



# A Participatory Toolkit

for Sustainable Agriculture Programmes in  
the Pacific – THE DSAP EXPERIENCE



Development of Sustainable Agriculture  
in the Pacific (DSAP)





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### About DSAP

The Development of Sustainable Agriculture in the Pacific (DSAP) programme promotes and implements sustainable agriculture that will improve food production thereby enhancing food security and income generating in the Pacific. Funded by the European Union, the programme commenced in 2003 in the 10 Pacific countries of Fiji, French Polynesia, Kiribati, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu and Wallis and Futuna. Cook Islands, Niue, Marshall Islands, Nauru, Federated States of Micronesia and Palau joined the DSAP programme in 2004.

DSAP is the result of collaborations and joint consultations between the Secretariat of the Pacific Community (SPC), Pacific Islands National Agricultural Research Extension Services, NGOs and regional stakeholders. These consultations examined constraints to sustainable agriculture and rural livelihoods in the Pacific and designed this initiative to regenerate Pacific agriculture using practices that are sensitive to the environment, methods that are sustainable and a programme that involves local relevant stakeholders in the agriculture sector.



# SUSTAINABLE AGRICULTURE TOOLKIT

This sustainable agriculture toolkit is a documentation of the process used by the Development of Sustainable Agriculture in the Pacific project (DSAP).

The process outlined in this toolkit was used by the 16 participating Pacific Island countries and territories to implement the project in their countries. It is important to note that some of the tools or activities documented in this publication may have varied from country to country during implementation but the process used was the same for all the participating countries and territories.

For the overall management of the project, the log frame approach (LFA) was used. To implement the project activities at local level, DSAP used tools from the participatory rural appraisal (PRA) to identify farmer needs, conduct assessments of extension officers, implement activities and also in the monitoring and evaluation of project activities. Some of the PRA tools used may have been adapted to suit the local conditions during their use in the consultations.

## WHO IS THIS TOOLKIT FOR?

This toolkit first is a documentation of the DSAP project process and the main objective is to share the DSAP experience. This resource is targeted at extension officers, and other development workers implementing sustainable agriculture development activities in the Pacific region. Although the process described in this resource is specific to agriculture and references pertain to the agriculture sector, the process may be used in situation/circumstance or project related to community development in the Pacific region.

The experience in this toolkit focuses a lot more on the set up or the beginning of the project. It is important that any development project 'gets it right' at the beginning to ensure a more conducive environment to achieving the project objectives. Getting it right with stakeholders, partners and the process is important.

## Agriculture in crisis?

The agricultural sector in the Pacific accounts on average for 30% of GDP, 50% of export revenues and over 60% of employment (paid and subsistence), with a large number of the rural population in the Pacific still dependant on subsistence agriculture.

The Secretariat of the Pacific Community (SPC) as the region's largest technical development agency implements programmes targeted at enabling Pacific islanders make informed decisions about their future development and well being. SPC's Agricultural Programmes has seen technical assistance, advice and information provided to the Pacific Island Countries and Territories in the areas of Plant Protection Services, Crop Improvements, Animal Health and Production, Agricultural Resource Economics and Information and the Regional Forestry Programme. The Pacific Regional Agricultural Programme was targeted at improved dissemination of elected crops, agricultural information and techniques with the goal of improved agricultural productivity and quality of rural life.

Even with technological and scientific assistance and support provided to the agricultural sector in the region, there is still low productivity in both subsistence and commercial agricultural production; pest and diseases spreading as islands losing their isolation with the improvement in communications infrastructure; national agricultural research, information and extension services are poor and lack sound technological innovations. As a result, Pacific island communities who are the targeted beneficiaries in these advancements are not part of the development process. This contributes to a diminished capacity of the rural communities in coping with increasing threats and pressures to the agricultural sector. Weak agricultural research and extension services in the region and poor linkages between farmers, National Agricultural Research and Extension Services and NGOs have been identified as a reason behind a lack of involvement of rural communities in the development process

## Regenerating Pacific Agriculture

To address the shortcomings of previous projects and to ensure the lessons from SPC Agricultural projects achieve their maximum benefit with farming families, SPC together with NARES, NGOs and other regional stakeholders collaborated in an initiative to address many of the issues constraining sustainable agriculture and rural livelihoods in the region. The outcome of these consultations and funding support from the EU, DSAP aims to make agriculture productive, environmentally sensitive and capable of strengthening the social fabric of local communities.



## HOW TO USE THIS TOOLKIT?

This toolkit is divided into the various stages of the project implementation. Each stage has a different colour to separate it. The stages may be used together or **as stand alone sections** depending on your objectives.

The stages in this toolkit are

### **STAGE 1**

1. The beginning - Setting up the project with national stakeholders

### **STAGE 2**

2. Taking the project to the local level
3. Involving the local community - consulting with farmers
4. Planning the activities - after the consultation
5. Collecting baseline data for the project

### **STAGE 3**

6. Designing on-farm trials based on outcomes from community consultation
7. Monitoring and evaluating the project activities

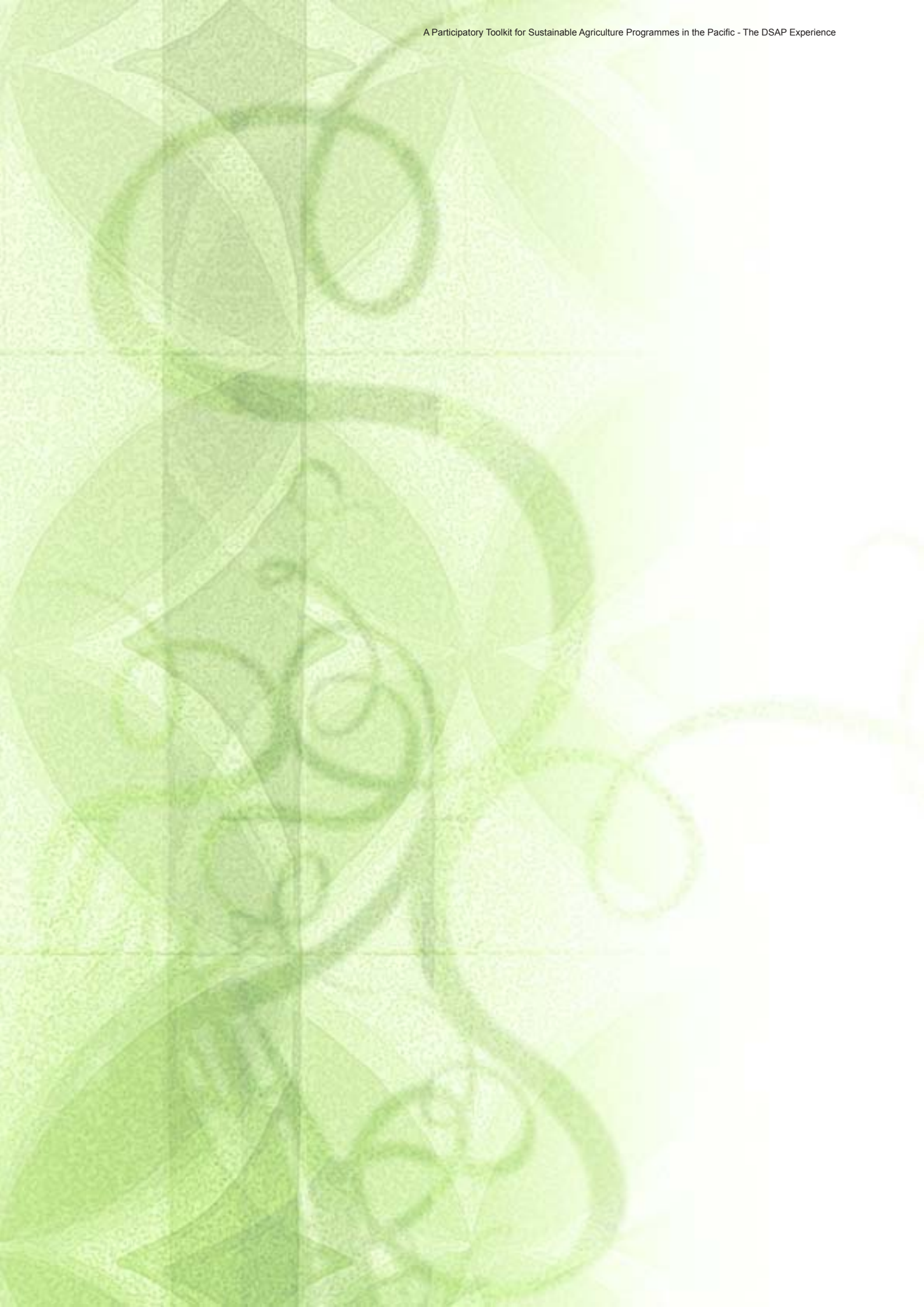
### **STAGE 4**

8. Sustaining the project

### **ANNEXES**

Important information relevant to the project.

- A - Partnerships and collaboration
- B - Gender inclusion
- C - Adult Literacy
- D - Communications
- E - Simple Technologies for farmers
- F - Sample case studies
- G - Energisers
- H - Contact addresses of participating countries





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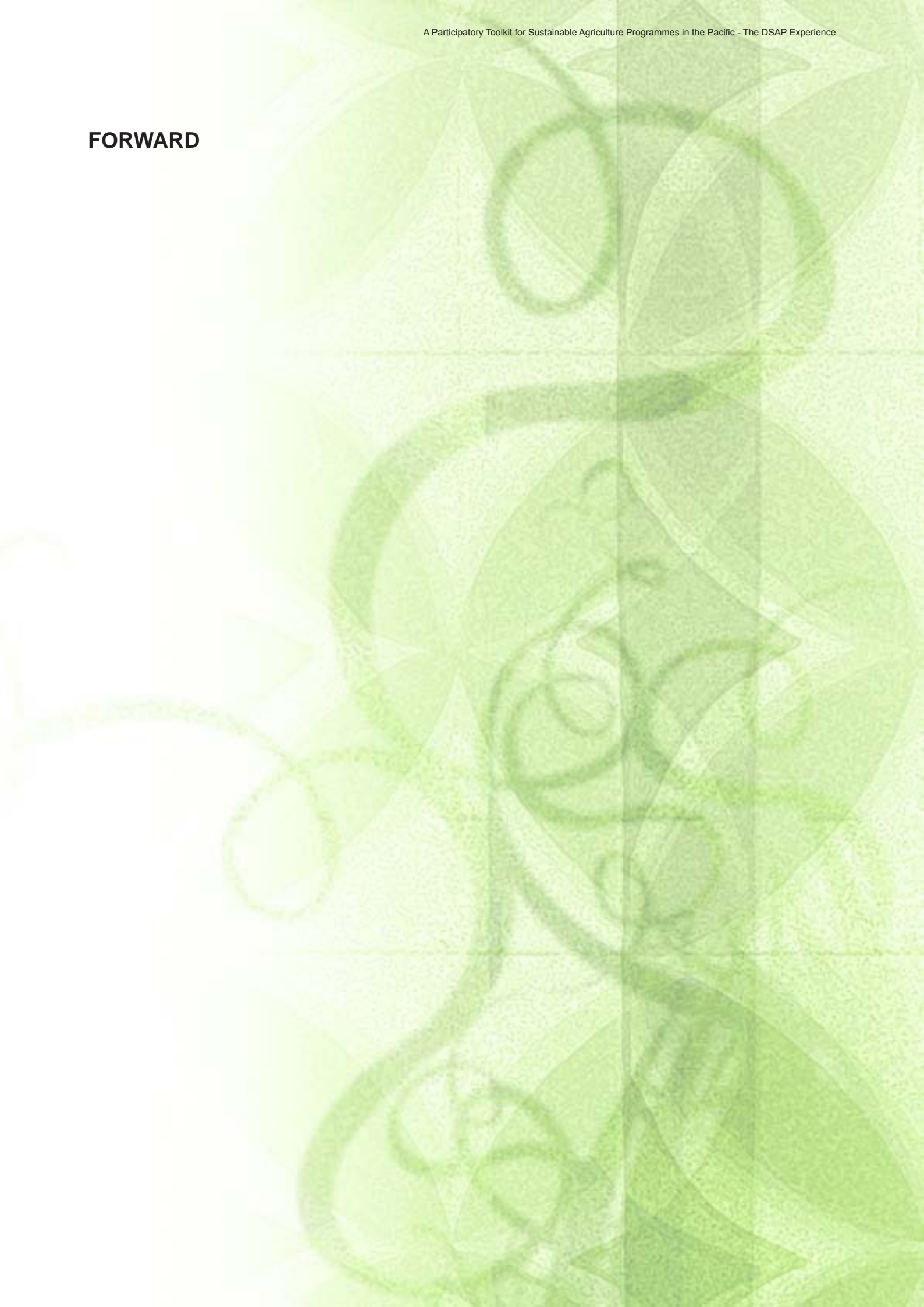
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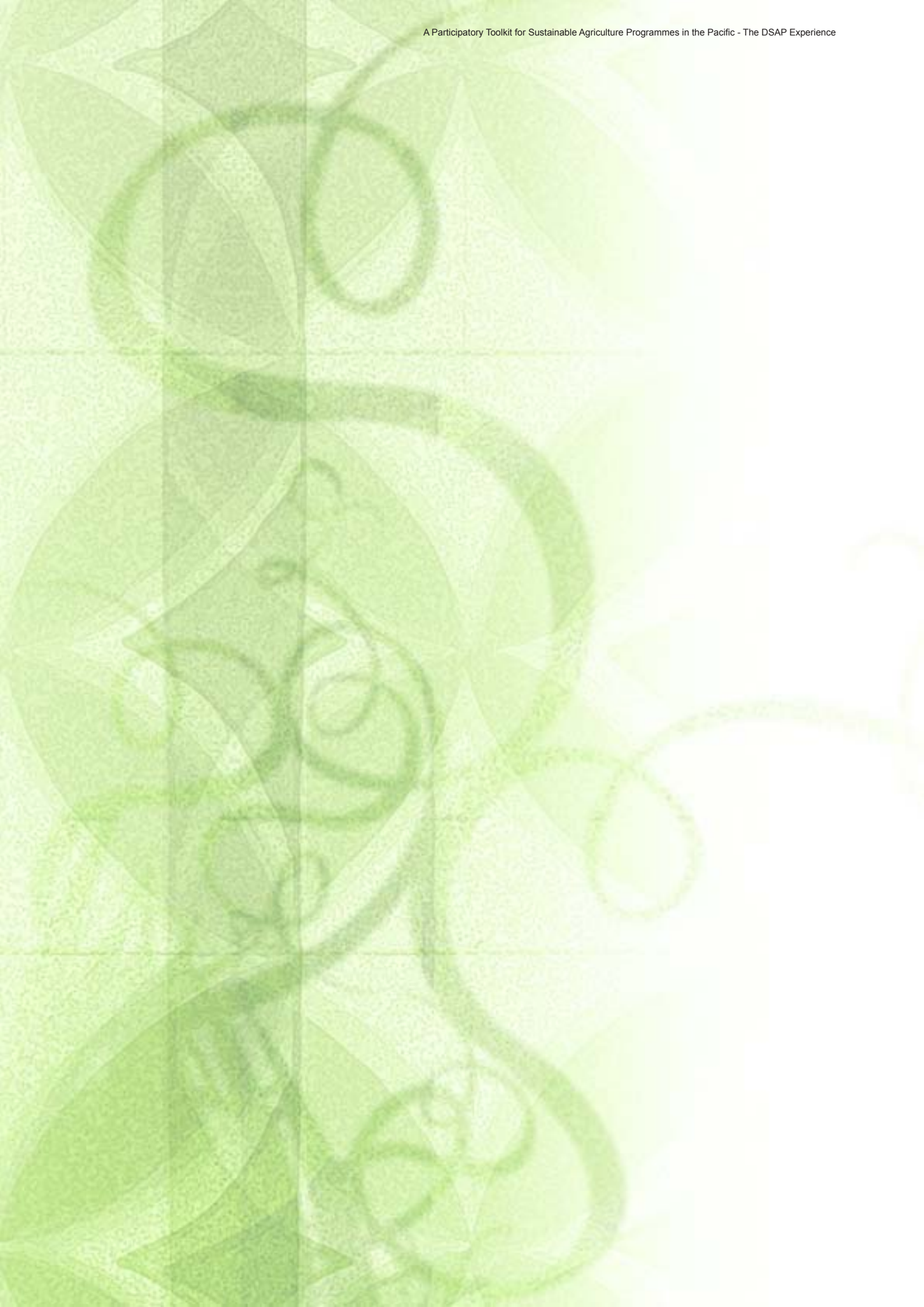
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## FORWARD







