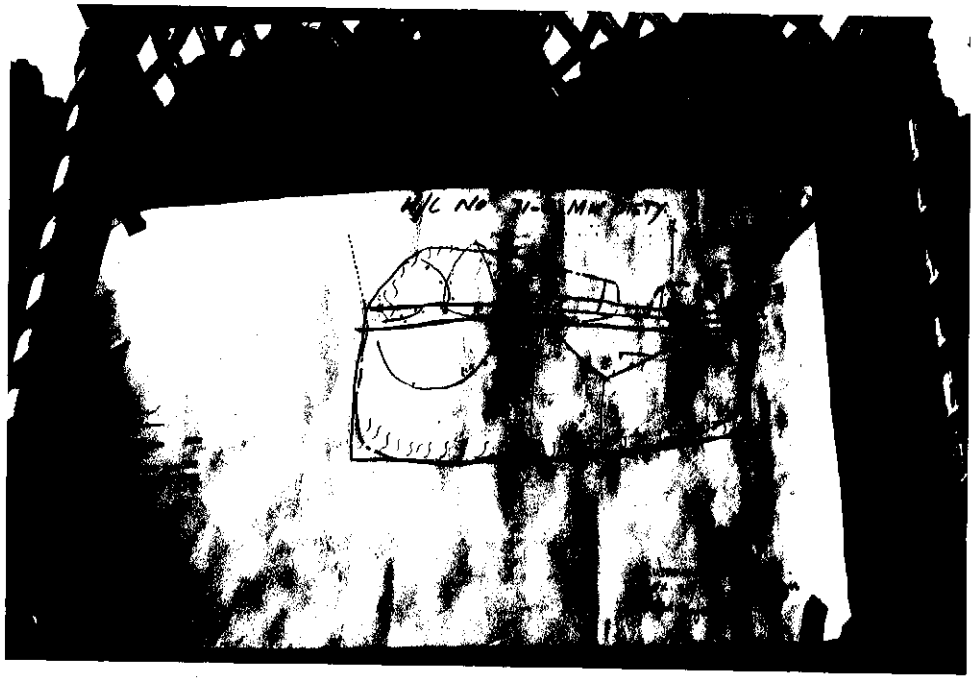

Plate 7 **Map of watercourse command area**

However, during the other days, the maps were better used as tools to indicate problems and issues mentioned by farmers. When there was an opportunity to go for a field walk, the chance to cross-check information indicated on the map by the farmers was provided. It was also effective in collecting additional information and understanding in a more practical way water users' problems.

The different tools were used to provide different information whereas one tool also helped to cross-check information gathered through another tool. For example, the bar chart applied by team 2 during the second day was cross-checked with the information gathered through the pie chart during the third day. During the last field day, one of the teams and some of the farmers involved in the whole field exercise presented the information gathered to other farmers. This was a useful way to further cross-check the information collected.

What did we get out of the exercises ?

The tools used in the process were partly a result of the objective set for that day as well as the evolution of the discussion among farmers and between farmers and the team.

The information gathered through using these tools gave the team members an overview of the problems related to water supply at the watercourse level for selected watercourses. It also helped the team to better understand the causes and effects of the problems mentioned by farmers, as well as actions taken by farmers to handle these problems. Team members also got a first impression of indicators used by farmers to assess the performance of the irrigation water supply at the field level, at the watercourse level and at the distributary level, as presented in the following section of this report.

2. Performance indicators from water users' perspectives

Apart from learning PRA techniques, a major objective of this training was to understand how water users perceive the quality of their water supplies. As explained elsewhere, water users rely on their own indicators of irrigation system performance which may differ from the more "technical" indicators that engineers calculate. Quite often, the indicators used by water users are no more than "rules of thumb" which are difficult to describe or to quantify, at first[1]. More structured survey techniques often fail to collect this information. The relaxed participatory atmosphere of PRA offers a greater opportunity for farmers to share this information with the team members.

Two broad categories of indicators were identified using various PRA techniques, reported in the previous paragraph. They are indicators of: (i) water quantity; and, (ii) water quality.

Indicators of water quantity

(i) Water level in the distributary: Farmers reported using the level of water in the distributary as an indicator of water supply they would receive. The water level was usually determined by eye-balling the distance between water surface and the upper edge of the embankment, or by measuring this distance in terms of "arm-lengths" or "feet"[2].

(ii) Water level in the watercourse: Like the previous indicator, the water level in the watercourse was used as an alternative indicator of water supply. However, the level in the watercourse is a more localized indicator, and it is sensitive to such local occurrences as

[1] However, once an indicator used by farmers is identified, it can be possibly approximated by a carefully chosen set of technical measures.

[2] Although farmers use the word "foot" in their discussion, this word refers to an approximate and local "foot" and not to the exact unit of the Imperial System.

breaches and illegal cuts that occur between the watercourse head and the field where the irrigation takes place.

(iii) Speed of water flow at the field "nakka": Farmers monitor the speed of water flow at their field inlet. This could also be used, along with readings on other indicators, to compare various fields in terms of their levelling. However, this is merely a conjecture at this point and needs to be confirmed through more field work.

(iv) Area irrigated with a warabandi turn water supply (or number of hours required for irrigating one kila or acre under a given crop): The number of acres irrigated during a given farmer's turn is the most frequently mentioned measure of quantity of canal water received. There is usually a considerable difference in the number of acres irrigated with the same canal water turn between the head farmers and the tail farmers of a given watercourse.

Indicators of water quality

(i) Source of water supply: The source of water supply is not an indicator of water quality in itself, but is used as a proxy to differentiate good quality (canal) water and poor quality (tubewell) water[3]. Both private and public tubewells may supply poor quality ground water. Farmers do not consider private tubewell water a perfect substitute for canal water which is partly a reflection of differences in water quality.

(ii) Impact as an indicator of water quality: Many times, farmers judge the quality of their irrigation water by its impact on soil and crops. This was particularly true for private tubewell water as farmers do not pre-test ground water before sinking their wells. Continued use of saline tubewell water leads to hardened soils, aperient salinity (in farmers' words: white crust) and, uneven and low rates of germination. These are taken as indicators of bad quality irrigation water. However, these indicators are not only related to the use of poor quality irrigation water but to several other aspects of farming practices. This may make their use (in terms of indicators of irrigation water quality) rather difficult. For example, a low germination rate may be related to the use of poor quality irrigation water, soil salinity, poor land levelling, poor farming practices and uneven input use, etc.

All indicators listed above were identified by farmers themselves with only some leading questions from investigators. For example, farmers reported that they monitor water levels in the watercourse to determine the location of occasional breaches and illegal cuts[4] along the watercourse.

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[3] During group discussions, no consensus was reached on whether the source of water supply was effectively a performance indicator related to water quality or not.

[4] If the water level in the water course fell rapidly, the breach or cut was considered to have occurred nearby. If the level receded slowly, that indicated, the diversion occurred some distance away.

Although the investigation succeeded in identifying some water supply performance indicators used by farmers, several issues are to be addressed. First, how do farmers process the information obtained from monitoring the indicators? For example, do they use information from different indicators in conjunction with one another? Do they systematically collect information to analyze trends and changes over time? Do they share the information they collect with other farmers? Second, how is this information used and what kinds of decisions are made after a reading is taken on particular indicators? How do water users' perceptions about the performance of their irrigation system influence their actions related to information collection, processing and application?

Most of the indicators listed above relate to quantity or quality of water supplies. There is also a need to identify indicators used by farmers to assess, for example, the timeliness and reliability of their water supplies.

3. PRA tools for analyzing irrigation system performance

This section investigates the two following issues: (i) the effectiveness of the PRA tools used to identify the indicators; and, (ii) the cost-effectiveness of this PRA exercise[5].

Effectiveness of PRA tools

Most information on indicators came up when the interaction with farmers was in a semi-structured interview (SSI) format. However, this does not mean that SSI alone could have provided this information. The information was revealed during a natural transition to SSI while using other tools. These other tools were certainly required to start the process, establish rapport, and build a good relationship between the team and the farmers[6]. These tools were needed as well to keep the information exchange process going. Of course, more practice is needed to apply PRA as a means to serve the objective and not as the final step of the process.

Cost-effectiveness of PRA exercise

The total time needed for the PRA exercise was approximately 45 hours spread over 5 days. Ten hours were spent in the field and 15 hours commuting. The rest of the time (20 hours approximately) was spent on planning, preparation and discussions.

[5] It should be acknowledged here that these remarks are only based on this particular training course which was relatively short. This implies that the comments should be interpreted as groundwork for a subsequent in-depth analysis of utility and (cost-)effectiveness of PRA.

[6] Farmers use rules of thumb as performance indicators which they themselves consider crude. Therefore, they were reluctant to share them with the team members whom they view as educated city people.

It seems that a disproportionate amount of time was spent on discussions among team members. There are several reasons for this. First, PRA gives qualitative information which can be interpreted in many ways. Therefore, discussions among team members are necessary to reach consensus. Also time is needed for planning and preparation to adapt the PRA tools to the situation under study. Communication among members was also hampered by the multilingual character of the teams. This caused coordination problems in the field which had to be discussed as well. Second, this was a training exercise involving a good deal of learning which is a time consuming process. Finally, discussions included processing information gathered from the field. Compared to surveys which produce reports only a long time after the last field day, processing PRA information requires much less time overall.

It seems that it was the combination of tools, centered around SSI which succeeded in the identification of the five performance indicators, instead of the use of a single tool. Compared to certain other methods for gathering information, PRA does not take a large amount of time. Additional time saving is also expected as experience is gained and team coordination improved.

CONCLUSIONS

a. training

A general sense of skepticism with the farmers remained alive during all sessions. One of the first questions asked during the introduction dealt with the closure of the public tubewell in one of the selected watercourses and whether we would be able to reinstall this water supply source again. During the final session, questions were raised about the advantages of all these activities for the farmers. One farmer remarked quite loudly that there would be no benefits from it until the next generation.

In spite of the fact that the activities undertaken in the field were part of a training with a very specific object for the participants, this question (what are the advantages of the activities for the farmers) is a generic one which is valid for all types of research, and not just for the PRA approach. One could argue that by "giving the information back to the farmers" through a field seminar, and assuring that farmers learn as well from the exercises, this issue comes less to the foreground in PRA than in other types of research methodologies.

It is difficult to assess to what extent **we** returned information to the farmers, and how much **they** in fact have learned. What was clear in any case, were the frank and open discussions with the team, the high level of participation in almost all sessions. This issue induced a discussion amongst team members about research and research-cum-development activities.

The fact that PRA is not meant to replace other methods currently used to gather information but to complement these methods and to use PRA in combination with regular field activities is a view that was shared by all the participants of the training.

b. future actions

The usefulness of PRA tools in irrigation management research depends on skilled use of the tools and a systematic manner in applying them. Also, a longitudinal assessment of the applicability of tools and their usefulness is needed. More extensive use of PRA is required before being able to assess its utility for irrigation management in general.

It is rather difficult to state at this point what is the effect of the training on future activities of field staff involved in the training. More applied training, focused on the use of PRA techniques within the context of existing research programs, would be required with a local PRA practitioner[7]. In this way, local professionals would test by themselves how PRA could be used in their own activities and complementing other more conventional data collection methods. In addition, what should be emphasized here is that a **relatively short, one-off training generally has little lasting impact**. A training should be integrated into a broader process of institutional reorientation if it is to have any long-term effect.

The potential usefulness of PRA techniques at the planning and strategic levels is to be assessed. These techniques will be used in the Fordwah Branch irrigation system for assessing irrigation performance from water users' perspectives, identify water users' performance indicators and assess the impact of various types of water transactions on these indicators and on the performance of the irrigation water supply. Field activities under this research have started in January 1995, and take place in watercourse command areas of the Fordwah and Azim distributaries (IIMI, 1994b), Chishtian sub-division, South-Punjab.

In other research programs, PRA approaches may offer very high returns in terms of research output and implementation and monitoring of specific innovations. To analyze the potential for organizing farmers at the watercourse and distributary levels, and to field test such organizations, is one of the major objectives of IIMI's current research program in Pakistan which may require an intensive use of PRA techniques. Research on issues related to institutional arrangements for improved sustainability and productivity of irrigated agriculture in Pakistan would be another area where PRA techniques could be required.

Based on the results of these on-going and planned research activities, and building on other experiences available in Pakistan in the use of PRA techniques for irrigation management research and development, guidelines may be developed for the use of PRA techniques in irrigation management. It is expected that the reactions and comments to the present report will help identify the important issues to be addressed that should be included in future research on the development of new research methodologies.

