

Appendix F
Trial Training Programs

Appendix F TRIAL TRAINING PROGRAMS

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APPENDIX F TRIAL TRAINING PROGRAMS

1. Background

In the course of the third fieldwork, trial training sessions were conducted for the farmers in the area specified during the past study period. The main purposes of conducting the trial sessions were;

- To see the response of the farmers for the proposed training, and
- To confirm the available training skill of government officers

Taking into consideration the importance of each area and possible time period, the following two programs were selected:

- (a) Water flow measurement and record keeping
- (b) Study tour to System C

Process and results of those training sessions are presented in the following text.

2. Training process

Training is a process that helps people to perform their duties to the set-standard by filling the gap between existing level of performance and expected level of performance. Training is generally defined as a process of changing knowledge, attitude and skill of people.

Analysis of existing situation and identification of the problem that can be solved by training is the first step in planning of training, as all problems may not be training problems. Training process consists of five key steps namely Training Need Assessment, Setting Training Objectives, Designing Training, Implementation of Training and Evaluation of Training.

3. Training programs

(a) Water flow measurement and record keeping

Water flow measurement and record keeping is one of the important areas in water management. However, the attention of farmers to such important area was found very much poor in the study area. The Study Team was able to conclude that the reason for such situation was due to the poor understanding and that training is required to improve the situation. Accordingly, comprehensive Training Needs Assessment was conducted in the pilot area. Based on the findings of the TNA (TNA report attached in *Attachment-1*) the program “water flow measurement and record keeping” was designed. The main objective of the program was to emphasize the importance of water flow measurement and keeping records. The program detail and lesson plans are attached in *Attachment-2*.

The training program was conducted May 10, 2006 for the Farmer Leaders of Sri Udara Farmers Organization, in Rajangana Scheme.

(1) Attendance of the training program

Farmers had been informed just a day before the training program was conducted. Out of the 15 farmers invited, 14 had attended even with the heavy workload that farmers have during the land preparation period. This is a good evidence to prove the farmers' enthusiasm for training.

(2) Trainers (Government Officers)

Two Engineering Assistants attached to Irrigation Engineer's office, Rajangana conducted the training and their ability as trainers was observed and evaluated as follows:

- Trainers tried their best to impart the knowledge and skill as planned. Also the attention given by the trainers to change the attitudes of farmers was satisfactory.
- On the technical aspects, trainers had sufficient knowledge and skill as trainers, though some improvement is needed in particular topics.
- Some of the important training skills were lacking with them and it has to be improved through TOT courses.

(3) Training environment

Classroom arrangement was satisfactory. However, seating facilities was little uncomfortable and farmers showed uneasiness while the sessions were in progress. The classroom environment was hot & humid and it affected trainees to lose the concentration.

Further, the other commitment that farmers had in the afternoon also affected the training program.

(4) Training materials

Training materials used was fairly satisfactory but not up to the standard. Preparation of training material is a skilled job and trainers need to get the assistance of audio-visual expert in this regard. The available time was not sufficient for trainers to get such assistance.

(5) Trainee participation

Participation of trainees for the training session was very high and beyond the level that was expected.

(6) Training evaluation

Learning Evaluation was conducted at the end of the session and it revealed that the specific training objectives of the program were achieved (Evaluation sheet attached in ***Attachment-3***).

As an overall view, 84% of the trainees are rated "very good" or "good", which means they achieved more than satisfactory level. Some of the trainees still have the knowledge

obtained in the past training¹ and they achieved higher rate.

Some trainees seemed to need more training especially on gate operation and this could be done in actual operations.

(7) Conclusion and recommendations

The main purpose of conducting this training program was to see the response of farmers for the proposed training and to confirm the available training skill of government officers. Accordingly, activities related to planning, implementation and evaluation of training were monitored closely by the study team and based on the findings the following conclusions and recommendations are made.

- Farmers showed a keen interest in participating training programs. However, they have to be informed early as it helps them to arrange their day-to-day work and attend the training freely without other commitments.
- Selection of trainees for the training session has to be done carefully. Some farmers may be leaders for some years but they may not get the benefit out of the training, as they are old. Hence, in such cases, it is advisable to nominate another young person to represent the canal or FCG group. This has to be done carefully without hearing to particular person. Second generation participation must be encouraged.
- Sufficient time should be available for trainers to make the preparation specially training materials. In addition, pre testing of training materials is very helpful for the trainers to conduct the training sessions effectively.
- Training Program Outlines provide necessary guidance to trainer for preparation of required lesson plans for the training.
- There are Government Officers who are capable of conducting training but they need well-planned series of training courses on training methodology to improve the performance.
- It can be concluded that, the necessary change in knowledge, attitude and skill of participants has been done to the satisfactory level to fill the gap existed before the training. As a result of that, it is expected to improve the performance level of participants on “water measurements and record keeping”. Therefore it is necessary to conduct “performance evaluation” after sometime and decide the training problem is solved or not.

(b) Study tour to advanced area

Irrigation system of the study area has already been earmarked for rehabilitation under a development program to be implemented in the near future. Experiences gained in other rehabilitation projects have proved that the “community participatory approach” for irrigation rehabilitation is an effective method for strengthening CBOs. Hence, the study team held several discussions with farmer groups in the study area to see their

¹ This area has experienced a pilot program under Major Irrigation Rehabilitation Project. In the program, ITT/Galgamuwa conducted training to the farmers.

understanding on the “community participatory rehabilitation approach”. In the discussions it was revealed that the farmers are not familiar with the system and also do not believe that farmers can undertake such a big task by themselves alone.

With the aim of eliminating such negative ideas of farmers and developing the interest to undertake the responsibility of Community Participatory Rehabilitation, the Study Team arranged the study tour to Mahaweli System C where Community Participatory Rehabilitation Approach was used under the Mahaweli Upgrading Project funded by JBIC. The study tour was conducted on 16th and 17th May 2006 and 14 persons including 09 farmer leaders, 02 officers from ID and 03 members from the study team participated.

(1) Visit Farmers Organizations and discussions

Three farmers organizations in System C, were visited and separate discussions were held. Tour participants were warmly welcomed by the FO members of system C and took part actively in the discussions that followed. After the discussions all the farmers visited to see the construction activities completed by the farmers through Community Participatory Rehabilitation Approach.