## GLOSSARY

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<b>COLLABORATION</b>	Groups with shared interest working together on specific activities. It is not necessary long term.
<b>EMPOWERMENT</b>	Transfer of control over decision making and resources to communities.
<b>EXTENSION COMMUNICATIONS ASSISTANT (ECA)</b>	
<b>GRADUATE RESEARCH EXTENSION ASSISTANT</b>	Graduate Research & Extension Assistant or the national DSAP staff in the participating countries.
<b>INSTITUTIONALIZING THE PARTICIPATORY APPROACH</b>	Mainstreaming participatory process into the policies and corporate plans.
<b>LOG-FRAME</b>	Method of designing, planning, managing, monitoring and evaluating development programs.
<b>NATIONAL STEERING COMMITTEE (NSC)</b>	National Steering Committee is the national committee for DSAP in the participating countries.
<b>PARTICIPATORY RURAL APPROACH</b>	<p>A development approach that facilitates the engagement of local community for information gathering and collective action in a participatory manner for sustainable development.</p> <p>- From the World Bank in Poverty Reduction Strategy Sourcebook, : a process through which stakeholders influence and share control over development initiatives, decision and resources that affect them.</p>
<b>PARTNERSHIP</b>	Groups, organization, and individuals with which the project works very closely with and share resources. It normally has a longer term agreement
<b>REFLECTION</b>	<p>Reviewing on information gathered so far is an important step in ensuring the effectiveness of your engagement planning processes.</p> <p>(Book 2 Engagement planning workbook, Department of Sustainability &amp; Environment, 2005) eg Stakeholder Analysis, Roadmap.</p>
<b>RESEARCH EXTENSION ASSOCIATE (REA)</b>	
<b>STAKEHOLDER</b>	Individuals/groups/organisations that have shared interests in your programme objectives and vision. Stakeholders are able to complement the programme work at various stages and areas. DSAP stakeholders include farmers, farmer groups, NGOs, other government ministries.
<b>SEVUSEVU</b>	A traditional Fijian protocol of presenting yaqona (kava/grog) to the community elders when first entering a Fijian community.
<b>DEMONSTRATION FARM</b>	A farm developed to promote a certain agriculture farming farming system/ tool/method/technology to the community.
<b>ON-FARM TRIALS</b>	Research conducted on selected farms to test certain farming system/tool/ method/technology.



## **STAGE 1 - THE BEGINNING**

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### **SETTING UP A PROJECT AT NATIONAL LEVEL**

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## **STAGE 1 - THE BEGINNING**

### **SETTING UP A PROJECT AT NATIONAL LEVEL**

#### **Introduction**

The DSAP project required the following to be in place before project activities started in the participating countries.

#### **Memorandum of Understanding (MoU)**

As the DSAP project was a national project within the Ministry of Agriculture and was a result of regional aid funded by the European Union and implemented by the Secretariat of the Pacific Community, Memorandums of Understanding are an important component demarcating the terms, conditions and responsibilities of each party towards the project. An MoU serves as a binding document on roles and responsibilities.

#### **National Steering Committee (NSC)**

The general role of the NSC is to guide and coordinate national DSAP activities and that all stakeholders participate. The NSC provides collective technical advice on selection of locations for DSAP pilot field activities, implementation of on-farm demonstrations, monitoring and evaluation and reporting. The presence of a national steering committee not only ensures relevance to local priorities and context in relation to the project but it ensures integration at the local level. The NSC meets periodically (ideally on a quarterly basis) to perform this role.

In some DSAP countries, existing structures such as management advisory committees of the Ministry of Agriculture were used as national steering bodies to monitor project activities.

It is also the role of the NSC to select the national project staff who will work full time implementing the project. A recommendation from the DSAP experience is to hire 2 or 3 national staff for projects of such sizes as DSAP to assist with the smooth organising and functioning of DSAP national offices.

#### **National Logframing**

The NSC has the responsibility of drafting a national project logframe. The process of drafting logframe will be based on priorities of farmers in selected pilot fields and locations. Integrating farmers' objectively verifiable indicators (OVIs) with those of the project management is an important element in DSAP logframing process.

#### **National Imprest Accounts**

The DSAP project set up imprest accounts specifically for the project staff to be able to easily access funding that will allow the implementation of project activities. Setting up national accounts is a requirement under the MoU and was mandatory at the beginning of the project. For transparency and accountability, there are more than one signatories for the account and there are checks and balances in place for the accounts, namely, purchase orders, requests, payment vouchers and receipts and invoices to name a few. For DSAP, the national budgets are sent 4 times a year on a quarterly basis and national staff have to acquit the previous quarters accounts before receiving funding for the new quarter.

#### **Setting objectives**

For the DSAP project, the regional and overall objectives of project had already been identified through previous implementation workshops where representatives from the Ministries of Agriculture of the participating countries provided the inputs for the countries.



## COMMUNICATING THE PROJECT WITH INTERNAL STAFF

When working with development projects, while the focus is usually and correctly on the external audience and correctly so as they are the targeted beneficiaries, there is also an important target audience that is just as important and that is the internal audience. In this instance, the internal audience is important as they help with the smooth facilitation of the project.

The DSAP project dealt with two types of internal audiences, the senior management and line supervisors as well as the extension officers. Communications with those in senior management included keeping them informed through meetings, presentations and briefings as well as through project newsletters and with extension officers it was through training sessions, workshops, meetings, face to face briefings as well as through regular phone calls and emails - where it was available.

## COMMUNICATIONS

It is necessary to have clear and effective lines of communications. Often the success or weakness of many projects has its root cause in weak communications or poor communication channels.

Central to any effective communication is knowing who you are trying to communicate with, so at this early stage of the project, stakeholders and target audiences should be clearly identified.

**For stakeholders,** the project must communicate with them the purposes of the project, the roles and responsibilities required of them to ensure the success of the project and their role in that success.

**For target audiences,** the project will need to communicate with them the project purpose, the intended benefits to them, their expected role and commitment.

*More information on the role that communication plays in development projects is in Section...*

## PROCESS USED TO IMPLEMENT PROJECT AT LOCAL LEVEL

This is the process identified by the DSAP project to select activities that the project can fund. As the project had to be delivered within a limited time frame, a process that was relevant and important and could deliver to both the farmers involved with the project and for the donor was important. The process below is not a recipe that everyone has to follow to the letter but is more of what worked for the DSAP project.

### Explanation of diagram of the DSAP Participatory Process

#### A

- Carrying out participatory community consultations with farmers and farming communities to identify their agricultural needs and problems.
- Assessment of capacity and skills of national extension staff in participatory methods and technical skills and knowledge.
- Information and communications needs assessment of farmers, national extension staff and partners.

#### B & C

After the PRA is carried out, linkages are made to respond to the farmer needs. During the formation of linkages, establishment on-farm trials at community level and training of extension and information staff, DSAP encourages the participation of involved bodies in identifying indicator for monitoring and evaluation measures, which leads to the establishment a Participatory Monitoring and Evaluation framework. DSAP works with other organisations, departments, NGOs, educational and research institutes who are already carrying out activities on the issues that the farmer has raised as problems or need to be addressed to achieve a sustainable livelihood.

#### D

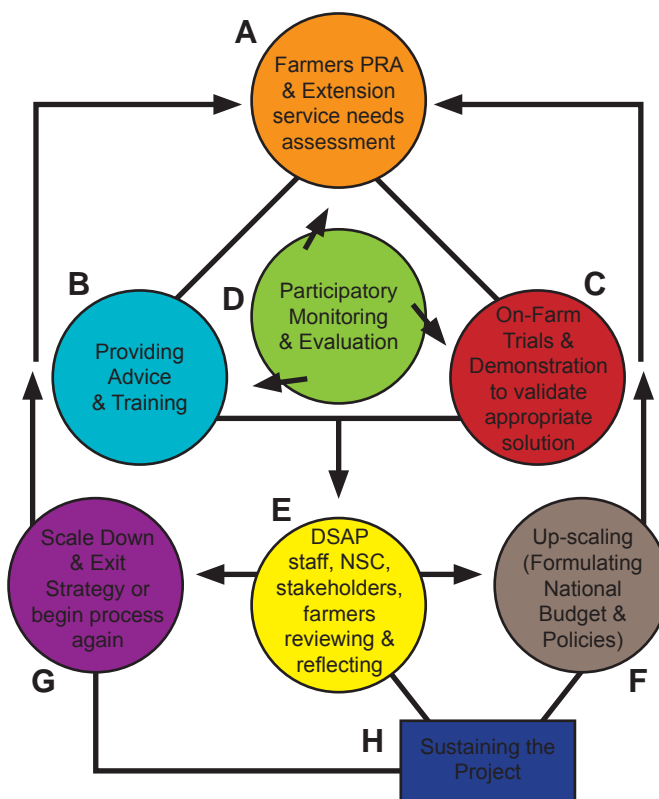
Participatory Monitoring and Evaluation Framework identifies and groups line alliances that are working together towards achieving an objective of a common interest activity. PM&E Framework outlines indicators and identifies personnel(s) within the group to carryout monitor and evaluation. The PM&E encourages the involvement of communities in monitoring and evaluation. The DSAP staff should be involved in the PM&E in order to be well informed of tangible progress and linkages strengthening.

#### E

DSAP staff reviewing and reflecting allows project staff to reflect upon information gathered from the PM&E and sort them into three avenues:

- 1) **F** - Stakeholder analysis when there are issues needs to be discussed to build and strengthen partnership.
- 2) **G** - Scale down and weaning off when objective of a common interest activity is about to achieve.
- 3) **H** - Take to policy level results of activities that all partners identified to be satisfied with, the most cost effective and enhance sustainable agriculture. Take to national budget results of activities identified as priority to still need to further investigate.

### DSAP Process





## BENEFITS OF USING A PARTICIPATORY APPROACH

- A participatory approach ensures that the project addresses the priority needs/problems of the project beneficiaries/recipients.
- A participatory approach assists with informing upper level decision-makers about the recipients' realities so that they make informed decisions. Example - when introducing relevant agricultural technologies, the results from the participatory consultation provide management with information on what farmers needs are in terms of agriculture.
- A participatory approach provides beneficiaries with the opportunity to be involved in the decision making process of the development project that is supposed to benefit them.
- A participatory approach assists with the nurturing of the sense of project ownership by the recipients so to enhance project sustainability prospect when the project ends.
- A participatory approach allows for a more responsive project as the participants are provided an opportunity for continuous feedback from the action learning within the project.
- A participatory approach better utilises projects' resources and at the same time discuss what recipients can contribute.
- A participatory approach utilises local structures, recognises culture and understand the needs of marginal groups.
- A participatory approach encourages all members of the community to participate including men, women, youth and marginalised groups. Everyone is able to express their opinion.