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[7] This aspect was mentioned several times by the participants at the time of evaluation of the training activities.

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APPENDIX I

Team report 1

Participatory Rural Appraisal for the analysis of performance indicators from water users' perspectives summary of a 3 day field exercise

I. INTRODUCTION

Activities under the International Irrigation Management Institute (IIMI)'s performance program in Pakistan started in 1994 with a major focus on water supply and agricultural production indicators in the Chishtian sub-division, south-Punjab. As it was felt that the planned activities did not try to understand performance from the water users' point of view, a specific research component titled "How do farmers perceive the quality of their irrigation services ?" was included in the program

The first step under this component is to identify performance indicators used by farmers to judge their water supply, using Participatory Rural Appraisal (PRA) techniques. As IIMI staff did not have previous experience in the use of PRA techniques for research purposes, a training in the use of Participatory Rural Appraisal techniques to identify performance indicators from a water users' perspectives was organized in Lahore from November 23 to November 30, 1994.

Three days of field work were included in the training. Two teams of each five people were formed since the group participating in the training was considered too large to go as one team in the field.

The present report summarizes the activities undertaken, the output and the lessons learnt by one of these two teams during this 3 day exercise. The following persons were members of the team:

Abdul Hamid, Senior Field Assistant
Anouk Hoeberichts, Communication and Extension Sciences
Mohammad Ishaq, Field Assistant
Khalid Riaz, Agricultural Economist
Pierre Strosser, Agricultural Economist

This report describes the planning process and activities undertaken for each day of the training. It includes also the daily evaluation of activities performed by the team itself, in order to refine the work plan and improve the quality of the team's field work.

II. PLANNING AND EVALUATION OF FIELD WORK

The area selected for the training activities was the command area of the watercourse 71-R of the Mananwala distributary. The main reason behind this choice is the possibility to compare the information collected during the three day period to data collected in the past by IIMI for a period of approximately 5 years. This choice was made prior to the first team meeting and the team did not question this choice in the first place.

1. Planning of day 1 field activities

The initial planning of the whole field exercise was rather short and focused only on the activities to be undertaken during the first day in the field. It was thought that the results of the first day would automatically identify activities to be undertaken during the following day, and so on. As a result, the planning meeting did not focus on the whole 3 day period in itself, but identified activities for the first day only. This point will be further discussed in this report. The following paragraphs describe the objectives identified by the group, the activities planned, and the team contract.

a. Discussion of the objectives

The team identified two major objectives:

(i) To identify problems related to canal water supply; and,

(ii) To prepare a map of the watercourse command area (including private and public tubewells, watercourse and nakkas, village, graveyards, etc) to identify problem zones

b. Activities planned

Three activities were discussed during the first planning meeting:

(i) To introduce the team and the objectives of its work in the area;

(ii) To prepare a map of the watercourse command area; and,

(iii) To prepare a transect of the watercourse.

Farmers were contacted the day before the beginning of the field work and a meeting was scheduled (time and place) with a group of farmers from the tail section of the watercourse command area.

c. Team contract

The team decided that one facilitator and one note taker would be selected for each day of field work, with a rotation among team members from one day to the other. For the first day, Abdul Hamid was facilitator and Mohammad Ishaq was note taker.

Elements of the team members' attitudes that was decided upon were to show sympathy to farmers' problems, not to interrupt farmers describing their problems (even if not directly related to objectives of the field work), and to sit on the floor with farmers or on charpoy if farmers would insist.

In the following sections, output, constraints as well as team behavior are discussed day by day.

2. Evaluation of Day 1 field activities

a. Output

Description of irrigation environment and identification of water related problems and actions

The first important output is information about the area and problems related to irrigation water supply. The main points are summarized below.

(i) The SCARP tubewell has been closed by the government. Farmers would like the government to open it again and would be ready to pay its full operation and maintenance costs.

(ii) The canal water supply is too short. One reason explaining this canal water shortage is the water stealing by big landlords located at the head of the distributary.

(iii) The annual canal closure took place from 13 January to 13 February.

(iv) In September and October 1994, a canal water supply rotation has been implemented by the Irrigation Department, and the Mananwala distributary receives canal water for only half of the time.

(v) Farmers have conflicts with the Irrigation Department staff (Patwari, SDO, XEN) as they claim that the abiana paid is higher than what should be.

(vi) Private tubewells are operated when there is a shortage of canal water supply. However, private tubewells are not a good substitute for canal and SCARP water supply, because of the less good quality of ground water, the high costs of operation (compared to low rice prices), and an unreliable supply of fuel.

(vii) Farmers mentioned general problems related to farming practices and agricultural production: high cost and poor quality of inputs, fragmented land holdings, shortage of labor (reducing the possibility to cultivate high value crops such as vegetables), and shortage of money.

(viii) Salinity is located at the tail of the fields and not in specific areas of the watercourse command.

PRA tools used

A map of the watercourse command area, with the watercourse route and the location of private tubewells (with a distinction between tubewells with bad and good ground water quality) was started on the ground. However, this map was not finalized or copied on paper.

Maps of fields with salinity problems and irrigation problems due to their high elevation were drawn during a walk through the tail part of the watercourse. Trend-diagrams of water-table depth, canal water supply, and tubewell water use were also done by farmers and discussed.

Most of the information collected was via a semi-structured interview. Although several farmers were present, mainly one farmer (the numberdar (head-man) of the village) participated in activities.

Performance indicators identified

Farmers acknowledge the importance of the irrigation water quality. However, they do not have a specific indicator for the quality of the water itself. They monitor the ground water quality by its impact on soils and production, i.e.

(i) white crust

(ii) hard upper layer

b. Constraints

The major constraint relates to the choice of the research site itself, i.e. a watercourse where IIMI has been working for 6 years in the past. The presence of the facilitator (Abdul Hamid) in the team made the process of questioning farmers difficult. Their favorite reply was: "but IIMI knows much more than we do about this, so what can we say."

Farmers had also problems with the removal of IIMI's piezometer pipes after IIMI's departure from the area. They strongly felt that these pipes should have been given to them after these 5-6 years of cooperation, and it was rather difficult to explain to them that IIMI had not removed the pipes itself (these pipes had been removed by a former IIMI staff).

Some team members felt that the homogeneity in irrigated related problems did not allow a full use of the PRA techniques (map for example). However, no agreement was reached on this matter within the group. One interview with one farmer was probably not sufficient to say that the area was homogenous.

The selection of the meeting place, i.e. the house of the numberdar of the village, had also an impact on the field day. The group interview was transformed into a single farmer's interview.

The need to fully understand the local vocabulary used by farmers was also stressed.

Finally, the inexperience of the team in the use of PRA techniques, and of farmers in drawing and participating in the process of data collection, was seen as a major aspect explaining the problems in obtaining information using these new techniques.

c. Behavior of team

The insufficient time allocated to the planning of the 3 days of field work was seen as the main problem explaining part of the low success of this first day in the field (improper approach for a given situation).

The introduction of the field work (objectives of our research, activities to be undertaken, etc) by the facilitator to the farmers was found insufficient, and too different from what the real objectives were.

The team did not show a high flexibility in the approach and did not adapt very well to the changes in situation and constraints arising. The efforts of the team were directed towards producing a nice output (map in this case), instead of understanding the system and its problems.

The output drawn by farmers was not finalized properly by the team. The most striking example is the map that was partly drawn on the floor by farmers, and then remained unfinished and unused.

3. Planning of Day 2 field activities

Three hours were spent for the planning of the remaining 2 days. As the constraints related to the choice of a watercourse where IIMI had been working in the past were seen as too important, the team decided to select a different watercourse where IIMI had not been working, i.e. watercourse 76-L of Mananwala distributary.

a. Objectives

The objectives of the activity were discussed again and identified as:

(i) To understand canal water supply from a farmers' point of view

(ii) To identify problems related to canal water supply and their indicators

(iii) To identify actions taken by farmers to solve these problems (short and long terms)

(iv) To use PRA techniques and evaluate these tools

b. Team interaction

The discussion on the team interaction led to the following decisions:

(i) For the first activities, Abdul Hamid will be the main facilitator, supported by Khalid Riaz. Mohammad Ishaque will take notes. These roles will be rotated after for the second day in the 76-L watercourse command area.

(ii) The roles were seen by the team members as more flexible than initially discussed.

(iii) The introduction will be made by Khalid Riaz.

(iv) Anouk Hoeberichts will assist Abdul Hamid, and Pierre Strosser will assist Khalid Riaz (as these two persons do not speak Urdu or Punjabi).

(iv) the team will try to mix with farmers (not to form a compact group "opposing" farmers).

c. Introductory remarks by team members

The main points to be included in the introductory remarks to farmers were discussed and agreed upon, as the team members felt that the introduction had a very important role for the rest of the activities. These points are: to introduce team members, to explain purpose of visit, to explain the advisory role of IIMI to the Irrigation Department, to focus on the need to know more on farmers' perceptions, to stress the importance of their point of view on problems and constraints for identifying potential improvements and solutions, to provide practical details about our activities (how long, where, with whom, etc)

d. Potential PRA tools identified at the planning stage

Map	. to locate individual farmers . to identify problem zones . to identify localized solutions
Map	. for water transactions (flows of water from farmers to farmers)
Transects	. to cross-check information, to express interest, asking while seeing
Trend line	. seasonal/annual . for canal water supply . for tubewell water use
Scoring/ranking	. to rank problems of water supply . to understand impact of actions on indicators
Chapati diagram	. to visualize portion of canal water supply
SSI	. for groups, sub-groups and individual farmers

4. Evaluation of Day 2 field activities

A group of farmers located at the head of the 76-L watercourse command area were interviewed for about 2 hours. These farmers were selected as they were the first farmers met by the team on the watercourse command area.

These farmers belong to one family cultivating 25 acres of land in this area. They were rather responsive to questions and did not show hesitation to draw on paper (they spontaneously selected the paper instead of drawing on the floor).

a. Output

Description of irrigation environment and identification of water related problems and actions

The main information related to the irrigation environment of the 76-L watercourse of the Mananwala distributary is detailed below. The major problem reported by farmers was a seasonal shortage of canal water during the Kharif season. This aspect was cross-checked during the field visit as the watercourse was closed at the time of visit.

(i) The canal water supply is low mainly in the months of May and June because more cuts in the upstream portion of the distributary take place during this period. After this period, rains and actions from tail farmers (pressure on the Irrigation Department officials) have increased the canal water supply.

(ii) Silt has accumulated in the distributary for the last 20 years. However, it was not clear if this had a direct impact on the canal water supply of the farmer interviewed.

(iii) Water losses are high because the watercourse is not lined

-> 6 hours of irrigation are required for 1 kila versus 6 hours of irrigation for 1.5 kila if the watercourse would be lined

-> 1/3 of the canal water supplied to the watercourse reaches the tail portion of the watercourse

(iv) The poor quality of all the tubewells (public and private) but one (private) is recognized as an important constraint by farmers.

To mitigate these problems, farmers take actions such as:

(i) for increasing the irrigation water supply and compensating for the reduced canal water supply: to install private tubewells; to bribe Irrigation Department officials for the installation of reclamation shoots (Rps. 26,000 for three months of extra supply); to steal canal water (cuts in the distributary); to operate the public tubewell privately (self-help basis).

(ii) for avoiding or mitigating salinity problems related to the use of poor quality ground water: half of the installed private tubewells have been abandoned; low use of public tubewell.

(iii) if farmers are obliged to use tubewell water, the upper layer of the soil becomes hard and farmers have to use canal water on these fields to reduce the hardness of the soil.

PRA tools used

The main tool used was a map of the watercourse command area with part of the distributary and the watercourse route, the nakkas along the watercourse, the limit between the area with good canal water supply and area with poor canal water supply, the location of the public tubewell and private tubewells, the location of private tubewells abandoned, and location of the fields cultivated by the farmers interviewed.

A pie chart was drawn by farmers to estimate the importance of seepage losses along the watercourse between the mogha and the tail portion of the watercourse.

A trend line for the canal water supply was obtained. However, the information was not really clear and precise (two scenarios presented on the same sheet, without a clear idea on the real scenario).

Semi-structured interviews were used at different points of the interaction with farmers.

Performance indicators identified

Three indicators were identified during the farmers' interview. These indicators relate to the quantity of canal water supplied at different levels of the irrigation system. The three indicators are:

(i) Water level in the distributary: if this water level is 1 foot lower than the higher possible level, the discharge to the 76-L watercourse is reduced by 10 percent; if the level is two feet lower, the reduction of the discharge is 50 percent.