Discussions were facilitated by the Study Team in line with the points mentioned below;

- Formation and strengthening of Field Canal Groups
- Planning and implementation of community contract activities
- Required knowledge, skill and attitudinal change for community contract activities
- Finding money for construction activities to meet the initial expenditure
- Farmers participation
- Operation and Maintenance of irrigation system
- Establishing the Operation and Maintenance Fund
- Benefits of community contracts
- Marketing of agricultural products
- Micro credit program

(2) Results of the field visits and discussions

At the end of the each day, discussions were held with the tour participants to obtain their feedback on the field visits. Accordingly, they summarized the following key points to be taken as valuable experiences to strengthen the Farmers Organizations.

- Genuine support from Government Officers is an essential requirement for strengthening of Farmers Organization
- Farmers have latent energy and it has to be inspired by an outsider
- Farmers can do irrigation system rehabilitation if they are guided properly
- Strong Field Canal Group is the base to plan and implement a Community Participatory Rehabilitation Program successfully.
- Women can play an important role in strengthening small groups
- Community Participatory Rehabilitation Program will result not only a good irrigation system but also other benefits such as financial gains, emerge skill development,

increase social capital, increase sense of ownership etc,

- FO fund can be increased through Community Participatory Rehabilitation
- Attention for irrigation system maintenance increases

(3) Evaluation

A separate evaluation was not conducted to see the items learned by the participants but the summary of the discussions prepared by them (mentioned above) is identical to the learning evaluation. However, a reaction evaluation was carried out and the participants expressed the following opinions.

- Arrangements made for the tour were satisfactory
- Number of days spent in the field was not sufficient and more time is required to visit in the field
- This type of tours should be arranged not only for farmer leaders but also for other FO members and selected youths in the village
- Study tours are important but should not be arranged during busy period like land preparation and harvesting

(4) Conclusions and recommendations

Based on the discussions and on the observations made during the tour, it could be concluded that the objective of the tour is achieved. Participants have changed their attitudes at the end of the second day confirming that they are capable of doing irrigation rehabilitation under the proper guidance.

It is recommended to arrange more study tours to visit advanced areas like system C for FO leaders as well as members before commencement of the actual rehabilitation activities in their areas. Study tours will help FO leaders to organize and carry out the rehabilitation activities successfully.

Attachment

Attachment F1

Training Needs Assessment for Irrigation Water Flow Measurement

**TRAINING NEEDS ASSESSMENT FOR
IRRIGATION WATER FLOW MEASUREMENT**

**CONDUCTED UNDER THE "STUDY ON INCREASING THE CAPACITY OF
INTEGRATED MANAGEMENT IN IRRIGATION SECTOR IN SRI LANKA"**

Apr-06

Nippon Koei Co., Ltd.

***Problems could be solved by training
if
they are true training problems***

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Abbreviations

D-1	Distributory Canal no. one
D-2	Distributory Canal no. two
DCFO	Distributory Canal Farmers Organization
FCG	Field Canal Groups
FO	Farmers Organizations
GOSL	Government of Sri Lanka
ID	Irrigation Department
ITII	Irrigation Training Institute
KAS	Knowledge, Attitude and Skill
EA	Engineering Assistant
TNA	Training Needs Assessment
WS	Work Supervisors

Introduction

Background for TNA

Japan International Cooperation Agency(JICA) has provided assistance to carry out a study on "Increasing the Capacity of Integrated Management in Irrigation Sector in SriLanka" and it is in operation since October 2005 and continue up to June 2006. During the first and second phase of the study, the study team found that there are performance gaps in many areas like water management, FO development, agriculture etc.

During the study period, the study team made a close observation on water distribution under two distributory canals in tract 2, Rajangana Scheme namely D-1 and D-2 where, a water management pilot program has been carried out with using Automatic Head & Flow Control System under D-1 keeping the D-2 as a control area. This has been conducted under the Major Irrigation Rehabilitation Project (MIRP). ITI/Galgamuwa was the in-charge of the program and it has been implemented four consecutive seasons(1992 Yala, 1992/93 Maha, 1993 Yala, 1993/94 Maha). The farmers in D-1 and D-2 areas have undergone several training programs in water management and they are familiar with water measurements as it was the key item in the pilot program. Farmers who have undergone the training are now not in the key position of DCFO except one DCFO presedent. According to the information collected, during the pilot program farmers were very much cooperative and interested about water management including water measurements.

After the pilot program, it has not been followed up and consequently farmers' interest on water measurement has decreased gradually and finally they have given up the activities introduced under the pilot program. In addition to that, the water measuring devices also have become to the state of malfunctioning or completely out of order. Currently, farmers' attention to water management in the two D Canal areas is generally poor. In this regard, one of the key causes noted by the study team is lack of interest on water management. Hence the study team realized the importance of providing necessary training, based on the Training Needs Assessment in relation to move up the farmers' attention to water management.

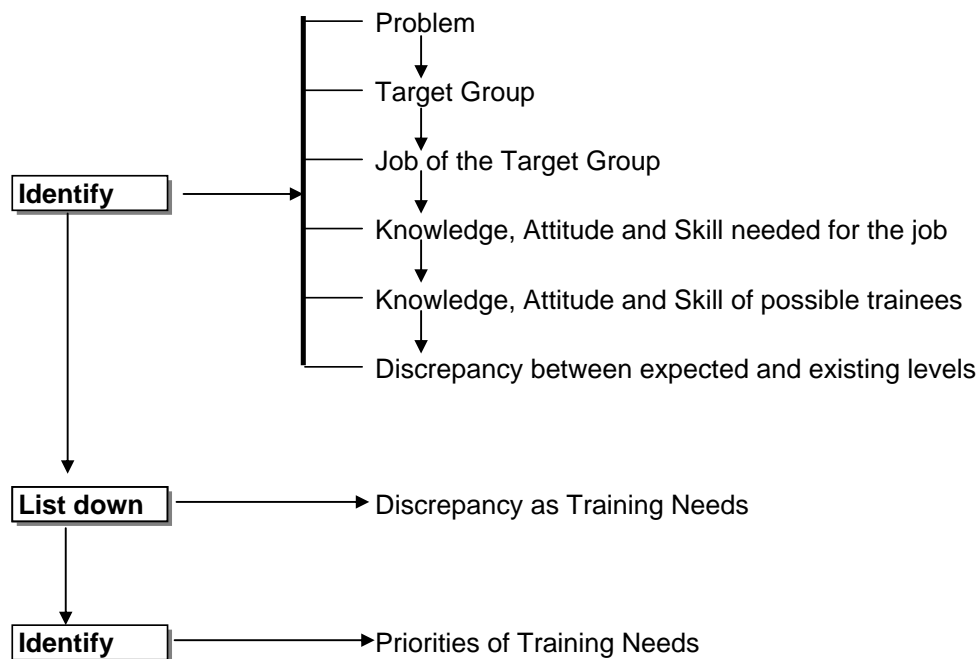
Necessity of TNA

In the past decades the GOSL has implemented several projects to get the participation of farmers in irrigation management. With the results obtained in those projects the GOSL has moved further and frame a policy to hand over the irrigation management responsibilities to Farmers Organizations. This is a new task for them and in this connection they need carefully planned training until they reach to the level that is expected. Not only for farmers it is also a new task for relevant government officers too which, need changing their role from "administration to facilitation".

