

Guideline

for
the Reconstruction of Agriculture
and Rural Communities
Affected by Natural Disasters
- Sri Lanka -



January, 2011

**Japan International Research Center for Agricultural Sciences
(JIRCAS)**



**The Department of Agrarian Development,
Ministry of Agrarian Development & Wildlife**



Department of Agriculture, Southern Province



Guideline

for

The Reconstruction of Agriculture and Rural Communities
Affected by Natural Disasters

- Sri Lanka -

January, 2011

- Forewords -



We hold in great value and gratitude the aid provided by Japan International Research Centre for Agricultural Sciences, towards the task of restoring the lifestyles and livelihoods of the victims of the tsunami devastation.

It was not only material values that were washed away by the tsunami tragedy. We sadly witnessed as the tidal wave washed away their hopes and morals as well. The homes that provided warmth to many a family as well as the social structure and relationships they were dependent on were suddenly destroyed in a most unexpected and ruthless manner.

The fact that the Japanese Government and affiliated establishments, who understand well the harsh realities of the pain and hardships faced by survivors in such situations, volunteering to aid in this noble task does not strike as a surprise to us.

The unique characteristic of JIRCAS was that by adopting the participatory approach method they utilized the skills and manpower of the villagers concerned who knew well the land, instead of utilizing outside contractors for restoration work. In this manner the work was performed with much care and also much more profitably for the villagers.

In addition, the direct participation by villagers also helped them to ease their frustrations and gain good perspective in the restoration of their livelihoods.

Here we should specially mention that through the participatory method, the community and community leaders as well as the agriculture research and production assistants together with agriculture instructors and officers who provide services for the community launched the effort to lay the foundation for social development by contributing towards community development.

We appreciate the actions performed towards this process with the assistance of university professors as well as other facility providers whilst maintaining good co-ordination with government institutions.

Ravindra Hewavitharna
Commissioner-General
Department of Agrarian Development.
The Ministry of Agrarian Services & Wildlife.
The Democratic Socialist Republic of Sri Lanka.
2010 " Decembe



Appreciation of Agriculture programs performed by JIRCAS



After the tsunami tidal wave in 2004 government organizations as well as various non-governmental organizations came forward to the assistance of those who were victimised by the devastation.

The fact that JIRCAS, along with the district agriculture department and the department of agrarian development, came forward to provide relief to those involved in agricultural activities who were affected by this devastation from Devinuwara and Dickwella district secretarial divisions of Matara district, and the fact that they came forward to uplift the livelihoods and provide facilities towards the social infrastructure of the community is appreciated in the highest manner.

Even though non governmental organizations which came forward to provide post tsunami aid ended their activities in a short period of time JIRCAS continued their activities for a period of five years cleansing waterways, repairing sluice gates, improving irrigation systems, bringing back to life about 60 of abandoned paddy fields and provided services and blessings to the community beyond value. Steps were also taken to uplift about 3200 home garden growers by providing them with seed and training and equipment.

The cooperation among the district agriculture department and the department of agrarian development during this process provides a good example of achieving success through good co-ordination and goodwill.

Our sincere anticipation is that the future activities of this organization will bring more blessings to our farmer community.

S.Rathnasiri.

Provincial Director of Agriculture
Southern Province Dept. of Agriculture
The Ministry of Agriculture, Irrigation & Livestock
Southern Province; The Democratic Socialist Republic of Sri Lanka

Contents

Chapter - 1.	Objective of the guideline.	1
1.1	The Background and Objectives of this guideline	1
1.2	Outline of JIRCAS survey	1
1.3	Characters of the guideline	3
Chapter - 2.	Process of Rural Agricultural Reconstruction.	4
2.1	Overall Process	4
2.2	Analyzing the prevailing conditions	4
2.3	Decision of preparing an Action Plan	5
2.4	Enforcing an Action Plan	5
2.5	Monitoring / Evaluating reforms.	5
Chapter - 3.	Guideline for Activities implemented in Rural Reconstruction Support.	6
3.1	Basic point of view	6
3.2	Analyzing the prevailing conditions	6
3.2.1	Damages related to Agricultural Sector.	8
3.2.2	Salinity accumulation	9
3.3	Determination of a plan	9
3.3.1	Group discussion	11
3.3.2	Budget and related enterprises	11
3.4	Implementation of an action plan	11
3.4.1	Inducing villagers to take part in rural activities.	11
3.4.2	Beneficiary payment principle	13
3.5	Project Monitoring and Evaluation.	16
3.5.1	Evaluation criteria of a project	16
3.5.2	Sharing of information (practical use of a steering committee)	17
Chapter - 4.	Training of Facilitators	19
4.1	Roles of a facilitator	19
4.2	Training as a facilitator	19
4.3	Overview of the Training program	20
4.4	Enhancing the facilitator ability	21
4.4.1	Training preparation	21
4.4.2	Contents of the training	22
4.4.3	Training with villagers	23
4.5	Agricultural Extensions – Home Gardening Project.	23
4.5.1	Role of AI and MO	24
4.5.2	Implementation of 'Agricultural Extension Training' targeting ARPAs.	24
4.5.3	Implementation of villagers training by ARPA	25
4.5.4	Villagers support activities	26
Chapter - 5.	Strengthening and Training of Community Organization	28
5.1	Build-up an organization in rural area	28
5.1.1	Organizations in rural area	28
5.1.2	Rural organization as a core group for the reconstruction activity	28
5.1.3	Good relationship among neighboring villages	29
5.1.4	Utilizing Home-Gardening group	29
5.2	Using PRA Techniques.	29
5.3	A method of the long term joint training	32
5.3.1	A use of IPVM program for paddy field management	32
5.3.2	Existing common problem, but different understanding among FOs	33
5.3.3	An interchanging through a joint activity	33
5.3.4	Outline of the IPVM training	34
5.3.5	Process of the training	34
5.3.6	Selection of the suitable FOs and trainees	36
5.3.7	Contents of the field training	36

5.3.8	Preparation of the training	38
5.3.9	The villagers' comprehension and reactions	39
5.3.10	Maintenance activity by cooperative work for the common water system	40
5.3.11	Comprehensive evaluation.....	41
5.4	Organization in the case of home gardening.....	43
5.5	Training of the villagers leader.....	45
5.6	Field Observation Trips.....	46
Chapter - 6.	Restoration techniques for abandoned Paddy Fields	47
6.1	Rehabilitating abandoned fields using field rehabilitation fund	47
6.2	Sluice Gate.....	50
6.2.1	Components of sluice gate.....	50
6.2.2	Diagnosis method	50
6.2.3	Function diagnosis method	51
6.2.4	Implementation of the works.....	51
6.2.5	Procedure of the rehabilitation work for the sluice gate	51
6.2.6	Construction management.....	54
6.3	Canal	54
6.3.1	Diagnosis Method.....	54
6.3.2	Function diagnosis method	56
6.3.3	Implementation of the works.....	56
6.3.4	Construction management.....	59
6.4	Paddy Fields	60
6.4.1	Diagnosis method	60
6.4.2	Implementation of works (Plowing Technique)	61
6.4.3	Construction management.....	65
Appendix - 1.	Field Activity in Participatory Rural Approach	67
Appendix - 2.	Agricultural Extension & Conducting of Farmers Training Classes.....	80
Appendix - 3.	List of Participants to the Project.....	87

List of figures and tables

Fig. 1.1 Images of 3 Phases of post-disaster Reconstruction.	3
Fig. 2.1 The rural reconstruction process	4
Fig. 3.1 Reconstruction of paddy field.....	9
Fig. 3.2 Procedures of PRA survey.	10
Fig. 4.1 Overview of the ARPA training program.....	20
Fig. 4.2 Progress schedule of agricultural extension activity by ARPA	23
Fig. 6.1 Schematic view of the paddy field rehabilitation system using funds.....	47
Fig. 6.2 A transition of the rice yield after the restoration at abandoned paddy lands.....	49
Fig. 6.3 Direction of the first plowing	62
Fig. 6.4 Direction of the Second plowing	62
Fig. 6.5 Direction of the Preliminary Plowing.....	65
Table 3.1 Effected Situation of tidal wave and the restoration of sluice gates	7
Table 3.2 Member of steering committee.....	17
Table 4.1 General roles of a facilitator.....	19
Table 4.2 Major tools used for PRA.....	22
Table 5.1 A registration situation in the Wattegma village (2008).....	28
Table 5.2 Process of the training.....	35
Table 5.3 Comparative trial for different cultivation method in an observation plot (2009)	37
Table 5.4 Members on the trainers' side and their roles (Example).....	38
Table 5.5 List of materials and equipments	38
Table 5.6 Action plan for the irrigation system management (Weihela-South).....	40
Case 1 Neglected paddy fields.....	8
Case 2 Group discussion.....	11
Case 3 Adjustment among related plans	11
Case 4 Inducing villagers to take part in rural activities	12
Case 5 Beneficiary payment for retrieval of paddy fields	13
Case 6 Beneficiary payment for home garden.....	14
Case 7 Villagers' contribution, step by step.....	15
Case 8 Usage of monitoring results	16
Case 9 The reconstruction of seawater protection sluice gate.....	18
Case 10 Using equipments and obtaining services of technical officers of Pradeshiya Sabha. ..	18
Case 11 Strengthening of Community Organization using PRA techniques	31
Case 12 Water scramble from upper to lower current	33
Case 13 Topics from a matter of villagers' interest	34
Case 14 The leader training.....	45
Case 15 Field observation trips.....	46

Abbreviations

ac.	An unit of area, Acre
AI	Agricultural Instructor
ARPA	Agricultural Research & Production Assistant
ASC	Agrarian Service Centre
bu.	An unit of volume or weight, Bushel
CAP	Community Action Plan
DO	Development Officer
DS	Divisional Secretariat Division
FAO	UN, Food & Agriculture Organization
FO	Farmers' Organization
GN	Grama Niladari Division (Village)
IPVM	Integrated Pest & Vector Management
JICA	Japan International Cooperation Agency
JIRCAS	Japan International Research Center for Agricultural Sciences
MO	Monitoring Officer
NGO	Non Governmental Organization
PRA	Participatory Rural Appraisal
Rs.	Local currency, Sri Lankan Rupee
SMO	Subject Matter Officer
South CAP	Project on Rural Livelihood Improvement in Hambantota District

Chapter - 1. Objective of the guideline.

1.1 The Background and Objectives of this guideline

The big Sumatra earthquake which occurred in December, 2004, together with the Indian Ocean Tsunami also brought Sri Lanka an unprecedented human lives and property loss. Twelve out of 14 districts except northwestern part encountered Tsunami damage in areas along the shore. More than 30,000 people were killed, and over 210,000 household suffered damage. Even in the agricultural sector, many farmland and waterways broke and the cultivations became impossible in ground by the influence from salt water which driven to farmlands.

The JIRCAS which began its survey just 1½ years later of Tsunami tragic casualties that is in June, 2006, and got into the actual implementation by the results of investigating the restoration situations in an agricultural sector, in southern province, from January, 2007.

Most of the Post-Tsunami restoration works accomplished after one year had passed, the restoration works related to agricultural sector damages have not been performed well at that time. Therefore we JIRCAS began from reconstructing sea water protection gate and irrigational waterway, adopted the technique of diverting farmers for the reproduction paddy field work and the revival work. These activities carried out in two pilot project villages in Tsunami stricken area of the District of Matara. Furthermore, home garden development scheme introduced for 2300 farming families of two D.S. Divisions.

Owing to the activities which carried out in these pilot projects, JIRCAS tried to develop the techniques on improvement by strengthening the capability of a local agricultural administrative organization; and also developed the proficiency of supporting of farmers' organization.

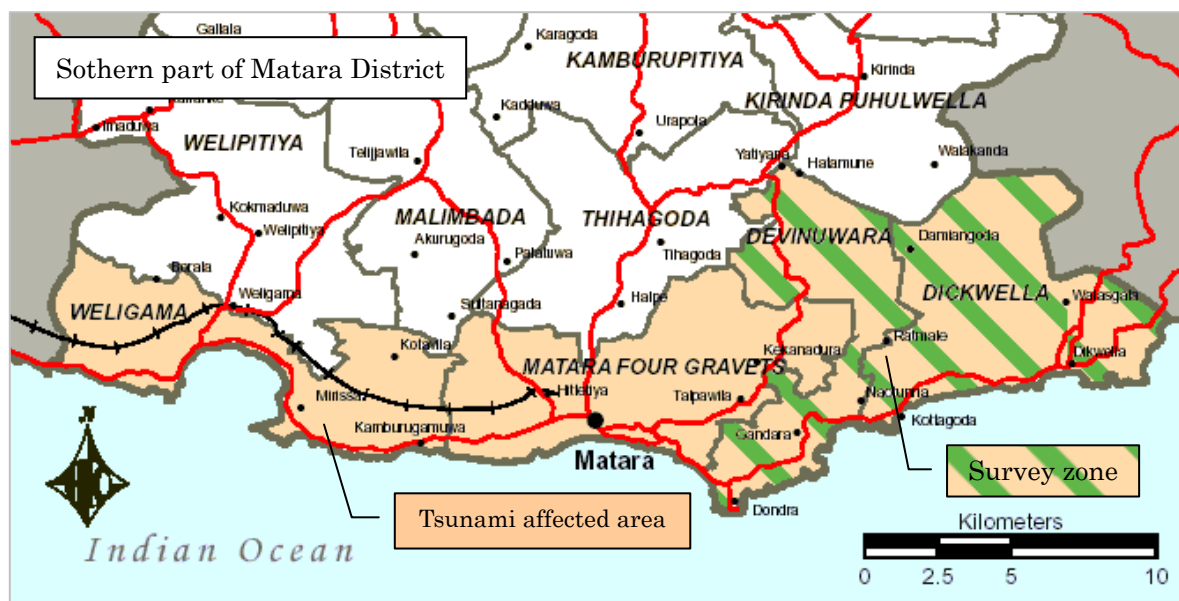
This guideline is prepared and made for available with outcomes basing on mid-term agricultural reconstruction support or assistance in a rural agricultural village using techniques applicable to a pilot project.

The procedure of carrying out the reconstruction analysis just after a disaster situation, it results in preparing an action plan with the participation of villagers. To implement such an action plan is to be initiated with a technique of participatory development which is vastly described in this guideline.

1.2 Outline of JIRCAS survey

The purpose of survey implemented by JIRCAS and outline of the results are given below.

- 1) Period of Field survey: June 2006 to December 2010
- 2) Targeted Survey zone : Devinuwara & Dickwella divisions in the district of Matara in Southern Province.

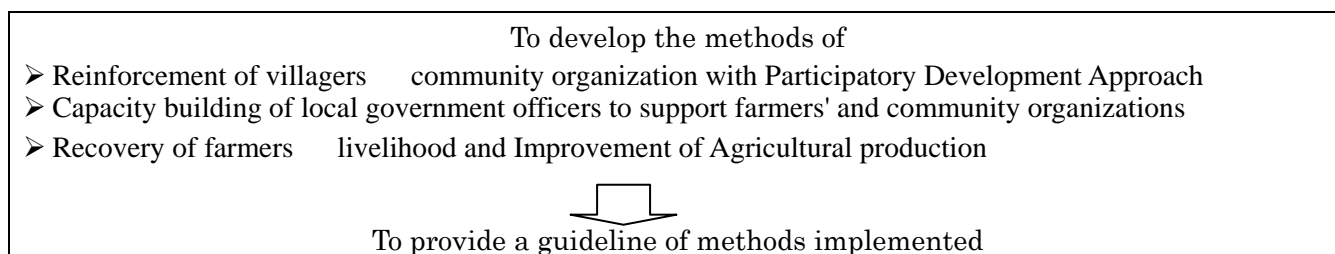


Source : Humanitarian Information Centre for Sri Lanka HP

3) Principal collaborative organizations:

Department of Agrarian Development of The Ministry of Agriculture, Department of Agriculture in Southern Province, Divisional Secretariats of Devinuwara and Dickwella, Pradeshiya Sabhas of Devinuwara and Dickwella respectively.

4) The purpose of the survey



5) Overall results of the survey project:

- Reconstruction of the second seawater protection sluice gate and canal bank with the participation of villagers (2 villages)
- Implementing 'Facilitator Training' for ARPAs (52 members), Implementation of 'Agricultural Extension Methods' training for ARPAs (56 members)
- Implementation of action plan based on PRA survey (2 villages)
 - Retrieval of abandoned paddy land (65 acres), Agro-Road improvement (540m), Implementing Home gardens (170 people)
- Expansion of retrieving abandoned paddy land (25 acres in 2 villages)
- Supporting of HG activities initiated by ARPAs, AIs and MOs. (2,100 beneficiaries in 33 villages)
- Support assistance on pepper cultivation through ARPAs and EO of the Dept of export agriculture. (270

persons in 34 villages)

- Reinforcement of farmers organization utilizing IPV training (35 trainees from 6 villages)
- Preparation, compiling and distribution of the guideline

1.3 Characters of the guideline

This guideline is describing about how the supporting was performed in 03 stages such as Immediate Measure, Early Recovery Assistance, Mid-Term and Long Term for a reconstructive effort just after a disaster. Among the above we have added the comprehensive techniques widely used in recovery measures to implement a pilot project carried out with the reconstruction assistance.

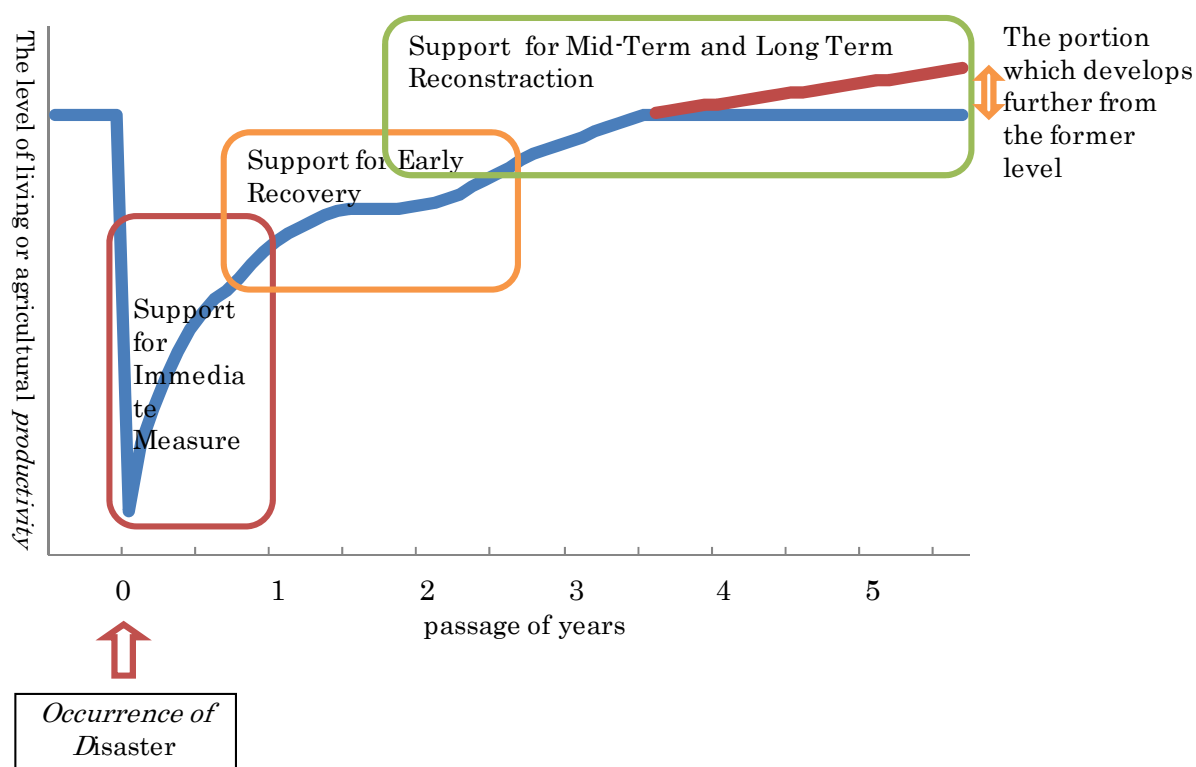


Fig. 1.1 Images of 3 Phases of post-disaster Reconstruction.

Early stages of emergency restoration, different systems are carried out in humanitarian levels on emergency assistances. Thereafter, the reconstruction process is clearly ceased, the convergence of the particular reconstruction is getting slower and subsequently the villagers dependency for aid or grant (Dependency Syndrome) are induced and often encountered problems. To eliminate this, mid / long-term recovery plans, which are briefly explaining the lessons learned through pilot projects using techniques that are necessary to run the process with a focus on implementing system of rural reconstruction.

This guideline was collected and summarized as a field work guidance book for local agricultural officials in order to make close cooperation activities with their attached villagers or farmers.

Chapter - 2. Process of Rural Agricultural Reconstruction

2.1 Overall Process

The whole rural agricultural reconstruction process is shown in the following figure 2.1.

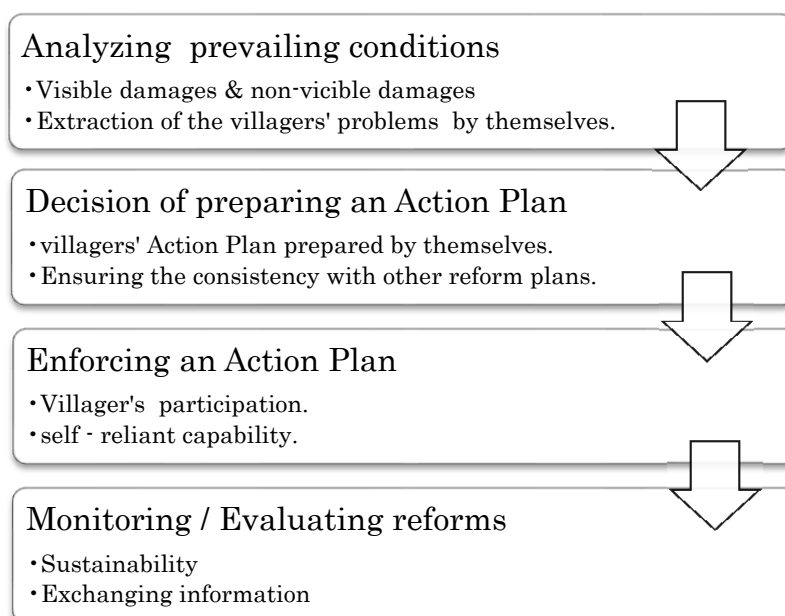


Fig. 2.1 The rural reconstruction process

In a medium-to-long term reconstruction stage, it is compulsory to decide on villager's necessity of getting their own recovery program plan done which suits to their needs. Otherwise, a situation is created where the villager or farmers do not get benefited with what restored or established even in the future. They tend to express their increasing dissatisfaction conversely. In such circumstances villagers may oppose thus, causing a weakening in the development process. In this point self-supporting recovery development cannot be achieved.