## STAGE 2 - TAKING THE PROJECT TO THE LOCAL COMMUNITIES

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A. Communicating the project with other internal (field) staff

B. Liaising with project stakeholders

C. Awareness raising visit to targeted communities

- Follow local protocol
- During the awareness visit

D. Preparing for the FIRST community consultation

- Checklist
- Tips for facilitators
- Sample programme

E. The first community consultation

- Introduction
- Tools for the first community consultation

F. Designing the community work plan

- Constructing a problem tree
- Designing an objective tree
- Example of a log frame for the local project

G. Baseline Data

H. Managing the project

- Monitoring and Evaluation
  - Stakeholder Analysis
-

## **STAGE 2 - TAKING THE PROJECT TO THE LOCAL COMMUNITIES**

### **A. Communicating the project with other internal (field) staff**

It is important to carry out an awareness session with other agriculture staff, example, extension staff, research staff who will be involved with the project. This may vary from country to country depending on the size and structure of the Ministry of Agriculture and its services. In Fiji, this involved an awareness sessions of the project and its aims to agriculture staff at the designated sites. For the Northern Pacific, this may involve an awareness session with the staff at the Land Grant Office.

The role of this communication with other internal (field) staff is necessary as they are the contact point for the project at the site level.

### **B. Liaising with other stakeholders**

By this stage the project will also have identified other groups and organisations who have working links to the targeted local community. These other groups and organisations can be grouped as stakeholders. In the interest of the wise and efficient use of project resources, it is a good idea to group stakeholders into key stakeholders and stakeholders.

Key stakeholders - are those with which the project will work closest with in an almost interdependent relationship to deliver services and implement activities at the community level. Examples of key stakeholders for DSAP have been other departments within the Ministry of Agriculture, NGOs, Departments from within the Ministry of Health. Since many of the key stakeholders were already members of the DSAP National Steering Committees (NSC), it was easier to form a relationship for the benefit of the targeted beneficiaries.

Stakeholders - are those with an interest in the project or have similar objectives, however their relationship with the project can be on a collaborative level although the two may not be interdependent.

Once stakeholders have been identified, the project has to carry out an awareness session where the objectives of the project are communicated. At this stage, activities are planned with the key stakeholders and usually the first plan is the first awareness raising visit to the targeted community.



### **C. Awareness raising visit to the targeted community**

- **Follow local protocol**

It is important that local protocol is understood and adhered when working with communities in the Pacific region. For the DSAP project, the first point of contact was almost always the local department of agriculture who then advised on the appropriate channels to follow. Some of the appropriate channels to follow in the following countries are Tuvalu - Kaupule, Fiji - Provincial Office, Samoa - Matai System, it is advisable to seek advice from your local counterpart on the appropriate channel to follow. The local agriculture staff would visit the community or let them know of the impending visit of the project staff and request the community to advise on a suitable day and time for this awareness raising visit.

- **During the awareness raising visit**

In this visit it is important that the targeted community appreciate and understand the purpose of the project and why their community has been selected. It is imperative at this stage that the community agree to commit to the project or decline from being part of the project. The project staff have to be realistic and inform the community of the realities of being involved in the project and the commitment required from the community. In the event that the community agrees, the date of the visit for the first community consultation should be decided at this meeting.

#### **CONCLUSION**

- At the end of these steps a date should set with the community for the first consultation with the community.
- The team that made the initial contact has to understand not to raise expectations of the communities beyond what the project can deliver.
- Invite all community groups the first consultation.

## **D. Preparing for the FIRST community consultation**

### **Checklist of preparations for community consultations**

- It is important to closely liaise with the community for an appropriate date and time for the consultation. In these communications ensure that a wider representation of the community will be present for the consultation.
- Decide the time frame of the community consultation, whether the consultation will be a half - day, one day or even if it has to take one week. Be conscious of the time needed for the consultation and inform the community of the time required for the consultation. The community have to be aware of the time required for the consultation so they can coordinate other roles and responsibilities they may have and free themselves to participate in the consultation.
- Decide on the number of facilitators required for the consultation. The number of facilitators required can be determined by the number of community members present at the consultation. It is important that there is constant communication with the contact person in the community on numbers that will be attending the consultation.
- Facilitators to discuss the community consultation and their roles during the exercise. A mock community consultation amongst the facilitators is often a good idea to ensure all facilitators understand and are familiar with participatory techniques and the tools to be used during the consultation.
- Design a programme for the community consultation, including the participatory tools to be used during the exercise.
- Allocate a budget for the consultation. Ensure that all expenses have been identified and contingency funds are included. Sometimes the project may need to pay transport costs for participants. Assign a budget for observation of traditional or local protocol, example, purchase of kava for sevusevu in Fiji or purchase of Irish tobacco for communities in Kiribati.
- Prepare materials required for the consultation, flip chart paper, pens, cellotape, etc.
- Collate any resources needed for the consultation and remember to translate any handouts you may wish to provide the participants.
- Plan for the catering during the consultation. Good sustenance is important to keep participants focused on the activities. It is recommended to use local products and local foods.
- Use a translator if necessary.



## TIPS FOR FACILITATORS

### DO's

- Do encourage participants by showing positive body language. A SMILE goes a long way!
- Do encourage participant's contribution by using their names.
- Do HEAR what the participants are saying, not just LISTEN to what they are saying.
- Do create a relaxing environment for the consultation, if using tools, break the monotony of the exercises by using energisers to keep participants alert and focused on the task.
- Do welcome ideas from all participants.
- Do dress appropriately, observe local customs and culture.
- Do observe unobtrusively.
- Do be honest with stakeholders when they reflect on your actions, especially when working with multi-stakeholder groups.
- Do use simple language during the exercise. Avoid jargon or technical terms.
- Do divide participants into smaller groups or gender groups to give equal opportunity for contributions during the consultation.
- Do treat everyone equally.
- Do evaluate requests and do not raise false expectations with the participants.

### DONT's

- Do not be authoritative, dominating or controlling.
- Do not be threatened by criticism of your work.
- Do not make jokes that may offend.
- Do not allow individuals to dominate the consultation.
- Do not focus your attention on particular participants.
- Do not give in easily to demands, especially, request for inputs. Focus on the task at hand which is the community consultation and inform participants that requests will be placed into context for the project.
- Do not try to hurry the process, allow time for everyone to understand the issues and make their contributions.

## CONCLUSION

- Proper planning of the consultation is of great importance. All facilitators must understand the concept of participatory approaches before the first community consultation.
- The project must work according to the community's time and availability.
- Communications between the consultation team and the community regarding community consultation must be regular and clear.
- The consultation team must be flexible with any unexpected delay or postponement request from the community.

## SAMPLE PROGRAMME FOR FIRST COMMUNITY CONSULTATION

### Programme for a one-day community consultation, Tilivalevu village, Nadroga, Fiji.

**NOTE:** This programme was based on 20 participants, who were divided into 3 groups of men, women and male youth. Depending on the number of participants, the time spent on the activity will vary.

8.30am - Arrive at Tilivalevu village

9.00am - Sevu sevu presentation (Traditional presentation to chief)

10.30am - Morning Tea Break

11.00am - Energiser

- Break participants into smaller groups, 6-7 participants per group.
- Begin consultation through use of PRA Tools.

Activity 1 - Systems Diagram

Activity 2 - Institutional Linkages

Activity 3 - Identify problems for agriculture production.

### LUNCH BREAK

Activity 4 - Ranking and scoring

Activity 5 - Problem Analysis

Activity 6 - Livelihoods ranking

Activity 7 - Seasonal Calendar

Activity 8 - Information and Communications Needs Assessment.

3.00pm - Feedback to the whole group.

**NOTE:** Each group presents their results to the whole group (plenary). This feedback session is often a good source of information for the entire community and sometimes, community members are pleasantly surprised by the information shared during these sessions.

If there is not enough time to accommodate everyone to feedback to the plenary session, select results from certain tools rather than present feedback from all tools.



## E. The first community consultation

### Introduction

- It is important to introduce the whole team to the participants. Explain each team members role to the community.
- Use this introductory session to explain the purpose of the consultation to the community. Allow the community to ask questions or clarify some points they may not understand.
- Break the participants into small groups of men, women and youth. If numbers are small, ensure that there is a balance in each of the groups that is representative of the community.



### Energisers

- Energisers or icebreakers are activities that can help put participants at ease and have all participants and facilitators in a cheerful frame of mind for the consultation. Please refer to Appendix H at the end of this toolkit for some examples of energisers.

**Note:** a selection of ice breakers used by the DSAP project can be found in Annex



## TOOLS FOR PARTICIPATORY COMMUNITY CONSULTATION

The tools in the following section were used by DSAP staff during the initial consultations with the community. These tools are not exhaustive and there are other tools that can be used. For further information on Participatory tools, the following web sites maybe of use.

Participatory Rural Appraisal tools used by the DSAP Project.

<b>Tools</b>	<b>Page</b>
Activity 1a Mapping	16
1b Systems Diagram	
Activity 2 Timeline - Historical Background	18
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## Activity 1a - Mapping

### 1) What is Mapping?

When conducting a community consultation, the mapping activity is usually the first activity in the consultation. This mapping may vary in the subject to be mapped but for the purposes of the DSAP project, the participants were asked to map their community or draw the physical layout of their village/district/community.

### 2) Benefits of Mapping

- Encourages people to participate as they identify and draw the layout of their village/district/community
- Allows the facilitator to observe group dynamics of the participants
- Mapping also provides information about the village/district/community for the facilitators, project staff and the participants themselves.

### 3) Materials Needed

Flip charts, felt pens

### 4) Process (Steps)

- a. In their small groups, ask the participants to discuss and illustrate their village/district/community
- b. Ask them to draw houses, roads, farms, gardens, etc
- c. Summarize and share lessons and insights gained from the exercise

### 5) Time frame

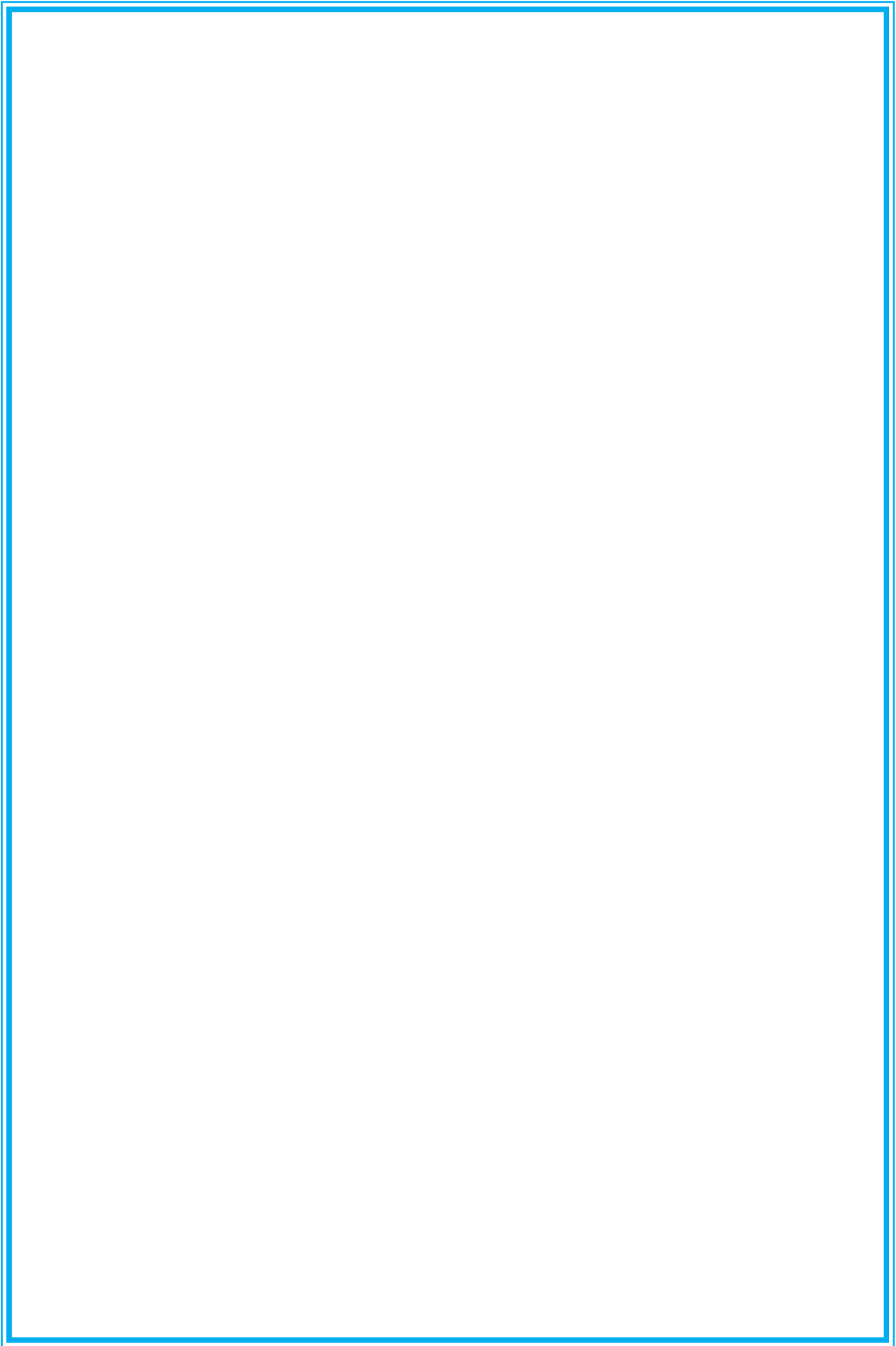
45 minutes

### 6) Example (Diagram/Drawing)

- Mapping of community in Futuna Island.