In many occasions most of the training programs are planned on the needs of implementers not on the real needs of trainees related to the problem prevailed. Although the training programs conducted were attractive and enjoyable, the achievement was not satisfactory and counted only number of training sessions. As such the trainee based needs assessment is important in terms of results oriented training programs.

Need Assessment Methodology

The methodology used to find out the type of training required for a person could be called as a Training Needs Assessment (TNA). This is an attempt to trace the difference between expected level of performance and existing level of performance of a person. The following approach was used to assess the training needs that are mentioned in this report.



Problem Identification:-

The problem has been identified as "Lack of flow monitoring and record keeping". This was identified in the area of D-1 and D-2, tract 2 of Rajangana scheme. Two parties were identified as the people to be trained to solve the problem. They are field level officers attached to Irrigation Department, Jalapalakas and Farmers.

Selection of target group:-

Two Engineering Assistants(EA) and two Work Supervisors were selected as they were the main actors responsible for water management activities with Farmers Organizations at field level.

Jalapalaka attached to ID is also playing a important role in water management with EA,WS

and Farmer Organization and therefore two Jalapalakas were also selected for the Needs Assessment Survey.

In the Farmers Organization, Jalapalaka(a farmer) and Field Canal Group(FCG) leaders are involved with water distribution activities and therefore two Jalapalakas attached to D-1 and D-2 and eight FCG leaders(each canal covers 16 FCGs and out of that 25% was selected) from the two canals were selected for the need assessment survey.

After making the selection of target groups, depending on their job description related to the problem, all the actors were divided into two groups as follows.

table-1 grouping actors

Group	Designation	No of persons	Area
Group I	Engineering Assistants	2	Tract 2 Rajangana
	Work Supervisors	2	Tract 2 Rajangana
Group ii	Jalapalaka/ID	2	D-1 and D-2
	Jalapalaka/FO	2	D-1 and D-2
	FCG leaders	4	D-1
	FCG leaders	4	D-2

Job Description of Group I and Group ii :-

In relation to the training problem, the job descriptions for the two groups were prepared with the consultation of relevant managers and it is given below.

table-2 job description

Group	Job Description
Group I	a. take water flow measurement b. keep flow measurement records c. guide Jalapalaka for accurate gate operations d. make field observations on water distribution and keep records e. facilitate farmers for effective use of irrigation water
Group ii	a. take water flow measurement b. keep flow measurement records c. make field observations on water distribution and corporate with farmers for distributing irrigation water d. operate gates according to the schedule prepared

Identification of Knowledge, Attitude and Skill (KAS)needed for the Job:-

Knowledge, Attitude and Skill needed for the job were analyzed and it is given in the table below.

table-3 KAS analysis Group I

Group i- KAS analysis

Knowledge	Attitude	Skill
advantageous of water flow measurement and record keeping	willingness to take water flow measurement and keep records	follow schedule of water issues and direct gate operations accordingly
gate operations according to the required discharge	willingness to assist rural farming community	read measuring gauge and record values
principles of facilitating people		facilitation skill

table-4 KAS analysis Group ii

Group ii- KAS analysis

Knowledge	Attitude	Skill
advantageous of water flow measurement and record keeping	willingness to take water flow measurement and keep records	follow schedule of water issues and make gate operations accordingly
gate operations according to the required discharge	willingness to operate gate according to the schedule and issue water for farmers	read measuring gauge and record values

Identification of KAS of possible trainees:-

Based on the KAS needed for the job, relevant actors were interviewed and field observations were made to collect the necessary information. Further, discussions were made with other officers and farmers to confirm the findings. The findings are tabulated in table-4 and table-5.

Identification of discrepancy:-

The discrepancy between existing level and expected level of KAS was identified and it is mentioned in the table-5 and table-6.

Training Needs

The Training Needs Assessment summary for Group i and Group ii are given in the table-7 and table-8 respectively. Based on the discrepancy indicated in those two tables, the training needs were identified and indicated in the table-9.

Actors of Group i (EAs and WSs) is having sufficient knowledge and skill in gate operations, flow monitoring and record keeping but they are lacking in knowledge and skill on facilitation of people towards certain objective. Change of their attitudes is significantly important about flow monitoring, record keeping and assisting rural community.

The Group ii included Jalapalaka/ID, Jalapalaka/FO and FCG leaders. Their knowledge on need of flow monitoring, gate operations, record keeping etc is not satisfactory; they have not realized the importance of water management. Attitude towards water flow measurement and record keeping is very much negative as they are currently enjoying with sufficient water. The skill they have for gate operations and taking gauge readings is also not sufficient.

TRAINING NEEDS ASSESSMENT

table-5 Training Need Assessment Group 1(contd.)

TNA i) Engineering Assistants/ID, Work supervisors/ID

	Knowledge(K)	Attitude(A)	Skill(S)	Remarks
KAS needed for the job →	a. advantageous of water flow measurement and record keeping b. gate operations according to the required discharge c. principles of facilitation of people	a. willingness to take water flow measurement and keep records b. willingness to assist rural farming community	a. follow schedule of water issues and direct gate operations accordingly b. read measuring gauge and record values c. facilitation skill	though there is no discrepancy in some areas, a refresher session may be useful to improve performance
KAS of trainee Trainee 1. EA-1	a. no discrepancy b. no discrepancy c. no idea about facilitation	a. no genuine interest to measure water and keep records as it is not a problem currently. b. like to handover and assist farmers regarding water measurements	a. no discrepancy b. no discrepancy c. not enough skill to facilitate farming community	
2.EA-2	a. no discrepancy b. no discrepancy c. no idea about facilitation	a. fairly interested to measure water and keep records. b. no genuine interest to assist farmers c. Rajangana has enough water, no need to worry water management	a. no discrepancy b. no discrepancy c. no discrepancy d. not enough skill to facilitate farming community	
3.WS-1	a. no discrepancy b. no discrepancy c. no idea about facilitation	a. fairly interested to measure water and keep records. b. farmers cant do gate operation properly. They need assistance.	a. no discrepancy b. no discrepancy c. no discrepancy d. not enough skill to facilitate farming community	
4.WS-2	a. no discrepancy b. no discrepancy c. no idea about facilitation	a. no genuine interest to measure water and keep records. b. like to assist but farmers are not interested doing gate operation. c. Rajangana has enough water.	a. no discrepancy b. no discrepancy c. no discrepancy d. not enough skill to facilitate farming community	