(ii) Speed of water flow at the watercourse or field level (?) (fast flow = high discharge)

(iii) time taken to irrigate one acre under a specific crop with a warabandi turn water supply

b. constraints

The only real constraints were one saboteur (an old man who interrupted the conversation several times, and kept talking all the time), and the short period of time available that did not allow the team to visit more farmers and cross-check part of the information collected the same day.

c. Team behavior

The team felt that considerable improvements had been made in the introductory comments. The team members were more relaxed as well than during the first day of field work.

5. Planning of Day 3 activities

The planning of the last day of field work was based on the evaluation of the previous day's work. Less time, however, was spent on discussing issues related to performance indicators and to the role of each team member.

a. Objectives

Three objectives were identified for the second day:

(i) to cross-check the information collected the previous day (canal water supply, management of public tubewell, etc)

(ii) to identify new indicators characterizing canal water supply

(iii) to identify in a more comprehensive way problems related to canal water supply, along with their causes, their impact and the actions to mitigate these problems

b. Team interaction

The role of Anouk Hoeberichts and Pierre Strosser (not speaking Urdu nor Punjabi) was discussed after the field work. It was felt that both should participate during the interviews by doing the "strategic" thinking and helping team members to follow-up on specific questions and issues.

It was decided that Mohammad Ishaque would be the facilitator and Abdul Hamid the note taker.

The possibility of presenting the results to farmers at the end of the exercise was discussed and the team agreed that such a presentation should be planned two days after the last field activities.

c. Potential PRA tools

Two PRA tools only were specifically identified during the planning stage for specific use during this last day of field activities: (i) a trend line to check the information already collected on changes in canal water supply over the year; and, (ii) a flow chart for the cause-effect analysis of problems related to canal water supply.

6. Evaluation of Day 3 field activities

No field work was planned for this day. The evaluation of the previous day's activities only took place and the team summarized the lessons learnt from this first experience with PRA techniques and their use for identifying performance indicators.

a. Output

Description of irrigation environment and identification of water related problems and actions

The main information collected during this last day is detailed below.

(i) Differences between head and tail farmers: there is a more acute shortage at the tail of the watercourse the whole year round; no bribes are given by tail farmers to Irrigation Department officials (their returns are too small); the level of canal water transactions is much lower at the tail (because less canal water is supplied in this portion of the watercourse).

(ii) Farmers with land far from the distributary do not make cuts.

(iii) Farmers/tubewell owners at the tail of the distributary do not sell water to non-friends (pricing = cost-based).

(iv) The management of the public tubewell by farmers themselves and the bad quality of the ground water were confirmed.

(v) With the high use (and cost) of other inputs, a proper water supply is required. If there are too many problems with the canal water supply, the risk of crop (and financial) failure becomes too high.

Specific actions were cited by farmers to mitigate problems related to irrigation water supply.

(i) To use of SSP and FYM to mitigate ground water quality problems when white salts appear at the surface of the field

(ii) To compensate for inadequate canal water supply, private tubewells are used every month, except during the period November 15 - December 15.

(iii) in case of water shortage due to reduced canal water supply, tubewells are operated at a higher rate (mainly in July and August)

PRA tools used

A trend line to indicate canal water supply was developed. However, the process was not as participatory as one could have expected. Therefore, neither the team or farmers did get a chance to identify cause-effect relationships with help of a flow chart.

The map prepared by farmers the previous day was used as a basis to start the discussion. At the same time, the information reported on the map was cross-checked.

The main tool used was semi-structured interviews. As for the development of the trend line, the team had a more directive attitude (formal questioning) than during the previous day's activity.

Performance indicators identified

Two indicators were identified during the interview.

(i) Speed of flow (cross-checking): this indicator is used by farmers at the field intake, "nakka" (and not along the watercourse)

(ii) Water level at the watercourse level: the interview shows how farmers were using this indicator to identify problems along the watercourse. The water level in the watercourse is monitored by farmers to understand problems/cuts in the upstream portion of the watercourse. If the water level decreases, the farmer knows that cuts have been made upstream (decrease = indicator of upstream problem). If the rate of decrease of the water level in the watercourse is rapid, than the cuts are close to the field the farmer is irrigating (rate of decrease = indicator of the distance between the field and the problem). The monitoring of the change in water level leads to patrolling along the watercourse.

b. constraints

The main constraint encountered was again the time available for the activity. Only one group of farmers was interviewed, and the problems of reliability of information arising during the interview could not be tackled properly.

c. Team behavior

However, the main constraint in this last day of field work was probably the attitude of the team itself. The main problems identified are:

(i) All the team members acted as facilitators during some periods of the interview. The competition for farmers' attention replaced a required collaboration among team members.

(ii) Members did not stick properly to their role. As said before, everybody played (partly) the role of facilitator.

(iii) Team members shifted from a semi-structured interview mode to a more formal interview mode.

III. SUMMARY OF FIELD EXPERIENCE

The main lesson learnt with the first day of field activities is the importance of the planning stage for using PRA techniques and approaches, as much for the use of PRA techniques that for the identification of the main issues related to the topic analyzed.
The inexperience of the team in using PRA techniques and the multilingual character of the team were probably two important constraints in having the process right.

The following table summarizes the objectives, team interaction, tools used and results of the evaluation process for the last two field days.

Table 2 Summary of field work for Day 2 and Day 3

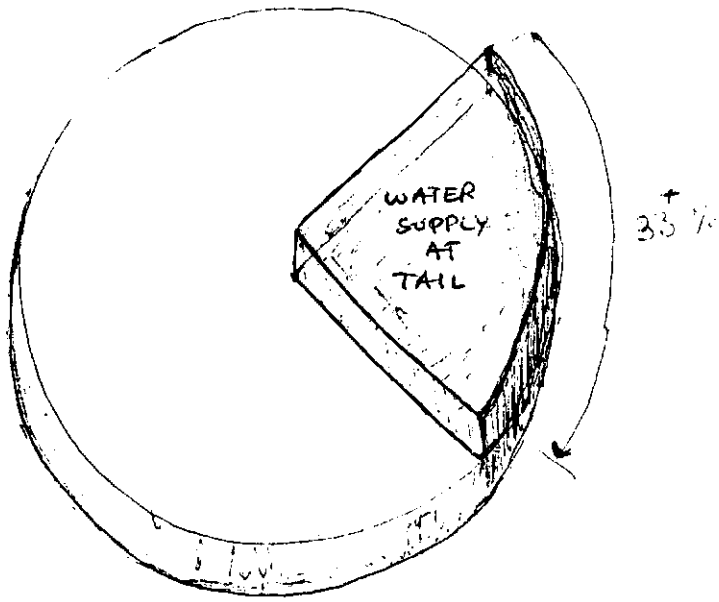
Planning	Day 2	Day 3
1. Objectives . To understand canal water supply from a farmer's point of view . To identify problems with canal water supply and their indicators . To identify action taken by farmers to solve problems	HEAD FARMERS . Canal water supply problems over time and over space (preliminary) . Water quality/water quantity at different levels and periods of time . Actions taken by farmers described	TAIL FARMERS . Information collected partially cross-checked . Differences between head and tail farmers described . 1 indicator cross-checked, two new indicators identified
2. Team interaction	+++	+ . Competition instead of collaboration . To high emphasis on discussion among team members instead of on interaction team-farmers
3. Tools used	Map, pie, trend line, SSI (but too long interviews with the same farmer)	Trend line, map (cross-check), SSI (towards formal interviews)
3. Evaluation of plans and activities	Achieved, new plans were made based on the evaluation	Achieved, conclusions were drawn and some recommendations were made

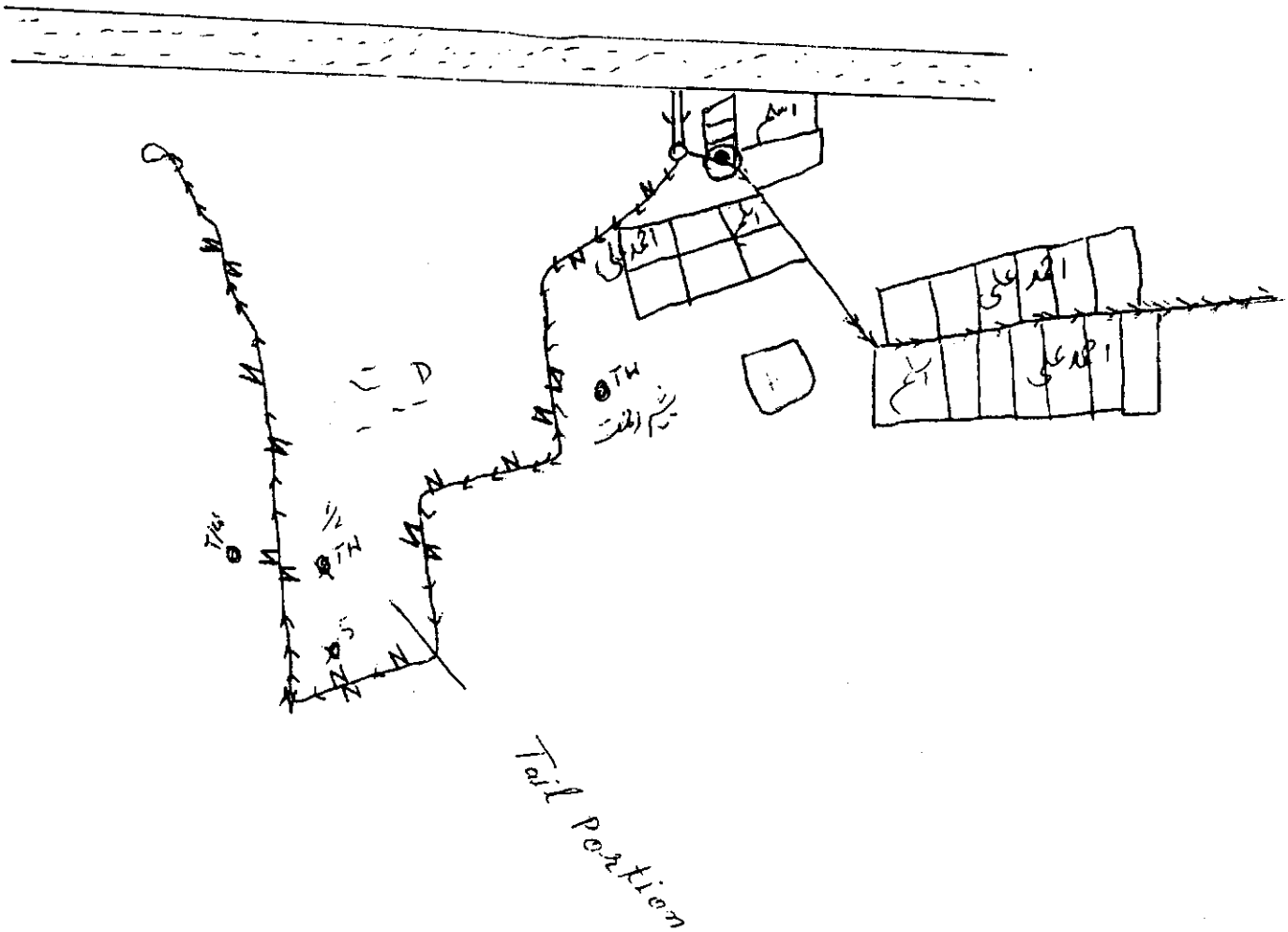
PRA techniques have proven useful as tools for collecting information and as a complementary approach to cross-check information collected by other sources. The approach and the use of these tools require a large farmers' participation, leading to a greater confidence from farmers making the communication easier between farmers and the field team.

One of the important advantage of the PRA approach is its flexibility and its capacity to adapt to unforeseen development (new issues identified, new farmers involved, changes in the environment integrated, etc)

Finally, although it is difficult to make this statement after such a short exercise and visits of only two locations, it seems possible to collect additional information which would not have been collected by using other methods and approaches. For example, in the first watercourse the team had been working (Watercourse 71-R of the Mananwala distributary), team members who had worked in the area for 5-6 years under an IIMI's project on Waterlogging and Salinity, were not aware of specific information related to salinity and its management by farmers.