An example of a Mapping is on the following page.

**STAGE 2**



## Activity 1b - Systems Diagram

### 1) What is Systems Diagram?

In Community Consultation, this activity is used to identify existing farming, social, health, environment, and economic systems. It also highlights movement of resources between existing systems. Note that this tool can be used for individual households, villages/settlements, and districts.

### 2) Benefits of Systems Diagram

- Systems Diagram provides insights of how farming systems function in a particular household set up
- It also indicates locations of water source, houses, gardens and livestock
- It captures flow of agricultural resources in and out of household

### 3) Materials Needed

Flip charts, felt pens

### 4) Process (Steps)

- a. Identify and list components that make up the existing farming systems per household.
  - type of crops, farming practices, livestock, water source
  - type and of inputs and outputs
- b. Spread out a flip chart paper on the floor and each farmer draws a house to represent his/her household in the centre of paper
- c. Map out the locations of components of existing farming systems
- d. Draw one-headed arrow explaining flow of resources between components
- e. Summarize and share lessons and insights gained from the exercise

### 5) Time frame

45 minutes

### 6) Example (Diagram/Drawing)

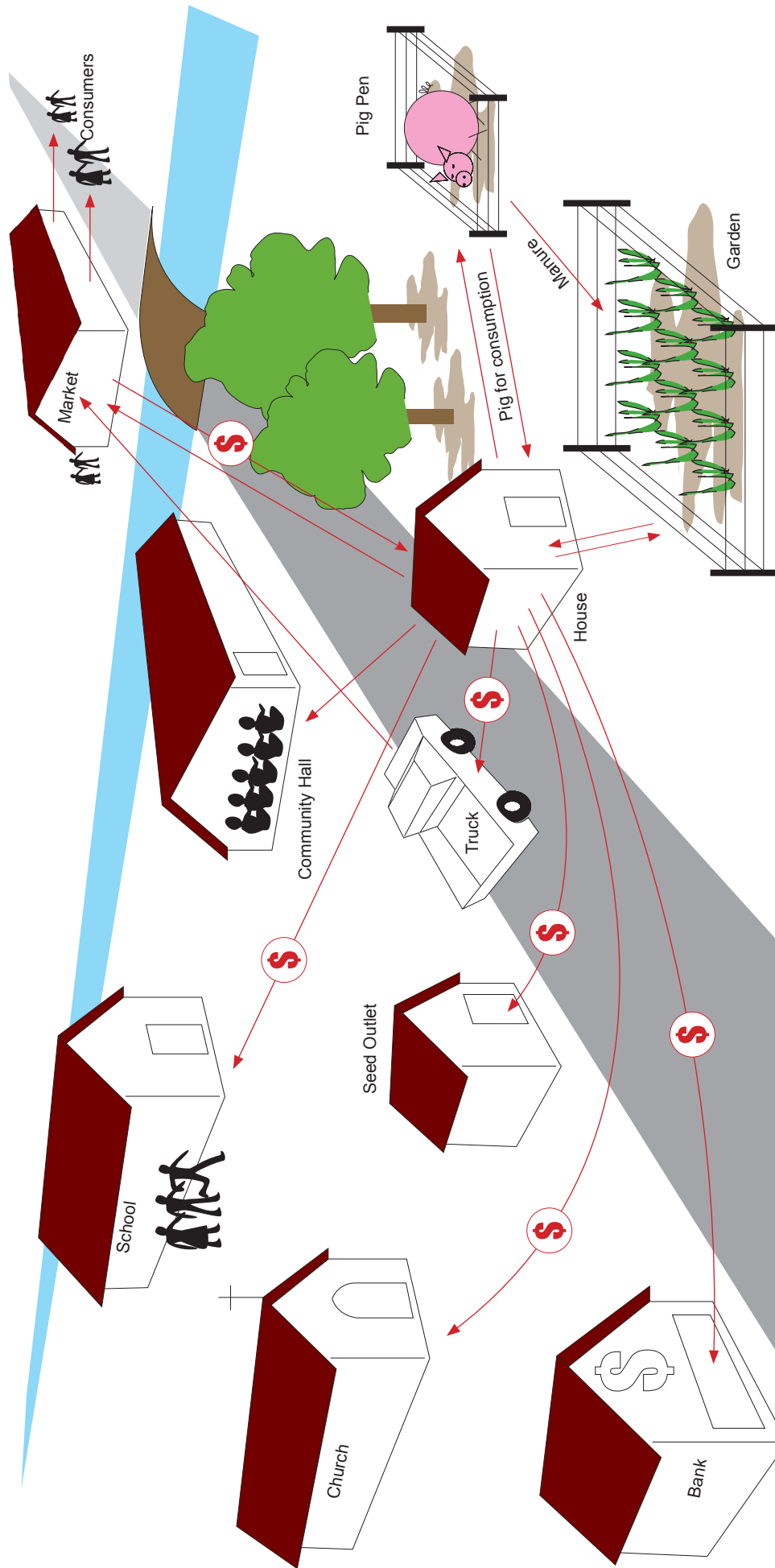
- Household Systems Diagram, from DSAP Vanuatu, Mangaliliu village

An example of a System Diagram on the following page.



# STAGE 2

## HOUSEHOLD SYSTEMS DIAGRAM



Analysis of individual farmer system:

1. Inputs into farming system
  - seeds to garden, manure etc.
2. Interactions within system
  - garden - household, livestock
3. Output: Market, community

## Activity 2 - Timeline - Historical Background

### 1) What is Timeline?

This activity basically captures historical events about the community from establishment of the community to natural disasters, and development.

### 2) Benefits

- It provides an opportunity to capture history of progress of development in the community
- It highlights important events

### 3) Materials

Flip charts and felt pens

### 4) Process

1. Separate group into gender groups (Men & Women)
2. Distribute flip chart paper and felt pens to group.
3. Ask the group to select someone to record group discussions
4. Explain to the group that the activity is targeted towards capturing all the events occurring or have occurred in the past. The group is to write the year against the event occurred
5. Facilitator to encourage participation from all members of the group.

### 5) Time

40 minutes

### 6) Example

A DSAP Fiji TIMELINE example is given below

Vavinaqiri Settlement : Timeline from Women's Group

Year	Activity
1962	- Moved from Emuri Village to the current settlement
	- Only 1 family settling at Vavinaqiri
1971	- Start with sugarcane farming
	- More families moving from Emuri to Vavinaqiri
1972	- Hurricane Bebe
	- Completely destroyed 3 homes
	- Housing Scheme from Government
1975	- Cyclone Oscar : destroyed homes and farms
	- Cyclone rehabilitation assistance from Government providing basic food items
1983	- Cyclone Eric & Cyclone Nigel
	- Both destroyed farms
1993	- Cyclone Kina
1996	- Infrastructural development : water connection
	- Assisted by Government through District Officer

## Activity 3 - Seasonal Calendar

### 1) What is seasonal calendar?

This activity shows period of cropping activities, incidents of pests & diseases, yearly rainfall patterns.

### 2) Benefits

- It can be used as a planning tool for planting to ensure regular income throughout the year
- It clearly shows the seasons of disasters which the community could be more prepared for

### 3) Materials Needed

Flip charts and felt pens

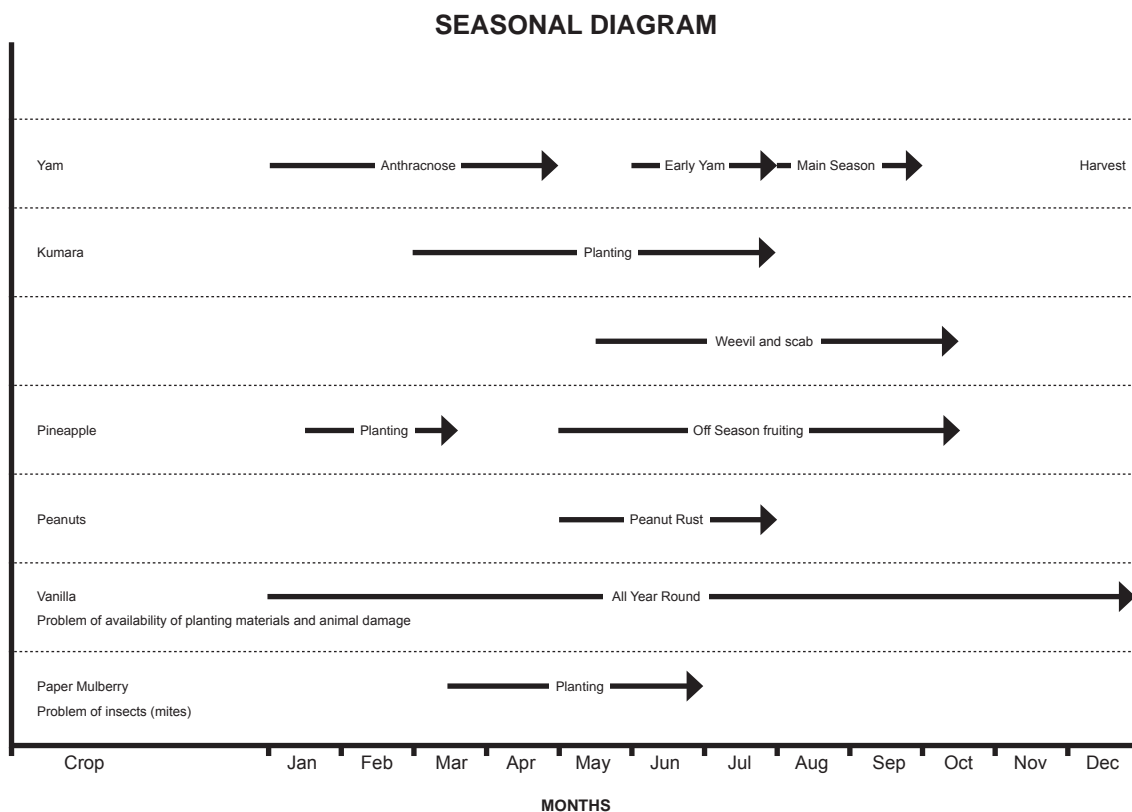
### 4) Process

- Explain the exercise and why it is being used
- Draw an outline of a graph with the months of the year in the horizontal line
- Ask the participants to list different crops they grow on the vertical line
- Ask participants to plot against the different crops planting and harvesting periods.
- Ask participants to plot periods where they witnessed high incidents of pests and diseases. If possible, encourage participants to name the pests and diseases (even giving its traditional name)
- Ask participants to plot periods of high rainfall, periods of droughts and dry season.

### 5) Time

40 minutes

### 6) An example of a SEASONAL DIAGRAM from one of DSAP Tonga's community consultation





## Activity 4 - Institutional Linkages

### 1) What is Institutional Linkages?

This activity identifies institutions and organisations that is considered important by the community. These institutions/organisations may not necessarily be in constant interaction with the community.

### 2) Why Institutional Linkage?

- Relevance of institutions to community
- Identify institutions/groups with common interest in the community
- Identifying who has the most influence on community so that the project can work through those institutions
- To encourage collaborative activities with institutions already established
- Identifying the level of interaction between institutions working with community

### 3) Materials Needed

Flip charts, felt pens

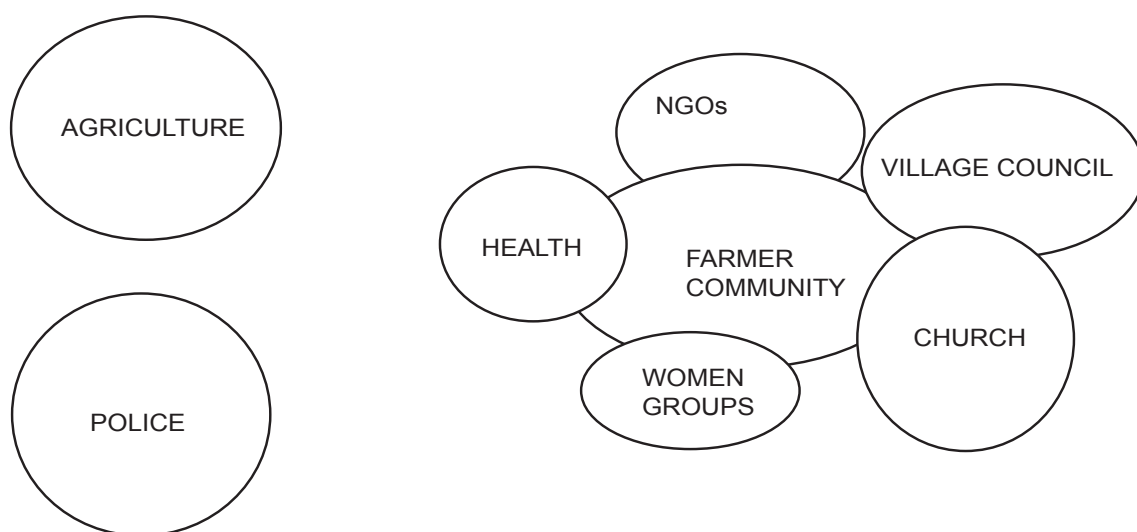
### 4) Process

1. List organizations, partners, institutions, groups, services, NGOs that you are currently interacting with.
2. Identify
  - a. level of importance
  - b. level of interaction
3. Draw a circle in the middle of paper to represent farmer or community
4. Draw circle to represent institutional interaction with community/farmer
  - a. the closer the circle to the farmer the higher the level of interaction (conversely) the farther the circle away from the farmer the lower the level of interaction.
  - b. the bigger the circle the higher the importance to the farmer and the smaller the circle the lower the level of importance.