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TRAINING NEEDS ASSESSMENT

table-5 Training Need Assessment Group 1

TNA i) Engineering Assistants/ID, Work supervisors/ID

	Knowledge(K)	Attitude(A)	Skill(S)	Remarks
Discrepancy in general	not sufficient knowledge on facilitating farmers	a. no genuine interest to measure water and keep records. b like to assist farmers but think that farmers cant do gate operations and water measurement	not enough skill to facilitate farming community	a refresher session on water measurement may help possible trainees to update the knowledge.

TRAINING NEEDS ASSESSMENT

TNA ii) Jalapalaka/ID, Jalapalaka/FO, Farmers(FCG leaders)

	Knowledge(K)	Attitude(A)	Skill(S)	Remarks
KAS needed for the job →	a. advantageous of water flow measurement and record keeping b. gate operations according to the required discharge	a. willingness to take water flow measurement and keep records b. willingness to operate gate according to the schedule and issue water for farmers	a. follow schedule of water issues and make gate operations accordingly b. read measuring gauge and record values	
KAS of trainee Trainee 1.JP-1/ID	a. not aware sufficiently about advantageous of water flow measurement and record keeping b. know gate operations generally	a. poor interest to measure water and keep records as water is not a problem in LB Tract 2 b. like to operate gates accurately and issue water for farmers	a. sufficient skill on gate operations b. sufficient skill on taking gauge readings but not keeping proper record.	all JPs showed their interest to refresh their knowledge with new technology
2.JP-2/ID	same as 1	same as 1	same as 1	
3.JP-1/FO	same as 1	same as 1	same as 1	
4.JP-2/FO	same as 1	a. interested to measure and distribute water and keep records. b. same as 1	same as 1	
5.F-1	a. same as 1 b. do not know gate operations	same as 1	a. no required skill on gate operations b. no required skill on reading measuring gauges and record keeping	some farmers like to do water management properly and hope to have a short term crop in between two main seasons
6.F-2	same as 5	same as 1	same as 5	
7.F-3	same as 5	same as 1	same as 5	
8.F-4	same as 1	same as 4	same as 5	
9.F-5	same as 1	same as 4	same as 5	
10.F-6	same as 5	same as 4	same as 5	
11.F-7	same as 5	a. same as 4 b. do not like to operate gate	same as 5	

table-6 Training Need Assessment Group 11 (contd)

FA-11

TRAINING NEEDS ASSESSMENT

TNA ii) Jalapalaka/ID, Jalapalaka/FO, Farmers (FCG leaders)

	Knowledge(K)	Attitude(A)	Skill(S)	Remarks
KAS needed for the job →	a. advantageous of water flow measurement and record keeping b. gate operations according to the required discharge	a. willingness to take water flow measurement and keep records b. willingness to operate gate according to the schedule and issue water for farmers	a. follow schedule of water issues and make gate operations accordingly b. read measuring gauge and record values	
KAS of trainee Trainee 12.F-8	same as 5	a. same as 1 b. do not like to operate gate	same as 5	farmers showed very poor interest on water management
Discrepancy in general	a. all the possible trainees are not aware sufficiently about advantageous of water flow measurement and record keeping. b. 50% of the possible trainees are not aware about systematic gate operations	a. 65% of the possible trainees have no genuine interest to measure water and keep records. b. like to operate gates accurately and issue water for farmers	a. no required skill on gate operations b. no required skill on reading measuring gauges and record keeping	all JPs are interested to refresh the knowledge with new technology. farmers showed very poor interest on water management.

table-6 Training Need Assessment Group 11

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TRAINING NEEDS ASSESSMENT-SUMMARY

COUNTRY- Sri Lanka

ORGANIZATION- Irrigation Department

PLACE- Rajangana tank, LB tract 2, D-1, D-2

Problem - Lack of flow monitoring and record keeping

People to be trained to solve the problem -
 i) Engineering Assistants/ID, Work supervisors/ID,
 ii) Farmers, Jalpalakas/FO, Jalpalakas/ID

table-7 Training Need Assessment summary group 1

TNA - i) Engineering Assistants/ID, Work supervisors/ID

Job Description	KAS Needed for the job	KAS of possible trainee	Discrepancy (Possible training need)	Priority
a. take water flow measurement b. keep flow measurement records c. guide Jalalalaka for accurate gate operations d. make field observations on water distribution and keep records e. facilitate farmers for effective use of irrigation water	Knowledge a. advantageous of water flow measurement and record keeping b. gate operations according to the required discharge c. principles of facilitation of people	Knowledge a. know about advantageous of water flow measurement and record keeping b. know gate operations thoroughly c. no idea about facilitation	no need knowledge on gate operations and flow measurement but need knowledge on facilitation.	couple with Priority 2
	Attitude a. willingness to take water flow measurement and keep records b. willingness to assist rural farming community	Attitude a. no genuine interest to measure water and keep records. b. like to assist farmers but think that farmers cant do gate operations and water measurement	change of attitudes is imperative towards need of irrigation water flow measurement and record keeping and assisting rural farming community.	1
	Skill a. follow schedule of water issues and direct gate operations accordingly b. read measuring gauge and record values c. facilitation skill	Skill a. sufficient skill on administrating Jalalalaka on gate operations b. sufficient skill on taking gauge readings and recording c. not enough skill to facilitate farming community	no need to improve the skill on taking water flow measurement and record keeping but refresh the knowledge already they have. provide opportunity to gather facilitation skills.	3 2