2.2 Analyzing the prevailing conditions

► In the survey to analyze existing circumstances we must first take into consideration the damages caused such as the destruction of protective dams in waterways, the obstruction of waterways by garbage, tree branches, twigs, earth and mud, the salinity on ground caused by seawater etc., The salinity in earth caused by the seeping of seawater can be determined by observing crops and plants in the area. The farmers' possess a clear understanding in assessing the damages and severity caused to farmlands. There is a necessity of providing training to farmers in the preparation of a plan for rehabilitation of such farmlands.

It is more suitable that such training programs should be organized with the unity of local Agriculture Sector Officers, Administration Officers and NGO's

2.3 Decision of preparing an Action Plan

- ▶ A villager's participation is so important for the preparation of an Action Plan to solve the problem that is coming out through PRA program. In order to realize the target by the farmer's desire, it points out that what kind of subjects the villager can perform and what he cannot. This criterion shows a great influence in implementing one's own action plan subsequently.
- ▶ A fresh plan is needed whenever some professional or technical advice is sought by the villagers in respect of financial restrictions aspects. The assistance providers as NGO and administrative officers too compulsorily care about amending such plans with other recovery programs concerned. Moreover, the allocation of funds with the activity of other organizations should also be planned and aimed in an effective manner.

2.4 Enforcing an Action Plan

- ▶ The supporting side should try to ease works as much as possible which is to be accomplished by the villagers. This may lead the villagers to perform subsequent maintenance work by themselves. In that case, cost cutting of wages can also be gained.
- ▶ To safeguard self – relying capacity, a donor or a supporter should be willing to apply the technique of a villager burden. Although the time of urgent support needs to perform labor-costs payment by participating villagers by making recovery of a prompt life base and recovery of a livelihood into a thing-of-paramount-importance clause, it should collect the appropriate burden from villagers at the rural agricultural reconstruction support time in a medium-to-long term viewpoint. Accordingly the villager's responsibility and expression of self-reliance will be performed with a positive implementation of continuous activities.

2.5 Monitoring / Evaluating reforms.

- ▶ In terms of evaluating a project the 'Sustainability' plays an important role in monitoring overall activities. When the benefits is not continued, the donor / supporter should clarify the reasons and should examine the whole management plan.
- ▶ Exchanging the information between related parties (when exchanging the outcomes of the activities) there must be a striving always. According to that particular validity of the planning and implementation of the problem which is to be debated among the concerned parties and found rapid solutions.

Chapter - 3. Guideline for Activities implemented in Rural Reconstruction Support.

3.1 Basic point of view

JIRCAS could learn various lessons via the enforcement of a pilot project. This column explains the effective technique and the importance of taking in to account subjects when implementing rural reconstruction applying the systems in a pilot project. Moreover, implementing various programs by advancing pilot project, we could strengthen villager's capability in organizational participatory systems together with updating the knowledge of ARPA's regarding 'community facilitating' simultaneously. These techniques are also described in under mentioned chapters.

3.2 Analyzing the prevailing conditions

To survey of existing conditions, some activities are performed such as listening to persons attached to villager community, assessing the damages of the local victimized area. There will be investigations of what sort of damage occurred and where has it happened. When analyzing the prevailing situations in the village, the cooperation of the local government officer can be obtained from the technical viewpoint.

The following subjects can be taught in order to carry out the survey related to Agricultural damages.

Description	Subject	Survey Content
Water related	.Water Facility	<ul style="list-style-type: none">• Damage location and size of the damage, content• Sediments flowing conditions
	• Waterway	<ul style="list-style-type: none">• The location and size of the damaged canal bank, content• Deposition situations, such as earth and sand, garbage• The location and size of the damaged intake, content• The inflow situation of salt water
	• Sluice gate	<ul style="list-style-type: none">• The part and size of the damage, content• The situation of canal bank and attachment
Crop related	Damage on Production	<ul style="list-style-type: none">• The situation of cultivation and plants growth
	• Salinity accumulation	<ul style="list-style-type: none">• Growth conditions & vegetation differences.
Soil related	• Soil loss	<ul style="list-style-type: none">• Loosing fertility, soil erosion loss
	• Salinity accumulation	<ul style="list-style-type: none">• Growth conditions of the crops.• Salinity levels

For an example table 3.1 shows the study results of the present situation of the effect by tidal wave and the restoration for the sea water protection sluice gate at the lowest reach of the canal,

conducted by JIRCAS in cooperation with Matara office, of the Dept Agrarian Development in July 2006. Almost one year and seven months has already passed since the tidal wave tragedy; not all of the sluice gate been restored. Part of the paddy field could not be cultivated because of the sea water adverse into paddy lands through the canals.

Table 3.1 Effected Situation of tidal wave and the restoration of sluice gates

DS	GN division	Damage by tidal wave			Agricultural damage	
		Sluice gate	Sand sedimentation at river mouth	Restoration situation	EC at the canal (2006/7)	Situation of cultivation abandonment
Devinuwara	Wawwa/Kapugama Central	Loss of weir stop	Damage by sand sedimentation	Cannot remove sand due to the loss of weir	500mS/m (along the road)	Exist
	Thalalla South/Thalalla Central	Loss of weir stop / cannot open and close		Not started as of January 2007 This project assumed as an emergency measure project	1.8 ~ 1.2S/m (near the sluice gate)	Exist
Dickwella	Kottegoda	Cannot open and close		Trash removed by NGO support after the tidal wave	30mS/m (near the sluice gate)	Exist
	Bategama West/Bambaranda East	Damage of weir stop	Damage by sand sedimentation	Restoration by 2006 through a support of NGO	50mS/m (near the sluice gate)	Restore by 2006
	Wattegama South	Damage of weir stop / cannot open and close	Damage by sand sedimentation	Not started as of January 2007 This project assumed as an emergency measure project	750mS/m (along the canal)	Exist
	Dodampahala South		Damage by sand sedimentation	Sedimentation is removed by themselves		
	Dodampahala East	Loss of weir stop		Sluice gate not restored. After the road restoration, the pipeline is buried under it.		

When analyzing the prevailing situations, the following attentions are to be applied accordingly.

3.2.1 Damages related to Agricultural Sector

Generally, agricultural-related damages are considered as not visible through naked eye easily. If the problems of water, crop and land are not solved, it does not lead to a true solution in paddy cultivation.

Case 1 Neglected paddy fields

An NGO group cleared the garbage accumulated in the paddy fields of Talalla - South and Talalla - Central Villages just after Tsunami tragedy. Then they retrieved abandoned field by a small tractor to make the field available for paddy cultivation again. In addition to that, seeds and weedicides were also distributed. Soon after, some paddy farmers (Presumably most of the farmers) involved in rice cultivation in 2005 'Yala' season. However, since the sluice gate of the down - stream part was remaining broken by Tsunami tragedy, where sea water ascended the waterway almost every day. The salinity level of the irrigational stream water was becoming high; the crop yields became very few. Then, the farmers had to give up cultivation; and as it was neglected by them the paddy fields changed in the position of thick weeds which are resistant for salinity water.

In early 2007, the JIRCAS initially restored 2nd sea water protection sluice gates (Illustrated in the picture as 2nd sluice) from the sea in Talalla - South village. Then, the first sluice gates near the sea were repaired by the Southern Provincial Government (Illustrated in the picture as 1st sluice). The threat of sea water flowing backwards during high-tide seasons was eliminated. Furthermore, a local body of NGO improved the irrigation drainage canal which was full of earth and mud. Thereafter the farming community could move ahead with their paddy cultivation again.



- 1 Reconstruction of 02nd seawater protection sluice gate and canal bank by JIRCAS along with the participation of villagers in March, 2007
- 2 Reconstruction of first seawater protection sluice gate and canal bank by Southern Provincial Ministry in August, 2008
- 3 Rehabilitation of 2km distance irrigation canal, by 'Sarvodaya' from August, 2008
- 4 Retrieval of abandoned paddy land by JIRCAS and a contribution of 20% of the yield settled to the F.O as a rehabilitation fund by participants (16 acres) to use for Maha Season production 2008/9
- 5 Retrieval of abandoned paddy land partially using rehabilitation fund for Yala Season production 2009 by villagers (05 acres)

Fig. 3.1 Reconstruction of paddy field

3.2.2 Salinity accumulation

According to the FAO the salinity which permeated into soil due to Tsunami or high tide will be flushed by leaching generally if it passes 1 to 2 the rainy seasons. Cultivating of paddy lands which were covered with salt by Tsunami began in 2006 'Yala' season with the restoration of sluice gates and the water canal.

3.3 Determination of a plan

It is better to decide a plan using PRA investigation. By conducting PRA survey, the issues of present

condition faced by the villagers are expressed. Moreover, PRA survey is also creating a position of an accordance formation of such issues, and becomes viable to obtain the villagers cooperation in terms of solving subsequent problems. The general scope of PRA survey becomes as it is shown in Figure 3.2

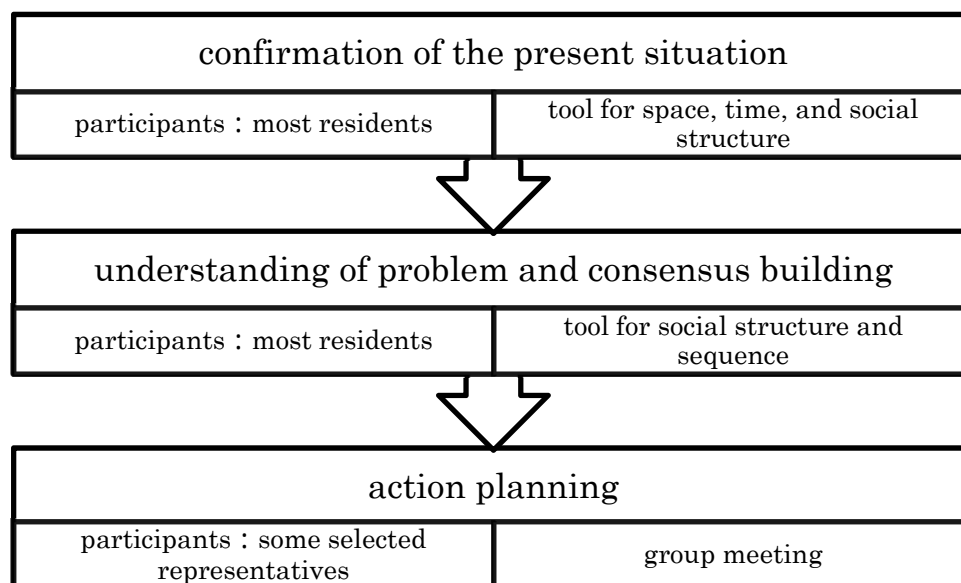


Fig. 3.2 Procedures of PRA survey.

It is good to narrow down some problems and to decide the order of such problems which is determined in an action plan in the stage of grasping problems and an accordance formation.

However, a certain amount of periods are needed for preparation and conducting PRA investigation. When a problem needs to be solved urgently, rehabilitation work may be performed immediately after checking villagers' intention in the meeting with villagers.

From the result of the survey of existing conditions shown in Table 3.2.1, JIRCAS decided to begin two sluice gates to be repaired in Talalla - South village and Wattegama - South respectively. Because JIRCAS considered that farmers would not start cultivation in paddy fields without repairing the sluice gates at an early stage.

JIRCAS requested the divisional officers in each ASC office to hold the meeting with villagers and proposed to start the reconstruction of two sluice gates with the participation of villagers. The villagers showed understanding of reconstruction and started their participatory activity.

While each ARPA in assigned village checked the daily villagers' participation, where construction was advanced and finished without any problems in Talalla - South village. However, in Wattegama - South village, the opinions of participants contradicted with each other and reconstruction work has stopped midway (see the following case 2). That is because the accordance formation in villagers was inadequate. As stated to the case 2, this problem was solved as a result of subsequent PRA investigation conducted thereafter.

Even though when a measure that to be implemented urgently, it is necessary to take the consent of villagers as much as possible and to advance construction.

3.3.1 Group discussion

Important thing is to leave the opportunity to villagers to consider how to solve the problem which came out through PRA investigation in terms of deciding a plan. If the problem is clear through conducting PRA program, some PRA tools can also be utilized and decision for plan can also be executed immediately. When deciding of planning, groups containing small number of people spent many hours for group debate to select their representative. It is necessary to select the leader by deviating opinion and valuing suggestions along with fair judgment taken in to consideration.

Case 2 Group discussion

In Wattagama - South village, the repairing works of sluice gates became standstill on the halfway. It was due to various opinions among construction participants how to drain stream water to concrete the sluice bottom. This problem was discussed in PRA survey, saying that the water must be drained out to continue the construction. People who had nothing to do with construction also had interest in joining talks with the members of farmers' association concerned. A new panel of team consisting of same ratio of men and women appeared for action. Earlier, part of the team argued that the system of construction should be like this, and again like that. Finally they came to a conclusion that the problem is not the way of construction but a problem that of a joint organization. Having establishing the organization in order to repair sluice gates, they listened to the opinions of a professional. After that, an action plan was drawn to advance construction works according to directions of a leader. The sea water protection sluice repair resumed according to the action plan, and completed safely without any obstructions.

3.3.2 Budget and related enterprises

When deciding of a plan, government officers have to consider that a limited fund can be used effectively with restrictions in terms of a budget. Moreover, attention should be paid to trends, such as recovery programs, and to be aware of making it as a fund of wastage.

Case 3 Adjustment among related plans

In Talalla - South the 1st sea water protection sluice gate is lying along the roadside of Route – 2 national highways. At the beginning JIRCAS considered to repair this sluice gate. However, we came to know that the particular work will be impossible due to road diverting construction by the loan of EU and the Asian Development Bank. Therefore we had to choose the 2nd sluice gate to get them repaired. After one and half years later we checked that there was no any diversions or any change in route 2, the southern provincial government accomplished restoration works of the 1st sluice gate.

3.4 Implementation of an action plan

3.4.1 Inducing villagers to take part in rural activities

Since the utilization of PRA investigation technique to acquire villagers' participation in rural

development affairs it is found difficult to collect their participation in the implementation stage. Due to the abundance of paddy land farmers who looked for alternative ways of earnings such as daily-labour works in the pilot project too rendered their participation by the help of ARPA's who had undergone 'Facilitator' training.

The following devices were effective while implementing the pilot project.

Case 4 Inducing villagers to take part in rural activities

(1) Practical use of Shramadana:

In Sri Lanka from the ancient period, there was a habit of volunteer spirit among the people. In Sinhalese language, Shramadana is called (Shramadana: 'Shrama' is labour, 'Dhana' means the share), for collective works in roads and schools of cleaning water, etc., participated by groups without any remuneration to do volunteer works.

The ARPA of Thalalla - South announced 'Shramadana' event and collected labor as much as possible for road improvement. This resulted for obtaining many women's and youth's participation. However, the Shramadana announcement is not something done often; where you should realize the situation and create an opportunity for this type of interventions.

(2) Usage of Samurudhi beneficiaries

The Samurudhi system has been implemented in Sri Lanka since 1995 as a part of poverty reduction policy, where the government pays a cost of living for the poor households. The earlier 'Janasaviya' plan became the Samurudhi as predecessor (1989 - 1995) receiving payments on a part of their cost of living. By receiving payment of the cost of living they were obliged to provide labour to participate in infrastructure development and training. According to Samurudhi plan, the amount paid even a reduced level there were no any such obligations. Some of the Samurudhi beneficiaries do feel guilty about it. Is an effective way to promote public participation can encourage participation in community service in a business place.

(3) Importance of collecting women's participation

The development of agro - road in Thalalla – South, where strong gravel road was concreted by women carrying cement mixture, carrying water from wells, adjusting concrete, serving tea among the participants. (Holidays were focused mainly for youth for construction works). Even old women did their part by collecting scattered gravel, helping to clean drains and end, their work as possible. Because many of the men went out seeking daily work, working during the day was only in charge of heavy lifting and mixing the concrete through the experience of several retired plasterers. Works that are preceded by women during the daytime replaced by men in the evening, to change men and women from day to day basis. This system is implemented naturally to continue work smoothly.

(4) Provisions to encourage women's participation

On the development of Coir training facilities in Wattegama -South village, the leaders involved are

mainly women, whose working hours were divided as early and afternoon session to avoid disrupting their domestic works. Also, when many women gather at once, work proceedings are moving with small gossips; when we replacing the group they did not mind considering together due to women's mentality.

3.4.2 Beneficiary payment principle

(1) What is the beneficiary payment?

The beneficiary payment is to bear the part of a necessary expense by the participating people for the promotion of the project. People's organization like FO manages the payment collected from people and utilizes it to necessary maintenance costs and budget to promote a project. And then it can lead to sustainable and self-sufficient development project.

Case 5 Beneficiary payment for retrieval of paddy fields

JIRCAS retrieved some abandoned paddy fields affected from Tsunami in Thalalla South village. Before retrieving paddy lands for 2008/9 Maha season our members talked with participating applicants and decided to collect an amount of money equivalent to 20% of the rice yield as a beneficiary payment after the harvest. Then JIRCAS retrieved approximately 16 acres of paddy fields and ARPA collected 80% contribution money from the participant farmers group after the harvest. They utilized the part of the money to retrieve another paddy land of 1.5 acres for 2009 Yala season. They were planning to cultivate some other paddy fields of 5 acres for 2009/10 Maha Season.

**Maha on
September in
2008**

- Restoration of 16 acres
- 20 participants

Yala in 2009

- Restoration of 3.5 acres
- 3 participants

**Maha on
October in 2009**

- Restoration of 5 acres
- 2 participants

Case 6 Beneficiary payment for home garden

Home gardening group or FO collected some money (aimed 100 rupees per person) as a training participant fee (beneficiary payment money) from the participants of home garden project in 2008 and 2009. Some home garden group or FO reduced to 50 rupees per person and collected them. Some home gardening groups or the FO couldn't collect them from all participants or trainees. But they managed to collect some amount of the contribution money. The main usage of the money is listed below.

Year	Number of participants (persons)	Collection amount (Rs)	Rate of collection (%)	Major usage
2008	1,199	103,380	86.2	Purchase of seeds and holding the training

(2) When the beneficiary payment should be collected?

Soon after a disaster, recovery of the livelihood should be given the top priority and the beneficiary payment should not be sought for some period. However, bread and butter is restored up to a certain level, and in time when living was restored. After self-reliant living is improved, you may actively seek benefit principle positively to some extent. In that case, you had better find a burden depending on progress of the revival step by step.

As shown in case 7, JIRCAS survey made a request charging gradually since the fourth year; that was in 2008 after the tidal wave disaster according to the restoration and the progress of the pilot project.

Time for emergency support

- situation of no income source by disaster etc.
- need to restore life infrastructure and living quickly
- pay for the labor supply etc. by residents participation / do not pay for those who regularly work for the government etc. as much as possible

Time for middle and long term restoration support

- according to the progress of restoration beneficiary is charged step by step
- charge is used as source for sustaining the activities

Case 7 Villagers' contribution, step by step

Paddy field restoration project, shown in case 5 made a request to pay step by step as follows.

2007

- village : Wattagama-S, Weihella-S, Wattagama
- venue : total area of 17 acres suffered from the tidal wave
- support by JIRCAS : tillage works by tractor, supply of rice seed and fertilizer
- beneficiary charge : tree trimming, removal of trash, labor supply to improving canal path and canal (for free)

2008

- village : Thalalla-S
- venue : 22 acres of farmland, suffered from the tidal wave, for 20 people who are interested
- support by JIRCAS : only expense on tillage works by tractor
- beneficiary charge : charge equivalent to 20 % of harvest, labor supply to trash removal, preparation of rice seeds and fertilizer
- department of agriculture supplied parts of the seed rice and fertilizer

2009 ~ 10

- village : Thalalla-S
- venue : 6.5 acres of farmland for those who are interested
- support by JIRCAS : nothing
- support by farmers' organization : expense on the tillage works by tractor (make use of charge)
- beneficiary charge : charge equivalent to 20 % of harvest, labor supply to trash removal etc., preparation for rice seed and fertilizer

(3) How much is the proper beneficiary payment.

In Sri Lanka, around 10% of payment demanded as a subsidy even in a normal project. (In this case an amount of money tends to convert it for value of the labor offer). Basing this account JIRCAS sought 10% (100 rupees) of the expense spent for the material costs per person participated in home garden activity as beneficiary rehabilitation fund. In addition, JIRCAS decided to collect 20% of the harvest for the paddy field restoration work which is not exceeding the ratio to a cultivator who usually pays the field owner (25% of the yield).

The ratio of the burden chooses it depending on the local fact and business subject, but we have to get the understanding of the participant by all means and have to decide a proportion amount of money. In the example of the home gardening, the appointed organization decides conversations some areas that reduced the sum of the payment to 50 rupee / per person. And then some are collecting Rs. 5 to 10 / a month / per person additionally with an initial payment of Rs. 100 in these organizations.

The person who cannot afford it must not forget to bear it either. It is the villagers to know it best, and the donor can show the principles of good management is to leave it to such villagers organizations. It is so necessary to have the understanding of the villagers organization how you utilize the fund fair enough and to entrust and convince the organization why villagers' beneficiary payment is necessary. In addition, if there is a system of monitoring from the outside is enabled such as to take the approval through government officers like AI or the DO, to use the fund.

3.5 Project Monitoring and Evaluation

3.5.1 Evaluation criteria of a project

In 1991, five evaluation items were proposed by DAC; namely, Relevance, Effectiveness, Impact, Efficiency, and Sustainability, which, are adopted as basic evaluation standards by many development assistance organizations in the world.

<u>Relevance</u> : The extent to which the objectives of a development intervention are consistent with beneficiaries' requirements, need of the country, global priorities and partners' and donors' policies.

<u>Effectiveness</u> : The extent to which the development intervention's objectives were achieved, or are expected to be achieved, taking into account their relative importance.
--

<u>Impacts</u> : Positive and negative, primary and secondary long-term effects produced by a development intervention, directly or indirectly, intended or unintended.

<u>Efficiency</u> : A measure of how economically resources / inputs (funds, expertise, time, etc.) are converted to results.

<u>Sustainability</u> : The continuation of benefits from a development intervention after major development assistance has been completed. The probability of continued long-term benefits. The resilience to risk of the net benefit flows over time.

Among these five items, the concept of increasing sustainability is very important. For that purpose, it is required to check monitoring at the middle time of a project and after it has been completed too. Whether benefit is continuing or not if there is a problem arises, there is a need to find the right solution.