WATER SUPPLY AT TAIL PORTION OF WATER COURSE AS A PERCENTAGE OF HEAD DISCHARGE

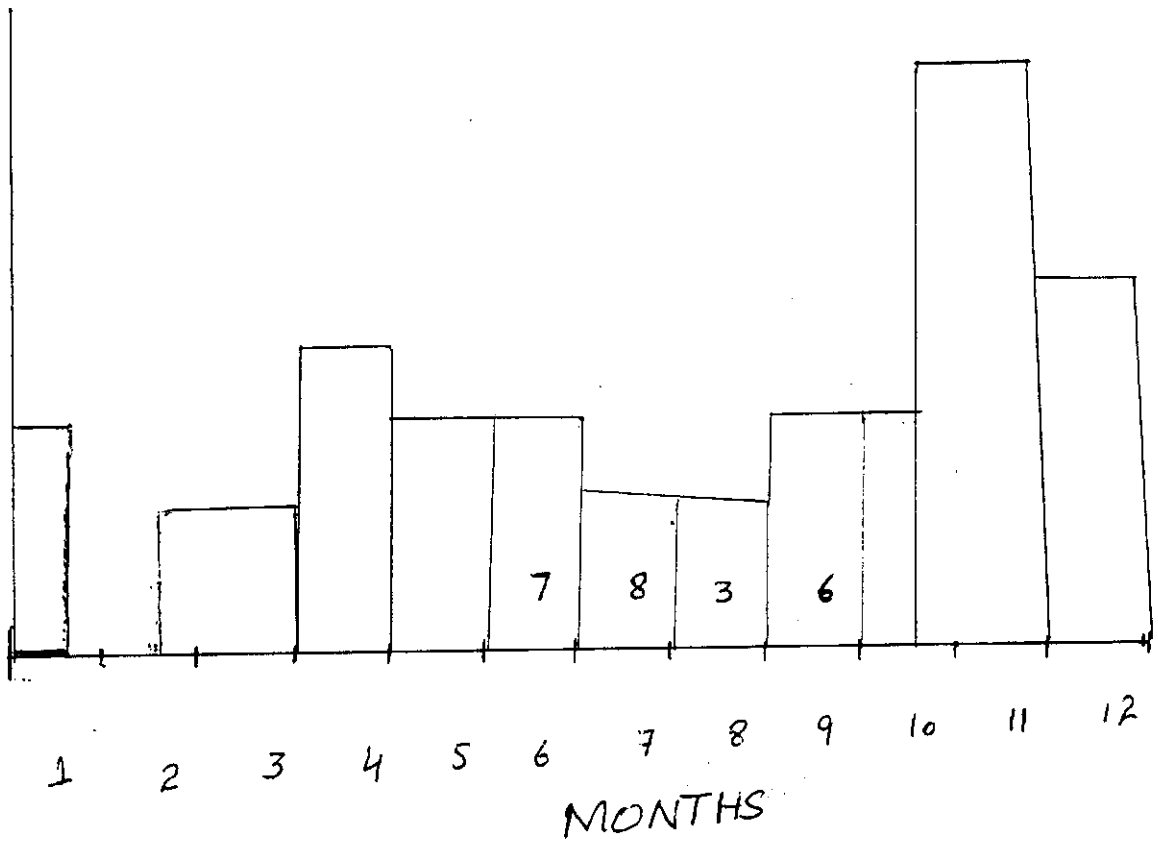




LEGEND

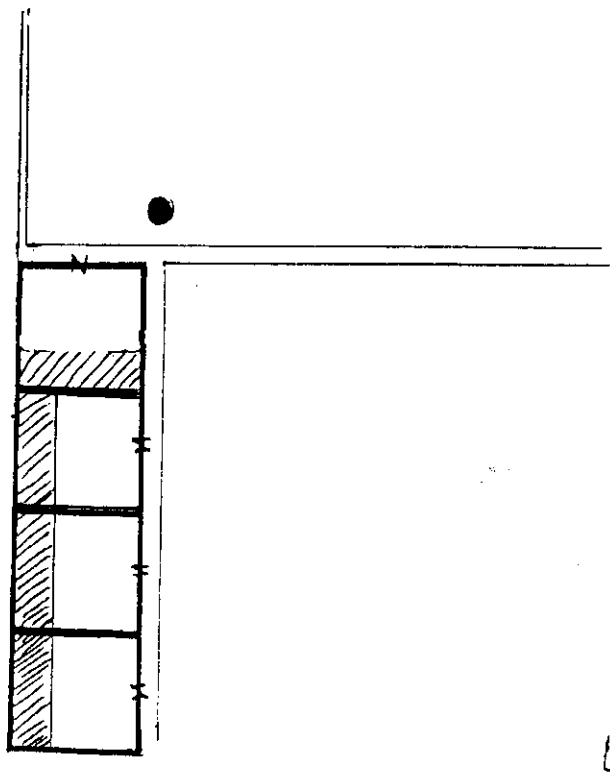
- DISTRIBUTARY
- WATERCOURSE
- NAKKA
- TUBEWELL (PRIVATE)
- SCARP TUBEWELL (PUBLIC)
- A ... HAJI SAHIB'S DARA
- FARMER'S LAND

MONTHLY VARIATIONS IN CANAL WATER SUPPLY



Note: Figures inside the bars show the number of hours tubewell was operated every alternate day during the relavant month.

SALINITY AT THE FIELD LEVEL



LEGEND

N — NAKKA

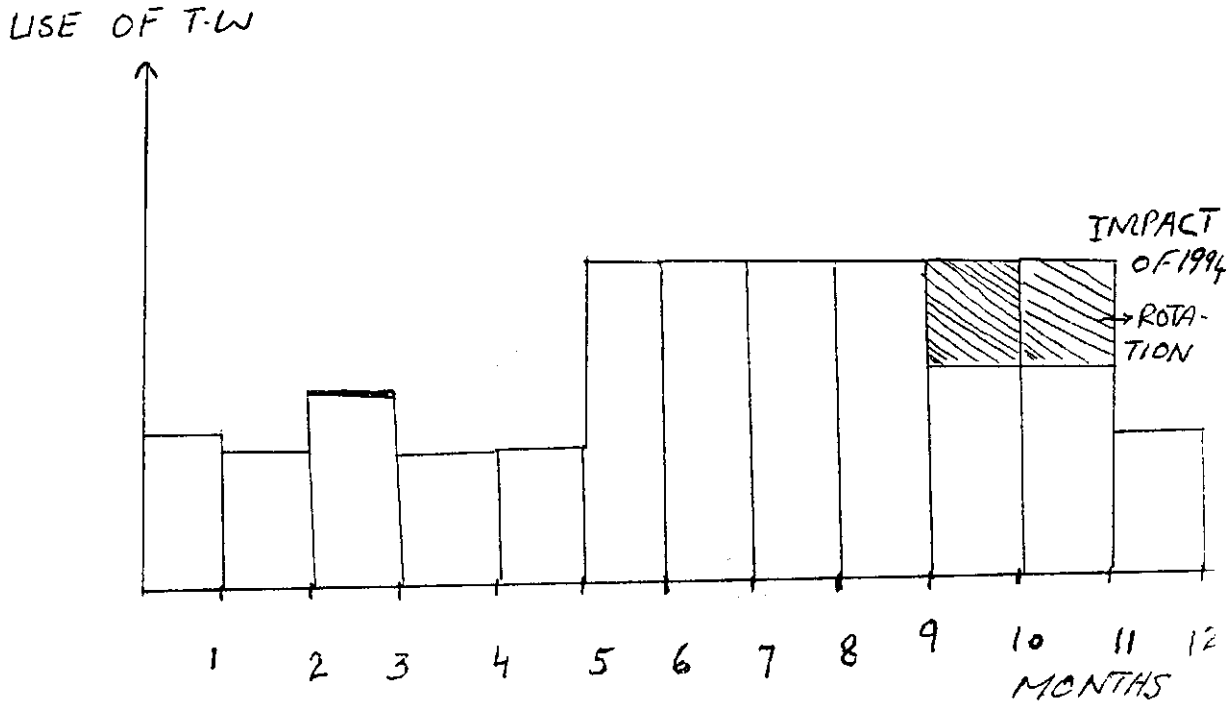
═══ — W/COURSE

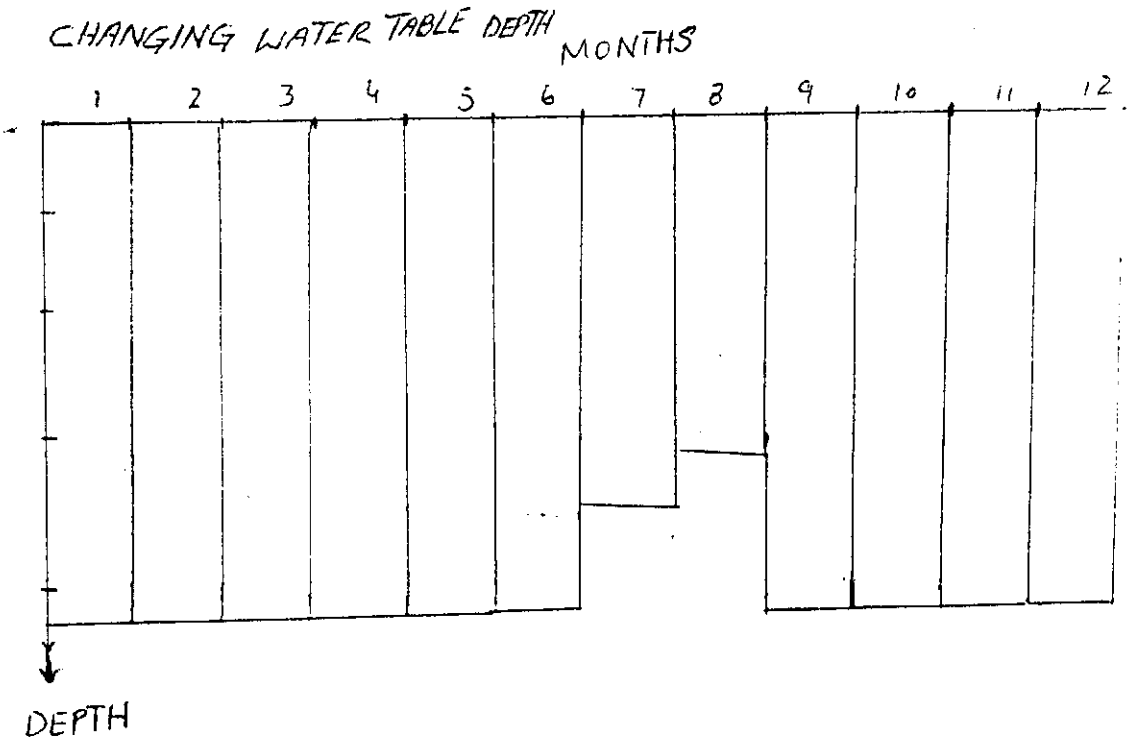
● — T.W

▨ — SALINITY

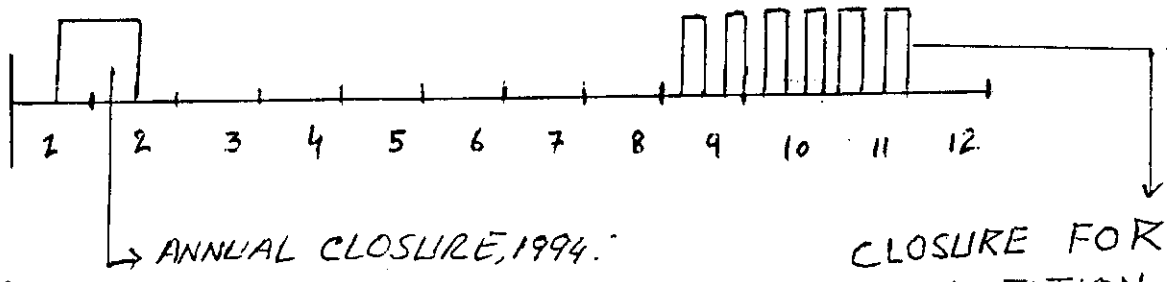
□ — ACRE

TUBEWELL OPERATION (IN A YEAR).





CANAL CLOSURE PERIOD



LAND ELEVATION PROBLEM FOR SAMPLE FARMER

1	2	3	4	5	+ 1	2 +	3	4	5	
10	9	8	7	6	+ 10	9 +	8	7	6	
11	12	13	14	15	+ 11	12	13	14	15	
20	19	18	17	+ 16	+ 20	19	18	17	16	
21	22	23	24	25	+ 21	22	23	24	25	

1	2	3	4	5
10	9	8	7	6
11	12	13	14	15
20	19	18	17	16
21	22	23	24	25

LEGEND

- FARMER'S LAND
- \+ ELEVATED FIELD
- = W/COURSE
- W/C BOUNDARY

APPENDIX II

Team report 2

Participatory Rural Appraisal for the analysis of performance indicators from water users' perspectives summary of a 3 day field exercise

At IIMI, Lahore, Pakistan, an eight-day PRA workshop was organized within the framework of the research of water users' perspectives of irrigation performance indicators (see above). Fieldwork was planned to practice the application of PRA tools and to identify indicators from the farmers' point of view. This section reports on the process of using PRA tools and on the major findings of the field work sessions in Mananwala Distributary of Upper Gugera Irrigation System, Farooqabad area, Punjab, Pakistan.