FA-13

table-8 Training Need Assessment summary group 11

TNA - ii) Farmers, Jalpalakas/FO, Jalapalakas/ID

Job Description	KAS Needed for the job	KAS of possible trainee	Discrepancy (Possible training need)	Priority
a. take water flow measurement b. keep flow measurement records c. make field observations on water distribution and corporate with farmers for distributing irrigation water d. operate gates according to the schedule prepared	<u>Knowledge</u> a. advantageous of water flow measurement and record keeping b. gate operations according to the required discharge	<u>Knowledge</u> a. not aware sufficiently about advantageous of water flow measurement and record keeping b. know gate operations generally but not as required	need to know advantageous of water flow measurement and record keeping	2
	<u>Attitude</u> a. willingness to take water flow measurement and keep records b. willingness to operate gate according to the schedule and issue water for farmers	<u>Attitude</u> a. no genuine interest to measure water and keep records as water is not a problem in LB Tract 2 b. like to operate gates accurately and issue water for farmers	change of attitudes is essential towards water flow measurement and record keeping.	1
	<u>Skill</u> a. follow schedule of water issues and make gate operations accordingly b. read measuring gauge and record values	<u>Skill</u> a. no required skill on gate operations b. no required skill on reading measuring gauges and record keeping	need to improve the skill on gate operation and taking water flow measurement. record keeping skill is also required	3

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TRAINING NEEDS IDENTIFIED

table-9 Training Needs identified

Target Group	Training needs	Priority	Remarks
Engineering Assistants Work supervisors	1.Change of attitudes to emphasize importance and need of irrigation water flow measurement, record keeping and assisting farming community to have a self managed system at D&Fcanal level.	1	genuine interest of policy-makers and top level managers is expected.
	2.Change the role from "administration to facilitation". In this regard knowledge on facilitation is required first and then change the attitudes and practice having well planned follow-up program.	2	a person cannot become a facilitator without proper follow-up even after the basic training on facilitation.
	3.Depending on the resources available (<i>funds, trainers, time etc</i>), a refresher session on flow measurement and record keeping may be useful to wakeup the possible trainees.	3	select the training methodology carefully to get the trainees' positive participation.
			<i>priority '2' is addressed in a separate program and priority '1' and '3' are taken in one program that "water flow measurement and record keeping"</i>
Farmers, Jalpalakas/FO, Jalalalakas/ID	1.Provide the necessary knowledge to understand the advantageous of water flow measurement and record keeping, giving more weight on change of attitudes.	1	participatory training techniques will be useful in this connection
	2.Provide necessary skill on gate operation and reading measuring gauges.	3	
	3.Introduce systematic record keeping for flow measurements.	2	
			<i>priority '1', '2' and '3' are taken in one program that "water flow measurement and record keeping"</i>

FA-15

Training Program Outline

Based on the training needs indicated in the table-7 and table-8, training objectives were developed and in relation to those objectives Training Program Outlines were prepared.

Under the training needs identified for Engineering Assistants and Work Supervisors, one of the important needs is "changing the role from administration to facilitation" . This is an important area in terms of participatory irrigation management and this will be addressed in a future training program and therefore no Training Program Outline was prepared for the said need.

Training Program Outline will provide the guidance to prepare Training Manual that will be used by the trainers in actual implementation of training. Hence, no one should try to use the Program Outline for actual implementation of training.

Two training Program Outlines on "Water Flow Measurement and Record Keeping" were prepared, one for Engineering Assistants and Work Supervisors and the other one for Jalapalakas/ID, Jalapalakas/FO and FCG leaders and they are given in next two pages.

In addition to the two programs mentioned here, it is advisable to implement a "communication campaign" for all the stakeholders to create a awareness on "importance of water management for a better harvest".

TRAINING PROGRAM OUTLINE

Program Title	: Water flow measurement and record keeping
Target Group	: Engineering Assistants and Work Supervisors
No of trainees/group	: 15
Duration	: 01 day
Training need justification	and : water flow measurement is one of the key factors that help managers to decide water distribution in the field and assure the irrigation water availability for the crop without crop failures. Hence, it is vital for EAs and Ws to refresh their knowledge and skill as they are the decision makers and facilitators at grassroots level with farmers.
Training Objectives	: After the training the participants will be able to <ol style="list-style-type: none">1 explain the need of assisting farmers for self-managed system at D& F canal level2 explain the importance of water flow measurement and record keeping3 demonstrate the correct way of taking flow measurement and recording
Program contents	: <ol style="list-style-type: none">1. Assisting farmers in water management<ol style="list-style-type: none">1.1 government policy in irrigation management1.2 role of FO in irrigation management and its capacity1.3 need of assistance to FOs1.4 way of providing assistance to FOs2. Water flow measurement and record keeping<ol style="list-style-type: none">2.1 need of water flow measurements and recording2.2 gate operations and taking gauge readings
Training Methods	: mini lecture, group discussions and field demonstrations
Training materials	: <ol style="list-style-type: none">1. Newsprint papers, markers, A4 papers, pens/pencils2. Demonstration site and relevant Issue tree, discharge schedule, calibration curve
Training Evaluation	: Pre-course :- no In-course :- observation by trainer Post-course :- explanation and demonstration by trainees Follow-up :- observation of work performance
Trainers	: Persons with participatory training skills, specially to change the attitudes of government officers.

Venue for Training : A place with horse-shoe seating arrangement and sufficient space for group discussion and close to the field that practical session is held.

Remarks : 1 Remember that trainees are experienced persons in the field for long time and try to use them as far as possible in the training session inviting them to share their knowledge and skills.

2 Convince the target group importance of water management for better yields. This could be done by arranging a field visit to a area where yields are high due to proper water management practices.

TRAINING PROGRAM OUTLINE

Program Title	: Water flow measurement and record keeping
Target Group	: Jalapalaka/ID, Jalapalaka/FO, FCG leaders
No of trainees/group	: 15
Duration	: 01 day
Training need and justification	: water flow measurement is the main factor that help farmers to understand that they have received sufficient irrigation water. Also, as per the irrigation policy in the country, FOs are empowered with water management activities within the area of their command. Hence, training in water flow measurement and keeping records are basically important for farmers to have a sustainable system.
Training Objectives	: After the training the participants will be able to <ol style="list-style-type: none">1 explain the importance of water flow measurement and record keeping.2 demonstrate gate operations according to the required discharge.3 read measuring gauge correctly and record the value.4 explain possible errors in water measurements and the way of minimizing such errors.
Program contents	: 1. Water flow measurement <ol style="list-style-type: none">1.1 why water is important in general1.2 why water management is important in agriculture1.3 importance of water flow measurement1.4 importance of record keeping in water management1.5 gate operations and taking gauge readings1.6 errors in water measurements
Training Methods	: mini lecture, group discussions and field demonstrations
Training materials	: 1. Newsprint papers, markers, A4 papers, pens/pencils 2. Demonstration site and relevant Issue tree, discharge schedule, calibration curve
Training Evaluation	: Pre-course :- no In-course :- observation by trainer Post-course :- explanation and demonstration by trainees Follow-up :- observation of work performance by EAs and WSs
Trainers	: Persons with participatory training skills, specially to change the attitudes of farmers

Venue for Training : A place with horse-shoe seating arrangement and sufficient space for group discussion and close to the field that practical session is held.