Case 8 Usage of monitoring results

During February, 2010, a set of questionnaires distributed targeting 900 participants of home garden training program implemented in June, 2009. The respondents replied that 16% of their 814 home gardens decreased or stopped their activities. According to the ARPAs point of view, about 13% of home gardens were not much taken care of.

AI thinks that about 20% of those who took part in lecture on home garden training would stop their activity, where 40% of participants repeatedly discontinuing and resuming their activity. Remaining 40 % of the participants take up home garden activity continuously.

The Dept of Agriculture selected those who are carrying out home garden activity continuously basing the monitoring outcomes, and chose the trainees as new leaders among them.

3.5.2 Sharing of information (practical use of a steering committee)

A steering committee was established and sharing of information was achieved in JIRCAS survey project. Officers attached to agricultural sector as well as local political authority represented the above committee. If there are too much members, debated matters will not be accumulated properly. Therefore one has to be so careful in selecting limited member for the committee.

The members in the above committee are shown as in Table 3.2.

Table 3.2 Member of steering committee

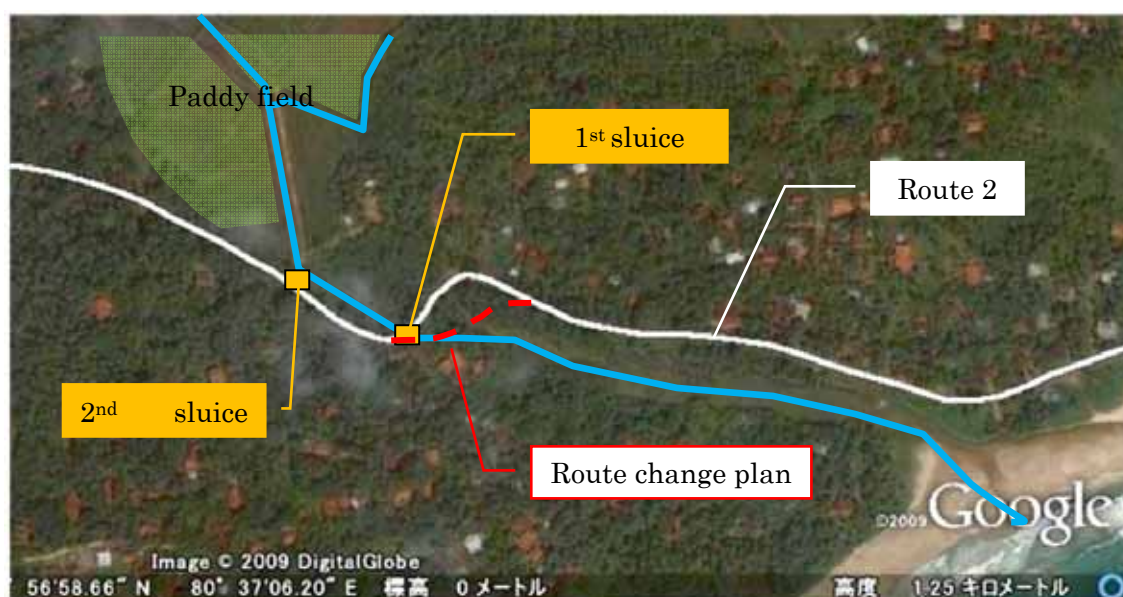
Position	Title	Institution
Chairman	Deputy Commissioner	Department of Agrarian Development, Matara
Member	Deputy Agricultural Director	Dept of Agriculture (Extension), Matara
	Divisional Secretary	Divisional Secretariat of Devinuwara
	Divisional Secretary	Divisional Secretariat of Dickwella
	Chairman	Pradeshiya Sabha of Devinuwara
	Chairman	Pradeshiya Sabha of Dickwella
	Development Officer	Agrarian Service Center of Thalalla
	Development Officer	Agrarian Service Center of Dickwella
	Agricultural Instructor	Agrarian Service Center of Thalalla
	Agricultural Instructor	Agrarian Service Center of Dickwella
	Team Leader	Survey Study Team. (JIRCAS)
Observer	District Technological Officer	Department of Agrarian Development, Matara
	Monitoring Officer	Agrarian Service Center of Thalalla
	Monitoring Officer	Agrarian Service Center of Dickwella

Every year this Steering Committee is gathered to discuss the project progress and issues, which promoted the sharing of information and helped smooth progress of the project.

Case 9 The reconstruction of seawater protection sluice gate

In regard to the reconstruction of seawater protection sluice gate in Thalalla-South village, JIRCAS made an effort to repair the 1st sluice gate initially which was affected by salt water inflow mostly. However, there was a plan to change the route in the national roadway beside the 1st sluice gate. This would have made impossible to use even if we repairs this gate due to that reason. Therefore, JIRCAS decided to repair the 2nd sluice gate and to stop sea water adverse in the canal. This whole process and circumstances explained in the steering committee, and obtained approval of reconstructing the 2nd gate.

Devinuwara Divisional Secretariat placed a condition to the Road Development Authority to relocate and repair the 1st sluice gate which was became impossible to do so at that time.



Finally, the route changing plan of national roadway dropped and Southern Provincial Ministry reconstructed the 1st sluice gate after one and half year. Now the sea water flows into a canal can be stopped at the time of high tide.

Through the cooperation of Divisional Secretariat office which is a member of the steering committee, the project was able to go on efficiently.

Case 10 Using equipments and obtaining services of technical officers of Pradeshiya Sabha.

In the waterway repair and road reconstruction in pilot project villages, JIRCAS and village participants could have used the equipments (small back-hoe and tractor for earth-and-sand conveyance, the concrete mixer, etc.) belonged to Pradeshiya Sabha for cheap rentals. As a result of ARPA appealing to the chairman of the Sabha in the early morning, and is also the result of the chairman accepting the meaning of a participatory project as a member of a steering committee. Further, we could request the technical officer of Pradeshiya Sabha as a supervisor for road improvement.

Chapter - 4. Training of Facilitators

4.1 Roles of a facilitator

Table 4.1 shows the general roles of a facilitator.

Table 4.1 General roles of a facilitator

Promoter's role	<ul style="list-style-type: none">• to have the stance that it is not "Coach", "supporter", and "leader" but "accompanist."• to consider the process to be an important thing• not to criticize, guide and operate others• to be able to trust and wait for a participant
Information provider's role	<ul style="list-style-type: none">• to have required knowledge and experience. to be able to share knowledge and experience.• to be going to have or acquire required information.
Chairman's role	<ul style="list-style-type: none">• to intervenes in a process if needed.• to change the viewpoint of a discussion. to correct the route of a discussion
Entertainer's role	<ul style="list-style-type: none">• to react to a situation occasional flexibly.• to expresses richly and to react to participants clearly.• to make an open atmosphere.
Others	<ul style="list-style-type: none">• not going to solve a problem by yourself. † to make participants solve a problem• to accept your mistake and your ignorance• to accept various senses of values

The facilitator is generally defined as the person who plays roles in maintaining neutrality to precede the meeting and the project. They are bringing out the participants' talent by controlling the discussion, and deciding the direction. The facilitator differs from the chairperson of the meeting in that he/she does not have the right to decide.

It is necessary for the facilitator to play roles in not an instructor and a leader but an accompanist, bring out the participants' opinion, control the direction of the discussion, deepen the mutual understanding, lead to the consensus building, and activate the organization. On the other hand, it is important for a leader to play a role in activating the organization. It is necessary for a leader to control the organization and lead to a sustainable development.

4.2 Training as a facilitator

Although all AI's and MO's attached to Matara district agricultural Department have obtained training in PRA technique where an AI attached to 30 to 40 villages (AI administrative region) wherever duty reaches. It takes very much time for an AI to grasp clearly the problems of 1 village to another. But there is a possibility for an ARPA who is taking charge of 1 or 2 villages to deal in which is a small task in comparison. For this situation, an ARPA who masters PRA techniques can lead situation by analyzing (the suggestions of the villagers, by understanding the practical issues the means of finding the solutions) as a facilitator. This is only due to the training of such in search of remedies for the problems arise in the villages in a rapid way. If the issue comes in a technical aspect,

suggestion from AI or MO can be obtained. Moreover if the issue comes out in relation to an administrative matter, solutions can be sought through DO or GN (village head: Grama Niladhari). Again, the ARPA also get used to play a leader's role that performs his duty while residing in the same village.

The ARPA is directly involved in the development of the village administration as the (GN) village head (Grama Niladhari) and Samurdhi development officer. A key factor to the successful rural restoration is that the ARPA should play roles in summarizing rural folk's opinions, and sometimes leading village people as a leader to perform rapid actions. Thus, JIRCAS implemented the program which could not only develop the ARPA but also play a role in a leader.

Applying the techniques of capacity building of ARPA as 'Facilitator', JIRCAS utilized them to progress for reconstructing rural agriculture sector. It was structured by the Department of Agrarian Development where they are belonging to and along with the cooperation of the District Department of Agriculture / Export Agriculture. That is to be justified as an effective technique of getting assistance from departments with agricultural-related activities that are widespread with persons concerned (the overall number of assigned officers are insufficient in general).

4.3 Overview of the Training program.

The overview of the program, which JIRCAS implemented to train the ARPA, is shown in figure 4.1.

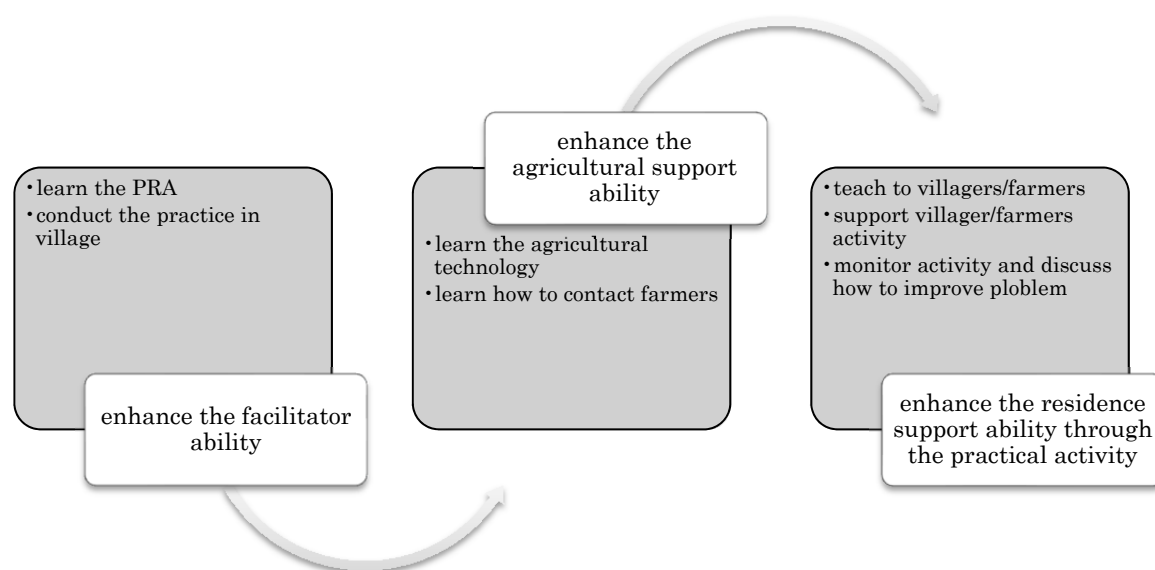


Fig. 4.1 Overview of the ARPA training program

- ❖ It is important that the practical training should be conducted in which trainees can learn not only various tools in term of PRA but also how to deal with farmers and farmers by themselves.
- ❖ The ARPA is not always an agricultural expert. Thus, the ARPA should enhance the agricultural technology through implementations of agricultural trainings.
- ❖ To enhance the ability through practical activities is the most effective and efficient way.

4.4 Enhancing the facilitator ability

Based on the findings and lessons learned and obtained in the facilitator training, which JIRCAS conducted in cooperation with academic experts, the consideration points are described as follows.

4.4.1 Training preparation

(1) Participants for Training

The appropriate number of the participants for a training ranges from 10 to 15. The number of group members should be about 5 during the training, so that the number of the group could also be 2 to 3. It is recommended that the number of men and women has to be the same if possible.

(2) Schedule

The duration of the training must not be exceeding 5 days. The participants study the specific PRA procedure, which includes lectures and outdoor practices, for four days. The participants play a role as a facilitator to find the problems in the concerned village by actually collecting village people in the last day of training. Thus, we have to decide the concerned village of which one of ARPAs is in charge and who takes part in the training.

The training duration should be about 5 days out of two weeks and the schedule can be decided after the meeting with the lecturer and the Development Officer (DO), who is ARPA's boss.

We have to decide the date of the practice in the village after making an arrangement for rural folk's cooperation in the last day of the training.

The appropriate training time should be about 3 hours in the morning and about 3 hours in the afternoon including the lunch time for 1 hour.

According to the outcomes of the questionnaire to the ARPA conducted after the training is over, it is evaluated that the training should not be conducted every day and on Wednesday, a public day, because they have some troubles in their day to day works. On the other hand, an ARPA says that the outcome of the PRA tool should be used for relearning when the next training is conducted. It is considered to be necessary to show the outcome to the participants in the training venue.

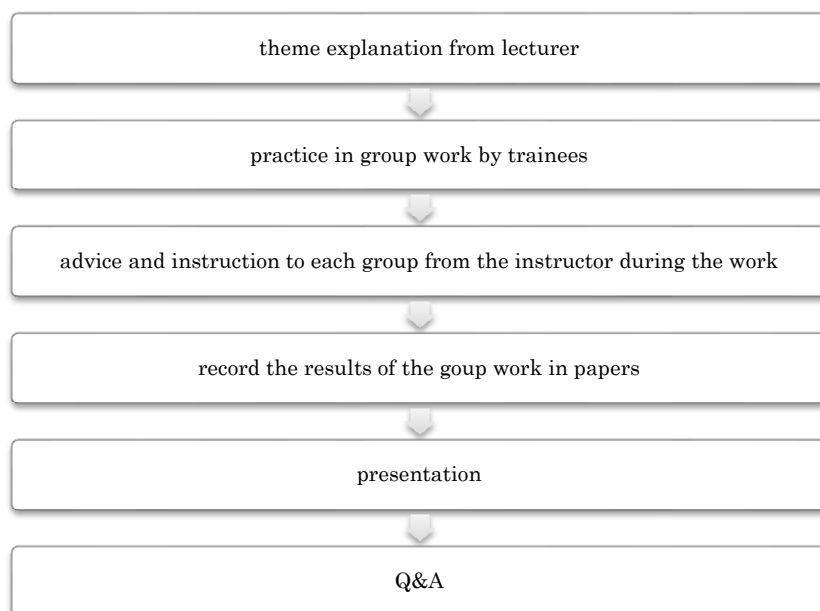
(3) Training venue

The training venue is hopefully a public institution, such as a temple or a school, near the concerned village where the practice is conducted in the final day. The training starts with the identification of the problem in the concerned village by using various PRA tools. If the training is conducted near the particular village, then it is easier to conduct the transect walking to reconfirm the problem.

The PRA also makes a map and a table by using nearby materials, such as leaves and small stones etc., so that we have to select the venue where these works can be done, such as open grounds and school playground.

4.4.2 Contents of the training

The training is conducted in a following way in principle. In each session in the morning or afternoon 1 or 2 issues are solved.



The trainees can feel the wisdom and promote active participation; it is possible for them to create an environment to experience when they actually conduct the PRA in a group work.

(1) PRA tool

There are various PRA tools. It is necessary to learn the PRA tools described in table 4.2 for four days lecture.

Space tool	<ul style="list-style-type: none">•Participatory mapping•Transect walk
Time tool	<ul style="list-style-type: none">•Seasonal calendar•Historical profile
Social structure tool	<ul style="list-style-type: none">•Venn diagramme•Problem tree•Institutional analysis
Sequence tool	<ul style="list-style-type: none">•Pair wise ranking•Matrix ranking•Free scoring•Preference scoring•Wealth ranking

Table 4.2 Major tools used for PRA

(2) Understanding about tools

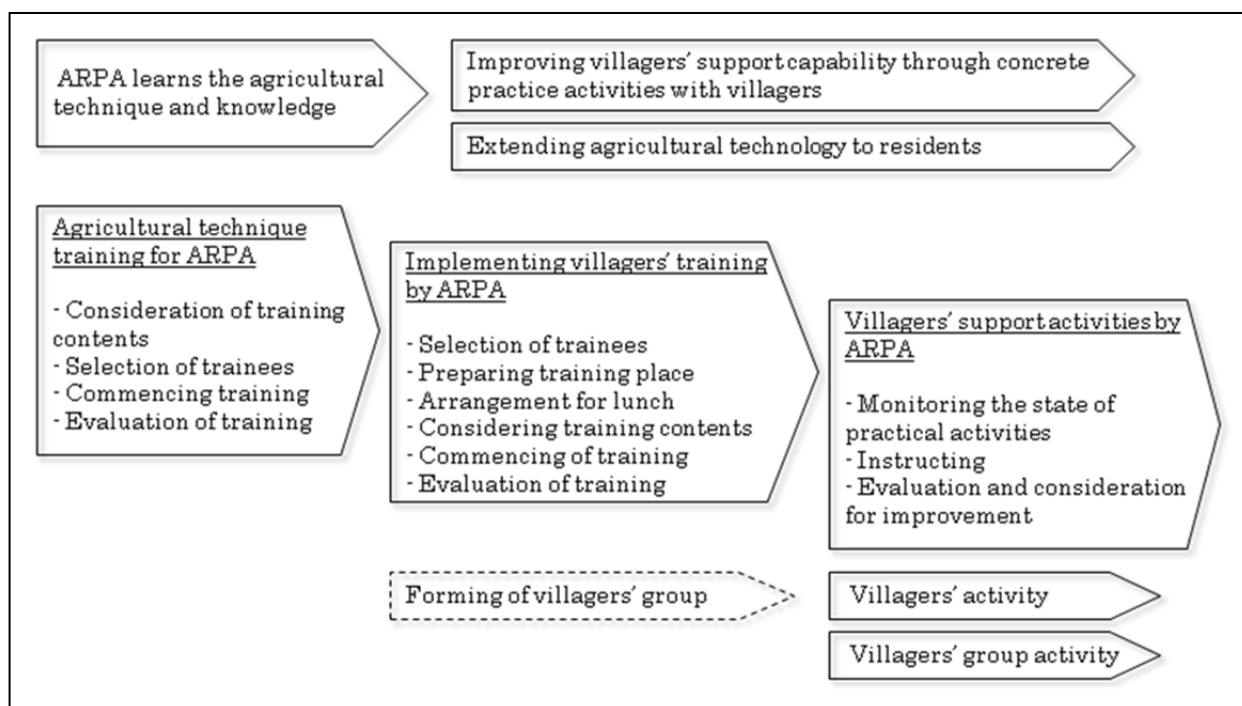
According to the self-valuation of ARPAs, they thought that “matrix ranking” and “pair wise ranking” are tools for judging a problem quantitatively which were somewhat difficult. The explanation and training on these tools are required to spend much time. They answered that they could understand other tools generally. See Appendix 1 as a reference regarding the important points when you actually start PRA survey in a rural area, which is written by University of Ruhuna and named “Field activity in participatory rural approach”.

4.4.3 Training with villagers

The trainees play a role as a facilitator to find the problems in the concerned village by actually collecting villagers in the final day. The trainees should discuss and select some subjects at the last part of the lecture on the 4th day. On that particular day, the trainees divide villagers into about 10-12 persons' group, and give some subjects to each group. The trainees perform to facilitate of each group. By having training with villagers, the trainee's degree of comprehension deepens more.

4.5 Agricultural Extensions – Home Gardening Project.

JIRCAS implemented the expansion activities of Home garden for 35 villages that were affected by Tsunami at Devinuwara and Dickwella D.S. Divisions in Matara district. For this activity, we obtained support and cooperation from the department of agriculture in Matara. JIRCAS used ARPAs as lecturers and developed the measures that the ARPAs themselves carries out the process which is consistent from training villagers to subsequent monitoring and evaluation. In this segment, we explain the structure of expansion of the agricultural technology and spread support by ARPAs making this home garden activity into fine example.



4.5.1 Role of AI and MO

Agricultural technical training designed for ARPAs are done through AI, MO who is specialist of agricultural extension implementations. AI is to draw up the training schedule of ARPA of the ASC in his AI division with MO and Subject Matter Officers. Because it is obvious that AI knows best the capability of ARPA in the AIs control area. Further, when a trained ARPA is performing villager's training, it is desirable to obtain support from AI and MO as much as possible.

4.5.2 Implementation of 'Agricultural Extension Training' targeting ARPAs

When such Training programs are taken place targeting ARPAs, it is better to note the under-mentioned things.

Especially (when extending guidance to the farmers, they will have to be prepared with the notes they gained through training for their own explanations) it is a preparedness as a 'facilitator' and it is specifically very important. This guideline has a report minutes of the lecture, for reference, by the District Agricultural Director of the Department of Agriculture, Southern Province (on the Appendix 2).

Key point	Explanation
It is desirable to have training which is focused on practical training, because the main agricultural support activity of ARPA is field work.	<p>They have participated actively to practical training rather than the lecture. They had many answers; "I want to increase practical training hours more" in the questionnaire after the training, and they were thinking that practical training is very important.</p> <p>In addition, villagers' training done by ARPA, been taught to villagers the same contents that they learned in practical training, and the training which leads to practical activity is effective for technical acquisition as well.</p>

The motivation for taking a lecture is increased by informing new agricultural technology into the contents of the lecture.	All ARPAs listened to the lecture interestingly which introduced new technical contents, and they especially had a deep interest about technology that they know first. For this reason, the motivation can be raised by positively taking in new technical information into lectures besides traditional agricultural technology.
It is important to design the contents of training to tackle villagers' need and some of their problem.	the example of villagers' needs: Insect control measure through natural insecticide. How to make organic fertilizer. Securing high quality seeds and technology management of seeds for sustainable production. Home garden management technique for the time of heavy rain and water shortage
The related officials in connection with rural development as well as ARPA participated together in training. Among them, there is a possibility to deepen understanding about the work content and the role of ARPA.	The Samrudhi development officers also participated in the agricultural technology training to ARPAs. As a result, when the villagers' training carried out by ARPA, most of the Samrudi officers too participated and supported ARPA. In this case, the exchanges between officers who support villagers nearby have achieved considerably.
In addition to technical explanation in training session, it is important to give the lecture to be suited to the mental attitude at the time of supporting farmers. This becomes an important matter on their villager's training.	Although ARPA is not agricultural specialist, they are an agricultural-related officer who is most close to villagers. Because of this reason, it is necessary not only the improvement of technology but also the acquisition of the instruction technique. This explains farmers to find easy to understand and mental attitude for extension activities.

4.5.3 Implementation of villagers training by ARPA

After carrying out training to ARPA for upgrading technical instruction capability, they got the opportunity that leads to perform training and to guide villagers directly. As a result, they made the lecture material by themselves out of their knowledge which they had learned already.