### 5) Time

40 minutes

### 6) An example of INSTITUTIONAL LINKAGES put together by a group of DSAP GREAs based on results from their community consultations



### ANALYSIS OF INSTITUTIONAL LINKAGES

1. Agriculture and Police are important, however, level of interaction is low
2. Circles closer to the farming community indicates high level of in high level of interaction

## Activity 5 - Problem Identification, Scoring & Ranking

### 1) What is Problem Identification, Scoring & Ranking?

This activity can be used to prioritise problems faced by communities, in relation to development in general. In the DSAP process, the activity was used to identify and prioritise general problems and specific agricultural production issues.

### 2) Benefits

- The results become a source of information for the community as members share experiences of agricultural problems.
- This activity provides information for the project to focus their intervention.

### 3) Materials Required Needed

Flip charts, pens, local materials (stones, sticks, cards, seeds) - for voting; or a show of hands is sufficient.

### 4) Process (Steps)

(This refers to general problems)

- Explain the exercise and why it is being used.
- Draw matrix with 5 columns: 1st column for "problems", 2nd column for "severity", 3rd column for "distribution", 4th column for "total" and 5th column for "rank".
- List problems in the first column of the matrix.
- Give each participant 5 local materials for voting.  
Ensure:
  - no one votes on behalf of someone else.
  - no one influences someone else's vote.
- Go through the problems on the list in column 1, ask participants to reflect on the problem. The participants then place their voting materials in the SEVERITY column beside problems that affect them most as individuals. SEVERITY is for the individuals analysis of the problem as it affects only them.
- Again, give each participant 5 local materials for voting.
- For the same listed problems, ask participants to reflect on the problems experienced by the community as a whole. Then participants are to place their voting materials in relation to the distribution of the problem throughout the whole community. The votes are placed under the DISTRIBUTION column. DISTRIBUTION is for the individuals analysis of the problem as it affects their community.
- The facilitator tallies the total of votes from the SEVERITY and DISTRIBUTION columns and writes the sum under the TOTAL column.
- This process is repeated for each voted problem on the list.
- At the end of the exercise, the TOTALS from each problem is ranked in order from highest to lowest in the "RANK" column.

NOTE - In cases where problems rank the same, the participants vote again through show of hands to reposition the ranking.

The output from this exercise is a series of problems ranked in importance from 1 being the most serious problem to the highest number signifying a not so serious problem.

### 5) Time

45 minutes

**6) An Example of a PROBLEM IDENTIFICATION, SCORING and RANKING table from DSAP PNG. This was from a community consultation held at Malabunga High School, Rabaul.**

***RANKING IDENTIFIED PROBLEMS - Malabunga High School (this group included teachers, students and neighboring youth)***

PROBLEM	SEVERITY	DISTRIBUTION	TOTAL	RANK
Lack of seeds	21	19	40	6
Lack of skills	12	16	28	9
Soil fertility	27	20	47	3
Pests & Diseases	26	21	47	3
Lack of finance	28	27	55	2
Lack of farming land	20	19	39	7
No milling machine	30	26	56	1
Lack of transport	19	17	36	8
Markets	25	20	45	4
Natural disasters	7	8	15	10
Lack of management planning	20	16	36	8
Price fluctuations	25	18	43	5
Lack of extension services	21	22	43	5

**RAPITOK MEN'S GROUP**

PROBLEM	SEVERITY	DISTRIBUTION	TOTAL	RANK
Lack of seeds	65	63	128	4
Lack of skills	65	61	126	5
Soil fertility	44	25	69	11
Pests & Diseases	56	65	121	8
Lack of finance	20	28	48	13
Lack of farming land	20	28	48	12
No milling machine	63	71	134	1
Lack of transport	64	60	124	6
Markets	65	65	130	3
Natural disasters	44	50	94	10
Lack of management planning	57	65	123	7
Price fluctuations	59	59	118	9
Lack of extension services	65	65	130	2



**WOMEN'S GROUP**

PROBLEM	SEVERITY	DISTRIBUTION	TOTAL	RANK
Lack of seeds	28	30	58	7
Lack of skills	24	23	47	4
Soil fertility	14	18	32	9
Pests and Diseases	18	18	36	8
Lack of finance	30	30	60	3
Lack of farmland	6	6	12	13
No milling machine	30	30	60	2
Lack of transport	26	26	52	7
Lack of markets	30	30	60	1
Natural disasters	30	30	60	6
Lack of management and planning	20	20	40	10
Price fluctuation	30	30	60	4
Lack of extension advice and support	30	30	60	5

From the prioritization of the problems the groups ranked similar problems in the top 5 although in a different order. Highlighted in the problems are the lack of a milling machine, Lack of extension support services, lack of finance, lack of markets for rice, price fluctuations, lack of seeds, lack of skills and poor management planning.

**THE RESULTS FROM THIS ACTIVITY PROVIDE THE DATA FOR ACTIVITY 6 - CAUSAL ANALYSIS. IT IS ADVISABLE THAT ACTIVITY 5 & 6 ARE CONDUCTED IN SEQUENCE.**

## Activity 6 - Causal Analysis

### 1) What is causal analysis?

This activity encourages participants to reflect on causes and effects of problems and their current solutions.

### 2) Benefits

- It provides an opportunity to capture traditional knowledge, practices, and beliefs peculiar to that location/crop/agriculture practices.
- It provides information on accessibility to agricultural technologies and resources by the farmer.
- It provides a better understanding of the community's perceptions and assumptions towards development.

### 3) Materials

Flip chart, felt pens

### 4) Process

- Explain the exercise and why it is being used
- Draw the matrix with 4 columns: 1st column for "causes", 2nd column for "problem", 3rd column for "effects", and 4th column for "solution"
- Select the top 3 agricultural problems from Activity 3 and list them in the problem column.
- Discuss causes of each problem and list them in the "causes" column
- The same is repeated for "effects" and "solutions" columns

### 5) Time

45 minutes

**6) Three examples of a causal analysis taken from a DSAP PNG community consultation, held at Malabunga Secondary School, Rabaul. These three examples have been selected to indicate the unique perceptions of the community relating to issues about their development and helps provide information for development practitioners. These causal analysis by 3 groups is a follow- on from Activity 5 of the problem identification, scoring and ranking.**

***Malabunga Secondary School (includes teachers, students and youth from the community)***

CAUSES	PROBLEMS	CONSEQUENCES	SOLUTION
Newly introduced crop	No milling machine	Unmilled rice	Increase production
Less awareness		Lack of interest	Increase awareness
Lack of government collaboration with communities		Deterioration of field grain production	Establish rice mill
Inadequate funding of subsidy	Lack of finance	Lack of project finding	Increase internal revenue (self reliant projects)
Incomplete/late fees payment			More awareness in fee payment
Continuous cultivation	Soil infertility	Low food production	Encourage integrated agricultural practices
			Soil management
Imbalance ecosystem	Pests and Diseases	Low production	IPM
		Low quality of crops	

Lack of information technology	Lack of access to market	Inability to market products	Establish information centre
Low quality product	Price fluctuation	Low prices for production	Proper training
Natural disaster			Proper planning

**Rapitok Men's Group**

CAUSES	PROBLEMS	CONSEQUENCES	SOLUTION
Lack of finance	No milling machine	Less farmers planting rice	Provide rice machine within the community
Lack of support from trained extension officers within LLG	Lack of extension services	Low productivity by farmers	Provide extension officers to the farmers
No milling machines	Lack of markets	Low productivity by farmers	Provide 1 and 2 to farmers
Lack of proper seed supply	Lack of seed	Low productivity	Provide extension officers to farmers

**Women's Group**

CAUSES	PROBLEMS	CONSEQUENCES	SOLUTIONS
Lack of awareness and education of rice planting and management	Lack of markets	Low quality produce	Encourage integrated agricultural practices
	Support from all levels of government for rice planting and management		Soil management
Lack of support from different levels of government		Low interest in rice planting	Awareness and education programme for rice planting
No rice to mill	No milling machine	No rice	Aggressive support from all levels of government for rice
			Aggressive awareness and education programme for rice
Lack of credit facilities for agriculture in general	Lack of finance	Low agricultural output	Availability of credit facilities for agriculture
World market	Price fluctuations	Low prices for rice	Look at encouraging domestic markets



## Activity 7 - Livelihoods Ranking

### 1) What is Livelihoods Ranking?

This activity is inclusive of sources of livelihoods, income status, and wealth of the community. The activity is aimed at identifying sources of income that sustain the daily lives of the community.

### 2) Benefits

- It provides baseline data for the socio-economic status prior to project intervention
- It identifies the main source of income
- It confirms the various expenses and the average amount of income per household
- It provides information on the sources of livelihood that is important to the community.

### 3) Materials needed

Flip charts, felt pens

### 4) Process

- Explain the exercise and why it is being used
- Draw matrix with 4 columns: 1st column for "livelihoods", 2nd column for "importance" 3rd column for "total" and 4th column for "ranking".
- Ask the participants to list the sources of livelihood in the first column
- Give each participant 5 local materials for voting.

Ensure:

- no one votes on behalf of someone else
- no one influences someone else's vote
- Reflect on various sources of livelihoods listed. Vote according to importance in terms of providing regular source of food & income; and the most profitable.
- At the end of the exercise, the sum from each source of livelihood is totalled in the "totals" column then later ranked in order from highest to lowest in the "RANK" column

### 5) Time

1 hour

**An example of LIVELIHOODS RANKING from a DSAP PNG community consultation. This is a sample of livelihoods ranking by the women's group made up of villagers from Taulil and Rاپitok.**

#### Women's Group

Activity	Taulil Area	Rاپitok Area
Copra/Coconut	1	1
Gardening	2	2
Marketing	3	3
Salaries/Wages	6	6
Handicrafts	7	7
PMV-Transport	4	4
Lawnmowers – grass cutting business	5	5
Business	5	5
Fundraising	8	8
Community Work	8	8
Livestock –chicken/pig	2	2

## Activity 8 - Information and communication needs assessment

### Why an information and communication needs assessment?

This assessment is to identify the information and communication sources and needs of the participants. Participants are asked to identify what individuals/institutions/organisations/groups provide are their current sources of information. The following steps can be followed to carry out the information and communications needs of the participants.

### Benefits

- Knowledge of current sources of information assists with the project selecting best way to communicate with the members of the community.
- The members of the community through this exercise inform the project of how they would like to receive information specific to the development objective.

### Materials

Flip charts, felt pens.

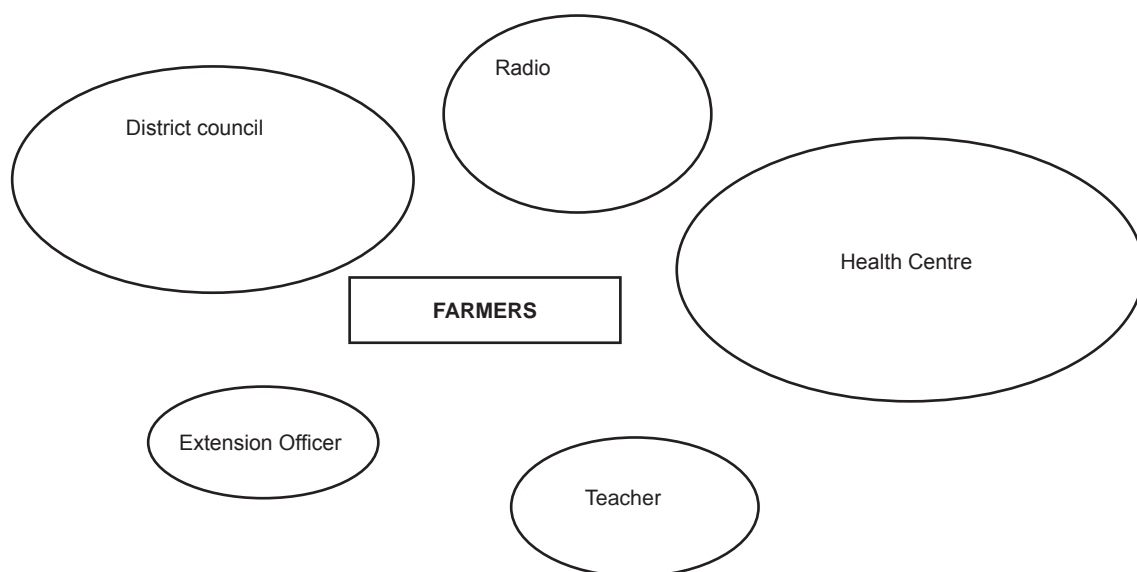
### Process

- **Explain the exercise and why it is being used.**

**There are three main questions to be asked during this session,**

- Identify current sources of information.

Ask the participants to their identify in order of largest source of information (all information relating to their daily lives) to smallest source of information. When complete, ask the participants to transfer to butcher paper the sources of information with the largest information provider having the largest circle. This usually refers to the individual.



- **How is the information that they currently receive transmitted? This refers to communal information and the participants are asked how information from the various sectors is disseminated to the community as a whole.**
- **Format in which the participants would like to receive agricultural information. Participants were informed that the DSAP project is in a position to assist them with access to relevant agriculture information and they are asked to identify how they would like to receive their agriculture information.**

Note - While these are the three main questions asked during the community consultations, this was not the only information and communications needs assessment carried out. More detailed information and communications needs assessments were carried out with the staff of the Department of Agriculture to determine their capacity to respond to the community's needs. More information on detailed information and communications needs assessments is available in Annex 2 of this resource.