Remarks : 1 Remember that you are dealing with a subject that farmers in the target area are not interested and it is the ability of trainer to keep the trainees in attention and more participatory.

2 Convince the target group importance of water management for better yields. This could be done by arranging a field visit to a area where yields are high due to proper water management practices.

3 After the initial training, prepare a well planned follow-up program until farmers reach to the certain level defined in advance.

ANNEXES

List of names of interviewees for the needs assessment survey

Name of person interviewed	Position	Organization
1. Utpala Dilhani	Eng. Assistant	Irrigation Department
2. R.M.W.K.Munanwala	Eng. Assistant	Irrigation Department
3. B.M.Yasanayaka	Work Supervisor	Irrigation Department
4. Y.G.Chandrapala	Work Supervisor	Irrigation Department
5. S.W.Harischandra	Jala Palaka	Irrigation Department
6. R.M.Maurasena	Jala Palaka	Irrigation Department
7. W.M.Wanigasekara	Jala Palaka	Farmers Organization
8. M.P.M.Gunawardena	Jala Palaka	Farmers Organization
9. R.B.Jayaratna	Farmer	D1 DCFO
10.R.P.Nandasena	Farmer	D1 DCFO
11. R.B.Rupasingha	Farmer	D1 DCFO
12. R.B.Chandrasekara	Farmer	D1 DCFO
13. K.B.Sardawathi	Farmer	D2 DCFO
14. W.Wanigasekera	Farmer	D2 DCFO
15. R.M.Ratnayaka	Farmer	D2 DCFO
16. K.P.Jayasekara	Farmer	D2 DCFO
Other persons interviewed for cross-checking the information collected.		
1. Franki Perera	Irrigation Engineer	Irrigation Department
2. H.M.L.D.K de Alwis	Irrigation Engineer	Irrigation Department
3.W.M.Karunadasa	Irrigation Engineer	Irrigation Department
4. Premasara	Farmer President	D1 DCFO

Attachment F2

Training Manual for Water Flow Measurement

TRAINING MANUAL
FOR WATER FLOW MEASUREMENT

**Conducted under the Study on Increasing the Capacity of Integrated
Management in Irrigation Sector in Sri Lanka**

May 2006

Nippon Koei Co., Ltd.

TABLE OF CONTENTS

Training Program

Lesson Plan-1: Introduction to the program

Lesson Plan-2: Importance of water measurement

Lesson Plan-3: Water measurement in practice

Lesson Plan-4: Closing session

TRAINING PROGRAM

I Program Title

Water Flow Measurement and Record Keeping

II Objectives

At the end of the program, the participants will be able to

- Explain the importance of water flow measurement
- Demonstrate gate operations according to the required discharge
- Read the discharge correctly and record the value
- Explain possible errors in water measurement and the way of minimizing

III Target Group

Jalapalaka/ID, Jalapalaka/FO, FCG leaders. 15-20 trainees per group.

IV Duration

One day

V Training Methods

Mini lecture with Q/A feedback, discussions, demonstration

VI Training Materials

Indicated in the lesson plans. It is composed of four lesson plans:

1. Introduction to the program,
2. Importance of water measurement,
3. Water measurement in practice, and
4. Closing sessions.

VII Training Evaluation

Pre course - no

In-course - observation by trainer

Post course - explanation and demonstration by trainees

Follow-up - observation of work performance

VIII Trainers

Persons with participatory training skills, especially to change the attitudes of farmers

IX Venue for training

A Place with horse-shoe seating arrangement and close to the field that practical session is held.

LESSON PLAN-1

I Program Title

Water Flow Measurement and Record Keeping

II Lesson

Introduction to the program

III Objective

Participants will be able to describe objectives and content of the program

IV Duration

0.5 hr

V Training Methods

Mini lecture with Q/A feedback

VI Training Materials

1. Flip chart containing program objectives and schedule of the day

VII Lesson Outline

(1) Welcome

- Welcome participants appreciating their participation despite busy with land preparation activities

(2) Tie-in

- This training session is held under the JICA Study on Increasing the Capacity of Integrated Management in Irrigation Sector. Training is an important item in capacity building program and you all are already aware about that. Under the forthcoming project there are very important training programs identified for Farmers and Govt. Officers. Today, we are having a trial session to see your response to the training and therefore your active participation during the training is highly appreciated.
- This program is selected, as you all are more familiar with water measurement during the pilot program. Hence, this will not be a new thing for some of the farmers. However, we all should participate actively to achieve the objectives of the training session.

(3) Objectives

Explain that at the end of the day the participants will be able to aware and improve some of the important factors relevant to water measurements. After explaining display the followings in a newsprint paper

- Importance of water flow measurement.
- Gate operations according to the required discharge.

- Read and record the discharge correctly.
- Identification of possible errors in water measurement and the way of minimizing such errors.

(3) Program agenda

Explain program agenda and display in the training room.

Time	Activity
9.00	Introduction to the program
9.30	Importance of water measurement
10.15	Explanation on water measurement
10.45	Water measurement, field practical
12.30	Lunch interval
13.30	Discussion
15.00	Summary of the day and closing

- (4) Link to the next lesson reminding importance of active participation in the program.

LESSON PLAN-2

I Program Title

Water Flow Measurement and Record Keeping

II Lesson

Importance of water measurement

III Objective

Participants will be able to explain the importance of water measurement

IV Duration

0.75 hr

V Training Methods

Mini lecture, discussion with Q/A feedback

VI Training Materials

1. Flip chart containing key points on importance of water measurement

VII Lesson Outline

(1) Importance of water measurement.

Initiate a discussion among the participants to come out with the ideas to prove that the water measurement is vital in water management. Facilitate the discussion to get the following points.

- Water issues could be done according to the actual requirement
- Minimize wastage
- Minimize damages to crop and soil.
- For farmers to understand that their water quota is released from the authority.
- When experiencing water scarcity, available water could be distributed successfully if water is measured.

(2) Measuring units

Using a Q/A session note down the measuring units in day-to-day life and from there slowly turn to the irrigation water, "cusec" and liter/second.