Moreover, technical knowledge that they learned earlier was repeated, such as instructing to villagers on the same contents they learned. Thus the training technique which combined is not merely the transfer of technical knowledge by just training, but also performing concrete practice activity with villagers effectively.

When training programs are held for the villagers, it is better to concentrate in to the under-mentioned subjects.

Key point	Explanation
The selection of participant trainees can be established through certain selection criteria reasonably.	Selection of participant trainees is a work which classifies those who receive support or do not receive. For this instance, the selection progress has to be under the consideration of fairness. An example of the ARPA who adopted such selection method. Villagers' activity situation was checked one by one, and had

	<p>selected those who have motivated and can do continuously,</p> <p>had selected villager who interested in signing up and understood the beneficiary payments,</p> <p>had preferentially selected villagers hailing from highly damage of Tsunami affect area etc,</p>
<p>In the villagers training done by ARPA, the weak point of ARPA can be compensated by cooperating with ARPAs who graduated from the agricultural vocational school and specialists such as AI, MO. Effective training can be carried out by them without any barriers.</p>	<p>Although we could not elaborate that all ARPAs can satisfy and produce results as a training lecturer. But he was advancing in training through following patterns in general.</p> <p>In some point on contents where he had a less confidence and an unclear point, AI, MO and a different ARPA who graduated from agricultural vocational school explained replacing him.</p> <p>ARPA explained by themselves with their own knowledge and experience.</p> <p>ARPA who graduated from agricultural vocational schools and AI, MO explained special contents, and then they assisted their explanations too.</p>

4.5.4 Villagers support activities

ARPA's capacity can be attained (enhanced) as he or she monitors or places guidance just after the training program. Obviously the Farmer's Organizations were induced to progress their activities. The role played by the ARPA to develop the village is bound to do monitoring as well as listening suggestion of the professionals. For this it is important to adopt a system to conduct a study on improvement measures. Also the monitoring made by an ARPA who was trained as a 'facilitator' can be considered as to be the best of their talent in their areas.

Key point	Explanation
<p>Giving concrete activity and responsibility of supporting and guiding villagers for home gardening. This leads ARPA to a highly motivated activity in terms of villager's concern.</p>	<p>ARPAs had no much knowledge and experience in the first year, so they cannot have confidence and guiding villagers with their uneasiness. However, some ARPAs in the 2nd year, participated in training of other ARPA as a volunteer, and performed technical guidance positively to villagers concerned.</p> <p>They had led to support activities with high motivations through their experience of previous year.</p>
<p>To do effective villagers' support, it is important to exchange experience and information among ARPA in the ASC office. It is possible to transfer capabilities of</p>	<p>Home garden villagers support activities performed by ARPA belonging to the same ASC had the tendency of performing activities with similar content.</p> <p>For example, some groups in Devinuwara held a meeting just once and carried out a technical guidance by ARPA. On the other hand, some groups in Dickwella held regular meetings</p>

each ARPA with an extra improvement.	and introduced a membership fee system. It clarified that the information and experience exchange in ASC are easy to be reflected to the village support service of ARPA.
Various activities of home garden organization is carried out with ARPA, and is urging the activities of mutual aid in their area.	An example of activities in home garden organization, 1. They perform the home garden training with AI and ARPA, For a total of 100 training participants, 2. ARPA collected and gathered ten persons at ten times for a total of 100 training participants. 3. They carried out a contest in a home garden group. 4. They carried out microfinance at 2% interest using village members' burden charge. 5. They introduced a membership fee system of 5 rupees per month, 10 rupees per month and so on. 6. Their activities came up with various ideas.

Chapter - 5. Strengthening and Training of Community Organization.

We examined a possibility of making a rural organization active in the process of farming reconstruction after damage by disasters, which could be implemented by building-up their organization.

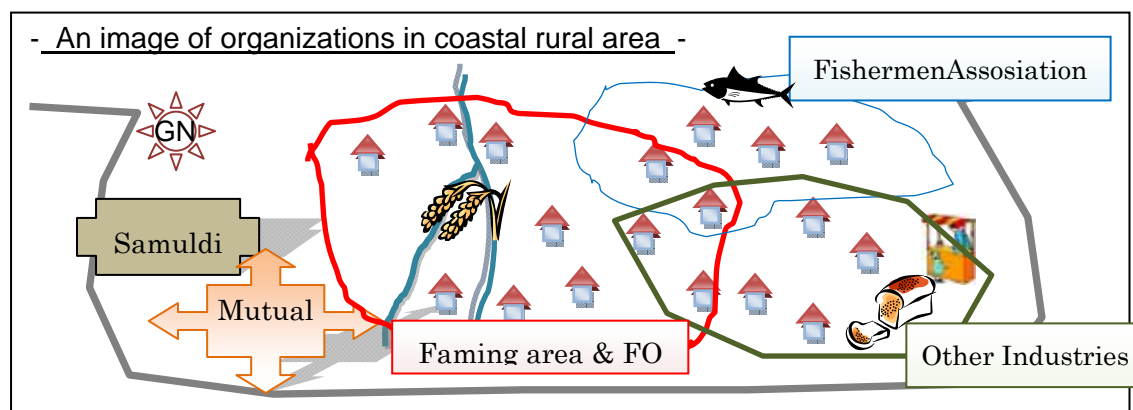
5.1 Build-up an organization in rural area

5.1.1 Organizations in rural area

In the rural area, there are various organizations such as Farmers Organization (FO), Fishermen's Association, etc.

Especially FO can be found in almost every GN village. Mainly, FO can become a core body for farming reconstruction activity in the rural area.

Besides that, the Samurdhi and some Mutual support society are functioning in other fields.



5.1.2 Rural organization as a core group for the reconstruction activity

We have taken into consideration two types of core groups in rural areas, which have potential for the reconstruction activities. They are as follows,

(1) Farmers Organization (FO)

FO consists of Rice growers and Home-Gardeners. Some of them are Coconut growers. Generally, the registration of farmers to the organization is not perfect (Table 5.1). But they can build up a stronger team for the reconstruction activity by basically utilizing FO.

Table 5.1 A registration situation in the Wattegma village (2008)

Total households	No. of Farmhouses	No. of FO members	No. of Rice growers*
Approx.300	227	Approx.100	34

* Number of Rice growers are included in the Number of FO members

(2) Home-Gardening group

Since many farmers and villagers haven't entered in FO, we can make another type of organization

mainly composed of villagers through Home-Gardening activity.

It is possible to cover gaps in non-paddy areas by establishing a Home-Gardening group.

5.1.3 Good relationship among neighboring villages

Once disaster comes, damage can occur in rural areas exceeding boundaries of villages. Especially in the case of paddy fields of adjoining lands using a common irrigation water system, they need to corporate mutually over their boundaries and difference of organizations.

Paddy fields in a rural area of a coastal region of the Southern Province have characteristics of using both rainwater and the irrigation system. And generally many FOs are sharing the same irrigation system at the same time. But recently, the joint works have become less and less and the condition of the irrigation system has become worse synchronously.

The maintenance of the condition of the common irrigation system is a common responsibility among neighboring villages. To secure food supplies in the process of reconstruction assistance, mutual corporation amongst plural FOs located in the damage prone coastal areas is important.

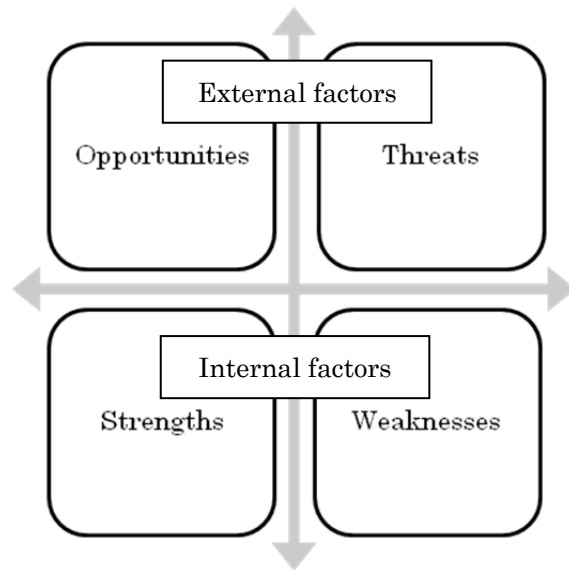
5.1.4 Utilizing Home-Gardening group

In the absence of entry to the FO, home garden activities could function by establishing a local group within the surrounding area. We can say that they could gain further benefits by operating on a small scale within a neighborhood group with the exchange of information amongst each other.

It is more profitable when they provide crops for sale.

5.2 Using PRA Techniques.

The capacity of the organization or the group is connected with external and internal factors. That particular organization's capacity depends on whether the outer support is acquired wisely and inner personnel are utilized correctly. Thus, to strengthen the villager organization, it is vital to analyze the following two viewpoints with extreme care. The relationship with outer organization can be seen by the usage of Venn diagram, a part of PRA tools. The improvements within the organization can be traced through 'organization analysis', depending on the outcomes of the SWOT analysis which shows what kind of opportunities should be utilized and what risk should be avoided from external factors. Also, what strong point should be made use of and what drawback should be overcome from internal factors. These measures are to be implemented comprehensively to strengthen those organizations.



The following example describes even further 'the rehabilitation works of the sluice gate', which is given in Case 2.

Case 11 Strengthening of Community Organization using PRA techniques

The outcomes of the SWOT analysis prepared by the farmers organization in Wattegama - South, when they participated in the PRA survey, is described as follows.

Strengths	Weaknesses
<ul style="list-style-type: none">• Powered by a 60 – 70 member capacity• Ability of financial support	<ul style="list-style-type: none">• Does not function properly• Poor communication system• Neglect to pay subscriptions• Poor participation and high degree of absenteeism• Disagreements and difficulty to come to a common decision• Inavailability of a proper action plan for future work• Members are not punctual• Weaknesses of the leadership
Opportunities	Threat
<ul style="list-style-type: none">• Ability to get advice / instructions from ASC and ARPAs• Ability to get contributions/ sponsorship from respectable people in the village• Ability to enroll more members• Financial funds provided by the J – Green• Ability to communicate using posters and leaflets• To improve the awareness of members about the organization	<ul style="list-style-type: none">• Difficulty to contact ASC personnel• Difficulty to contact respectable people in the area• Poor understanding among the members

According to the SWOT analysis, it is clear that the organization has its weaknesses and also it has a very good potential to overcome those. Though the organization has a strong membership capacity and financial facilities, the motivation among them are at a very low level to convert it to an active organization in the area.

Apart from that, poor participation, absence of a proper leader, disputes among participants, negligence to pay subscriptions, and unavailability of a future plan leads the organization towards a negative direction. In fact, it is important to overcome all these failures by restructuring the farmer organization. It should be lead by a highly motivated, active leader accepted by all.

On the other hand, the members must possess an understanding about the vision, mission, and action plan of the organization. In that respect, it is the responsibility of the active members to have an effective communication system and maintain a high level of participation. Hence, it is also the responsibility of the organization to eliminate the identified weaknesses, enhance strengths, occupy all the opportunities to improve the organization, and use necessary arrangements to mitigate those threats and barriers.

After all PRA practices and discussions, the community could build up an action plan to re-launch

the renovation of the gate project. The proposed action plan highlighted the following.

1. The farmer organization should appoint an action committee with 6 – 8 members.
2. The action committee must have a leader who is not the leader of existing farmer organization. The leader should be a very active, honest, responsible, genuine, and dedicated person.
3. The action committee can form smaller groups where they can assign responsibilities of a certain task.
4. Communication systems must be upgraded where they must have frequent meetings and inform the community about those meetings by way of posters.
5. It is required to get the estimation of an expert engineer about the labor days, equipment, and materials.
6. One responsibility of the action committee is to find ways to hire / buy those necessities at low cost but must be in good quality. They should try to fulfill those needs within their area as much as possible.
7. The activities must be under the thorough supervision of the ASC and ARPAs where the irrigation / technical officer must supervise and advise them for a better result.
8. The water accumulation problem in the section can be solved by constructing an alternative / by pass along the right bank of the canal. The remaining water can be removed using water pumps, sand and soil sealing.
9. Well experienced adult farmers have a very good knowledge about the on-going practices of farming. Hence, the group must respect and value those indigenous knowledge and practices for an environmentally friendly long lasting operation.
10. The project must be re-launched as soon as possible by forming an action committee and must be completed by the end of July, 2007.

As shown in case 11, the project can be operated effectively, using appropriate tools of PRA and sufficient debates / discussions. As a result, a strong organization could be formed successfully.

5.3 A method of the long term joint training

5.3.1 A use of IPVM program for paddy field management

Conducting long term joint training is considered to be a method of activating an existing organization.

There are several farmers' organizations in relation to each other in a common water system in paddy field areas. The farmer's organization is legally placed as the one that can manage the ending irrigation facilities. Thus, irrigation management, jointly performed by such farmer's organizations can increase the efficiency of the water use. However, it can be seen that farmers have little interest in the irrigation management, and that the cleaning of the canal was neglected and selfish water usage could not realize sustainable irrigation management. Recent abnormal weather has caused flood due to the bad drainage conditions under heavy rainfall, and adversely the drought and water stealing incidents under the monsoon season.

JIRCAS Study tried to increase farmers' interest on the water usage and farmers' awareness of rice cultivation by conducting the long term joint training, which uses the IPVM program to promote the cooperation among farmers' organizations.

5.3.2 Existing common problem, but different understanding among FOs

It is easy to assume that neighboring villages along one common irrigation system can draw interest in the utilization of the irrigation water. Once the water is led into paddy field at upper of a current, it will be able to difficult to lead it into lower area in the same day. Recently, since the rainfall can be unstable, they can face failure of cultivation due to missing the optimum time for sowing. They need an appropriate rule for use of water and well-managed maintenance of the current at regular intervals. But so far we cannot say that it has become a joint activity by multi-FOs.

Here is a situation we faced in a rural area,

Case 12 Water scramble from upper to lower current

Since there was a water scramble in one paddy field area which consists of three FO areas, we gathered relevant persons of three Farmers' Organizations at ASC office. The theme was to make clear "Common problem" among them. Village A is located in the lowest point along the irrigation system, which can be easily affected by backflow of the seawater. And the village was the last to benefit in the area. Other two FO where located in upper current said that the water scramble is caused by the volume of the tank and insisted that the cultivation period is basically different from them. On the other hand, the village A said that getting too much water was a main reason for water shortage. They hoped new facility in their area.

They never mentioned necessity of well managed common use and said that there is no common problem in the area.

5.3.3 An interchanging through a joint activity

Thus we planned a joint activity for stimulating a unanimous cooperation on the theme, "Well managing of paddy field" through field training.

Case 13 Topics from a matter of villagers' interest

We implemented training for well managing of paddy field under the cooperation by Department of Agriculture, Southern Province. This is introduced IPVM program (Integrated Pest & Vector Management). In 2009, it was the time of spreading Dengue and Rat-fever in rural areas. They were interested in the information of diseases and its knowledge concerning it.

More over many floods occurred along the irrigation system and wide range of paddy field has been submerged. The villagers started to understand the necessity of periodic management to the irrigation system.

5.3.4 Outline of the IPVM training

IPVM is defined as the local education of the knowledge concerning 1) the disease and insect damage, and endemic disease caused by the rice cultivation in the paddy fields, 2) the eco system in the paddy fields, and 3) related appropriate use of the fertilizer in the local unit. IPVM is conducted in the style of outdoor school, in which farmers learn through the farm work once a week for 20 weeks.

Normal IPVM program aims at stable rural agriculture by alleviating the risk of the disease and insect damage, and endemic disease in the rural area. This program considers reducing the use of fertilizer and alleviating the damage to the farm-household and the family by increasing the knowledge of agricultural eco system. It enables not only the alleviation of the farm-household burden and the cost but also aims at the universal stable farming by increasing the agricultural productivity.

The training, for which JIRCAS worked together with the Agrarian Department of Southern Province, and in which farmers in three farmers organizations in the same water system participated, aims at the fermentation of the common awareness of each farmers organization as well as the stable farming.

Then, enlarging work of the canal and the dredging work of the sediment earth and sand were conducted, and the action plan for the operation and maintenance of the canal was made.

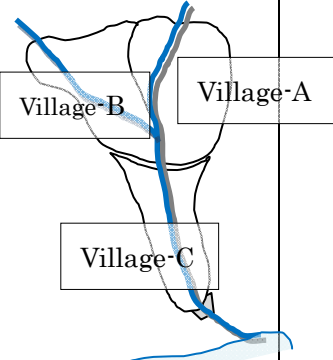
5.3.5 Process of the training


The long term joint training has been implemented under the process mentioned below. The process is divided broadly into two categories. The first one is the implementation of the field training by IPVM program through the rice production work in the rainy season. And other one is holding meetings and implementation about how to manage irrigation system continuously.

In the rainy season training they can learn many things through 20 weeks training and joint work. And if they want to have stable crops from their field, they will realize the irrigation system must always maintain and every grower ought to play their role for the maintenance. But if the condition of the system is serious they have difficulties in the joint work by hands (Such as dredging operation by machine). So they need to apply subsidy to the authorities concerned. This ought to be applied

jointly by plural FOs.

Table 5.2 Process of the training

Season	Procedures	Points	Remarks
Rainy season	Correct understanding of existing problems	- Common problems along the irrigation system	 <p><u>An example:</u> <u>Positional</u> <u>relationship of</u> <u>water supply</u></p>
	Selection of target village and participants	- Plural FOs using a common facility of water current - High motivated farmers	
	Making curriculum	- Effective training by Dep. of Agri. - Curriculum based on IPVM	
	Explanation to the villages	- Information of period and contents to farmers	
	Selection of the venue and the field	Borrow an observation plot from farmer	
	Start training	20 weeks field trainings and lecture	
	Harvesting & Evaluation	Cutting & surveying crops	
Dry	Meeting regarding irrigation maintenance	- About the importance of water system management to have high harvest yield - FO Meeting with administrative officers	- Necessary involvement of the ASC office, Dep of Agri, Dep of Agrarian development.
	Continuous maintenance for the irrigation system (Dredging ope. & manual work)	1) Implementation of machine dredging. 2) Dividing manual work by plural FOs and members	
	Dividing partially and	- Understand deeply to the	

	making a rule by FOs	importance of management. - Making rule or regulation	
After training	<div style="text-align: center;">  <p>(Time passing)</p> <p>Continue maintenance work by FOs</p> <p>Continuous rice cultivation with proper management</p> </div>	Extend this activity to other surrounding villages by “Farmers to Farmers” and/or “FOs to FOs”	

5.3.6 Selection of the suitable FOs and trainees

(1) Selection of the FOs

It is not pertinent to select many villages from the first. We have known that a few villages are appropriate for such training at one try. We decided only three villages, one village affected by Tsunami in 2004 and its two neighbor villages, for the training. It makes training easy to go on.

(2) Selection of the trainees

It is not pertinent to select many participants as well. This training is aimed on making core leaders in the area. So we thought it was enough that we gather 10 persons from each village (Total 30 persons). And they must be high motivated.

For this selection, the Agricultural Instructor (AI) and Agricultural Research and Production Assistant (ARPA) can give us proper information regarding this matter.

5.3.7 Contents of the field training

(1) Overall program

In the regular IPVM program, it's aiming to make a stability of the farming in the rural area by decreasing risks of diseases and endemic diseases originated in paddy field. First of all, it will enlighten the villages' knowledge of the Agro-ecosystem. They will understand they can mitigate bad influences in their living by reduction of chemicals. At the same time, it will be able to reduce agricultural cost in every farmer's budget. There is a reason to expect total farming stabilization.

To stabilize agricultural situation in an area, we need to give the same knowledge and techniques to all farmers as much as we can. But we just focused on the high motivated farmers in the training and are hoping effectiveness from “Farmers to Farmers” action after the training.

The main topics of the training have been programmed to adapt AT362, 3.5months long cultivation variety of rice, as follows,

- a. Overall technique of rice cultivation

- b. Agro-ecosystem around paddy fields, esp. “Beneficial & Harmful insects”
- c. Endemic diseases originated in paddy field,
esp. ”Countermeasure for Malaria, Dengue & Rat-fever”
- d. New cultivation method,
“Drum-Seeder, Dapog-method and Parachute-system





(2) Technical program by introducing various cultivating methods

We implemented a technical program in the training mentioned above. This comparative trial with different four cultivation methods was carried out in about 1,200 square meters wide of observation plot. We displayed traditional direct sowing and other three different methods. This is to show them as countermeasures because recently they are often facing damages by foods and the rice seeds have been washed away many times. It has a purpose to improve this situation.

In conclusion, the farmers can decide which method is the best for their field, even though they want to adapt new method, it’s not easy to take risks from the challenge. We think this program was a very good experience for farmers and it is a good example to stimulate the farmers’ interests to the training.

The table 5.3 is the description of the different types of method.

Table 5.3 Comparative trial for different cultivation method in an observation plot (2009)

	<u>Traditional method</u> (Basic sowing)	<u>Drum seeder</u> (Sowing in rows)	<u>Parachute system</u> (Random spreading)	<u>Dapog</u> (Transplant in rows)
Photos				
Description	Direct sowing by hand after leveling. The most popular method in the Southern Prov. area.	It can sow at regular distance by machine. Possible to decrease grains for sowing up to 50~60% comparing with Basic sowing. Easier to make weeding control.	Method by throwing baby plants produced in plastic multiple tray. Random transplanting way. Quantity of grains sowed is relatively less than others.	Transplanting method by hand. Rice plants produced on the Kun-tan based bed. Use 4~6inches long young plants (ternate leaves plant). Easy to produce.
Points	Amount of sowing grains on Avg. is two Bussheles/acre under technical instruction. But there’s a tendency, “More sowing, many crops” in the region. 300~350grains/sq-m.	Distance between lines 8inches and can drop a few grains every 4inches. Possible to make 35 sowing points /sq-m.	One tray has 434 small holes. Easy to produce plants and earlier than normal way. Density of transplant can be 30~40 for one sq-m. Necessary 325 trays per 1 acre.	Put Kun-tan charcoal about 1cm thick on the Banana leaf with wood frame. Cover it over with sprouted rice grains and lightly patting. Density of transplant can be at least 35 plants /sq-m.

* ”Kun-tan” is one kind of charcoals, made of rice husks.

5.3.8 Preparation of the training

(1) Selection of the trainers

It is very pertinent to select SMO, Department of Agriculture for Agricultural knowledge and PHI, Department of Health for the training. Moreover, AI, MO and ARPA can functionally assist them. They are all essential persons for such training.