Example of **CURRENT SOURCE OF INFORMATION** for men's group, taken from DSAP Vanuatu community consultation in North Pentecost, Vanuatu

Means of Communication	Rank
Talking in the nakamal (Kava Bar)	1
Telephone	2
Radio	3
News paper	4
Peace corps	5
Workshops	6
Public notice	7
Wan smol bag theater	8
Posters	9
Letter	10
Livestock –chicken/pig	2



## Activity 9 - SWOT Analysis

### Introduction

SWOT Analysis tool is normally used in measuring a organisation/project/community's ability to achieve planned activities.

### Definition:

- Strengths
- Weaknesses
- Opportunities
- Threats

SWOT analysis tool is normally used in finding out a community's ability to achieve planned activities.

Activity 9: Identify and list what they perceive as their Strengths, Weaknesses and Opportunities of their community as well as external threats which will affect the successful implementation of a project or activity.

### Materials:

- Paper sheets, marking pens, thumb pins/sticky tape.

### Process:

- Explain the exercise and why it is being used
- Ask the participants to identify and discuss in their groups what they perceive their communities' strengths, weaknesses, opportunities for them in the future and external threats to the topic at hand.
- Process should take 40 minutes at least.

**An example of a SWOT analysis taken from a DSAP Niue community consultation. The purpose of this exercise was to list the SWOT for organic farming in Niue.**

Strength	Weakness
<ul style="list-style-type: none"> <li>• Small population</li> <li>• Organic farming prioritized by government</li> <li>• High quality foods</li> <li>• Little damage to environment from organic farming</li> <li>• Educated staff and farmers</li> <li>• Large young population</li> <li>• DAFF improved structure</li> <li>• Linkage with donors</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of awareness of and experience in organic farming</li> <li>• Poor technical support</li> <li>• No organic chemicals</li> <li>• Ignorance</li> <li>• Land tenure</li> <li>• Little trust among farmers</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>• For exposure to health issues</li> <li>• To explore organic markets</li> <li>• Further training overseas</li> <li>• Address land tenure issues</li> <li>• To improve awareness and experience in organic farming</li> </ul>	<ul style="list-style-type: none"> <li>• Natural disasters</li> <li>• Dishonest practices</li> <li>• Consumer demand</li> <li>• Biosecurity</li> <li>• WTO requirements</li> </ul>

After having the buzz group discussions they report at a plenary session with the rest of the group on their findings.

The SWOT analysis is very useful in formulating appropriate project plans for communities. By the application of PRA, their needs / problems and also potential solutions will be identified. In order to achieve the anticipated results it is of paramount importance to understand the community's, strengths, weaknesses, the opportunities as they perceive as threatening their existence.

With this information the project can work on what the communities have and their strengths taking into consideration, the weaknesses, things they have identified as opportunities, whilst addressing the identified threats.

## Activity 10 - Transect Walk as a Participatory Tool

### Introduction

Transect walk is a walk across a sector of the community village area and farming areas. This is to observe the activities that the communities are doing and the farming practices of the area. You could also use this to observe pest and diseases and other social practices of the community. Transect walks could be done in groups or as individuals.

### Tools

Prepare tools and materials that you may need i.e. pocket note book, camera or hand lens for pest identification (optional).

### How to carry out a Transect Walk.

- Arrange for a key informant to guide you during the walk
- Walk across a sector of the community and do not select certain areas only
- Talk to people on that you meet on the walk.
- Let the people do the talking and be a good listener
- Observe customary practices that are observed within the community.
- Observing farming practices
- Jot down notes if you have to, but do not do this in front of the people, select a quiet corner or do this at the end of the visit
- Think of relevant questions to ask
- Draw a map of transect the area and put in what you have observed

### Facilitator's notes

- Plan in advance what information you are looking for.
- Treat with respect e chiefs and community leaders
- Perform customary rituals that are required of visitors by the community.
- Dress appropriately
- Observe customary practices, norms and values and act accordingly
- Be a good listener
- Carry out a reflection of what you have learned in the walk.

### Situations where Transect walks could be used

- Observing pest and disease in gardens.
- Observing gender groups performing their roles
- Customary practices that is observed within the community.
- Observing farming practices
- Improved practices given to farmers before and after use could also be observed during the visit.

## Activity 11 - Participatory Observation as a Tool

### Introduction

Participatory observation is observing how a community lives. This could be done by an individual or as a group, when entering a village or meeting with a community. Subconsciously every one carries out participatory observation with out realizing it. However if such an observation is planned, with the observer identifying, what to look for, participatory observation could yield a lot of information about the community and the livelihood of the people. This could be used to collect social data and other information's that could not be collected in transect walks. This could also be done to observe gender roles in meetings and PRA.

### Tools

Prepare tools and materials that you may need i.e. pocket note book, camera or hand lens for pest identification.

### How to carry out participatory observation

- This could be done by an individual or as a team.
- Carefully plan what information you collect.
- Identify areas or where to look at and what to look out for
- Go into the community observing the customary practices of the community.
- Observe what the community is doing
- Ask few questions
- Take notes if you may have to in case you forget but do not do this in front of the people.

### Facilitators Notes

- Plan in advance what information you are looking for.
- Jot down notes if you have to, but do not do this in front of the people, select a quiet corner or do this at the end of the visit
- Think of relevant questions to ask
- Carry out informal interviews but do not ask too many questions
- Let the persons talk and do not interfere unless necessary
- Carry out transcend walk and talk to people you meet.
- Carry out reflection of what you have observed

### Do's

- Treat with respect e chiefs and community leaders
- Perform customary rituals that are required of visitors by the community.
- Dress appropriately
- Observe customary practices, norms and values and act accordingly
- Be a good listener

### Limitations

- There limitations in observing gender roles in some areas as it may require a person of the same gender to observe or ask questions
  - It is difficult to collect information on sensible issues like income. Your may have to use other observable sources like yield.
- Situations where observation can be used
- This could be done through transcend walks.
  - Observing pest and disease in gardens.
  - Observing gender groups performing their roles
  - Customary practices that is observed within the community.
  - Observing farming practices
  - Carrying out informal interviews
  - Gathering impacts on sensitive issues e.g. Income
  - Improved practices given to farmers before and after use could also be observed during the visit.



## PLANNING THE ACTIVITIES - AFTER THE CONSULTATION

The DSAP project uses the Logframe Approach as a method of planning, implementing, monitoring and evaluating the project activities. Using the logframe approach, results from the community consultation are inserted into a problem tree. The problems are then turned into positive statements which is named the objective tree.

Note - this section does not provide full information on the Logframe approach, rather it provides part of the Logframe process that the DSAP project used, namely the problem tree, the objective tree and constructing a work plan out of the objective tree.

- I. Create a problem tree
- II. Form an objective tree
- III. Build a workplan out of the objective tree

## I. Building a problem tree

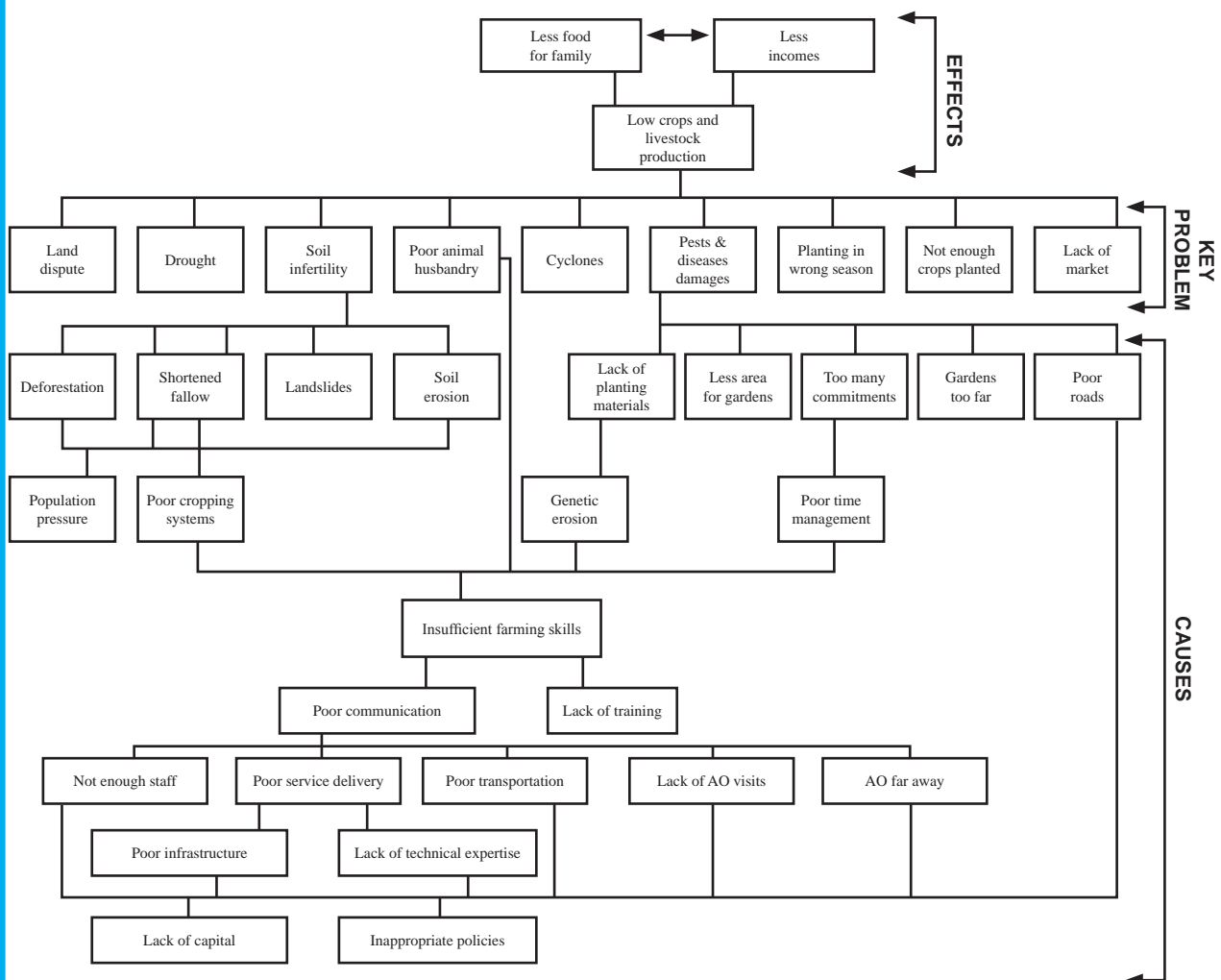
Problems related to agriculture production would have been identified during the community consultation, using Activities 3,4 and 5 in the previous section.

A problem tree in the Logframe Approach summarises identified problems in a “cause and effect” relationship.

### Steps for developing a problem tree

- Cluster the problems identified from all the groups.
- Isolate/Identify the main problem e.g. Low crop and livestock production. Put this at the top of the tree to reflect a main EFFECT.
- Layout the other problems as lower - order problems or Key PROBLEMS
- Layout rest of problems under key problems in a cause and effect manner. These become CAUSES.

### Putting results from consultation into a problem tree



All results grouped and put into a problem tree - 'cause and effect'.

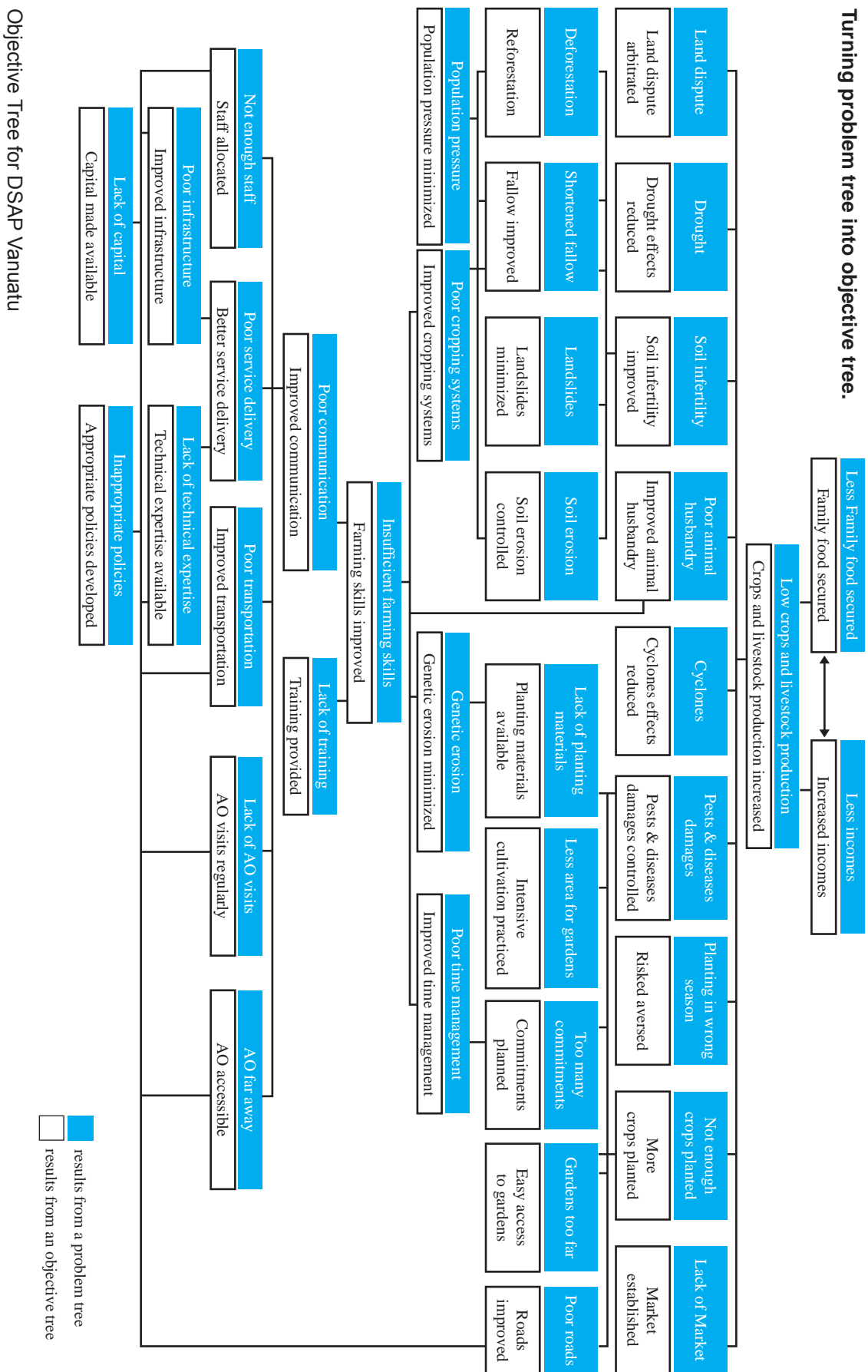
## II. Building an objective tree

The objective tree describes the ideal situation if the problems are solved.