I. ORGANIZATION OF FIELDWORK

1. Objectives

The two major objectives of the fieldwork were:

(1) To use and test a selected number of PRA tools;
(2) To follow the general principles of PRA (e.g. team work, facilitate participation, being relaxed, shoulder tapping, etc)
(3) To identify farmers' indicators which they use to assess their irrigation services.

2. Team cooperation and behavior

To gain maximum experience and practice, and to cover a wide range of field conditions, the participants of the training workshop were divided in two groups of each five people. One group visited head-end farmers of the watercourse, and the second group focused on the tail-enders of the same watercourse (see report team 1).

Team 2 consisted of the following researchers:

Mr Paul Gosselink, Human Geographer, Colombo, Sri Lanka.
Mr M. Rafiq Khan, Senior Field Assistant, Hasilpur, Pakistan
Mr Saeed-ur-Rehman, Agricultural Economist, Lahore, Pakistan
Ms Robina Wahaj, Agricultural Engineer, Lahore, Pakistan
Mr Waheed-uz-Zahman, Senior Field Research Engineer, Harunabad, Pakistan

The strategy of our activities was to formulate a team contract which would define our roles and responsibilities. The roles were rotated day-by-day to give each and every person the opportunity to learn a new role. Before the fieldwork started, the team discussed: (1) what tools to prepare and (2) how to operate in the field. The general methodology followed every day was to review the findings of the fieldwork in the office, prepare sheets for presentation to the other group and discussions of processes and substance with the other team. This proved to be a very effective, but time-consuming exercise.

The Team Contract of this team was as follows:

Before going into the field:

- the role of each team member was decided;
- a check-list was prepared;
- farmers were "lined-up", i.e. date, time and place of the meeting was fixed;
- it was decided about the tool to be tested;
- preparation for the implementation of the specific tool was done.
- work of the previous days was reviewed and investigated for missing and/or contradicting information and would be cross-checked in the field the next day
- information from interviews would be compiled in the note books;

To share the experiences:

- discussions would be held in group meetings;
- the field work would be presented in presence of all participants in the training.

Behavior of team members during the application of the PRA approach (theoretical):

- to assist facilitator in getting more detailed information;
- to help facilitator to get rid of saboteurs;
- to assist the facilitator in supplying material to be used for the exercise;
- to help facilitator in avoiding deviating discussions both by farmers and the team members;
- to avoid leading questions;
- to ensure maximum participation of farmers;

II. EVALUATION OF FIELDWORK

After completion of the field sessions, the team contract was evaluated and the following conclusions were drawn:

Behavior of team members during the implementation of PRA techniques (actual):

- assigned roles were changed due to
  a) lack of attention by team members;
  b) lack of experience in using PRA techniques;
  c) being used to other interview techniques than PRA.
- concentration on one topic leads to less involvement of farmers in the participatory process.

In addition, several conclusions could be drawn on the drawbacks in procedure of questioning:

The following types of inappropriate questions were asked which affected the quality of information:

- leading questions: one team member for example asked how many water users are in the command? Silence form farmer's side for a moment. Team member said 60 or 70? The farmer replied 70.
- humiliating questions: a team member asked about the yield of wheat from 3 farmers. One farmer reported 1,000 kg (originally reported in maunds), second farmers said 800 kg and the third farmers stated 600 kg. On response of third farmer the team member said "no, no it is not correct. What is the correct figure of per acre yield"? A humiliating question.
- repeated questions: when the main facilitator asked a certain question, the co-facilitator asked the same question, even after getting the proper replies.
- confusing questions: some questions were asked although this was already clear to the team member, but this was not related to the targeted investigations which lead the farmers into a confused state.
- unclear questions: in some cases some team members themselves were not clear about the question that they were asking, perhaps due to non-acquaintance to the area and system.

III. ACTUAL FIELDWORK

After the introductory sessions of PRA and exercises the first fieldwork practices were prepared to grasp the details of the methodology. It was agreed to make a detailed organization of the fieldwork in order to be well prepared.

Day 1

For the first day of the fieldwork, the following roles were assigned to the team members:

Mr Paul Gosselink, observer
Mr M. Rafiq Khan, facilitator
Mr Saeed-ur-Rehman, observer

Ms Robina Wahaj, note taker
Mr Waheed-uz-Zahman, observer

Upon arrival in the field, roles were changed quickly in order to adapt to the situation on the ground. As the farmers were already present, an instant introduction was necessary. This was done by Saeed. Later when Rafiq took over, contradicting information was passed on to the farmers which made them critical.

The tools applied, objectives, outputs and lessons of day 1 are summarized in the table below.

Table 3 Overview of tools, objectives, outputs, and lessons of Day 1

Tool	Objectives	Output	Lessons
Mapping	- understanding watercourse command area - locating tubewells - tracing problem areas - to establish rapport with farmers	- Map by farmers - Additional info on higher lands, salinity, distribution of castes, branch water courses	- need to prepare well (roles) and have checklist - if farmers are aware that we already have a map, they question the utility of the approach
Transect	- to cross-check map information - acquaintance with area - to have informal discussions with farmers	- information on tubewells, crops, salinity, w/c nakkas - indications of performance indicators	- concentrate on farmers in stead of team members

Conclusion Day 1: at this first day we managed to get an initial understanding of the area, but our attempts were influenced by the fact that IIMI had already been working in the area. IIMI has prepared detailed maps of this watercourse area, which made farmers suspicious about our exercise. In addition, they concentrated all attention to the closure of their SCARP tubewell, which had a severe impact on their irrigation water supply (see below). However, the map and the transect facilitated the participation process. This participation however was limited to the top end of the watercourse only. The roles of the team members, which were outlined beforehand were not always complied with and created sometimes a saboteur from the team itself.

Upon return in the office at Lahore, the team prepared a detailed analysis of the processes and the collected information. This was shared with the other group, and productive discussions were held. Subsequently, the next day was prepared.

Day 2

For the fieldwork of day 2, the roles were re-assigned as follows:

Mr Paul Gosselink, observer
Mr M. Rafiq Khan, absent due to university exams
Mr Saeed-ur-Rehman, facilitator
Ms Robina Wahaj, observer
Mr Waheed-uz-Zahman, note taker

The major objective of day 2 was to cross-check the information which was collected on day 1, and to apply two other tools, viz. (1) a flow diagram to assess the major problems and constraints in irrigated agriculture and to identify farmers responses to it, and (2) a bar chart to gain a better understanding of the variation of canal water supply throughout the year.

The bar chart exercise went relatively well, but the team was a strong facilitator. Yet, it yielded a satisfactory result. Immediately after the bar chart exercise, a flow chart exercise was done (cause-effect relationships) to analyze the major problems in irrigated agriculture as perceived by the farmers. This proved to be an excellent exercise, with an extremely high participation of the farmers. While the team was strongly facilitating as well, this did not harm the participation process, since all persons were very much involved and contributed to the discussion. The method applied was to elicit problems from the farmers, rank them and subsequently find causes, effects and local responses of the farmers. Day 2 is summarized in the table below. The reflection process was the same as for Day 1.

One of the **conclusions** of this day was the recognition that strong facilitation can go simultaneously with strong farmers participation. Working with partly literate farmers and using cards to reach consensus about statements worked out well. The flow chart (see below) provided a clear picture of important constraints in irrigated agriculture and the local responses to it. A "logistical" conclusion of the day would be that before departure a proper check needs to be done by the team to verify whether all supporting materials have been collected...

Table 4 Overview of tools, objectives, output, and lessons for Day 2

Tool	Objectives	Output	Lessons
SSI	-cross-checking of previous information - collect additional info	- not materialized, map left in office	- prepare better
Ranking of problems & Flow Diagram	- identifying problems, effects, efforts and solution in irrigated agriculture	* ranking of problems: - abandonment of public tubewell (1) - scarcity of canal water (2) - low support price of rice crop (3) - high cost and adulteration of fertilizer (4) - high cost and adulteration of insecticides/ /pesticides (5) - diesel shortage (6) * cause-effect relationships identified and visualized on a poster	- strong facilitation and strong participation can go hand-in-hand - use of cards is effective way of getting information
Bar Chart	- seasonal irrigation supply trend - contribution of canal and tubewell water on a monthly basis	- identified 4 months with approx. 15 dry days each (annual closure, rotation) - relative contribution of groundwater and surface water	- relative figures need to be cross-checked - potential under-reporting of surface water supplies

Day 3

Day 3 started with the following roles and responsibilities:

Mr Waheed-uz-Zahman, facilitator
Mr M. Rafiq Khan, note taker
Mr Saeed-ur-Rehman, observer
Ms Robina Wahaj, observer
Mr Paul Gosselink, observer

Table 5 below summarizes our work of this day. Tools which were used were: SSI, mapping, bar chart and pie chart. A great deal of information was gathered through application of these tools as can be seen from the table. Worth mentioning of today is that triangulation of information (using different tools and techniques) can provide a further diversity of the information. In addition, it seems that the team easily "falls back" to SSI, which is not necessarily the most participatory tool from a farmer's perspective.

Table 5 Overview of tools, objectives, output, and lessons for Day 3

Tool	Objectives	Output	Lessons
SSI & Mapping	- cross-checking of previous days work	- clarification density of tubewells - identification of salinity affected areas - marking of higher lands on map - verification irrigation supply conditions - confirmation of rotational schedule - impact of closure of public TW on cropping pattern - verification of farmers reporting period	- information can be refined to a greater extent with cross-checking
SSI & Bar Chart	- cross-checking of previous work	- verification of irrigation supply conditions - contribution of groundwater and surface water	- as above
Pie Chart	-To determine season wise operation of tube wells -To determine season wise contribution of surface and ground water in irrigation demands. -To find cropping pattern in both seasons.	-Tube well operate 1/8 of total operation in rabi. -Ground water contribute about 80% to irrigation needs of the region. -In rabi ground water contributes 50% of the total needs. -In kharif ground water contribute 7/8 of the total needs. -Wheat is the major crop in rabi season. -Rice is the major crop in kharif season. -Fodder is the 2nd major crop of the area in rabi season. -Sugarcane is the 2nd major crop in kharif season. -Average yield of rice is 800 Kg /acre. -Average yield of wheat crop is 1000 kg /acre. -average yield of sugarcane crop is 20000 kg /acre.	Pie chart is an easiest way to get farmers understand the theme of question.

Tool	Objectives	Output	Lessons
SSI	- Yield information of 3 major crops - to determine indicators - to identify measures adopted by farmers to save water - to learn about water trading (tw/canal)	- as above - indicators used by farmers: (1) stage (level) of water in the watercourse; (2) velocity in the watercourse; (3) extent of area irrigated - measures: (1) alignment of watercourse; (2) cleaning of watercourse; (3) dividing into sub-plots; (4) raising bed of eroded watercourse; (5) levelling of fields. - Identified following types of water trading. 1) swapping of canal water for canal water. 2) Exchange of canal water for tube well water. a) 1:1 basis b) 1:2 basis 3) Cash/hour of tube well water. 4) Fuel basis only. -Prices: Varies from Rps.20 to 40/hour. Factor affecting prices of tube well water: - Discharge of tubewell -degree of cooperation among farmers -technology of tube wells.	- development of performance indicators and refinement can be done by SSI

Conclusions of day 3: the combination of SSI and diagrams to cross-check the information proved to improve the quality of the information.

Day 4

The last day of the field exercises was reserved for the "field seminar" (our equivalent to village or farmers presentation of information acquired). The time for preparation of this exercise was very limited since the team had already started drafting the report of the training workshop in the morning. Arrangements were made in the vehicle on the way to the field site. The marginal time of preparation had only a limited influence on our performance. During this session, the roles were divided as follows:

Mr Paul Gosselink, observer
Mr M. Rafiq Khan, absent due to university exams

Mr Saeed-ur-Rehman, initiator
Ms Robina Wahaj, initiator
Mr Waheed-uz-Zahman, initiator

The "field seminar" started with a presentation of what we had learned during the last few days. While presenting some of the issues of water supply, there was active debate amongst the farmers with regard to the contribution of groundwater to the irrigation requirements.