(2) Members and system on the trainers' side

The members on the trainers' side mentioned above, other agricultural administrative officers and other relevant organization should play their roles as given below,

Table 5.4 Members on the trainers' side and their roles (Example)

Item	Southern Province	Min. of Agriculture	JIRCAS
Roles	a. Dep. of Agriculture - Dispatch agricultural engineers as trainers - Implement lectures and practices	a. Development Officer (ASC office of D.S.Div.) - Dispatch ARPAs - Convoke FOs to the conferences	Organization staff m. - Coordination - Preparation of the event - Data collecting and analysis
	b. Dep. of Health - Dispatch appropriate officers in charge of health and sanitary	b. ARPAs - Investigate the farming situation and problem - Liaison and coordination in the GN village	

(3) Selection of venue and plot

a. Venue for the lecture

Temple and other social facility are appropriate for the lecture. It is good for gathering trainees if you can prepare the venue at the center of the villages.

b. Observation plot

In the same reason, the experimental plot should be prepared at the center of the area. But you can select better place depending on the owner's agreement and condition of the place.

(4) Materials and equipments

Here is a list of least materials and equipments for the training.

Table 5.5 List of materials and equipments

Classif.	Items
For Lecture	Desks, Chairs, Black board, Chalks Note and writing tools for each trainee

	Large sized papers for presentation by trainees, Marker pens (4colours), Pins, Personal computer and PC-projector for the explanation by trainers.
For Practice	<p><u>- For nature study-</u> Insect catching net, Insect cage, Plastic bottle(for water insects) and netting bag (for flying insects)</p> <p><u>- For comparative trial in the observation plot -</u> Direct seeder, Parachute tray, Hand weeder, Sprayer, Rice grains, Manure, 1m by 1m frame for density measurement, Sign boards for each test, other farming equipments</p>

5.3.9 The villagers' comprehension and reactions

To check the villagers' comprehension we should carry out these way as follows,

- a. Reconfirmation by trainers' questions to the trainees
- b. Presentation by group of the trainees after their discussion and review

It can be useful to deepen their understanding by these ways. At the presentation, using large paper is very effective.

We have known they have had different reactions to the training through the confirmation ways mentioned above. Picking up some positive opinions, we can say they have obtained new awareness from the training. The people who mentioned these opinions are all perfect attendances.

Positive opinions from trainees

- I understood the matters of diseases, harmful insects, endemic diseases and agro-ecosystem are very important for the villagers.
 - We have not ever observed the condition of paddy leaves even if we used to work for a long time in the field. It is very beneficial for our cultivation.
 - It strongly impressed me to adapt different and new technique in my field.
- etc.

It is difficult to hear such positive opinions from all trainees. But what we could aware through the training is as follows,

Important points in such training

- We should make opportunities to think new matters for the villagers.
- The themes should be contents connect with their livelihood.
- Mixing lecture and field work is very effective.
- The most important thing is that the donor side energize together with farmers and is always observing them.

We can indicate the result of training from the amount of harvest as well. But furthermore we can

say that the result comes down to this speech by a trainee.

A speech of thanks from a trainee

“We used to cultivate selfishly because we thought there was no problem if other people couldn’t obtain good harvest from their fields. But now we have understood his problem is my problem. We ought to cultivate **cooperatively**. And we have been aware of the importance of the “Kanna meeting”.

5.3.10 Maintenance activity by cooperative work for the common water system

We held meetings several times with FOs, DO, AI and ARPAs concerning the water system matter. As given above, the villagers often used to face water shortage during cultivation seasons. Their paddy fields used to be influenced by floods, especially their fields have been damaged after sowing. From this situation, some opinions the villagers harmonized are as follows,

- a. We have known there is a sediment problem in our irrigation system which piled up for a long time. But we cannot solve this problem alone. We need help by the administrative offices.
- b. But we understand we need to play our own role. If we have a help from the relevant department, we think we have to continue well management for the irrigation system in our area.

From the beginning, we have already known what we cannot strengthen a cooperation among plural FOs without the same idea for the good management. For that reason, we started dredging operation by using machine instead of their opinions. We hoped they can make a good result and we all started big operation under strongly tied-up cooperation. This was implemented as a second stage under the general program of the training (See Table 5.2).

If you start this type of cooperative work we can expect you will face some problems about budget arrangement, a delay in operation and other unexpected accidents. But we have to omit the details because there is no enough space.

We especially mention the Action Plan of irrigation system management elaborated by FOs. Here is an example,

Table 5.6 Action plan for the irrigation system management (Weihela-South)

Articles	
General	- We deepen our understanding to the importance of continuous management in our irrigation system which we are using commonly.

Obligation of growers	<ul style="list-style-type: none"> - We, rice growers have to obey as follows, <ul style="list-style-type: none"> a. Clean-up current around our field and banks before cultivation. b. Repair the current and the bank if we discover the problem. c. Exterminate pest and vector for keeping health condition if we discover their nests d. Repair or take a countermeasure for the irrigation system if we discover damages by animals, such as buffalos.
Obligation of FO	<ul style="list-style-type: none"> - We, Farmers Organization has to obey as follows, <ul style="list-style-type: none"> a. We tackle with recovery action for our farming after disaster, such as Tsunami. We take a good relationship with relevant administrative offices. b. We positively try to correct information of the condition of the irrigation system and banks. And we convey the information to other growers for our regional farming development. c. We manage all growers and take a necessary action against them if they obey their obligation of the maintenance work in the irrigation system. d. FO gives encouragement to the growers who act appropriate maintenance work and make them obtain easily some agricultural materials and equipments.

5.3.11 Comprehensive evaluation

(1) Field Training for Joint Herbicide Control in Paddy Cultivation

Our predecessors of ancient times engaged in cultivation activities along with the process of nature according to season and non-season. Whist they refrained from the use of chemical fertilizer, they mixed cattle bone fertilizer with seed paddy and utilized as fertilizer in farming. Though the yield was low, it was an environment friendly method.

Even though more yields were gained through new improved versions of paddy which was introduced along with the green revolution, there was a necessity of using chemical fertilizer. At the same time there was an increase in decease and insects (pests). In controlling decease and insects utilization of various herbicides was compulsory.

With the realization of the extent of toxic damage and disaster caused by the use of herbicides to crops, human beings and the environment, attention was again focused on the utilization of non chemical fertilizer thus, the joint Herbicide Control program was launched.

Within this program Indian specialists adopted a method for assessing damage.

- 1 Economically beneficial level
- 2 Economically harmful level

In various stages of paddy cultivation the present situation of insect hazards are taken into calculation and insecticides are used in recommended proportions before it reaches the stage of economically harmful levels. Apart from this, steps to be taken to prevent insect hazards are named in crop science as, elemental methods and chemical methods.

From 1982 – 1990 these methods were put into action by The Department of Agriculture along with farmers as a Joint Herbicide Suppression Program. Though these indicated methods were put into action survey reports revealed that there was no decrease in the volume of insecticide used, hence the Department of Agriculture focused on the Joint Herbicide Control Program. In 1988, with the participation of a number of officials from the agricultural field the joint herbicide suppression method was designed and experiments were carried out with farmers.

From 1993 – 94 officers were provided long term training on joint herbicide control and this program was launched island wide thereafter.

(2) Contents of this program

Joint herbicide control can be introduced as a method of controlling harmful insect hazards in cultivation to a minimum level by adopting one or more non contradictory methods

1. Adoption of sustainable varieties
2. Crop scientific methods
3. Elemental methods
4. Bio scientific methods
5. Chemical methods

In addition, whilst farmers who study these methods improve their ability in reaching correct and stable decisions regarding the types of paddy they use, farmer's schools provide the necessary training regarding these methods.

(3) Farmer's School for Joint Herbicide Control in Paddy Cultivation

A farmer's school commences with about 15 – 25 farmers and farming ranges. Officers and farmers with training regarding joint herbicide control are gathered at a common public place and the aim of the training is explained to them and a verbal agreement is reached regarding training. Whilst meeting on a specified day and time on a weekday is an initial characteristic of this school, scheduled activities are performed accordingly. Whilst officers act as facility providers, the trainees engage in self study and collect relevant data. Whilst a section of a farmer's field is utilized to cultivate according to department procedure the farmer continues his normal cultivation in another section of the field.

The farmer's organization monitors and records both these sections. An evaluation is also performed

on the environmental system accordingly. These data along with data regarding insects harmful to crops that live in the environment as well as their natural enemies are collected and photographed for evaluation purposes so that the team could arrive at a conclusion. The following weeks activities are performed based on these conclusions.

During each day lectures are performed for trainees on special topics. Whilst solutions are immediately provided for day to day problems farmers keep notes on their gained knowledge and experience.

In this order the farmers school that commences before the paddy harvest season continues training for a period between 16 – 20 weeks, and thereafter the farmers perform a field day by themselves and share their knowledge with other farmers as well.

This program, which was launched to provide education to farmers, regarding identification and control of mosquito larvae that breeds in wet environments related to fields, bore successful results.

Whilst farmers who received training minimized the use of insecticide by the end of this training program, they also increased production. Minimization of cultivation expenditure, food poisoning and environmental pollution was a great achievement which was gained through this program.

5.4 Organization in the case of home gardening

What to consider in the organization is described as follows.

- (1) Basic principles are decided but the operation depends on each organization.

In the case of a new organization being set up, a model of the agreement should be forwarded but the details should be decided upon by villagers participating in the meeting. How to manage the funding, how to hold the regular meeting, and whether the membership fee is collected or not etc. are decided by villagers or the actual situation of the village.

- (2) Advice by the administration officers are necessary to set up the organization.

When we conducted a hearing from the members of the organization, they said that they did not know how to make an agreement, and how to manage the burden etc. On the other hand, where new agreement is being decided, ARPA had a meeting with villagers with the consultation of AI, village head, and village villagers to make an agreement.

Administration officers should support the organization until their activities proceed in certain degrees.

- (3) Support by the administration officer is effective to strengthen and train the organization.

Organization activities of home garden group, where ARPA, AI, and the village head participated in regular meetings were continuous. In the hearing conducted to villagers, they said that if the administration officers participated in meetings and voiced their opinions, they could conduct

activities with self-confidence. The administration officers sometimes have to participate in the meeting and make a suggestion to strengthen and train the organization, which is considered to be effective.

- (4) The presence of an excellent leader leads to the strengthening of an organization.

In an organization, which has devoted leader, members are apt to act vividly.

- (5) The organization is not always set up in each village.

There are some cases that activities by a few group members can work well. For example, in case that the people cannot participate in the activities because the village is wide even if the organization is set up in the unit of village, then activities can work better in the unit of neighboring group.

5.5 Training of the villagers leader

It is important to train the leader of groups and of organizations to continuously conduct the activities for the home garden etc. The villager's leader should help the administration officers and the group organization can strengthen the solidarity, so that they would lead to the lively activities. The contents of the leader training, which Department of Agriculture conducted, are described hereafter.

Case 14 The leader training

The leader training, which was conducted by the Department of Agriculture in Southern Province, aims at the technical transfer on a basis of "Farmer to Farmers". 25 persons for one area in 36 areas, of which the agricultural instructor is in charge, in other words, 900 persons in total (36 areas multiplied by 25 persons) participated in the training in 2009.

Instructor	agricultural specialists, agricultural instructors, and agricultural monitoring officers, Department of Agriculture in Southern Province
The number of trainee	25 trainees for one district (area) in 36 areas, of which the agricultural instructor in Matara is in charge, are concerned. In addition to the 25 trainees participation was approved to those who offered the willingness to participate.
How to select the villagers leaders	AI and ARPA selected those who have credential, ability, and willingness as the leader based on the experiences of the villagers activities monitoring so far.
Contents of the training	From basic content of "What is home garden?" to not only technical contents of "Soil Components," "Chemical Fertilizer," and "Disease and Pest," but also cultivation management method such as "Cultivation for 1 year"
Training period and time	for five days, and three hours per day (lunch is not included) lectures for three days and practices for about 2 days
Duties of the trainees	To solve the problems regarding the home garden activities, the villagers leaders play a role in making a contact with the expert, such as AI etc. The villagers leaders, who took part in the training, conduct the villagers training in their villages. The leaders make an arrangement for the selection of training contents and trainees
Distributed materials	notebook, sprayer, and seeds are distributed.

Hearing survey was conducted to the participants in the leader training.

5.6 Field Observation Trips

Arranging field observation trips to close by zones is a fine example of exchanging information between villagers.

Moreover it is known that the effect of training increases more through such incentive measures with project implementations.

Case 15 Field observation trips

In June 2010, JIRCAS arranged a study tour to JICA project sites (South CAP) in Hambantota district. Thereafter, we verified with participants whether there were any results influenced by the particular study tour. As a result, we found that two tour participants had newly begun mushroom cultivation. These two persons who participated in the above observation trip enhanced impression in the mushroom cultivating farmer's activity under the implementation of South CAP as business home garden. They wanted to begin mushroom cultivation soon; so that they consulted AI regarding the same. Then the AI collected other participants, and made 11 persons to participate in training on mushroom cultivation in Telijjawila Agricultural Training Center.

Among 2 persons one Mr. F who purchased Seeds of Mushroom (spawn / fungi) and began cultivation experimentally in a room at his house. Once it was harvested in about 20days, he found some places to sell. Then he made a hut beside his house and started to cultivate mushroom with much keenness. At the moment he is having a plan to produce 80 packs of 250g in less than 2 month and sell them for Rs. 35 per pack. Another one called Mr. S, started cultivation transferring the hut which was made as to use as a kitchen into a cultivation place. He sells them to villagers and at to nearby shops, intending to expand the scale gradually.

The Dept of Agriculture introduces and trains new agricultural products and new agricultural techniques such as mushroom cultivation opportunity and paddy seeding method using drum seeders on various occasions. However, there are very few people who adopt these new practices, as it is appeared Figure of 2.2.2 in the appendix 2. In this regard, some idea is required to draw people's motivation. People can enhance their confidence by observing and gaining useful information directly on superior examples to step towards their beginnings as shown in case 11.

Identically, in home garden training too, the trainees have answered that they were able to study many things by actually inspecting examples in nearby home gardens. In order to enhance the effect of training or to increase the incentive motivations, it is desirable to carry out study tour and inspection of superior type examples.

Chapter - 6. Restoration techniques for abandoned Paddy Fields

As stated in 3.2.1, entire problems in regard to water, crop and soil must be solved for the cultivation of paddy fields. This chapter shows not only the rehabilitation procedure for the cultivation of abandoned paddy lands, using field rehabilitation fund but, also the rehabilitating technique for the same.

6.1 Rehabilitating abandoned fields using field rehabilitation fund

JIRCAS has started the verification study since 2008 and created the above system, which rehabilitated a part of the paddy fields of certain scale affected by the tidal wave in Thalalla – South. They made accumulating the fund, obtained from the harvest in those rehabilitated fields, and used for rehabilitating the rest of the paddy fields as a resource (Figure 6.1).

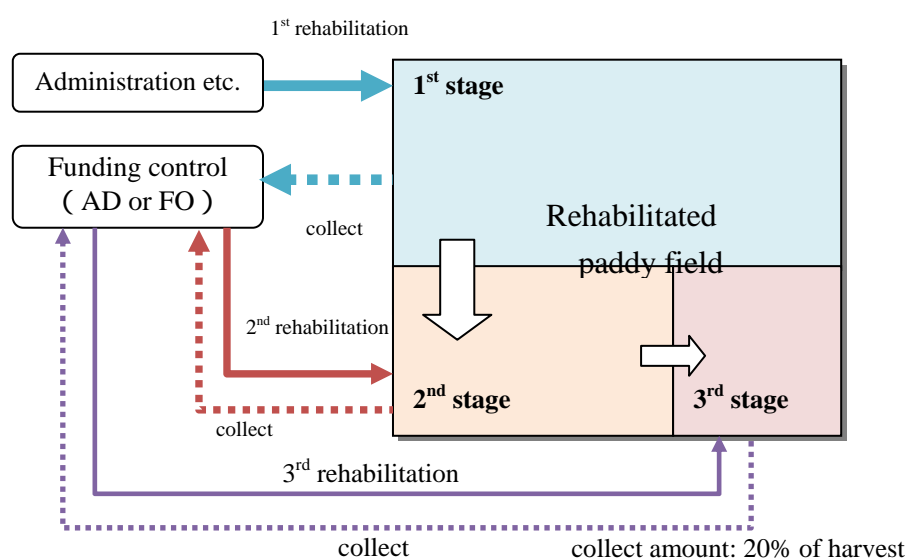


Fig. 6.1 Schematic view of the paddy field rehabilitation system using funds

The rehabilitation works for the paddy fields are 1) to plow down the weed into the ground using the rotary hallow for the first work stage, 2) to plow down the weed into the ground and to level the paddy fields ground using the rotary hallow for the second work stage, 3) levelling of paddy fields using Nagula hallow for the third work stage, which are explained in detail in 6.4.2.

The paddy field retrieval works in Sri Lanka generally conducted the tillage works after flourishing reed that are eliminated by herbicides. The effect of the tiller works increases just after using herbicide; therefore, the paddy field rehabilitation could be done for a short period. However, it takes around five days to destroy plants after spraying herbicide. Then there could be a risk to flow the flux away along with the rainfall. And it is possibly health hazardous and affects water environments too.

Thus, retrieval of paddy fields, which were conducted by JIRCAS, carefully considering economics and environment impacts. It was conducted the inverted tillage works using no herbicides but small tiller, plow down the weed, and decompose it naturally in the ground (for about 1 to 2 weeks). It is necessary to conduct the inverted tillage works twice (totally 3 times) to promote the decomposition. This type of works needs certain time. It is expected to improve the fertility and the physical soil properties by plowing down the plants because these affected paddy fields has not been cultivated for a long time.

In this system, the government departments and aid agencies pay the initial retrieval cost to conduct the rehabilitation work in the paddy fields. Then, 20% of the rice yield is collected from the participants as the rehabilitation fund for these paddy fields (the first stage). Then, 20% of the yields are collected at the harvest after the next retrieval for these fields by using rehabilitation fund (the second stage). Further, the next retrieval work is conducted by the using the collected amount obtained from second stage (after the third stage). This is the way to proceed to the next retrieval step by step.

In case that at first 20 acres of fields are cultivated, the work cost is Rs. 8,400/acre, yield of the rice is 39bushels/acre, and sales of the rice were Rs. 670/bushel. Then 85% of the ration of planted area to land area except the furrow and the canal, then the calculation results can be summarized as follows.

First Stage

Retrieval cost	Rs .168,000	20ac × 8400Rs/ac
Retrieving area	20 acres	
Cultivation area	17.0 acres	20ac × 0.85
Harvest	663 bushels	17ac × 39bu/ac
Yield	444,210 Rs	663bu × 670Rs/bu
Collected amount of funding	88,842 Rs	444210Rs × 0.2

Second Stage

Retrieval cost	84,000 Rs	10ac × 8400Rs/ac
Retrieving area	10 acres	
Cultivation area	8.5 acres	10ac × 0.85
Harvest	332 bushels	8.5ac × 39bu/ac
Yield	222,440 Rs	332bu × 670Rs/bu
Collected amount of funding	44,488 Rs	222440Rs × 0.2
Balance brought forward	4,842 Rs	88842Rs - 84000Rs
Total amount of funding	49,330 Rs	

Third stage

Retrieval cost	42,000 Rs	5ac × 8400Rs/ac
Retrieving area	5 acres	
Cultivation area	4.3 acres	5ac × 0.85
Harvest	168 bushels	7.7ac × 42bu/ac
Yield	112,560 Rs	321bu × 670Rs/bu
Collected amount of funding	22,512 Rs	112560Rs × 0.2
Balance brought forward	7,330 Rs	49330Rs - 42000Rs
Total amount of funding	29,842 Rs	

In case that the 3rd stage of the rehabilitation was conducted, 35 acres of the paddy land are ehabilitated and the remaining fund is Rs 29,842

Average harvest in Matara is 67.7 bushels/acre for 2008/9 Maha season and 66.0 bushels/acre for

2009 Yala season in rain-fed paddy fields. The first harvest after the rehabilitation of the paddy fields is little (see Figure 6.2). The calculation shows the first harvest is 39bushels/acre, which accounts for 60% of the district average.²

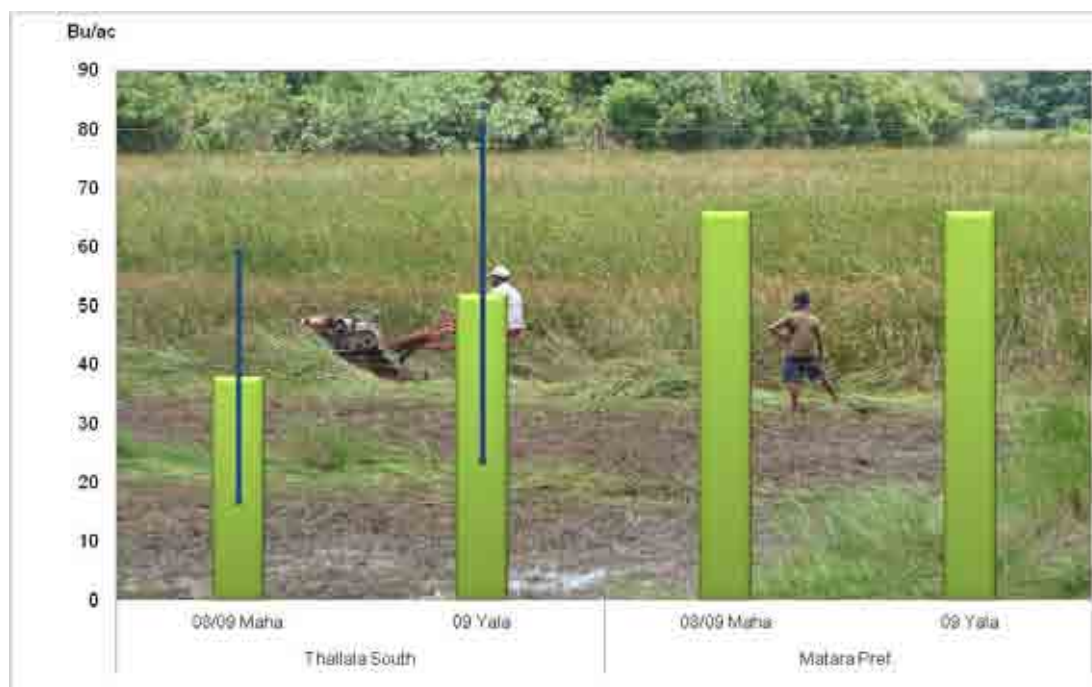


Fig. 6.2 A transition of the rice yield after the restoration at abandoned paddy lands

The second harvest is expected to increase. Collection amount to the funding is 10% of the first harvest. From the second harvest the rate is 10% as the yield increases, so that more paddy fields would be considered to be able to be rehabilitated. Considering the soil conditions and the fallow period, it is necessary to decide the collection rate at the meeting with the participants to further retrieval project.