- Main measuring units are Kg, Liters, Meters, Kilometers, Metric tone, Centimeters, millimeters etc
- What are the units used to measure irrigation water? Millimeter, Centimeter for gauge post indicating height of water flow and cubic feet, liters for measuring volume of water.
- The volume of water flowing in a canal is linked with the speed and therefore regarding the irrigation water flow measurement, "time" has to be taken into account. Generally, at the field level, the units called "cusec" (cubic feet per second and "liter/second" are

used to measure irrigation water. Also discuss about Acre-feet.

- Explain clearly using simple terms “cusec”, “lit/sec”, Acre-feet.

(3) Current practice

Discuss about the current practice on water measurement. Let participants to explain their experiences, observations etc. Facilitate them, how do you read gauge post, how do you measure water- cm, mm, cusec, lit/sec, Acre-feet etc. Write down the answers in a newsprint paper.

(4) Required quantity of water

Initiate a discussion on “how to decide required quantity of water for the canal”.

It mainly depend on the stage of land preparation, crop development etc. Explain that these values have been already calculated and also most of the canals have been calibrated to measure water as a height in relation to the quantity. Such detail will be discussed in a future training session.

(5) Effect of excess water

Stress on excess use of water and facilitate participants to come out with agricultural and social problems emerged due to use of excess water.

- Salinity problems in poor drainage area.
- Wash off valuable nutrients
- Create favorable environment for pest and diseases
- Downstream farmers will suffer due to lack of water
- Facilities are damaged

At the end of the discussion let participants to understand importance of water measurement again.

(6) Explain practical session on water measurement and take the participants to the field

LESSON PLAN-3

I Program Title

Water Flow Measurement and Record Keeping

II Lesson

Water measurement in practice

III Objective

Participants will be able to measure and release water accurately

IV Duration

3.5 hr

V Training Methods

Demonstration and discussion

VI Training Materials

1. Water measuring devices, canal flow

VII Lesson Outline

(1) Measuring devices

There are different types of devices for measuring water. Weirs, Flumes and baffle gates are among them. In the pilot area baffle gates are used. After explaining the type of devices generally, provide more detail on baffle gates.

(2) Taking water measurements

- Take gate reading at the head of D-1 and FC-7 and record it in the form given. First, trainer can explain the way of taking readings and recording in the format and later allow participants to do the same.
- Change the baffle settings and show the participants the change of water flow. Do the same for several settings until participants get the required knowledge and skill. Record all the values.
- Discuss about possible errors in water measurements and stress the need of minimizing such errors (higher reading due to canal block and water level raise, parallax error due to improper reading etc)
- After the practical session get back to the classroom for the balance work that comparison of current water use and actual water requirement.

(3) Comparison of actual requirement and the current use of irrigation water

- Calculate the actual water requirement in newsprint with the participants. Land preparation period could be used for the calculations as farmers are currently in that

period.

- As per the guidelines given in the “Design of Irrigation Head works for small Catchments” by A.J.Ponnaraja, 7 inches of depth of water is required for 15 days during the land preparation.

$$\begin{aligned} \text{Depth of water} &= 7 \text{ inch} \\ &= 7 \times 2.54 = 17.78 \text{ cm} \\ \text{Total volume of water required for 10.5 ha} &= 17.78\text{cm} \times 10.5\text{ha} = 186.69 \\ &= (186.69 \times 10000 \times 10000)\text{cm}^3 \\ &= 18669000000/1000 \\ &= 18669000 \text{ lit} \times 0.6(\text{A.E}) \\ &= 31115000 \text{ lit} \\ &= \mathbf{31.1 \text{ MCM}} \end{aligned}$$

- Calculation of current use

$$\begin{aligned} \text{Current issue} &= 30\text{lit/sec} \\ \text{Total issue for per day} &= 30 \times 60 \times 60 \times 24 \text{ lit} \\ \text{Total issue for 15 days} &= 30 \times 60 \times 60 \times 24 \times 15 \\ &= 38880000 \text{ lit} \\ &= \mathbf{38.88 \text{ MCM}} \end{aligned}$$

Current use is higher than the actual need. This is a sample calculation and calculates using the values that participants obtain from the field practical. Compare actual need and current use and ask participants reasons for the difference if any.

Note- complete relevant part of the evaluation sheet.

LESSON PLAN-4

I Program Title

Water Flow Measurement and Record Keeping

II Lesson

Closing session

III Objective

Participants will be able to refresh the key points of the training program

IV Duration

0.5 hr

V Training Methods

Q/A, discussion

VI Training Materials

1. Newsprint papers and markers

VII Lesson Outline

(1) Brief the activities done for the day using Q/A and write down in newsprint paper.

- Importance of water measurement, why it is important?
- Field water measurement, how to measure, how to calculate actual water requirement, how to calculate current use of water
- How can current water use be greater than actual requirement etc.

(2) Stress the following points

- Water measurement is must for proper water distribution in timely, reasonably and accurate quantity.
- Proper water management improves agricultural production
- Proper water management minimize environmental problems such as salinity, water logging situation etc
- Social problems that can emerge due to water scarcity ion irrigation projects could be minimized through proper water management
- Measuring and issuing water minimize possible damages to facilities.

(3) Thanks for the participation and wind up the session.

Note- while getting the feedback to the newsprint completes the evaluation sheet also.

Attachment F3

Evaluation Sheet

EVALUATION SHEET

Program- Water measurement and record keeping

Type of evaluation- Learning

Date - 10.05.2006

FA-33

Criteria	Response of trainees																				Total					
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	VG	G	F	P		
	1.Explain importance of water flow measurement	G	G	F	G	G	VG	VG	F	F	F	G	G	VG	G								3	7	4	0
2.Demonstrate gate operations according to the discharge	F	F	P	G	G	G	G	P	P	G	G	G	VG	VG								2	7	2	3	
3.Read the discharge correctly and record the value	G	G	G	VG	VG	VG	VG	G	G	G	G	G	VG	VG								6	8	0	0	
4.Explain possible errors in water measurement and the way of minimizing such errors	VG	VG	VG	G	G	VG	VG	G	G	G	G	G	VG	VG								7	7	0	0	
																						Total	18	29	6	3
Average of grading	Very good(VG)				Good(G)				Fair(F)				Poor(P)													
	32%				52%				11%				5%													

Attachment F4

List of Participants

THE STUDY ON INCREASING THE CAPACITY OF INTEGRATED MANAGEMENT IN IRRIGATION SECTOR

Preparatory Meeting for Trial Training Session "Water Flow Measurement"