During the "seminar" the farmers played a dominant role in 1) presenting the information and 2) in discussing issues amongst themselves and with the team members. In retrospect, the following aspects of the presentation were considered important by the team members:

(1) Except for the map, most of the diagrams were copied onto paper by the team members back in Lahore due to time limitations. While this did not restrict farmers commenting on it (they immediately recognized the diagrams as **their** output), it was felt that we had not complied with some of the principles of PRA. This made the village presentation an exercise which was a mix of our and farmers' presentations more or less on an equal basis, while the emphasis should have been more on the leading role of the farmers.

(2) Presentations were done in a relatively formal manner by using a standing charpoy as a flip-board. However, it worked well and farmers showed no hesitation to give their views using the diagrams which were fixed on the charpoy.

(3) The presence of the school teacher who said he was not able to come revealed some of the importance which he attached to this exercise.

(4) The "field seminar" was a good way to cross-check information with other farmers. The contradicting information of a bar chart versus pie chart was discussed intensively by the farmers and all agreed that only the information from the bar chart was correct.

IV. GENERAL CONCLUSIONS

(1) Testing and applying PRA in an area where we already knew many things, made the whole exercise a little unnatural and made farmers reluctant to share their information with us. This pleads for testing PRA techniques in new areas.

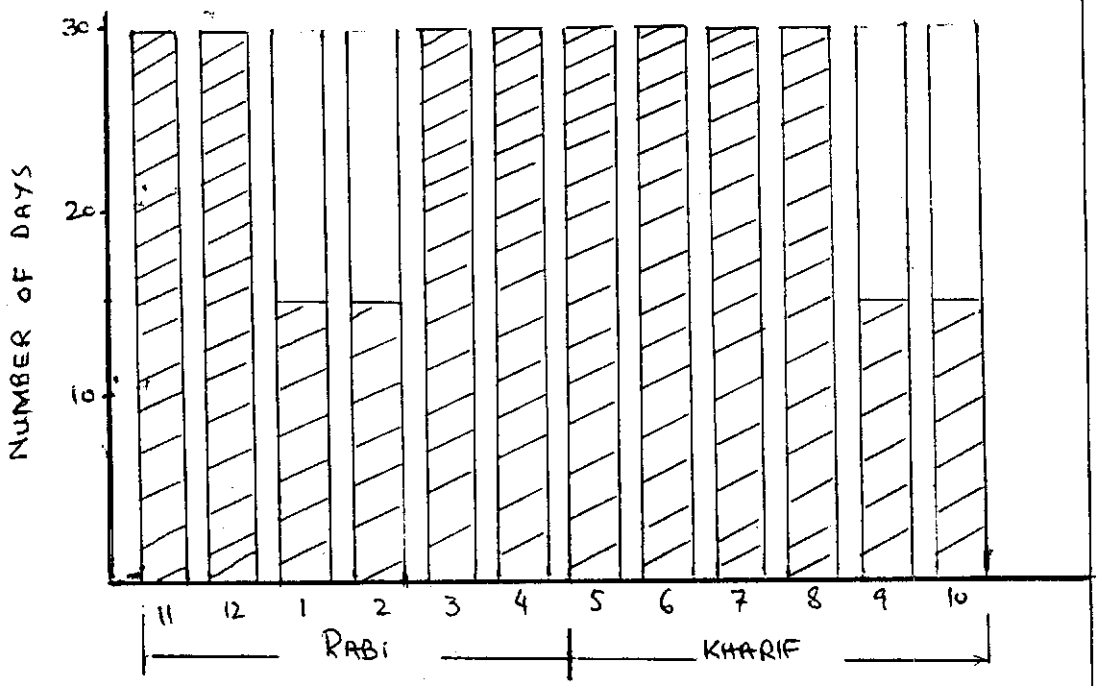
(2) It appeared that the SSI formed an important tool during all our field exercises. However, it may be beneficial to include more diagramming tools within an SSI session in order not to rely too much on question - answer interaction. This requires more practice in the PRA approach.

(3) The combination of acquiring new skills in PRA and the focus on identifying performance indicators was a demanding task. This could mean that not one single objective of the approach received sufficient attention.

(4) Appointments with farmers work out more efficiently than surprise visits.

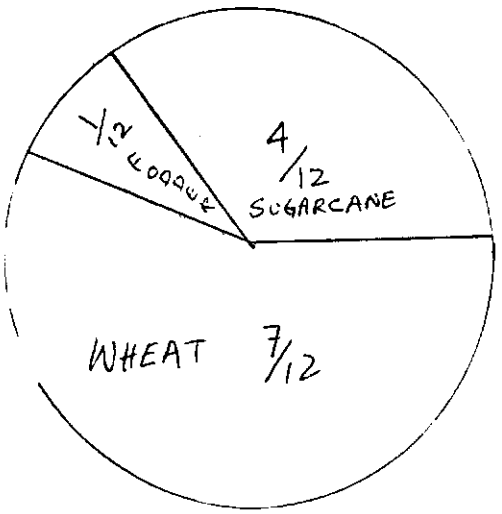
SEASONAL IRRIGATION SUPPLIES

THROUGH CANAL SOURCE

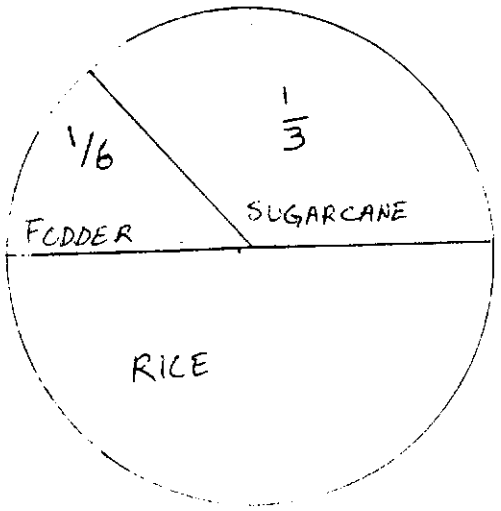


CROPPING PATTERN

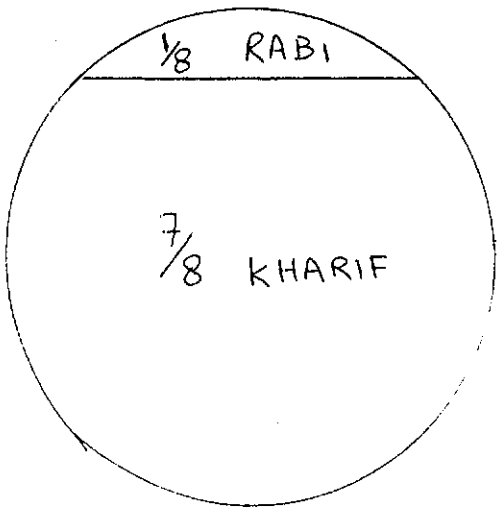
RABI



KHARIF

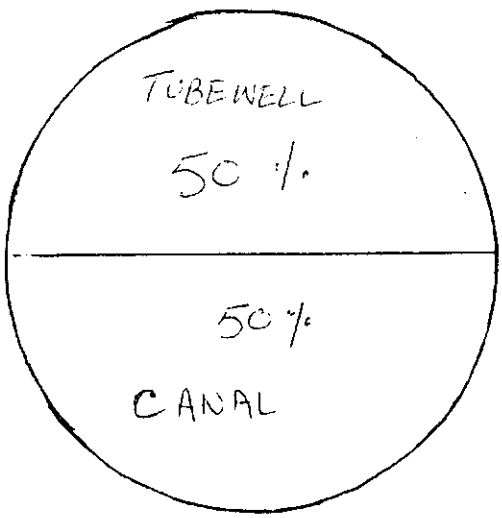


TUBEWELL OPERATION

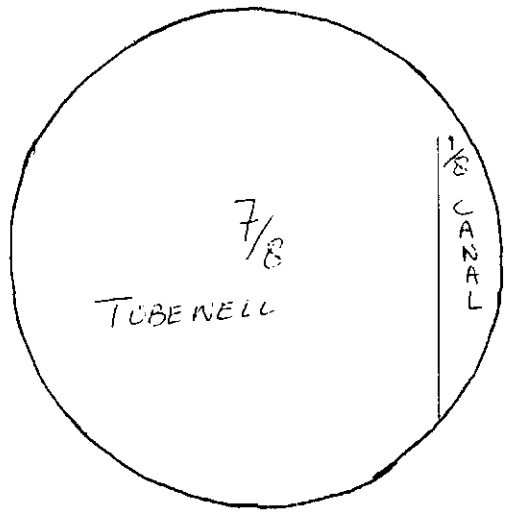


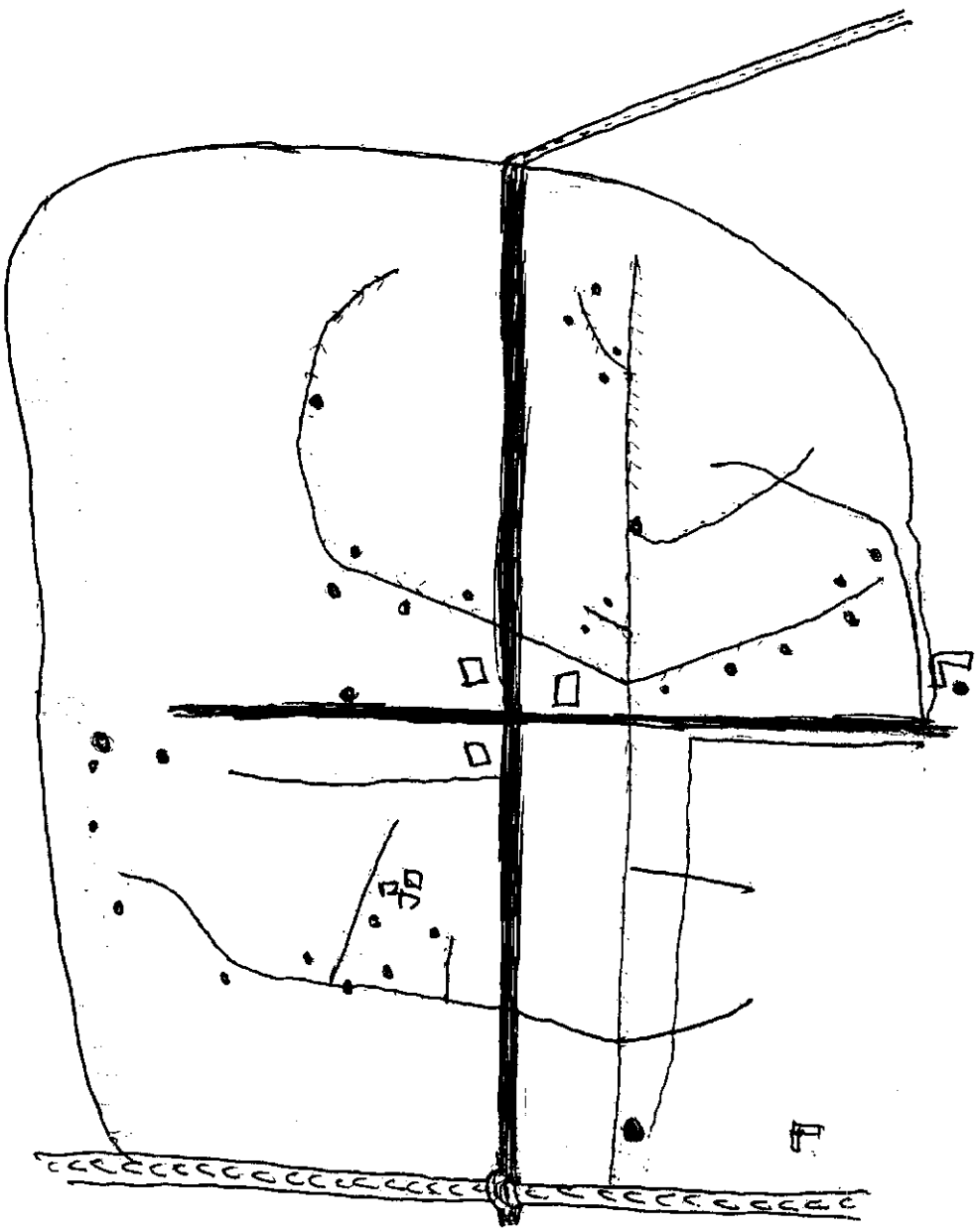
CONTRIBUTION OF TUBEWELLS IN IRRIGATION DEMAND