Still more importantly, to make a judgment properly for the fare contribution on the fund, the villagers should carry out some sampling survey on the crops like “Tsubo gari”; 1 by 1 meter sampling. It is the best way to maintain fairness in the community and they can decide the amount of contribution for each by using this data.

It would be possible for the government departments and aid agencies to rehabilitate the paddy fields by the effective use of the limited funding, which were abandoned for various reasons.

6.2 Sluice Gate

6.2.1 Components of sluice gate

Sluice gate is a facility, which is installed mainly near the end of drainage canal for the purposes of removing the inner water and preventing the reverse flow of outside water etc. It is consisted of gate door, door operator, and door support structure.

Sluice gate has the functions of structure (durability and stability), hydraulics (hydraulic stability), flood control (prevention of salt water moving-up), and water use (water management).

As we consider the flood control function to be important, we especially have to pay attention to the degradation of the structural function, which has direct impact on the degradation of the flood control function.

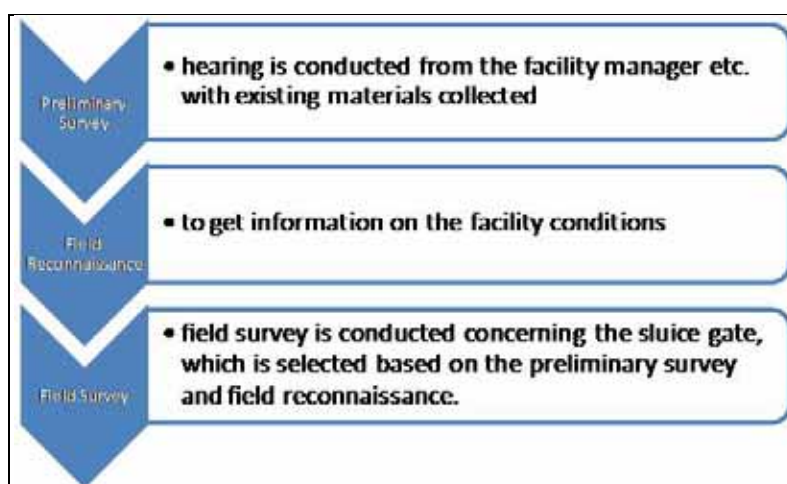
We also have to review the capability degradation due to the flow blockage caused by sedimentation, trash, and weed etc. In the case of large projects the removal of inner water is controlled by a hatch. But, in small irrigation systems that sustain rainwater the functions are controlled by a screw and nut. Water is controlled by adjusting the height of the screw and nut.

6.2.2 Diagnosis method

Field survey is conducted to evaluate the degree of the soundness of the water gate during the survey as well as to get information on the change of facility conditions over time.

(1) Survey procedure

The survey is conducted in the order of preliminary survey, field reconnaissance, and field survey.



(2) Preliminary survey

Existing materials should be preliminarily collected regarding the history of the facility, facility environment for the common use, and areal characteristics, which are necessary for the judgment and evaluation of degradation factors. Hearing is also conducted t from the facility manager, who is the member of farmers' organization etc., to review the survey planning, such as survey items in the field reconnaissance.

(3) Field reconnaissance

With reference to the information obtained in the preliminary survey, actual field reconnaissance should be carried out so that the location for the field survey and survey items can be decided by remote visual judgment. The manager (farmers' organization member etc.), who knows very well normal conditions through daily management, is expected to attend the field reconnaissance.

(4) Field survey

The survey should be conducted on not only the change of member and joint etc. but also the condition of river bed and embankment. The sluice gate should be selected by considering the remarkable change and degradation etc.

6.2.3 Function diagnosis method

It is necessary for the survey of the sluice gate to see not only the water use function but also the flood control function.

Table 6.2.1 Diagnosis method for the sluice gate function

Place	Method
Body	As a concrete structure, the stability and durability should be surveyed by getting information on the crack size, the shape and outer looking of concrete member surface, and the wearing.
Revetment and attached retaining wall	Deformation, strain, as well as degradation should be evaluated for the concrete structure. The subsidence and deformation on the embankment ground should also be paid attention to.

6.2.4 Implementation of the works

As for the repair works, it is important to take adequate measures by getting information not only on the cause and the degree of the sluice gate degradation but also on the local environment and the required structural performance where the sluice gate is located.

(1) Measures for rehabilitation works of the sluice gate

As for the review of the rehabilitation works, it is necessary to consider the characteristics of the sluice gate degradation based on the results of the field survey.

It is necessary to exchange opinions about the rehabilitation work (draft) with concerned people.

6.2.5 Procedure of the rehabilitation work for the sluice gate

(1) Preliminary preparation work

(1-1) Preliminary explanation meeting

Preliminary explanation meeting about the rehabilitation work of the sluice gate should be conducted to the farmers' organization. And request for the cooperation with the participation to the rehabilitation work of the sluice gate should be made to them.

(1-2) Land survey

Land survey should be conducted before the rehabilitation work of the canal is conducted.

(1-3) Delivery of materials and equipment

The necessary materials and equipment for the rehabilitation work of sluice gate should be ordered

(2) Rehabilitation work of the sluice gate

(2-1) Removal work of broken concrete part of the sluice gate



Pic.6.1 Removing the broken concrete body by using the hammer etc.

(2-2) Removing the broken sluice gate



Pic.6.2 Removing the degraded wooden portion of the sluice gate

(2-3) Temporary work

Construction of the temporary canal.

For the sluice gate rehabilitation work, sandbags are installed both on the upstream and downstream side in the canal.



Pic.6.3 Sandbags stop water flowing to sluice gate rehabilitation section.

(2-4) Drainage work

Rental drainage pump is used to discharge the water existing in the section of sluice gate rehabilitation in the canal.

(2-5) Concrete work: Reinforcing concrete is casted

(2-6) Iron framework for the sluice gate installation: Iron framework is attached to the ditch in the canal. The broken reinforcing iron bar and concrete is removed.

(2-7) Iron work: Angle steel is installed.

(2-8) Welding and formwork: Hook is installed during the iron welding and concrete casting.

(2-9) Foundation work: Concrete on the foundation is casted.

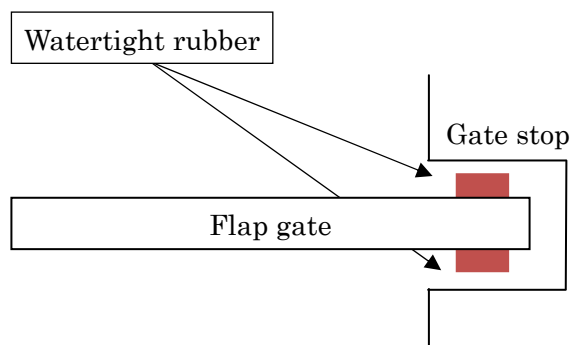
(2-10) Additional work: Installation of two new fiber reinforced plastics gate setting the handle for the gate operation

Application of rust-proofing and grease

Attachment of the watertight rubber to the flap gate



Pic.6.4 Fiber reinforced plastics gate as sluice gate



Pic6.5 Installation of watertight rubber

(3) Installation of additional structures (pathway and stairs)

(3-1) Earth work: Foundation for stairs is excavated.

(3-2) Reinforcing steel work: Cutting, bending, and installation of reinforcing steel bar.

(3-3) Foundation work: Concrete is casted on the foundation.

(3-4) Additional work: Handrail is installed along the pathway and stairs.



Pic. 6.6 Before reconstructing - Thalalla



Pic. 6.7 After reconstructing - Thalalla

6.2.6 Construction management

(1) Quality management

- Weld, paint, and installation etc. should be adequately conducted.

(2) Schedule management

- Schedule coordination between the gate installation works and concrete body works is necessary.
- Conditions should be confirmed which are specified by the preliminary meeting with farmers organization and consultation with the concerned organizations.

(3) Safety management

- Flood during the rainy season should be cared to secure the works safety.
- If necessary, the transportation route for the materials and equipment should be constructed. However, troubles with villagers should be avoided.

6.3 Canal

The type of the open canal, with which this guideline deals, is classified into the earth canal.

The canal is composed of canal itself and additional facilities. It is installed for the purpose of transporting necessary irrigation water.

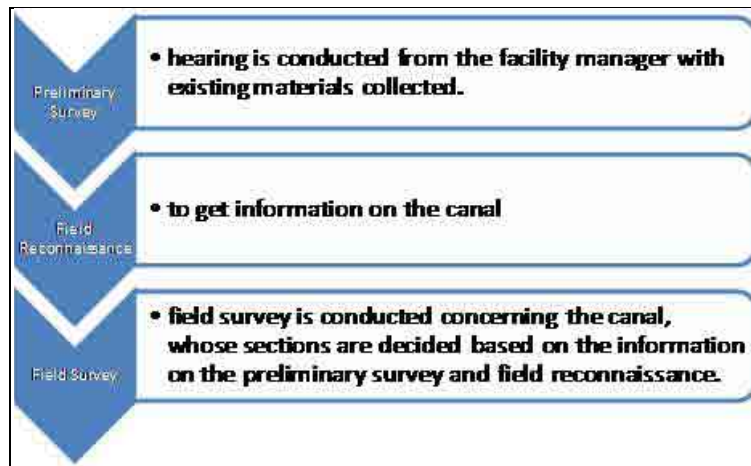
In terms of the function of the canal, we mainly review the degradation due to the water blockage caused by sedimentation, garbage, and weed etc.

6.3.1 Diagnosis Method.

The field survey is conducted to get information on the chronological change of the facility conditions and to evaluate the facility functions during the survey.

(1) Survey procedure

The survey is conducted in the order of preliminary survey, field reconnaissance, and field survey.



(2) Preliminary survey

Existing materials should be preliminarily collected regarding the history of the canal, environment for the common use, and areal characteristics, which are necessary for the judgment and evaluation of degradation factors. Hearing is also conducted from the canal manager, who is the leader of farmers' organization etc., to review the survey planning, such as survey items in the field reconnaissance.

(3) Field reconnaissance

With reference to the information obtained in the preliminary survey, the field reconnaissance should be carried out along all canal lines in principle by visual patrol on foot. The location for the field survey, survey items, and survey method, can be decided after the information on locations, contents, and degree of change is obtained. The manager (farmers' organization leader etc.), who knows very well about the normal conditions through daily management, is expected to attend the field reconnaissance.

(4) Field survey

The field survey on the canal is conducted to decide the canal rehabilitation section. It should be selected by considering the conditions of whether the change and degradation are remarkably shown etc.

The rehabilitation section should be selected where the canal is degraded, for example, where the overflow happens in case of flood, where the thick soil sedimentation is observed, and where the weed flourishes.



Pic. 6.8 Location where the flourishing weed and trees on the soil sedimentation could be an obstacle for the canal flow (before the works (left), and after the works (right))

6.3.2 Function diagnosis method

(1) Diagnosis procedure

According to the condition of the canal based on the appearance visual survey, major factors for the canal degradation should be identified and the function diagnosis should be conducted.

The factors to cause the canal capacity degradation always exist. Evaluation of the present situation depends on the contents of the factors. Thus we have to review the degradation factors at first.

(2) Contents of the diagnosis

As for the diagnosis of the canal it is necessary to see the hydraulic stability, and evaluate the function as a structure and the capability as a canal.

We have to look at the deformation, collapse, bottom change (scouring and moving up) of the embankment slope. Then we have to conduct the diagnosis of the stability as a canal structure and the hydraulic function as a canal.

6.3.3 Implementation of the works

As for the rehabilitation works for canal conditions change, it is important to take adequate

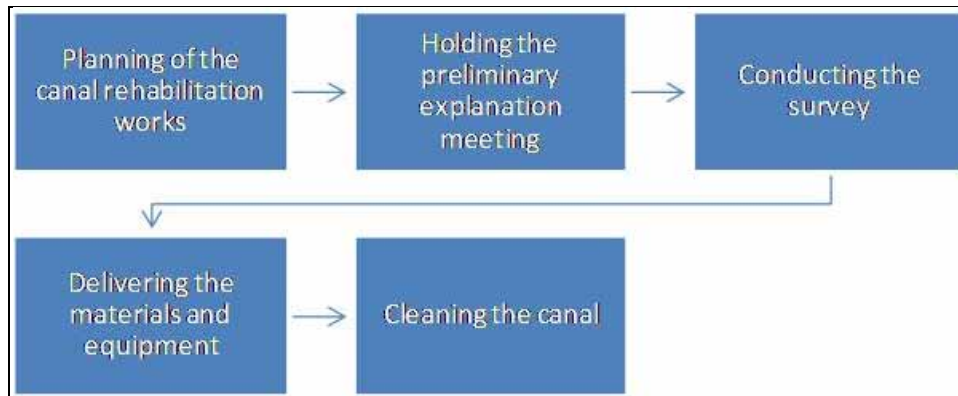
rehabilitation measures.

(1) Rehabilitation measure for the canal

As for the rehabilitation measure, it is necessary to review the rehabilitation measure considering the results of field survey and the characteristics of condition change/degradation of the canal.

Procedure for the canal rehabilitation works

(1) Preliminary preparation works



(1-1) Planning of the canal rehabilitation works

The canal rehabilitation works should be planned with ARPA etc. who knows well about the site.

(1-2) Holding the preliminary explanation meeting

The preliminary explanation meeting is held with farmers' organization on the contents of canal rehabilitation works so that the request for the cooperation with the canal rehabilitation works could be made.

(1-3) Conducting the survey

The survey is conducted before the canal rehabilitation works start.

(1-4) Delivering the materials and equipment

Materials and equipment, which are necessary for canal rehabilitation works, are removed.

(1-5) Cleaning the canal

Farmers, who participate in the canal cleaning as a farmers' organization activity, remove the garbage and mud in the canal.

(2) Removing the mud and sands in the canal by the use of hydraulic shovel

It is difficult to remove lots of mud and soils manually, so that the hydraulic shovel is used to complete the removal. The mud and soils are removed from inside the canal and built up on the embankment.

(2-1) Dredging from the top of the embankment

It is difficult to conduct the dredge works in case that the water level and the velocity in the canal are high, so that the dredging works should be conducted from the top of the embankment by the use of the hydraulic shovel.

(2-2) Dredging works in the canal

The hydraulic shovel can move in the canal in case that the water level and the velocity are low, so that the dredging works could be conducted in the canal.

The hydraulic shovel can move to the barge floating on the water surface and conduct the dredging works in case that it cannot move in the canal.



Pic.6.9 Hydraulic shovel working on the embankment



Pic.6.10 Dredging shovels floating on barges in canal

(3) Installation of the structure

Canal rehabilitation works are conducted by the use of sandbags and gabions to prevent the collapse by erosion on the slope of the embankment. The height of revetment is almost same as the one before the works started.

(3-1) Rehabilitation by the use of sandbags

Sandbags are saclike earth structure. The bag is made from hemp or polyethylene. Sands are filled in the sandbag for use. They are used as an emergency measure to prevent water and sands from moving in case of the water level increase due to the heavy rain and the collapse of the embankment.

(3-2) Rehabilitation by the use of gabion

Gabion is a structure, of which crushed stones are filled in the wire frame. It has excellent function to prevent erosion and is used for the revetment of the canal. It is economical rehabilitation measure and is not destroyed even in case of disaster as it can conform to the ground change.

- 1) Sandbags for temporary works are built up in the upstream of the sluice gate to stop water flow in the canal as the preparation works to install the gabion.
- 2) After farmers stop the water flow in the canal, they grade the canal foundation.
- 3) Crushed stone, which is filled in the gabion, is transported by car to the construction site
- 4) Wire netting, which is the outer frame of the gabion, is built up in the material storage site.
- 5) Geo-textile is used to keep the close contact between the ground and the gabion.
- 6) Crushed stones are filled in the gabions after the geo-textile and the gabions are installed in the canal.

- 7) The sandbags, which are used to stop the water flow in the canal for temporary works, are removed after the gabions are installed.



Pic. 6.11 Grading the foundation



Pic.6.12 Building up the gabion



Pic. 6.13 Installation of the gabions



Pic. 6.14 After the completion of canal rehabilitation

6.3.4 Construction management.

(1) Quality management

- Land used for the temporary works should be recovered as it was.
- The foundation of the canal should be flat after the excavation works finish. To prevent from the sea water moving up from the downstream side, the foundation should not be over-excavated.
- The low embankment should be covered by dredging sand to prevent the overflow.
- Existing Hume pipe and outlet should not be broken during the works.

(2) Schedule management

- Before the rehabilitation works start, farmers should cooperate in the grass cutting.
- Conditions should be confirmed which are specified by the preliminary meeting with farmers organization and consultation with the concerned organizations.

(3) Safety management

- Flood during the rainy season should be cared to secure the works safety.

- If necessary, the transportation route for the materials and equipment should be constructed. However, troubles with villager people should be avoided.

6.4 Paddy Fields

The paddy fields in the concerned area are classified into the flat land and located near the coast line. The lots of the paddy fields are surrounded by the road, canal, and levee etc. Most of the paddy fields have not been cultivated over several years; so that their cultivation layers do not have enough thickness as well as they are weedy.



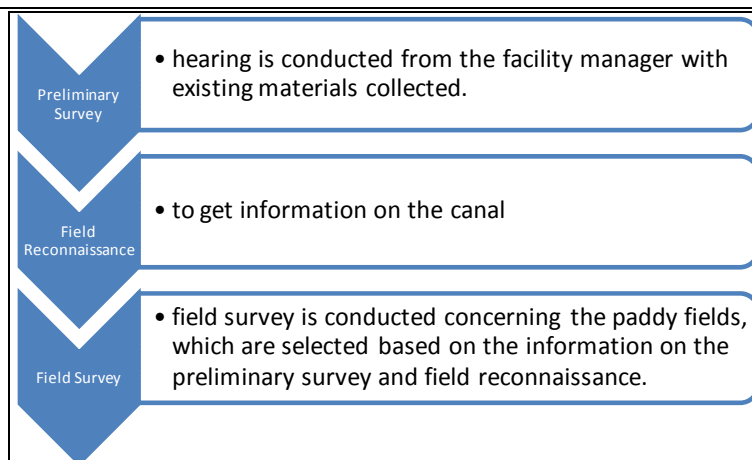
Pic.6.15 Paddy fields in Thalalla South before plowing

6.4.1 Diagnosis method

The field survey is conducted to implement the plowing as well as to get information on the situation of the concerned paddy fields.

(1) Procedure of the survey

The survey sequentially includes the preliminary survey, and the field survey, which are followed by the field survey.



(2) Preliminary survey

The information regarding the damage on the paddy fields brought by the Tsunami, or tidal wave, is collected. The planning for the field survey is well-considered after the hearing on the request for the paddy fields plowing is conducted to the farmers organizations and concerned organizations etc.

(3) Field reconnaissance

The field reconnaissance is conducted to collect information on the situation of the paddy fields with reference to the information obtained in the preliminary survey. It is recommended that the farmers, who know the situation very well, should attend the field reconnaissance.

(4) Field survey

The plowing area should be decided after the field survey is conducted and the information on the present situations, such as salt water move-up and submerged conditions, are obtained.

6.4.2 Implementation of works (Plowing Technique)

(1) Purposes

There are four purposes in terms of the paddy field plowing.

- 1) to make mud fine and make the paddy fields easy to be planted
- 2) to improve the water retaining ability
- 3) to plow weeds down and mix them with mud
- 4) to make the surface of the paddy fields almost flat

(2) Method

The small-sized tractor is used to conduct three kinds of plowing works.

The regional characteristic is that herbicides do not work out due to the rainfall in the concerned area. Thus, the plowing works are conducted three times by small-sized tractor in the paddy fields where the ground is very soft due to the rainfall.

1) The 1st Plowing.

The first plowing is conducted to plow weeds down and to bring a balance of soil volume.

- In case of the first plowing the depth of water in the paddy fields is about two inches.
- The rests of the weeds after the first plowing finishes are about 20 % of original weeds.



Pic. 6.16 1st plowing works in Wattegama

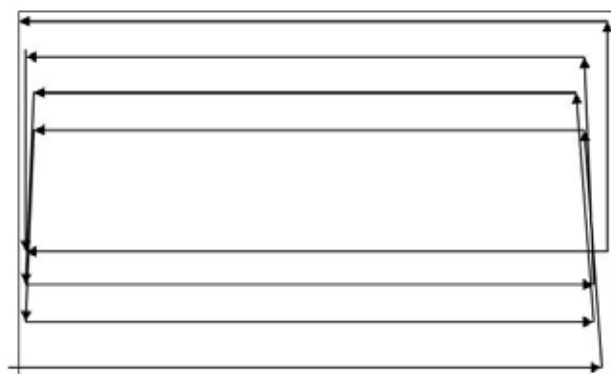


Fig. 6.3 Direction of the first plowing

Remark) The above figure is being cited from certain case studies, which were conducted by JIRCAS, so that the appropriate method should be selected based on the local conditions.

2) The 2nd Plowing

The second plowing is conducted to remove the rests of the weeds perfectly and to avoid the height differences in the paddy fields.

- The water depth of the paddy fields is about 2 inches at the second plowing.
- The small-sized tractor runs once in the paddy fields.
- The velocity of the small-sized tractor is about 8 km/h with the 3 speeds (out of 6shift transmissions) and 2000 rotations/minute.
- The rests of the weeds after the second plowing should not be left.
- The interval between the first plowing and the second plowing is about one week.
- The plowing is conducted by making use of the rotary harrow, which is attached to the small-sized tractor.



Pic. 6.17 After 2nd plowing finishing
in Wattegama

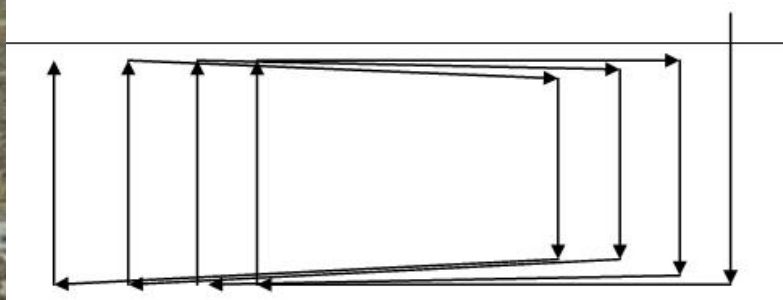


Fig. 6.4 Direction of the Second plowing

Remark) The above figure is being cited from certain case studies, which were conducted by JIRCAS, so that the appropriate method should be selected based on the local conditions.

3) The 3rd Plowing

The third plowing is conducted to grade the paddy fields.