Rajangana IE's office, 8th May, 2006

List of Participants

No.	Name	Agency	Position
1	S.A.M.Chandrarathne, Mr.	Irrigation Department	Engineering Assitant
2	R.M.W.K.Muwanwella, Mr.	Irrigation Department	Engineering Assitant
3	C.J.Kasthuarchchi, Ms.	Irrigation Department	Engineering Assitant
4	P.H.Yasas Rupanada, Mr.	Irrigation Department	Engineering Assitant
5	G.K.Uthpala Dilhani, Ms.	Irrigation Department	Engineering Assitant
6	M.W.Methananda, Mr.	Irrigation Department	Irrigation Engineer
7	Y.B.M.G.Jayasiri, Mr.	Irrigation Department	Engineering Assitant
8	Y.Gamini Chandrapala, Mr.	Irrigation Department	Work Supervisor
9	M.Dayananda, Mr.	Irrigation Department	Work Supervisor
10	K.C.WeHELLa, Ms.	Irrigation Department	Development Assitant
11	P.K.D.W.Gunasekara, Ms.	Irrigation Department	Development Assitant
<u>JICA Study Team</u>			
1	Naoto MORIOKA, Mr.	Team Leader	
2	Shigeya OTSUKA, Mr.	Water Management / O&M of Irrigation Facilities	
3	Wakana YAMAMOTO, Ms.	Coordinator / Higdology / Water Use	
4	G.A. Jayawickrama, Mr.	Facilitator / Organizing Workshops	
5	Masahiko HIRAIWA, Mr.	JICA Expert	

THE STUDY ON INCREASING THE CAPACITY OF INTEGRATED MANAGEMENT IN IRRIGATION SECTOR

Trial Training Session "Water Flow Measurement"

Rajangana LB Tract 2: 10th May, 2006

List of Participants

No.	Name	Designation	Remarks
1	R.P.Sarth Premachandra, Mr.	F.C.8, Sri Udala FO	
2	H.P.Amarasena, Mr.	F.C.13, Sri Udala FO	
3	D.M.Herathbanda, Mr.	F.C.13 A, Sri Udala FO	
4	A.A.Siripala, Mr.	F.C.14 A, Sri Udala FO	
5	R.P.Mohothra, Mr.	F.C.14 A, Sri Udala FO	
6	U.P.Saradiyal, Mr.	F.C.12, Sri Udala FO	
7	R.D.Wijerathne, Mr.	F.C.7, Sri Udala FO	
8	P.Chandrasena, Mr.	F.C.10, Sri Udala FO	
9	B.D.D.Jayasingha, Mr.	F.C.14, Sri Udala FO	
10	R.M.Anura Santha, Mr.	F.C.14 A, Sri Udala FO	
11	G.Piyadasa, Mr.	F.C.14 A, Sri Udala FO	
12	J.P.Pramasara, Mr.	F.C.12 A, Sri Udala FO	
13	N.A.Egonish, Mr.	F.C.14 A, Sri Udala FO	
14	M.D.Muthuwa, Mr.	F.C.14 A, Sri Udala FO	
15	S.W.Harischandra, Mr.	Jalaparaka, ID	
16	R.D.K.Wimalasena, Mr.	Jalaparaka, ID	
<u>Government Agencies</u>			
1	G.K.Uthpala Dilhani, Ms.	E.A.-Irrigation Engineer Office	
2	R.M.W.K.Nuwan, Mr.	E.A.-Irrigation Engineer Office	
3	M.W.Methananda, Mr.	Irrigation Engineer	Observer
4	A.M.Chandarthne, Mr.	E.A.-Irrigation Engineer Office	Observer
5	C.J.Kasthuriarchchi, Ms.	E.A.-Irrigation Engineer Office	Observer
<u>JICA Study Team</u>			
1	G.A.Jayawikrama, Mr.	JICA Study team	
2	W.Yamamoto, Ms.	JICA Study team	

THE STUDY ON INCREASING THE CAPACITY OF INTEGRATED MANAGEMENT IN IRRIGATION SECTOR

Trial Training Session "Study Tour to System C"

16th-17th May, 2006

List of Participants

No.	Name	Organization	Position
1	J.K.Layanal, Mr.	Isuru - Nachchaduwa	A Famer
2	T.M.Somapala, Mr.	Isuru - Nachchaduwa	Member
3	A.P.D.Gunarathbanda, Mr.	Isuru - Nachchaduwa	Filed Canal Group
4	R.A.P.Rathnayaka, Mr.	Isuru - Nachchaduwa	President
5	J.L.Wijerathne, Mr.	Sri Udara - Rajangana LB Tract 2	Vice President
6	J.K..Aruna Dissanayaka, Mr.	Isuru - Nachchaduwa	Data Management
7	R.A.Priyankara Rathneyaka, Mr.	Isuru - Nachchaduwa	Member
8	D.L.Somapala, Mr.	Gamunu - Rajangana RB Tract 2	President
9	S.P.Ajith Nisantha, Mr.	Sri Saliyaraja - Rajangana RB Tract 1	Secretary
10	Kamani Wehella, Ms.	Irrigation Dept	D.A
11	P.A.J.Puspamali, Ms.	Irrigation Dept	D.A
12	G.A.Jayawikrama, Mr.	Study Team	Member
13	J.Watanabe, Mr.	Study Team	FO Expert
14	W.Yamamoto. Ms.	Study Team	Coordinator

Attachment F5

Photos

PHOTOS

Trial Training Session "Water Flow Measurement and Record Keeping" in Rajangana Tract 2, on 10th May, 2006



Trainers (government officers) are facilitating the discussion.



Farmers are writing down the record format.



An officer is giving an advice for farmers.



Reading measuring gauge at D-canal by farmers.



An officer is explaining about the gate function.



A farmer is opening the gate for demonstration.



A farmer is expressing his opinion about the session.



Guiding trainers (government officers) by a member of JICA Study Team

PHOTOS

*Trial Training Session "Study Tour to System C"
on 16th-17th May, 2006*



FO representative in System C is greeting study tour members.



Representative of Isuru FO, Nachchaduwa, is explaining problems of his FO.



A Rajangana farmer is asking questions about reservation area.



One of the FCG leaders in System C is explaining his experience in Community Participatory Rehabilitation.



Discussion is in progress between FO members in System C and study tour members.



FO representative of Rajangana is telling his problem to System C farmers.



Feedback session of tour participants



Participants including FO representative in System C