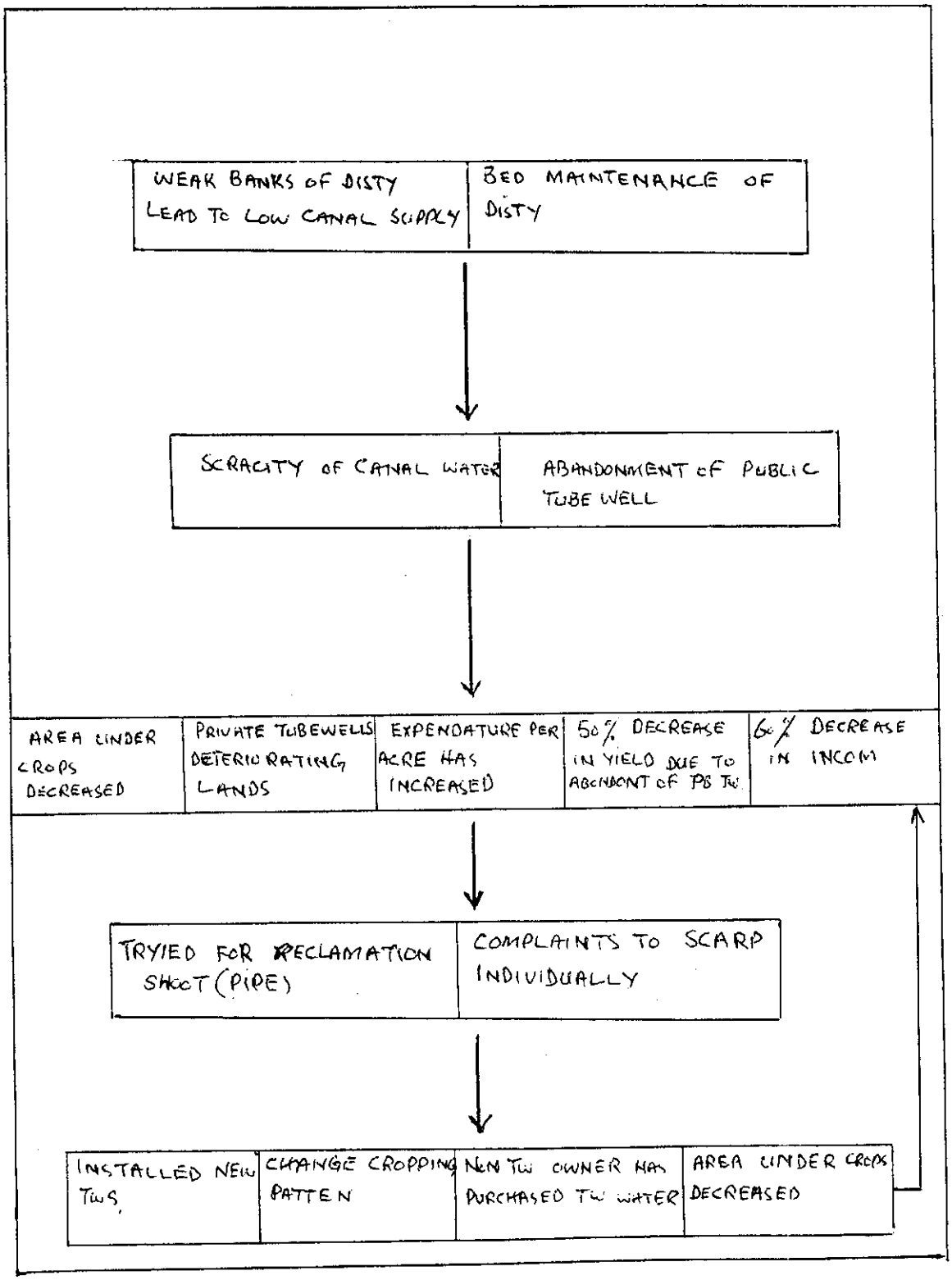
RABI



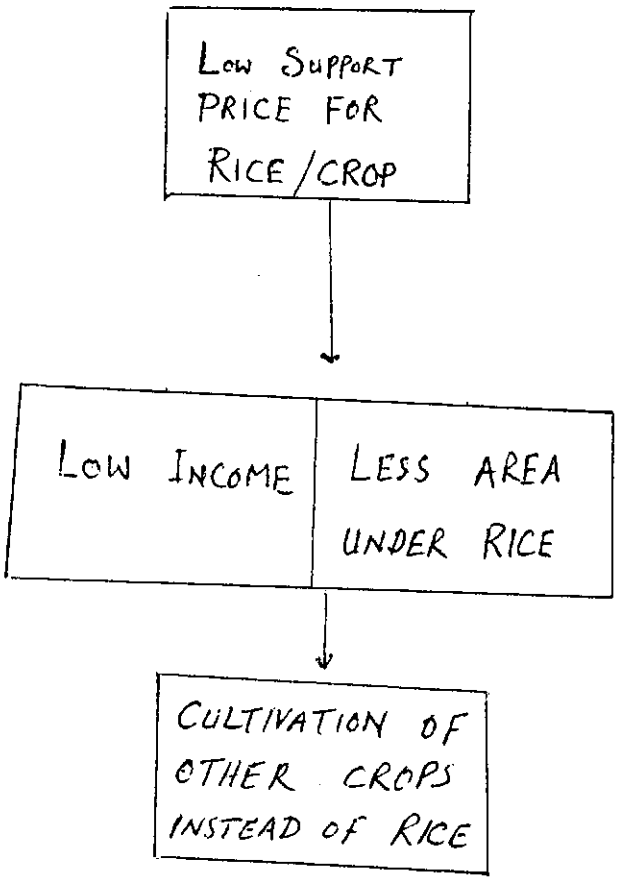
KHARIF



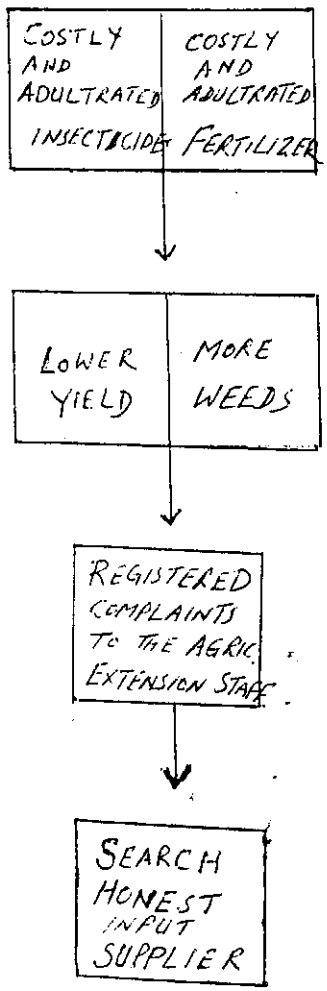



WEAK BANKS OF DISTY LEAD TO LOW CANAL SUPPLY
BED MAINTENANCE OF DISTY
SCRACITY OF CANAL WATER
ABANDONMENT OF PUBLIC TUBE WELL
AREA UNDER CROPS DECREASED
PRIVATE TUBEWELLS DETERIORATING LANDS
EXPENDATURE PER ACRE HAS INCREASED
50% DECREASE IN YIELD DUE TO ABONDONT OF PB TW
6% DECREASE IN INCOM
TRYIED FOR RECLAMATION SHOOT (PIPE)
COMPLAINTS TO SCARP INDIVIDUALLY
INSTALLED NEW TWS
CHANGE CROPPING PATTEN
NEW TW OWNER HAS PURCHASED TW WATER
AREA UNDER CROPS DECREASED

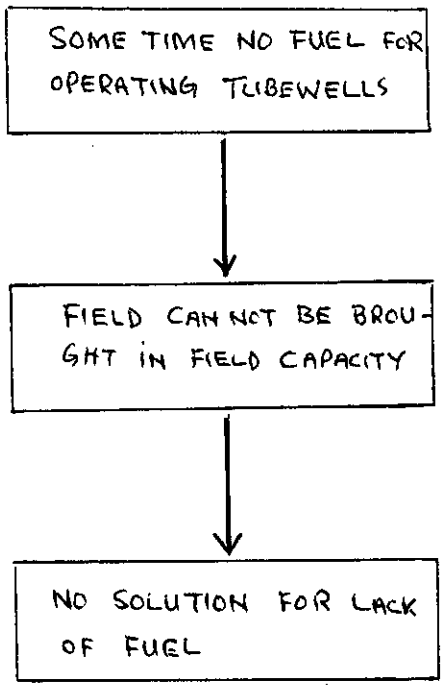
PROBLEM ANALYSIS FLOW CHART



PROBLEM ANALYSIS FLOW CHART

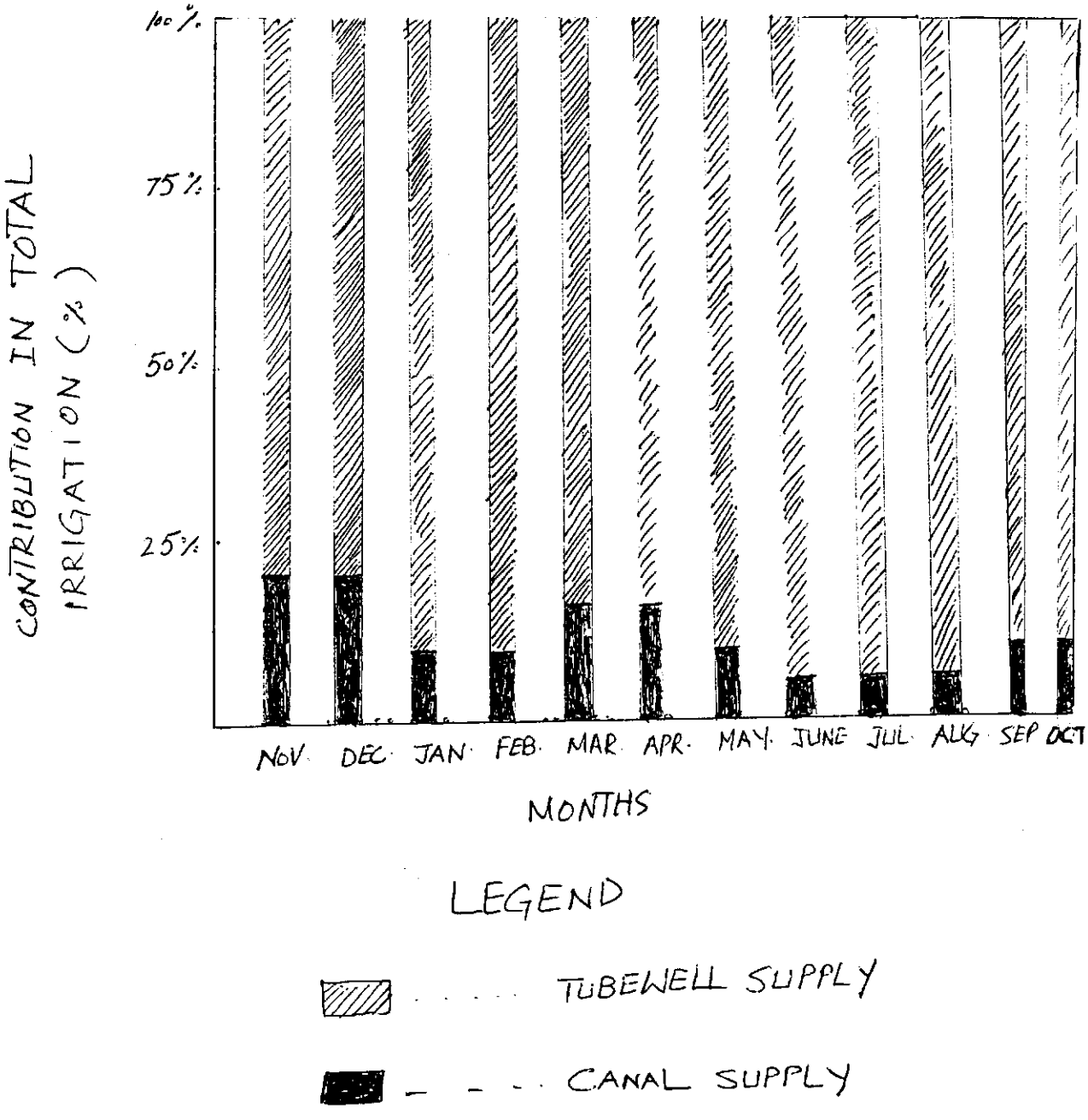


FLOW CHART


SOME TIME NO FUEL FOR OPERATING TUBEWELLS
FIELD CAN NOT BE BROUGHT IN FIELD CAPACITY
NO SOLUTION FOR LACK OF FUEL

FARMERS PERSPECTIVE

CONTRIBUTION OF CANAL AND TUBEWELL SUPPLIES



APPENDIX III

PRA Training Hand-Outs

WHY THE NEED FOR PRA?