- The water depth of the paddy field is about 2 inches in case of the third plowing.
- The land of the paddy field is covered in mud in case of the third plowing.
- The velocity of the small-sized tractor is about 16 km/h with the 4 speeds (out of 6 shift transmissions).
- The operator grades the paddy land, where he recognizes the ups and downs by his eyes, by adjusting the height of the harrow through the lever.
- The interval between the second plowing and the third plowing is about one week, too.



Pic. 6.18 The 3rd plowing works in Wattegama

(3) Equipment

The plowing is conducted by using the equipment such as tractor, rotary harrow, Nagura harrow, and special tires etc.

1) Tractor

The small-sized tractor with the carrying capacity of one person is used to conduct the plowing works.

- The small-sized tractor can deliver 12 horsepower.
- The small-sized tractor is improved as follows to deal with the local conditions such as the paddy fields, which has not been used for several years.
- The normal tires (radius of 20 inches and width of 6 inches) are removed and the special tires (radius of 24 inches and width of 12 inches) are attached.



Pic.6.19 Tractor fixed with special tire

- The engine moves higher up to 3 inches.
- Forward pulley whose diameter is 6 inches is replaced by the one whose diameter is 5 inches.

2) Harrow

Harrow is attached to the tractor to grade the paddy land.

- The first and the second plowings are conducted to plow the weeds down by using the tractor, to which the rotary harrow is attached.
- The dimensions of the rotary harrow are 24 inches in width and about 8 inches in depth. The interval of the cutting part is about 4 inches, and the arrangement of 3 lines and 8 rows.
- Nagula Harrow is used to grade the paddy fields in case of the third plowing.
- The dimensions of Nagula Harrow are 108 inches in length, 38 inches in width, and 49.2 inches in height. The depth of Nagula Harrow is about 6 inches, which is equivalent to the depth of the surface layer as well as the paddy root zone.



Pic. 6.20 Rotary harrow



Pic. 6.21 'Nagula' harrow

3) Mud Plank

The mud plank is used to conduct the final land grading in the paddy fields.

- The third plowing finishes in one day. The flat plate is finally used to grade the land manually in the paddy fields.
- Flat land grading is conducted in a way that the flat late is pushed down with the mud a little bit flowing out

from the side of the mud plank.

- Since the mud plank is 6 – 8 feet in length leveling can be done up to 6 – 8 feet.
 - The procedure using the mud plank in a section of a paddy field is described as follows.
1. Preparing brackish brooks.
 2. Preparing mud brooks.
 3. Ground leveling can be done



Pic. 6.22 Finishing works using mud plank



Pic. 6.23 Brackish and mud brooks

6.4.3 Construction management

(1) Quality management

- Around the four corners of the paddy field the grass should carefully be removed. Farmers should conduct the grass removal works by the use of spade where the grass is left.
- It is necessary to take the measures according to the field conditions to secure the quality. For example, in case that the grass is tall, the preparatory plowing should be conducted before the first plowing starts. The tractor runs down the grass and goes back on the grass. Then, the tractor repeats the same plowing beside the grass.

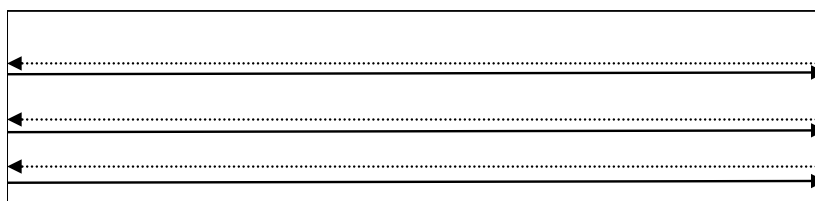


Fig. 6.5 Direction of the Preliminary Plowing

(2) Schedule management

- Plowing starts after the canal is rehabilitated where the drainage conditions are bad, so that the farmers and ARPAs cooperation is considered to be essential for the early completion of canal rehabilitation.

- It is necessary for the farmers to cooperate in group for the early completion of the furrow making which is conducted between the first plowing and the second plowing.

(3) Safety management

- When the tractor runs over the glass, the broken pieces of the glass could hurt the farmers. The track operator should take the glass when he finds them.

Appendix - 1. Field Activity in Participatory Rural Approach

1.1 Introduction

A development project or a programme, which is going to commence in rural or peripheral areas should undergo several steps. The process starts with problem recognition or in simply situation analysis. From that to the post evaluation, the process progress over different phases as a circle. This is termed as planning cycle (Fig 01).

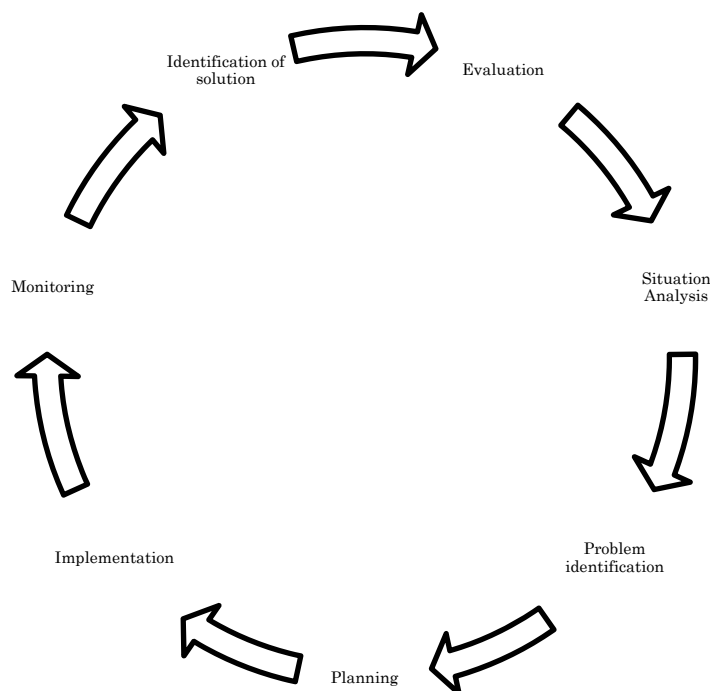


Figure 01: Planning Cycle

Before being launched any development project, a situation analysis about the area has to be carried out. Widely, the strengths, weaknesses, opportunities and threats of the community should be analyzed. After the plan is made, each stage has to be discussed in terms of activities or work to be completed, the raw materials, energy, labour, financial requirement and so on. Each stage should be completed within the allocated time period. Proper management, leadership, and control is needed in monitoring during the project period. This has to be followed by evaluation. It is important that all development projects in the area fall into this “Planning Cycle”. In this way, any project can be completed efficiently and effectively.

As has been previously mentioned, the maximum community participation is essential. But, the community’s consent and devoted participation are contradictory. This is a primary challenging problem that the officers involved in. Here, the differences of opinion, participation, and presenting true information are controversial. But, their active participation is paramount importance. If so, it is a necessity to find ways to draw active community participation on rural development activities. But how can institutional officers do this? How can officers get the maximum input from the

community? Finding the answer is a challenging but timely issue.

In this regard, “Participatory Rural Appraisal (PRA)” has become an important technique to attract community participation into development activities. By that, the community participation can be expected to all the levels in the planning cycle. In order to do a successful PRA programme, the facilitators should demonstrate certain skills and abilities. They should be talent and aware of the application of PRA tools, problems pertaining to the villagers, and solutions.

1.1.1 Planning Participatory Rural Appraisal in a Village

Normally, one PRA activity is applicable to one particular village, division, or area. The officers in charge or the area representative should take the responsibility in organizing such activities in his or her working area. The reason behind this is that they are familiar with the villagers and the area than the others. Hence, knows whose attendance from the community is compulsory.

Grouping is important in these types of activity. Participation in groups of 10 – 12 members results efficient and effective programme. Hence, it is worthwhile to invite around 40 - 50 villagers for one PRA session. Two facilitators should be there to guide one group. In that sense, the number of participants, number of groups should be determined according to the available facilitators for the intended PRA programme.

The facilitators should meet prior to the session in order to plan the entire programme (Fig 02). This might be headed by the area officer. In this respect, two fundamental facts should be considered.

1. The purpose of the activity

2. The tools that have to be used to achieve the objectives of the programme

It is crucial to select the most important and essential tools that have to be used in the PRA session by the facilitators. Hence, a discussion by the facilitators’ about the tools to be utilized and the problems arising thereby would promote self confidence of the facilitators’. Selection of a place, serving foods, informs villagers...*etc* should be done by the facilitator or the officer who represents the corresponding area. When concerning the place, the place should be easily reachable and must be suits for everyone. Hence, a place like a temple, community center or any other common place is desired. Prior permission for the selected place, inviting the head of the place to the inauguration, thanking him at the meeting would be noteworthy.



Pic. 02: Planning a PRA programme

1.1.2 Selection of Tools

The PRA activity should be planned to get the maximum benefit out of it. There, the tools which are best fitted with the objectives of the programme should be prioritized. In that respect, the facilitator must be aware of the exact objective of each tool. The followings are some important tools with the exact objectives.

- Resource Map – understand about the location and the availability of the resources therein.
- Venn diagram – To identify the service providing institutes, organizations, and individuals in the village based on the importance and the interaction with villagers.
- Pair wise Ranking – to define the burning issue or the problem in the area
- Matrix Ranking – to select the best solution among number of alternatives according to certain criteria
- Seasonal calendar –fluctuation and interaction of factors along a time line
- Preference Ranking – Select the best solution or the suggestion based on individual preference
- Institutional analysis – Situation analysis of a village institution
- Wealth ranking – Categorize villagers based on their wealth and properties

1.1.3 Factors considered in assigning tools

- ❖ Complex and time consuming tools should not be assigned to the same group. It would lead for exhausting.
- ❖ Tools designed to achieve similar objectives should be distributed over different groups rather than assigning it into one group. For an example, the Venn diagram and the

Institutional analysis should be given to two groups. That would facilitate for a cross checking of the results. Same way, the Pair Wise ranking and the Free Scoring should be given to two groups.

- ❖ The Wealth ranking tool should be done with the participants who know about the villagers very well. Also, that tool should be facilitated by the officer who represents the corresponding village.

1.2 Important attributes in dealing with the community

When dealing with the community the facilitator should exhibit certain attributes those would enhance his or her performances in the community. Hence, it is worthwhile to discuss certain attributes that have to be practiced by the facilitator.

1.2.1 Understanding the gathering

Different types of people are among us. When dealing with a community, it is noteworthy to have an understanding on such categories. It would help to eliminate confrontations and aggressive discussions. Hence, the followings are some different types of people living in societies.

- Aggressive – have to be dealt with diplomatically.
- Positive / optimistic – whose ideas and suggestions would be contributory
- All knowing – who though little knowing behave as all knowing. Hence, the facilitators should be keen enough to tackle them with patience.
- Talkative – should be assigned for reporting
- Shy – the shy individuals can get into the discussion by asking simple questions and appreciating the responses.
- Rejecting – need to change their attitudes by asking questions, effective explanations and insisting the importance of their contribution

1.2.2 Qualities of a good facilitator

1. Good listener – Listening to others' ideas and opinions are important.
2. Patient – the facilitator must be patient at an argument or at a contradictory issue among the participants
3. Appreciation – the facilitator could be able to appreciate the contribution of participants, their active involvements, and the responses given for the success of the programme
4. Time management – the facilitator must have a very good sense on time management. He or she must be able to utilize the time effectively and efficiently. Normally, a PRA programme should be scheduled to be having in non rushing periods, where the villagers can devote their leisure time on such activities. Also, the organizers must take the responsibility to commence and wind up the session on time. The facilitators must promote the gathering to furnish each tool within 45 minutes. In presenting the out come of the activities too, proper

time management should be practiced. This would enhance a most active, efficient, and enjoyable PRA programme.

1.3 Organizing PRA session in a village

When organizing a PRA activity in a village, the foremost responsible is to inform the Grama Niladhari of the village and get his or her approval. Apart from that, permission for the place should be obtained. If it is a temple, the permission from the chief Priest of the temple must be obtained. Next, the community must be informed. It is better to inform them verbally as well as in written.

1.3.1 Preparation for PRA activity

The preparation for a PRA is two forms.

- (1) Preparation of materials
- (2) Inform the community / Participants

(1) Preparation of materials

In a PRA activity, all the necessary information should be transmitted by means of pictures, maps, tables, and charts. Hence, the facilitators must provide all the materials required by participants. Some of the materials required mainly are as follows.

- Bristol boards in different colours
- Colour pens / chalks
- Scissors
- Glue
- Cello tape
- Ruler
- Clips to hang boards
- White papers

The facilitator who intends to carry out a PRA activity must provide these and all other materials without any shortage. Apart from these, the field demonstrations should be done using materials that can be found from the surrounding.

(2) Inform the participants

In doing a PRA session, community participation is the most important and essential factor. Hence, all the institutes, associations, organizations, responsible personals, and community leaders must be informed in advanced. The time and the date must be convenient for all. That would assure the participation of majority and the success of the event.

Place - The place must be spacious with basic requirements. It should be able to access everyone without any difficulty or barriers. In that connection, temple, community hall are the best places for a PRA session.

Date - The scheduled date should not be in a busiest time period for the community. For an example, the most labour required time periods in paddy cultivation such as: planting, harvesting, land preparation must omit. Farmers cannot spent time on extra activities during those time periods. That would lead to lower the rate of participation.

Time - It is not wise to conduct a PRA session throughout the day. The morning session that would end up with the lunch is most desired.

When informing the community, it is important to insist the importance of their participation (Pic 03). The benefits that they can be acquired by active contribution should be explained. But, it is not ethical to exaggerate anything or make false promises. The community should be educated with real facts and conditions. Moreover, explaining the exact objectives and expected outcome of the programme would encourage participants and motivate them to give true information regarding the present condition of the area.



Pic. 03: Explaining objectives of PRA to the community

1.3.2 Problems encountered when dealing with the community

Thousands of problems are arising when dealing with communities. The main problematic issues have been given below.

- Lack of punctuality
- Poor attention on the activity
- Operation of one member's idea
- Politically based views, expressions, and opinions
- Departure before the session is over

As facilitators, the fully attention should be paid on these. The facilitator is responsible to minimize the above issues and to optimize the active participation of the community with true and unbiased information.

1.3.3 Seating arrangement

A norm followed in PRA is equality and empowerment. The personal wealth, properties, or any other assets are immaterial. All are served and empowered equally. Everyone can get the same chances.

This also proved by the seating arrangement, too. Hence, the group members must ask to be seated in a circle (Fig 04). Then, the facilitator can give equal attention to all. Further, everyone can express their views and ideas, and get the contribution of all. The facilitator must build an ideal communication with the participants. If the members get seated in rows, the members who are in back seats would reluctant to express their ideas. Most of the time, the members who are in front seats contributing actively while the members in back seats keep silence. But, everyone must deserve equal chances. Hence, it is advisable to have a circular seating arrangement rather than in rows.



Pic. 04: Seating arrangement

1.4 Approach to the activity

Dealing with human being is really complicated and troublesome. Dealing with a rural community is more complicated and troublesome. In fact, a proper plan and an approach should be followed to reach the community and get reliable information. Lack of a plan would confuse the community as well as destroy the good will of the organizers'. Hence, it is worthwhile to follow a formal procedure in order to approach the community. At first, the facilitator should introduce the visitors or guests and other facilitators who are invited to the session. Then, the objectives of the programme, the expectations, importance of community participation and active contribution should be elaborated. Thereafter, the tools can be demonstrated.

1.4.1 Tools demonstration

In order to initiate the PRA session, the resource map is the most suitable tool to demonstrate. The community will build up the resource map of their village. It creates a friendly environment for them and strengthens the reliability and trustworthiness between the facilitators and the community. The community can aware of the importance of their involvement and enhance self – esteem. Moreover, this is the simplest, but interesting tool in PRA. The resource map presented by Wategama – South is shown in figure 05.



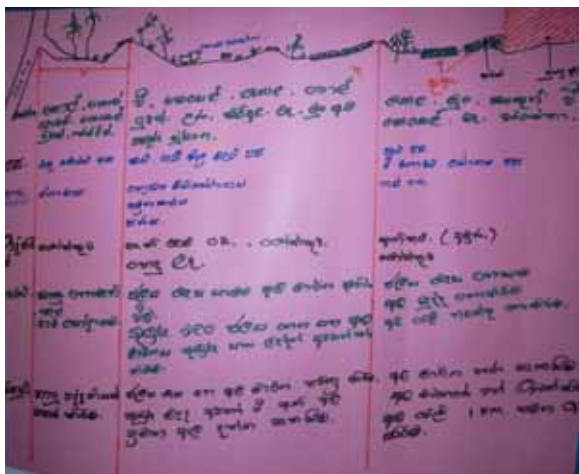
a) Make the resource map



b) Resource Map – Wattegama South

Pic. 05: Participatory Resource Map

After constructing the resource map, identification of resources, limitations, unproductive resources, unutilized resources, and the potential to develop such resources should be discussed. This is done after a field excursion called “Transect Walk”. Through a transect walk, it is possible to see the active status of the resources as mentioned in the resource map. There, cultivated crops, soil condition, building, land utilization...*etc* are observed and taken into consideration. This would be helpful to develop the action plan for the area. Such a resource profile that has been constructed after a transect walk is shown in figure 06.



Pic. 06: Resource profile – Pahala Aparekka

The main objective of a transect walk is to get a vivid understanding on the existing resources, abandoned resources, and to find the ways to utilize those in the productive process. Hence, this would be important to design development projects for the area.

Pair wise ranking

A community may undergo myriad of problems. They have number of unattainable wants and needs. It is not easier to even list out those problems with an agreement of the majority. But, in project development, identification of most severe problem is important. In that respect, as facilitators, it is our responsibility to recognize the burning issue for the community. Therefore, the pair wise ranking tool would be helpful. It ranks the prevailing problems according to its sequence of severity. The Pair wise ranking tool done in Pahala Aparekka has shown in table 01.

Table 01: Pair Wise Ranking – Pahala Aparekka

Problem	1	2	3	4	5	6	7	8	Total Marks	Rank
1. Rehabilitate water Canals	X	1	1	1	1	1	1	1	7	①
2. Renovate the anicuit		X	2	2	2	2	2	2	6	②
3. Rehabilitate rural roads			X	3	3	3	3	8	4	4
4. Lack of Community hall				X	5	6	7	8	0	-
5. Lack of Dispensary					X	6	7	8	1	7
6. Requirement of a Library						X	7	8	2	6
7. Poor access to market							X	8	3	5
8. Unavailability of job opportunities								X	5	③

The results given in table 01 reveal that the rehabilitation of water canals, renovation of the anicuit, and unavailability of job opportunities as first, second, and third soaring problems consecutively. Hence, any development project, which is intended to launch in the area should be focused to solve those problems. It would cause for well being of the majority.

Free Scoring

After identifying the problems in the village, impact of those issues should be recognized. It is done by free scoring, which gives a weight to each problem. Thereby, it is possible to understand the degree of influence of each problem for rural lives. The free scoring tool carried out for Pahala Aparekka (Pic 07) shows that the losses due to wild animals and lack of enough land area to cultivate are the most stressed problems for their day today lives.

Pic. 07: Free Scoring – Pahala Aparekka

ಕ್ರಮ	ಪ್ರಶ್ನೆ	ರೇಟಿಂಗ್	ರೇಂಕ್
01	ಜಲ ಸಂಪನ್ಮೂಲದ ಕೊರತೆ	20	③
02	ಜಲ ಸಂಪನ್ಮೂಲದ ಕೊರತೆ - 2ನೇ ಹಂತ	5	④
03	ಜಲ ಸಂಪನ್ಮೂಲದ ಕೊರತೆ - 3ನೇ ಹಂತ	8	⑤
04	ಜಲ ಸಂಪನ್ಮೂಲದ ಕೊರತೆ - 4ನೇ ಹಂತ	2	⑥
05	ಜಲ ಸಂಪನ್ಮೂಲದ ಕೊರತೆ - 5ನೇ ಹಂತ	15	②
		50	

Matrix Ranking

Detect the best solution among an array of alternatives is done by matrix ranking. In matrix ranking, each alternative is evaluated based on pre – decided criteria and assign marks accordingly. This has made the process much easier to find the best solution or the suggestion. The matrix ranking done in Wehalla – North is shown in table 02.

Table 02: The best self employment - Matrix ranking: Wehalla – North

Critetia Alternatives	Financial requirement	Knowledge needed	Labour	Land	Raw material	Time allocation	Total	Rank
Sweets	♦ ♦ ♦ ♦ ♦	♣ ♣ ♣ ♣ ♣ ♣	♥ ♥ ♥ ♥ ♥	• • • • •	♠ ♠ ♠ ♠ ♠ ♠ ♠	***** ***	35	1
Sewing	♦ ♦ ♦	♣ ♣ ♣ ♣	♥ ♥ ♥ ♥ ♥ ♥ ♥ ♥ ♥ ♥	• • • •	♠ ♠	***** ****	31	3
Home gardening	♦ ♦ ♦ ♦ ♦ ♦ ♦ ♦ ♦ ♦	♣ ♣ ♣ ♣ ♣ ♣ ♣ ♣ ♣	♥ ♥ ♥	• •	♠ ♠ ♠ ♠	***	29	5
Coir industry	♦ ♦	♣ ♣	♥ ♥ ♥ ♥ ♥	• • • • • • • • • •	♠ ♠ ♠ ♠ ♠ ♠	*****	29.6	4
Brick industry	♦ ♦ ♦ ♦ ♦ ♦ ♦	♣ ♣ ♣ ♣ ♣ ♣ ♣ ♣ ♣ ♣	♥ ♥	• • •	♠ ♠ ♠ ♠ ♠ ♠ ♠ ♠ ♠ ♠	**	34	2
Youghurt	♦ ♦ ♦	♣	♥ ♥ ♥ ♥ ♥ ♥ ♥ ♥	• • • • • •	♠	****	22	6
Total	30	30	30	30	30	30	180	

Sweet industry has been selected as the most suitable self employment industry for Wehalla – North based on financial requirement, knowledge, labour, land, raw material, and time allocation criteria. Brick industry and the sewing industry became the second and third consequently. Hence, any development project plans to upgrade the self employability of the area should give the priority for those industries, which would be beneficial for the community.

Though the matrix ranking done based on pre – defined criteria, the preference ranking does not have such evaluation procedure. Preference ranking is solely based on the individual preference without any terms or conditions. Paddy cultivation, home gardening, and livestock rearing were ranked as the most, preferred training programme for Agriculture Research and Production Assistants (Pic 08).



Pic.08 : Preference Ranking

Venn diagram

Venn diagram shows the importance and the degree of interaction prevailing in service providing institutes, organizations, and individuals in the locality. The objective of this tool is to sort out the institute or the organization that has to be contacted in order to launch a project in the area. The Venn diagram done in Bambaranda – East is shown in Pic 09.