### Steps to building an objective tree

- Change all statements in problem tree from a negative to a positive.
  - e.g. Soil Infertility - Soil fertility improved
  - Deforestation - Reforestation
  - Pest and disease damages - Pest and disease damage controlled.
- An objective tree helps with a strategic analysis of the project being designed.
- From the objective tree, the area/areas for project intervention can be identified.

# Turning problem tree into objective tree.



Objective Tree for DSAP Vanuatu



## DOCUMENTING AND REPORTING ON COMMUNITY CONSULTATION

It is important to document and report on the results of the community consultation. Not only does it serve as data for the project but is an important document for future activities in that area.

There are many formats that exist for documenting and reporting of community consultations, the following format is what the DSAP project has used.

DSAP Format for documenting and reporting on Community Consultation.

### Introduction

#### Background information

- Objectives of the consultation
- Information on community, location, population, land use etc. etc.

#### Results of consultation

List results from consultation

- e.g.
- Mapping
  - Venn Diagram
  - Seasonal Calendar
  - List of Problems
  - Matrix Scoring etc.

#### Project Intervention

- Problem Tree
- Objective Tree
- Workplan derived from objective tree.

### **Presenting results to the community.**

- It is important to translate the reports of the consultation into the local language.
- Liase with the community a good time when all who were present for the initial consultation can be present for this feedback.
- Be flexible with timing on this consultation as a lot of time may be used clarifying workplans and activities planned for the project.
- Try to work within a two-week timeframe to compile and translate the consultation report.

## CONVERTING THE OBJECTIVE TREE INTO A WORK PLAN

### Process

- Ensure a wider representation of stakeholders are present
- Brainstorm as a whole group and select key problem the project will address. to identify in their stakeholder groups
- Discuss and identify in stakeholder groups problem. Write problems on pieces of paper and get stakeholders and to stick thme on board.
  - Write one problem per piece of paper
  - No more than 3 sentences per problem
- Facilitator during plenary sessions groups problems that are related and clarify problems and why they were selected as problems.
- Analyse the problems into direct causes (issues that directly relate to the key problem)
- Put remaining problems under related areas UNDER the direct causes.

Sometimes root problems may not be identified at the initial problem identification stage. It is advisable to continue probing until the group agrees on real root causes. It is recommended that these causes are integrated as project activities.

### Workplan fromo DSAP Kiribati based on results of community consultation

A large, empty rectangular box with a blue border, occupying most of the page. It is intended for a diagram or drawing related to Stage 2 of the toolkit.

## BASELINE DATA

For the purposes of documenting the process which DSAP engaged, two types of baseline data collection are recorded in this resource. The first one is a questionnaire that was conducted as a survey with the community during the community and the other is a more theoretical approach to baseline data.

### **Method 1**

#### **What is baseline data?**

- Basic information gathered before a project/program begins
- It is used later to provide a comparison for assessing project/program IMPACT

#### **What are the kinds of baseline data?**

- Two kinds
  - *Determinate baseline data*
    - Closely related to the proposed project/program
    - Clearly indicated by the goals and objectives of the project/program
  - *Indeterminate baseline data*
    - Not obviously related to the goals and objectives
    - But provides useful background awareness of the sociolinguistic and cultural context of the program

#### **Example of baseline data**

The DSAP Project has the following goals and objectives

1. Increased sustainable agricultural production
  - a. 20% increase in productivity of target farmers in target areas of participating countries
  - b. Robust agricultural production throughout the years
2. Capacity of the NARES, NGOs and farmer groups for identification and promotion of sustainable agricultural technologies with farm families improved
  - a. More efficient NARES and NGO staff operational in the countries before the end of the project
  - b. At least 40% adoption rate of 2 technologies per country by participating farmers before the end of the project

#### **Appropriate determinate baseline data?**

- Current number and productivity of target farmers in target areas of participating countries
- Current number of NARES and NGOs staff operational in the countries
- Current number of technologies recommended and available for farmers' adoption in the country
- Etc.....

#### **Appropriate indeterminate baseline data?**

- Agricultural production trend in the past 5 – 10 years in the country
- The average number of farm household members
- The traditional food system
- The attitude of farmers towards new technologies
- Etc.....



## **CASE STUDY ON THE USAGE OF BASELINE DATA IN FEDERATED STATES OF MICRONESIA**

### **Pre-Project**

Name of Farmer: Francisco Marquez  
 Farm Location: Kamar, Nett Municipality, Pohnpei State  
 Years of Farming: 5 years  
 Area Farmed: 20ft x 25ft  
 Household No.: 6  
 Type of Farming: Traditional agro-forestry system  
 Crops Grown: Banana, breadfruit, sugarcane, yams, cassava, swamp taro, sweet taro  
 Type of Farmer: Subsistence - purely for home consumption

### **Project Alive**

PRA conducted: Names and number of community members  
 Names and number of identified institutions of importance to the community  
 Types of crops grown and their seasonality  
 Most preferred crops  
 Roles of men, women, youth and children in farming  
 Impact of a natural disaster  
 Identified production problems and solutions  
 Prioritized activities to be carried out

### **Post Project**

Differences: Increase number of crop types  
 Inclusion of vegetables in the traditional agro-forestry system  
 Increase number of crop varieties (new sweet taro varieties included)  
 Increase area of planting from 20ft x 25ft to 50ft x 100ft  
 Increase knowledge attained on recommended plant spacing of different crops  
 Increase number of farmers' training  
 Increase participation of men, women, youth (1 household (Marcus) to 25 households)  
 Each household has its own food garden  
 Increase in crop yields (lbs/sq.ft.)  
 Increase number of farmers who are subsistence, semi-commercial and commercial farmers  
 Produce own vegetable seeds  
 Improved food security with the inclusion of vegetables (2 cans of meat are reduced to 1 can with vegetables)  
 Children are now eating vegetables (change to a healthy diet)  
 Adopted organic pesticide and new composting method

Impact: Stimulated and increased community involvement  
 Increased and improved food security for households  
 Change in diet inclusion of more vegetables, more fibre that helps reduce status of diabetics  
 Healthy household  
 Increased knowledge gained and skills acquired by farmers  
 Trained farmers passed on skills and knowledge to younger generation

Status of Farmer: Marcus became the Secretary to the Pohnpei Farmers' Association  
 Highly respected and a good negotiator on behalf of farmers  
 Employed by a big commercial farming company  
 Facilitated the vocational training of high school dropouts in agriculture  
 Represented FSM to the SPC CRGA Meeting in Samoa in 2007

**METHOD 2 - Baseline data questionnaire used by DSAP Fiji**

This questionnaire was completed by participants at the DSAP Fiji sites and was filled out at the beginning of the project. This document has been translated from the Fijian language into the English language.

**Survey of livestock**

	Before DSAP	After DSAP
1. Do you have livestock?		
2. If 'yes', what livestock do you have? List the livestock that you have.		
3. What is the number of livestock that you are farming? List according to type of livestock.		
4. Is your livestock divided into different categories? For selling, for family consumption, for communal obligations?		
5. Does anyone assist you with looking after your livestock? If 'yes', how many people assist you with looking after your livestock.		
6. Do you own your own tools to help with your livestock farming? If 'yes', list them.		
7. Rate your level of knowledge of livestock farming. On a scale of 1 - 5 with 5 being expert knowledge and 1 being not enough knowledge.		
8. What were/are your reasons for taking up livestock farming?		
9. How long have you been engaged in livestock farming?		

**Survey of land use management**

	Before DSAP	After DSAP
1. Are you aware of some proper land use practices?		
2. If you have answered 'yes' to the above question, name some proper land use practices that you are aware of?		
3. Do you use some methods that prevent soil erosion on your farm/plantation?		
4. Why is it a good idea to use practices that prevent soil erosion as well as methods that help with soil fertility? Na cava e kilikili kina me vakayagataki e so na ka me tarovi kina na sisi ni qele ka maroroi talega kina na qele?		

**Survey of land use management**

	Before DSAP	After DSAP
1. Are you aware of some proper land use practices?		
2. If you have answered 'yes' to the above question, name some proper land use practices that you are aware of?		
3. Do you use some methods that prevent soil erosion on your farm/plantation?		
4. Why is it a good idea to use practices that prevent soil erosion as well as methods that help with soil fertility? Na cava e kilikili kina me vakayagataki e so na ka me tarovi kina na sisi ni qele ka maroroi talega kina na qele?		

**Economic survey**

	Before DSAP	After DSAP
1. State your main source of income		
2. How much do you earn in a month?		
3. If agriculture is a source of income for you, please specify the agricultural activity. If it is in crops, please identify the crops that earns money for you.		
4. How often do you receive a monetary income? Weekly, fortnightly, monthly etc.?		
5. For those occasions where you do not have cash on hand, how do you fulfil your family, church and communal obligations?		
6. List the breakdown of your household expenses.		
7. Do you save money in a bank account or elsewhere?		
8. What are some of your plans for the next 5 years?		
9. Have you received any training in planning and budgeting for households or for small business?		
10. If you have answered 'yes' to the question above, are you practicing some of the methods for planning and budgeting that you have learnt?		

**Nutrition survey**

	Before DSAP	After DSAP
1. Please list foods that you eat at : Breakfast Lunch Dinner		

2. Please list the type of food items that you often purchase from the store?		
3. Why do you purchase these food items from the store?		
4. Do you plant crops for family consumption? If 'yes', please list crops planted for family consumption.		
5. Are you aware of the nutrition value of foods in general?		

**Any other issues you may want to raise:**

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**METHOD 3 - Baseline Data for Objectively Verifiable Indicators**

The **DSAP Vanuatu** log frame will be used to illustrate how baseline data are collected and used to evaluate indicators and demonstrate impacts of project activities and outputs. Below is a traditional log frame table with the Vanuatu goal, purpose and a couple of outputs. Indicators for each level and the methods for data collection are also given.

Goal/Purpose/Outputs	Objectively Verifiable Indicators (OVIs)	Means of Verification/ Data Collection Strategy	Assumption or Risks
<u>Goal</u> Increased food security and income for farming households	<ul style="list-style-type: none"> <li>• Increase in the contribution of locally grown foods to diets</li> <li>• Household expenditures</li> </ul>	Nutrition survey (latest). If not then focused survey Statistics Bureau. If not focused survey	
<u>Purpose</u> Crops and livestock production increased	<ul style="list-style-type: none"> <li>• Increased adoption of sustainable management systems</li> <li>• Increased in crop area and production</li> <li>• Increased in livestock numbers and production</li> </ul>	Agricultural census or survey. If not focused survey Annual crop survey and on-farm trial results Annual livestock surveys and on-farm trials	
<u>Output</u> Planting materials made available	<ul style="list-style-type: none"> <li>• Number of cvs collected</li> <li>• Genebanks established</li> </ul>	Field surveys and project reports	
<u>Output</u> Soil fertility improved	<ul style="list-style-type: none"> <li>• Fertility parameters improved</li> <li>• Productivity improved</li> </ul>	Soil test reports On-farm trial assessment and reports	

**Performance Targets**

After the indicators are decided then progressive performance targets are decided. Performance targets are the basis from which measurement take place and improvement begins. Without them, it is not possible to know whether performance is improving or falling behind. Recollection of past situations can help define the situation in the beginning of a project.

Performance targets should be established according to the followings:

1. Establish targets for each indicator in relation to baseline data or benchmarks you have identified. This sets expectations for performance over a fixed period of time.
2. During the annual work planning exercise, establish end-of-year performance targets to serve as measures of the extent of progress made toward the achievement of expected results in a given fiscal year.

Goal/ Purpose/ Outputs	Objectively Verifiable Indicators (OVIs)	Baseline (Year 1)	Target (Year 2)	Target (end of project)	Means of Verification/ Data Collection Strategy	Assumption or Risks
<u>Goal</u> Increased food security and income for farming households	<ul style="list-style-type: none"> <li>• Increase in the contribution of locally grown foods to diets</li> <li>• Household expenditures</li> </ul>	X%		Z%		
<u>Purpose</u> Crops and livestock production increased	<ul style="list-style-type: none"> <li>• Increased adoption of sustainable management systems</li> <li>• Increased in crop area and production</li> <li>• Increased in livestock numbers and production</li> </ul>	X%  X acres Y tons  X numbers Y kgs of meat		Y%  Z% increases  Z% increases		
<u>Output</u> Planting materials made available	<ul style="list-style-type: none"> <li>• Number of cvs collected</li> <li>• Genebanks established</li> </ul>	X number of cvs X number of genebanks	Y numbers Y numbers	Z numbers Z numbers		
<u>Output</u> Soil fertility improved	<ul style="list-style-type: none"> <li>• Fertility parameters improved</li> <li>• Productivity improved</li> </ul>	X% of nutrient  Kg/ha		Y% increase in levels  Y% increase in yield		

Once the performance targets are set then a system for on-going monitoring must be established and tools for the data collection. It is recommended that data collection and the ongoing monitoring are integrated into the overall management practices, operational processes, and record keeping activities. Often, data collection activities that are separate from regular roles and responsibilities fail because people simply do not have the time or resources to undertake these activities separately.