- Accelerating rate of change
- Limited resources - making the most of the least
- Recognition that "we" (the experts) were part of the problem and "they" were part of the solution
- "Rural Development Tourism" - assorted anti-poverty biases (spatial, seasonal, person, project, ...)
- Isolation, insulation, out-of-date experience of senior and powerful decision makers
- "Survey Slavery" - questionnaire fatigue
- The search for cost-effectiveness recognizing trade offs between depth, breadth, accuracy and timeliness

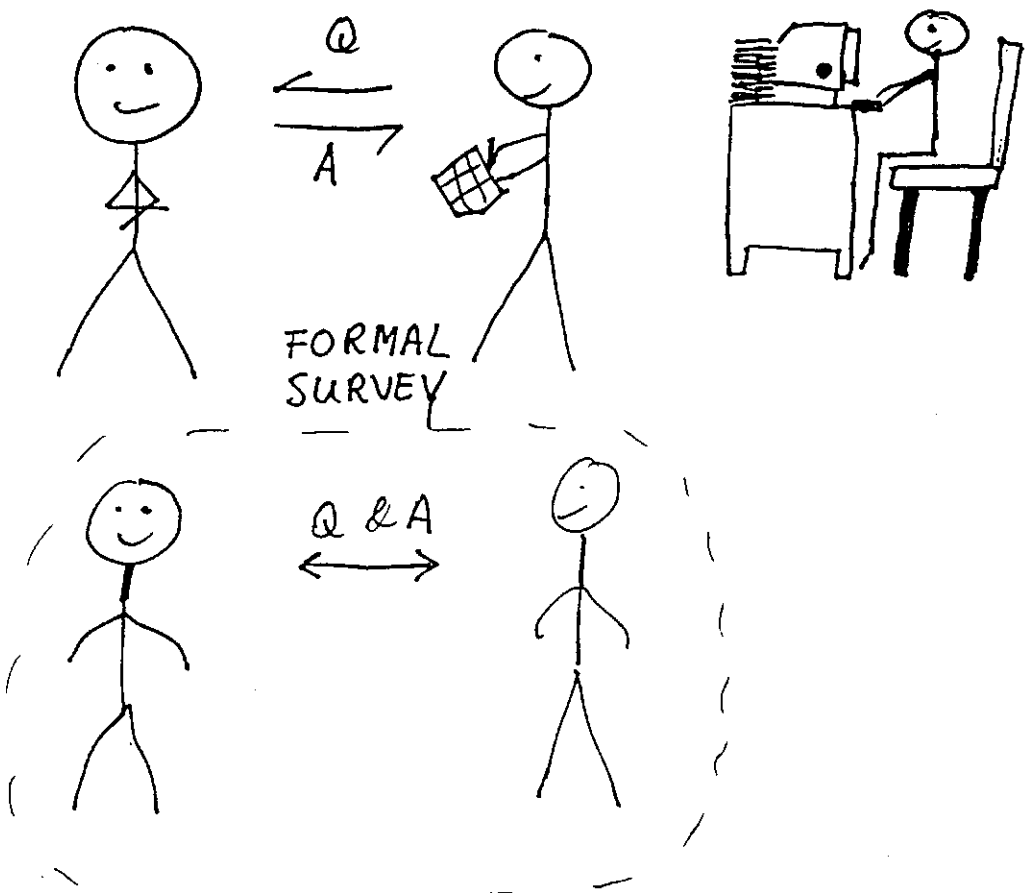
"It is better to be approximately right than precisely wrong"

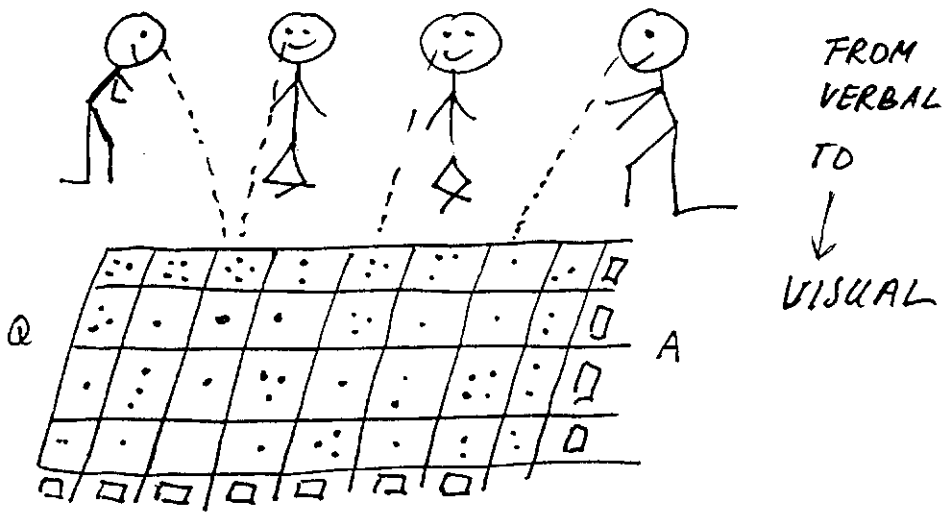
- *J.M. Keynes*

CORE PRINCIPLES OF PRA

- Rapid and progressive learning
- Role reversals
- Optimal ignorance and appropriate imprecision
- Triangulation / Cross-checking
- Interdisciplinary teams
- Critical self-awareness

USE YOUR OWN BEST JUDGEMENT
AT ALL TIMES


Q
A
FORMAL
SURVEY
Q & A
SEMI-STRUCTURED INTERVIEW


FROM
VERBAL
TO
VISUAL
Q
A

PRA VS. OTHER RESEARCH METHODS

PARTICIPATORY APPRAISAL	QUESTIONNAIRE RESEARCH
Short time	Long time
Low cost	High cost
Flexible	Fixed
High participation	Low participation
On-the-spot analysis	Analysis in the office
Little statistical analysis	Heavy statistical analysis
Semi-structured interviews and group discussions	Formal questionnaires
Opportunity sample	Random sample
Multi-disciplinary team	Enumerators
Non-hierarchical	Hierarchical
Best for learning and understanding rural peoples' opinions, behaviour and attitudes	Best for gathering representative, quantitative data and statistical analysis

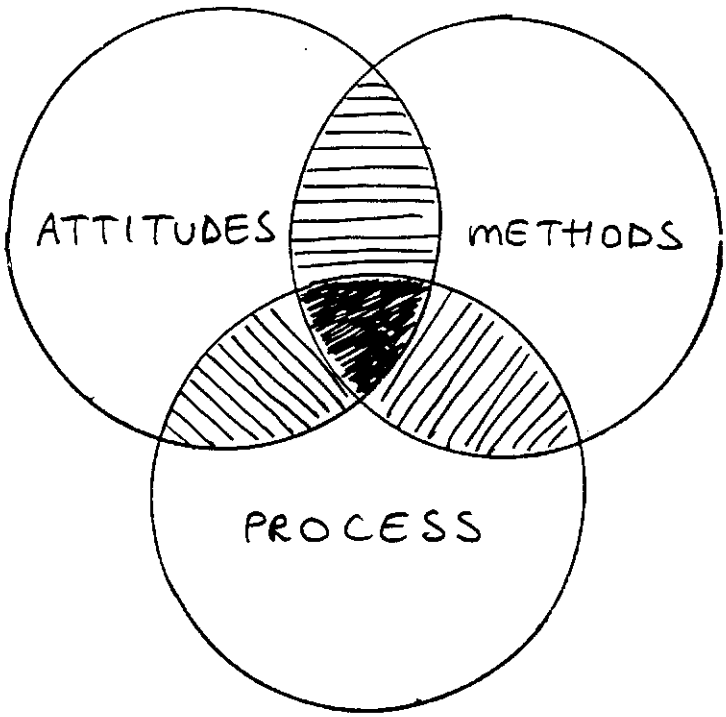
What methods have you used for collecting information on living conditions in rural areas?

How have you used that information?

What difficulties have you encountered in collecting and using that information?

Were you able to overcome these difficulties? If so, how?

PARTICIPATORY RURAL APPRAISAL



PRA IS AN APPROACH (ATTITUDES + METHODS + PROCESS) FOR LEARNING ABOUT RURAL LIFE AND CONDITIONS FROM, WITH AND BY RURAL PEOPLE.

SEMI-STRUCTURED INTERVIEWING

Semi-structured interviewing is guided interviewing where only some of the questions are pre-determined and new questions come up during the interview.

The interviewers prepare a list of topics and questions rather than a fixed questionnaire.

Semi-structured interviews are held with:

- *individuals*: for representative information. Interview a number of different individuals on the same topic (e.g. women, men, old, young, participating and non participating farmers)

- *key informants*: for specialized information. Key informants have special knowledge which others do not have (e.g. midwives on birth complications)

- *groups*: for general community-level information

- *focus groups*: to discuss a specific topic in detail

SEMI-STRUCTURED INTERVIEWING

DO	DO NOT
Be patient and relaxed	Panic
Have a clear idea of your objectives	Ask complicated questions
Have respect	Ask leading questions
Establish rapport, ask informal questions	Continue too long
Understand the background	
Be well prepared	
Cross-check	

TEN POINTS FOR SSI

1. Prepare as a team
2. Use a checklist
3. Be sensitive to your informants
4. Use visualization methods to increase participation and dialogue
5. Listen and Learn
6. Ask open-ended questions using the six helpers (Why?, Who?, What?, Where?, When?, How?)
7. Probe responses carefully
8. Judge responses
9. Verify through Triangulation (cross-checking)
10. Record responses and observations fully

PARTICIPATORY MAPPING

- Villagers should take the lead in mapping (to discover the mental maps)

- Choice depends on purpose/topic of PRA

  - demography
  - social/residential
  - stratification (wealth, ethnicity, religion)
  - village use of natural resources
  - mobility
  - water
  - soils/crops

- STEPS:

  - decide on topic
  - find the people
  - choose suitable place
  - help people to get started
  - sit back
  - copy map onto paper and name the participants (gender, age)

WEALTH RANKING

- to investigate the wealth differences/inequalities in a community
- discover local indicators/criteria of wealth and wealth-being
- establish the relative position of households in a community

PRINCIPLES:

- outsiders and community members have a different perception of wealth. local perceptions are crucial to get a deeper insight
- different people in a community use different criteria for wealth
- investigating the range of socio-economic situations provides insights for analysis

ASSUMPTION:

- community members have a good sense of who among them is more or less well off. Thus: cross-check

WEALTH RANKING

- STEPS:

- prepare list of households

- each household on each card (name/no.)

- ask informants to sort cards into piles (as many piles as wealth categories

- after sorting ask informants for wealth criteria and differences between the piles

- repeat the process with other informants

- take information to office and analyze, by

  - weighting
  - comparing
  - classifying

WEALTH RANKING

■ TO CALCULATE THE AVERAGE SCORE OF EACH CARD

Card	Score from informant #1	informant #2	informant #3	AVERAGE
1	.66	.40	.25	.43
2	1	1	1	1
3	1	1	1	1
4	.33	.20	.50	.34
5	.33	.40	.50	.41
6	.66	.20	.25	.51
7	.66	.60	.75	.67
8	1	.8	1	.95
9	.66	.60	.50	.59
10	.33	.40	.50	.41
11	1	.80	1	.95
12	1	1	.25	.75
13	.33	.40	.50	.41
14	.33	.20	.25	.26
15	.66	.40	.25	.44
16	1	.60	.75	.78
17	.66	.60	.75	.67
18	.33	.40	.50	.41
19	.33	.20	.75	.43
20	.66	.60	.75	.67

WEALTH RANKING

■ CLASSIFICATION

(classify cards according to wealth)

	AVERAGE SCORE	CARD NO
POOREST	1	2
	1	3
	.93	8
	.93	11
	.78	16
	.75	12
	.67	20
	.67	17
	.67	7
	.59	9
	.51	6
	.44	15
	.43	1
	.41	10
	.41	5
	.41	18
	.41	13
RICHEST	.34	4
	.26	14
	.18	19