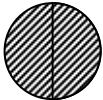


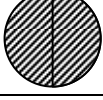
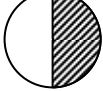
Pic. 09: Venn Diagram – Bambaranda – East

According to the Pic. 09, the Sanasa bank provides the best service and good interaction with villagers than other organizations. Contrast, Agrarian Service Center shows a lesser interaction though it provides a same level of service to the community. By that, it is possible to conclude that the Sanasa bank is the best institute to contact or launch a project in the area. Agrarian Service Center too can be considered as an alternative.

Institutional analysis

An institutional analysis should be carried out in order to analyze the institutes, which have been chosen as best to implement the project or development programme. There, the institute is evaluated qualitatively against certain criteria proposed by the community itself. By that, the facilitators, community, and the office bearers of that particular institute can improve the institute paying attention on weak facets. The institutional analysis done for Agarawala farmer organization is shown in table 03.

Table 03: Institutional Analysis – Farmer Organization - Agarawala

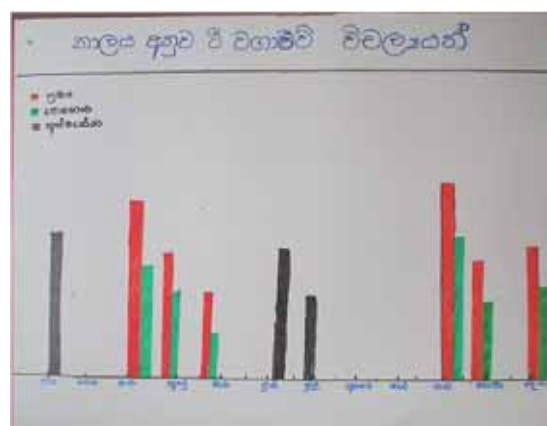
Criteria	Percentage	
1. Attendance of members		75%
2. Dedication of office bearers		100%
3. Rewards for members		25%
4. Trustworthiness		75%
5. Financial handling		100%
6. Enrolment of new members		50%

The institution analysis given in table 02 reveals that the dedication of officers and financial handling are at 100 percent. But, rewarding system remains at 25 percent, which should be improved for the welfare of members. Attendance of members and trustworthiness is at 75 percent, which should be improved for the maximum productivity of the institute.

The tools discussed above are the main, unavoidable tools in a PRA package. Apart from those, there are some other tools such as historical profile (Pic 10:a), seasonal calendar (Pic 10:b) and so on. Hence, the facilitators must be competent to opt the best and effective tools according to the objectives of the PRA programme.



a) Historical Profile



b) Seasonal Calendar

Pic. 10: Other PRA tools

1.4.2 Completion of the activity

The last event of a PRA activity is to present the outcome to the gathering. A voluntary group member who has the ability to present confidently and elaborately should be invited by the facilitator of each group (Pic. 11). Instead of giving opportunities to one member, number of members



Pic. 11: Presenting the result

can be asked to present different tool. It re-assures the equality too. The generalization of the results or get further explanation and criticism from the gathering is important after the presentation. The facilitator should note down all these facts and illustrations. At length, the facilitator should thank the gathering for their participation, contribution, and dedication for the activity. By that, the facilitator can wind up the PRA session successfully as well as cheerfully.

All these facts that have been discussed up to now elicit the key components of a PRA session. Understanding, learning, and putting into action of these facts would build self confidence and strength to be an efficient facilitator. That would enable to glean reliable and correct information from the community, while entrusting a good relationship with the community.

Appendix - 2. Agricultural Extension & Conducting of Farmers Training Classes.

1) What is meant by agricultural extension?

Agricultural extension means, the introduction and expansion of advanced agricultural techniques to farmers, who could benefit from such and encouraging them to act willingly and knowledgeably and increase agricultural productivity within a short period of time to gain higher income and profits and at the same time advance in community and make farming more interesting and enjoyable.

2) Innovation and communication

2.1 Agricultural Extension :

2.1.1 What is meant by Agricultural Extension?

In the process of agricultural extension	• transfer the results and findings of agricultural research to farmers
How to transfer them	• by the administrative officers who know well agricultural extension
What the administrative officers bring to farmers	• seeds, techniques, and knowledge and experience through good will and trust
How	• by the use of communication theory

2.1.2 What is meant by communication in agriculture?

Communication in agriculture means the delivery of a certain message via the use of any methodology, to a certain individual, team or a crowd with intentions of obtaining the expected results.

Knowledge and skill are very important towards agricultural communication. The tool used for imparting information and experiments performed by the research officer is communication.

Communication procedure

(S-M-C-R Communication Theory)

- S** - Sender - Group or organization presenting message
- M** - Message - Presented information, verbal or written information
- C** - Communication medial - Sound -listening (discussions, meetings, lectures)
 Reading -leaflets, books, magazines, writings
 Sight -demonstrations, posters, films, transparencies
- R** - Receiver - Message receiver or crowd – farmer, group of farmers

The adaptation of S-M-C-R- theory in Agricultural Extension

<u>Sender</u>	<u>Message</u>	<u>Channel</u>	<u>Receiver</u>
<i>Extension Officer</i>	<i>On a new variety</i>	<i>Lectures</i>	<i>Farmer</i>
<i>Farmer</i>	<i>On a demonstration</i>	<i>Letters</i>	<i>Farmer's homes</i>
<i>Announcer</i>	<i>On pest damage</i>	<i>Posters</i>	<i>School children</i>
<i>Home Minister</i>	<i>On cheaper methods</i>	<i>Hand-outs</i>	<i>Relative officers</i>
<i>Research Officer</i>	<i>On better yielding</i>	<i>Radio</i>	<i>Public Figures</i>
		<i>T.V. Etc.,</i>	

Problematic situations may arise during every step of the communication procedure. In such instances you cannot obtain the expected success. If success is to be achieved the sender of the message should be well acknowledged in the objective and also present the message creatively. The necessity of the message, importance, relevance, language used, style etc, should be very clear. The communication media, written or visual should be chosen according to the message. Even if understanding and persuasion of the receiver is achieved, the message would be accepted or rejected by the receiver according to his social acceptance factor, ability and resources.

Conducting farmer training :

Conducting farmer training classes can be considered as an extremely effective method towards the communication of extension activities. Farmer training is a Non Formal Education Method.

In training

- Teaching - is a process of sharing knowledge and skills.
- Learning - is a process of gaining knowledge and skills which result in the development of behavioral attitude.

In conducting training programs for farmers, extension officers provide skills and knowledge

whilst aiming at the objective. The changing of behavioral attitudes by the adoption of various motivation and desire building methods are results acquired through training. The demonstration of methods and its results, aid towards the change of training as well as behavioral attitudes.

Gains through training:

1. Perspective
2. Hearing
3. Sense of odors and smell
4. Identification by touch
5. Identification by taste

There are three aspects in training:

- Cognitive - Knowledge
- Affective - Attitudes
- Psychomotor - Skills, abilities

There are five senses in training:

- Sight
- Smell
- Hearing
- Touch
- Taste

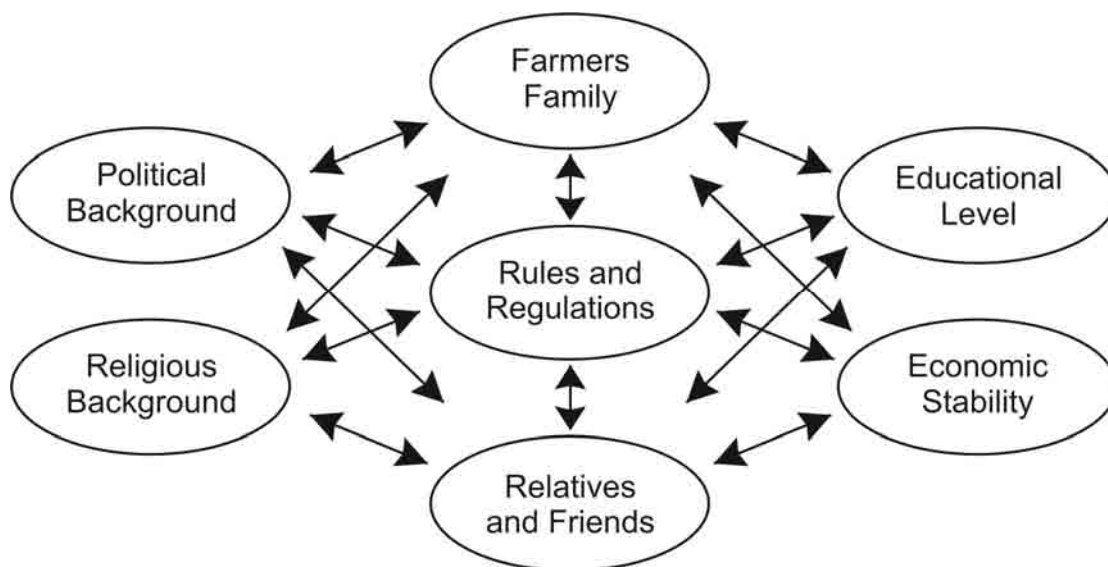
2.2 Know your villagers

2.2.1 Agricultural community

Knowledge about the farmers and the society they live in is essential. The agricultural officer approaching them should be a person they know and trust.

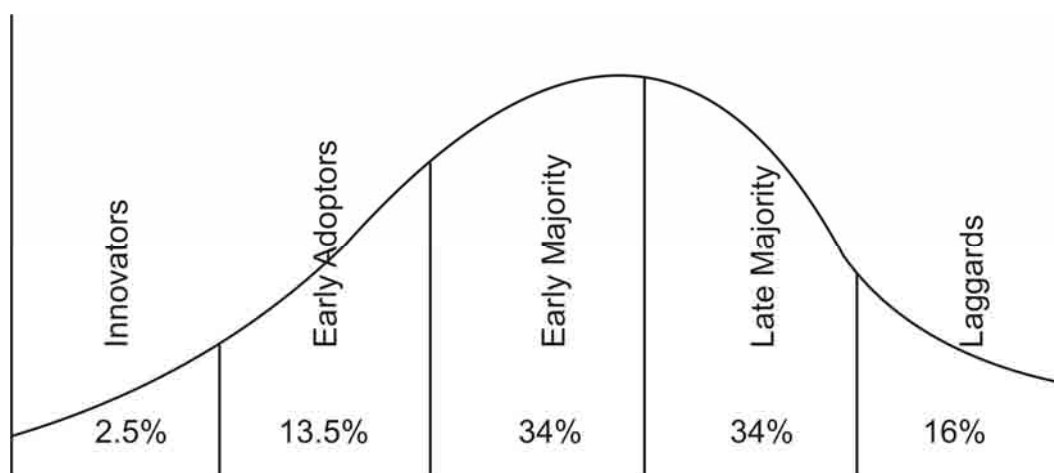
In this order to provide training and knowledge of all five senses of the human body, the relationship of the rural farming community is constructed upon two main factors.

- 1) Community relationship
- 2) Inter dependency



All these factors are in vise versa relation to each other and are so well-bonded. The life circle will not be fulfilled if any of these factors are not in relation.

2.2.2 A ratio of the adoptability of villagers to new technologies



In India, there are five standard forms of data regarding the adaptation and acceptance of such agricultural relationships within rural communities.

In our society when innovation is presented, the adaptations show the similar pattern. An understanding about the difficulty in bringing a change to the farming community by utilizing agricultural technology could be seen here. But, the majority of the farmers could be persuaded to accept innovation depending on the expertise of the extension officer.

2.3 Knowledge through farmer training

2.3.1 Educational Systems:

There are three expected methods of teaching.

- 1) Formal : School education – higher education
Syllabus – evaluation-grading-promotion
Results sheets
- 2) Informal : Through various media-incomplete-various subjects
We gain knowledge mostly via informal methods
- 3) Non – formal : Instructors-revolutionary-followers
Providing knowledge and skills to a limited an selected audience
towards an objective through certain subjects, to achieve a change in
attitudes

The career training conducted for farmers is considered an nonformal training method. This method is result oriented even in the field of agriculture extension.

The extension officer should take care when teaching adult farmers to teach them as though they are not being taught since adults have a tendency of not liking to be taught by others.

Various extension methods

- ❖ Meeting farmers personally – very effective method but, at the cost of lots of time and energy
- ❖ Meeting small farmer groups – meeting small 5-6 member farmer groups for discussion is much result oriented. Fast dual communication methods such as asking questions and providing answers are put into action. The percentage of acceptance is better when solutions for problems are provided immediately.
- ❖ Optimum farmer groups (between 20-30 farmers)
Pre informed gathering at a specified time and place to provide training. The majority could receive necessary information and facts within a short period of time. The acceptance towards innovation by the entire group depends on the expertise of the extension officer.

2.3.2 Speeches, Lectures and Discussions

Speeches should be done to educate large gatherings on the importance of change and attitudes. Short period effectiveness is of utmost importance.

2.3.3 Farmer training done by lecturers

Trainer or Facilitator should know -

- The topic
- Objectives
- Main objective

- Sub objectives
- Hidden objectives
- Aim of the program – target

Example :	Topic	-	weed control in rice.
	Main objective	-	most effective weed control method.
	Sub objective	-	comparison with other methods in weed control.
	Hidden objectives	-	1) Promotion of a new product. 2) Increase scales of new product.
	Target	-	Increase yields of the crop and establish a demand for the product

Therefore the objective and target should be defined properly.

2.3.4 Organize a farmer training program

- ❖ Training topic should outline the "Needs of farmers" which are very much effective for farmer life.
- ❖ Number of farmers per program should consist of 25 – 30 or more.
- ❖ Place – should be a common ground such as a school, temple or a praja shala.
- ❖ If in the event of a training program been organized in a local farmers premises, assurance should be made that all are in agreement of the location.

2.3.5 When to conduct a training class:

- ❖ The majority of farmers prefer to participate in classes on weekends.
- ❖ Mornings are most preferable.
- ❖ Most suitable times to begin programs in the mornings are between 9.00 am - 10.30 am.
- ❖ Most suitable times to begin programs in the evenings are between 2.30 pm - 3.30 pm.
- ❖ Attention may be lost on a subject in the case of adult farmers during the first hour.
- ❖ Farmers prefer personal invitations and invitations by post rather than a public notice.
- ❖ If the extension officer visits the farmers on a personal basis, speaks to them and gives them written invitation participation for the training programs will be more assured.
- ❖ At the training program it is important that comfortable seating facilities are given to farmers. for example ; they would feel more comfortable seated in an armchair than on a short bench.

2.3.6 At the training class

- ❖ Commence training at the scheduled time. If delayed the farmers will also be late on the next scheduled date.
- ❖ Engaging in religious activity is essential before commencing the training class.

- ❖ Introduce your supporting staff on commencement.
- ❖ Speak to farmers by their names or their pet names (names they are most known by) as much as possible.
- ❖ Discuss your objectives clearly and properly in keeping with the class. Much emphasis should be made on benefits.
- ❖ Follow up your lesson plan.

Plan Your Work and Work Your Plan !

2.3.7 What a lesson plan should contain

- | | | |
|----------------------|---|--|
| 1)Topic | - | should tally with the time and need |
| 2)Target group | - | adults with similar needs |
| 3)Objective | - | should be over-come by the targeted group |
| 4)Aim | - | your expectations at the end of the program |
| 5)Training aids | - | material, audio-visual aids, samples etc. |
| 6) Welcome address | - | it is most important that you
do not miss anybody in your welcome address |
| 7)Begin with | - | making a want to listen with assurance of benefits |
| 8)Technology | - | point by point |
| 9)Middle | - | make it sound economical and practical |
| 10) End with summary | - | the farmer's attitudes should be changed positively
towards your aim. |

2.3.8 During lecturing.

- ❖ Enter - with full confidence. Do not show shyness.
 - ❖ Appear to be - charming and friendly. Show your ability.
 - ❖ Eye contact - look each person in the eye when speaking.
 - ❖ Conduct - conduct yourself honestly.
 - ❖ Speak - fluently with clear pronunciation.
- Speak at the speed of 60 words per minute (not more not less).
Do not repeat the same words.
Take caution in using sarcastic words and throwing questions.

Appendix - 3. List of Participants to the Project

The Project of “Agricultural Reconstruction in Tsunami Affected Areas in the District of Matara” or JIRCAS Project has been implemented from 2006 - 2010 (5 years) with great cooperation by many important persons as follow,

Sri Lanka

[Southern Provincial Council]

Ms. K. Kumudinie Abeywickrama

Ms. Pushpa Malalasekara

[Matara District]

Ms. W.K.K.Athukorala, District Secretary

Mr. Gamini Jayasekara (Former District Secretary)

Mr. A.M.Wijesinghe

Mr. W.A. Ariyaratna

Mr. Sampath Mallawaarachchi

[Polonnaruwa District]

Mr. D. A. L. Nimal, Divisional Secretary (Former Deputy Commissioner of DAD, Matara)

[Devinuwara D.S. Division]

Ms.E.A.C.Widanagamachchi, Divisional Secretary (Former)

Ms. I. Liyanagama, Divisional Secretary

Mr. Hemantha

Mr. A.G.Linton Abeydheera, Chairman of Pradesiya Sabah (Former)

Mr. C. Sooriyawansa, Chairman of Pradesiya Sabah

Mr. M.N. Nagasinghe, Technical Officer P/S

[Dickwella D.S. Division]

Mr. Sumith Alahakoon, Divisional Secretary (Former)

Mr.B.Ranaweera, Divisional Secretary (Former)

Mr. P. Somasiri, Divisional Secretary

Mr. K.Muthukumarana, Chairman of Pradesiya Sabah

Ms. T.G.A. Gurabarudana, Primary Secretary P/S

Mr. P.S.N. Yapa, Technical Officer P/S

[Ministry of Agriculture]

Mr. J. Ranjith Wijetilake, (Former Secretary)

Mr. Sirisena Amarasekara, Secretary

[Ministry of Disaster Management & Human Rights]

Mr. S.C.K. Balasooriya, Captain Director / Coordinator, Matara

[Ministry of Social Services Centre for NGO]

Mr. Daglus Nanayakkara, Director

[Department of Agrarian Development, Ministry of Agriculture]

Mr. Ravindra Hewavitharana, Commissioner General (Colombo)
Mr. D.D. Waniganayaka, Commissioner General (Former / Colombo)
Ms. Sumithra Kannangara, Additional Commissioner (Colombo)
Mr. J. Dickmadugoda, Assistant Commissioner (Matara)
Mr. N.W.G. Ananda Dias (Matara)
Ms. L.P. Devika Ashokarani, Development Officer of Thalalla
Mr. Nimal Samarakoon, Development Officer of Dickwella
Ms. S.H.R. Priyanthi, Development Officer of Dickwella (Former DO)
Mr. Dayasena Ratnayake, Export Office

[Department of Agriculture, Southern Province]

Mr. S. Rathnasiri, Provincial Director of Agriculture (Galle)
Mr. W.J.K.V. Ranjith, Provincial Director of Agriculture (Former Direc. / Galle)
Mr. Dissanayaka Rodrigo Indrajith (Lamented / Former Direc.)
Mr. M.W.Senani Ajantha de Silva, Deputy Agricultural Director (Matara)
Mr. R.H.U. Gunawardene, Assistant Technological Officer (Matara)
Mr. N. Nanayakkara, Deputy Agricultural Director (Hambantota)
Mr. W.A. Ranjith Gaminie, Subject Matter Officer
Mr. Nimalarathne, Deputy Agricultural Director (Galle)
Mr. W.H. Sunil Gamini, Agricultural Instructor (Thalalla)
Mr. D.V. Jagath Harischandra, Agricultural Instructor (Dickwella)
Mr. R.B. Leel, Monitoring Officer (Dickwella)
Ms. Lalani Ramanayake, Monitoring Officer (Thalalla)
Mr. K.H. John, SMO (Matara Extension Office)
Mr. W.A. Gunarathna, SMO (Matara Extension Office)
Mr. Gunawardana, Department of Health

[Ministry of Agriculture, Irrigation, Livestock, Health and Environment, Southern Province]

Mr. Chinthaka S. Lokuhetti, Secretary

[University, NGO & Amicable Organizations]

Senior Professor, Dr. Mahinda Wijerathne, University of Ruhuna
Ms. Nilantha De Silva, Lecturer, University of Ruhuna
Ms. Dilanthi Koralagama, Lecturer, University of Ruhuna
Mr. Sunil Wannigama, Southern Development Authority
Ms. Tharanga Gunasinghe, Project Coordinator, Oxfam GB
Mr. Hemapala de Zoysa, District Coordinator, Sarvodaya

[GN Villages]

People of Wattegama-South, Dickwella as a Pilot project site
People of Thalalla-South, Devinuwara as a Pilot project site
People of all the GN villages in Devinuwara DS division
People of all the GN villages in Dickwella DS division

Japan

[Japanese Embassy]

Mr. Yasuhiro Watanabe, (Former 2nd Secretary)

Mr. Hideaki Hatanaka, (1st Secretary)

Mr. Katsuho Hayashi, (2nd Secretary)

[JICA]

Mr. Takumi Ueshima, (Former Director)

Mr. Tomohiro Azegami, (Former JICA-SL staff)

Mr. Keiichiro Yuasa, (Former JICA-SL staff)

Dr. S.M. Punchibanda, Former Chief Program Officer, JICA-Sri Lanka

[JICA, South CAP Team]

Ms. Akino Kitazume, Chief Advisor, JICA-South CAP

Dr. Thilak T Ranasinghe, Deputy Chief Advisor, JICA-South CAP

Ms. Ayako Mitsui, Project Coordinator, JICA-South CAP

Mr. Masayoshi Terada, Expert, JICA-South CAP

Mr. S.M Wasantha Dissanayake, Assistant Institutional Advisor, JICA-South CAP

[Japanese JICA Experts]

Mr. Masahiko Hiraiwa, (Former Advisor of Irrigation)

Mr. Masanori Kawaguchi, (Former Advisor of Agriculture)

Mr. Junichiro Yamada, (Former Advisor for Agriculture, Irrigation and Rural Development)

Mr. Hiroshi Ishida, Advisor for Agriculture, Irrigation and Rural Development

Mr. Mitsuru Nanakubo, Expert, JICA-TRINCAP

[JIRCAS & J-Green (Former body) Staff members]

Takeru Higashimaki, Project Leader

Koichi Takenaka, Kazuhisa Koda, Shutaro Shiraki, Toshihide Takeuchi, Yasuyuki Nakanishi, Kazuhiro Tanaka,

Hiroaki Kunihiro, Goichi Ito, Mamoru Watanabe

[Coordinator & Interpreter]

Ali Mowlana (Local Coordinator)

Kumarage Rohan, Charles Rodrigo and many other Interpreters

Writers

Rural Development Planning Division

Takeru HIGASHIMAKI, Koichi TAKENAKA, Kazuhisa KODA, Shutaro SHIRAKI