### Measuring Impacts

Much of agricultural development project activities revolve around testing responses or performances of crops or animals to a new technology. And growth of the organism and yield data are usually measured (see On-farm Trial section) to monitor the responses. Based on these, projects tend to confine themselves to measuring scientific impacts of innovations by primarily looking at effects on yields and productivity. But then the impacts of improved productivity which are sometimes at higher objective levels of logframe are most of the time not measured and those are increasing food security, incomes, employment opportunities and overall wellbeing.

If the project is designed to increase food security, food consumption habits before and after the project should be monitored. If the project is designed to increase cash incomes, they should be calculated before and after project activities. If a project is designed to increase agricultural employment opportunities the activities of the participants before and after the project should be

noted. Table 1 gives some examples of variables you might want to measure in order to try and capture some of the social and economic impacts of interventions.

Table 1

	Objective			
	Increased income	Increased food security	Employment opportunities	Dietary changes
Variables to measure, before and after interventions	Cash income	Consumption diaries	Activity diary	Consumption diaries
	Expenditure	Subsistence crop production	Paid employment	Subsistence crop production
	Subsistence income - value of subsistence produce		Time spent on subsistence work	

Scientific experiments can be controlled so that changes can be directly attributed to the changes introduced as a result of the intervention. Changes in social or economic indicators such as income levels, employment, and dietary habits cannot be controlled and therefore you can never be sure that measured changes are all attributable to project activities but having some information on these changes is better than having none at all.

### Why is measuring the impact of a project important?

- To learn what works and what doesn't - and what works really well so that it can be shared with others!
- To report to stakeholders - participants, project national and regional office, donors
- To show that you've made a difference

### Measuring Impacts

How do we measure well being?

- Health
- Income
- Income security - ability to save for a rainy day, not to adversely affected by income shocks, reduced dependence on external sources of finance e.g. remittances, loans
- Food security
- Housing
- Empowerment - confidence, leadership
- Environment
- Free / leisure time

What contributes to these factors?

#### Production

- Improvements in production (quantity and quality of produce) may lead to higher incomes, greater income security, greater food security, better nutritional and health outcomes.

#### Expenditure

- A reduction in expenditure e.g. on fertilisers may lead to higher incomes, greater income security. The project may also have allowed them to increase expenditure and contribute to

better health and education outcomes, improved housing.

### **Gender issues**

- Generating independent sources of income may contribute to increased food and income security. Increasing the amount of joint decision making could contribute to improved health and educational outcomes.

### **Education / Access to information / training**

- May contribute to improvements in production, housing, health and the environment. It may empower individuals to be more confident, to share their expertise with others. Improved educational outcomes for children can have significant implications for their future well-being – their earning potential, their health.

### **Access to technology**

- May contribute to increases in production, reduction in time spent doing a particular task which may free up time to do others things.

### **Improved partnerships / networks**

- May contribute to improved production outcomes through sharing of information

So measuring **changes** in well-being requires collecting quantitative data (income, production, consumption, expenditure, allocation of time, environmental indicators) and qualitative data (What community structures/groups are in place in the village? How well do they work? Are there any conflicts? As a household how do you decide what to spend money on? How do you decide what to grow? Do you share skills that you have learnt with others? What are the mechanisms for doing this?)

Ideally we would want to measure these things **before** (baseline study) and **after** the project intervention so that changes can be measured. However, in the absence of a baseline study it is still possible to get an idea of how things have changed. Surveying people after the changes and asking them to cast their minds back to try and extract the same information from before the interventions may be possible. For example if you are asking questions about the quantity of eggplants they sell a week now – can they remember what quantities they were selling 3 years ago? Case studies can be designed to measure the impacts of project interventions.

### **Methods of data collection**

- Household income and expenditure surveys - can be time and resource intensive.
- 'Typical' household survey - less time-consuming but less statistically reliable than a wider sample.
- Story telling (e.g. most significant change approach) - doesn't require as much data collection and can be more engaging for the participants - allows them to define what the most important change in their life has been.
- Consumption diaries - households records all their meals and the ingredients in a typical week and whether they are produced or bought goods.
- Activity diary - households records amount of time spent doing different activities every day for a week.
- Participatory activities e.g. going with them to market and recording their sales.

## Issues for analysis

### Measurement of income

The measurement of income for subsistence agriculture households involves collecting information not only on their cash income (e.g. from the sale of produce, any paid work, remittances from relatives) but also on the non-monetised stream of non-cash income from the production and consumption of agricultural produce. The latter is more difficult to measure and may be easiest and less resource intensive to ask participants to complete consumption diaries.

### Other factors affecting changes

It is not possible to conduct socio-economic assessments of changes in a vacuum or controlled scenario as is possible with scientific experiments so it is important to remember that when you are assessing changes as a result of the project that other factors may also have contributed to changes that are outside the scope of the project. For example the road access may have been improved making it easier for farmers to market their produce. It's important to try and disentangle the effects of the project and other changes that have impacted people's lives. Questions should therefore also be directed at other changes that have happened during the lifetime of the project e.g. infrastructure improvements - water, roads.

### Qualitative information

The collection of qualitative information is complementary to and often more important than quantitative information. From your involvement with the projects you may already be able to record a lot of this in your case studies but it is important to try and get as much of the information directly from the participants themselves. And record as much information as possible. Relatively trivial bits of information may be important in painting the picture of the impact the project has had. For example the fact that someone spoke at a village meeting may not seem like a big issue but if that person had never done so before it may be incredibly important for their confidence and self-esteem.

So after every visit, keep a log of information gathered - even if it's in a very informal setting. Informal conversations are often the best way to gather information on the issues that really matter.

### Indirect benefits

There may be significant benefits not only to the participants themselves but also to others in the community / neighbouring communities if they have shared their knowledge and expertise with others. It is important therefore to gather information on whether the participants are sharing their skills with others and what effect that is having.

These benefits may extend beyond the lifetime of the project and it may be necessary to try and estimate the potential multiplier effects.

For example, the introduction of vegetable gardens in one village may result in others doing the same as a result of the sharing of information through word of mouth or via relatives.

### Economic analysis vs financial analysis

Financial analysis measures the financial returns to a specific intervention - for example the profits generated from growing 1 ha of papaya. Economic analysis includes a wider set of variables that have an impact on our well-being. This may include cash income generated by selling papayas but it may also include benefits as a result of increased free time or increased food security. These benefits are not associated with financial flows but are economic benefits nonetheless. Estimating the value of these benefits is difficult and many economic assessments therefore tend to focus on financial returns.

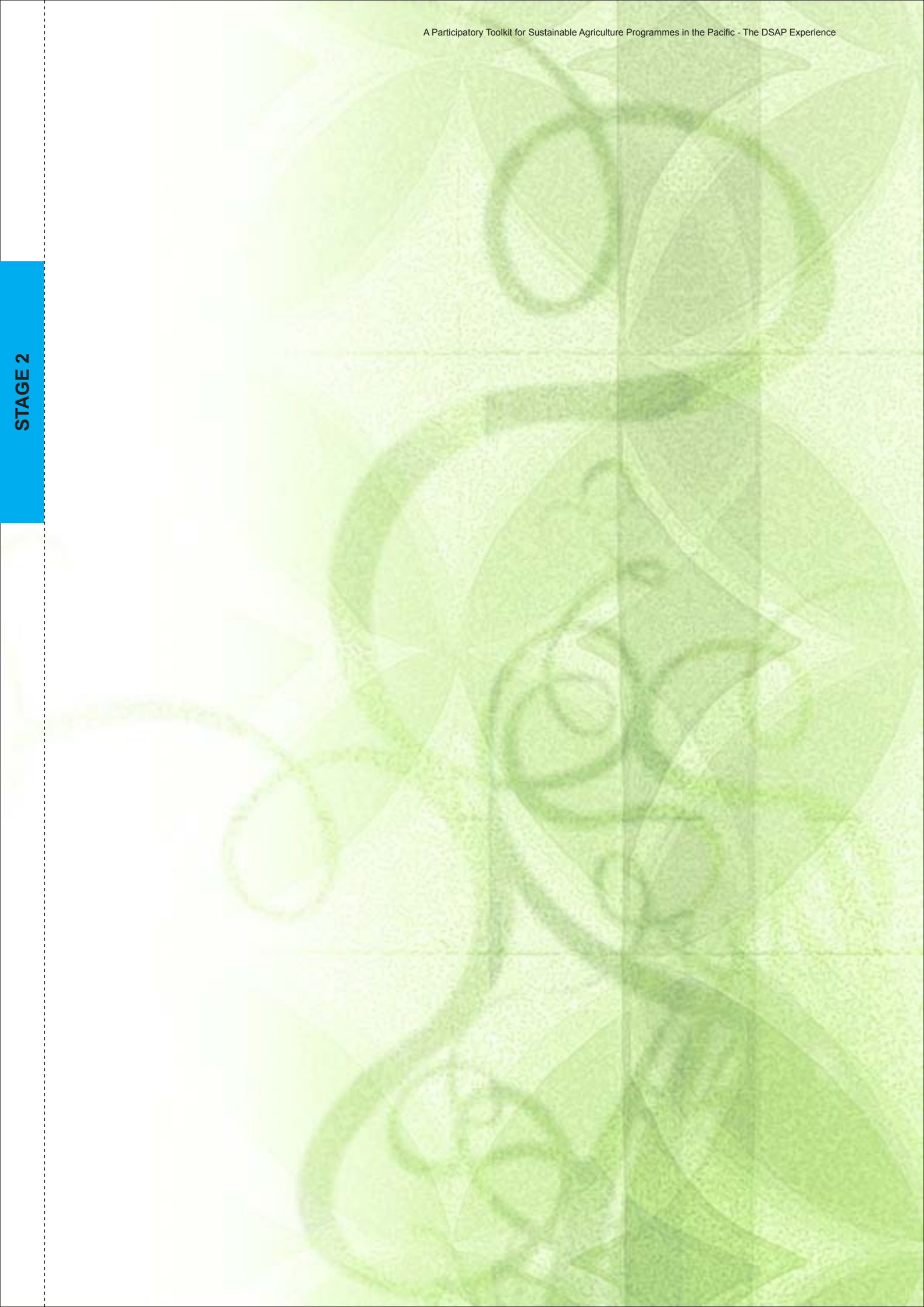


## Collecting data

The collection of social and economic data need not be too burdensome. Surveys can be designed simply and focused on the specific objective you are interested in. The collection of data can be timed to coincide with other project activities.

Even if you are unable to conduct a full economic analysis any information collected will help improve your knowledge about the people you are working with and may help to ensure that interventions are appropriately designed to address their specific needs.

Even the simplest approach possible - asking someone how their life has changed since the project began - can yield useful stories that can be as part of an impact assessment.



## **STAGE 3**

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**DESIGNING ON-FARM TRIALS BASED ON OUTCOMES FROM COMMUNITY CONSULTATION**

**MONITORING AND EVALUATING THE PROJECT ACTIVITIES**

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## DESIGNING ON-FARM TRIALS

### Introduction

In participatory on-farm trials, farmers should take the lead role in the design, implementation, and evaluation of technology. There are different types of on-farm trials depending on who designs it (farmer, extension officer or researcher or all) and who take the lead role in the implementation and evaluation of the technology.

### Objectives of On-farm Trials

An on-farm trial has several objectives. The first, it permits farmers, extension officers, and researchers to work as partners in the technology development.

Secondly, on-farm testing is useful for evaluating the biophysical performance of a practice under a wider range of conditions than is available on-station.

Thirdly, on-farm trials are important for obtaining realistic input-output data for financial analysis.

Finally, on-farm testing provides important diagnostic information about farmers' problems.

### Types of On-farm Trials

On-farm trials can be classified according to the balance of researcher and farmer involvement in their design and implementation.

- Trials designed and managed by researchers
- Trials designed by researchers and managed by farmers
- Trials designed and managed by farmers

***There is a pressing need for an on-farm research methodology that:***

1. *Empower farmers to quantitatively evaluate alternative agricultural practices;*
2. *Produces results considered credible by both agronomists and other farmers;*
3. *Is "farmable" using existing equipment and with minimum of additional effort.*

### Experimental Design

#### Site Selection

It is important to select a site that is representative of the area and the soil type where the trial is located. In doing experiment, we want to control all external sources of variation as best as we can. This helps to ensure that observed differences are most likely to have been caused by the treatments we applied. The selection of trial sites for cassava bitterness trial in Tonga was done by farmers as they know the patches of land within their property that cassava becomes bitter when planted on.

#### Trial Design

DSAP has found that *the paired treatment design* is the best for farmer-managed on-farm trials. It compares the improved technology treatment to farmer's normal practice as a check or control treatment or simply treatments with and without the improved innovation. Treatments should preferably be strips of one or two-equipment-widths and run completely across the experimental area. Having the 'with' and 'without' treatments standing adjacent to each other allows farmers to easily take visual comparisons and assess the trialed technology as the trial progresses. In order for the trials to be analyzed statistically, we need to replicate the treatments and randomly allocate them to their locations in the experimental area. Fig. 1 shows a trial with 2 treatments (with and without mucuna) replicated six times in a randomized block design. Alternatively the paired treatments can be located on different sites



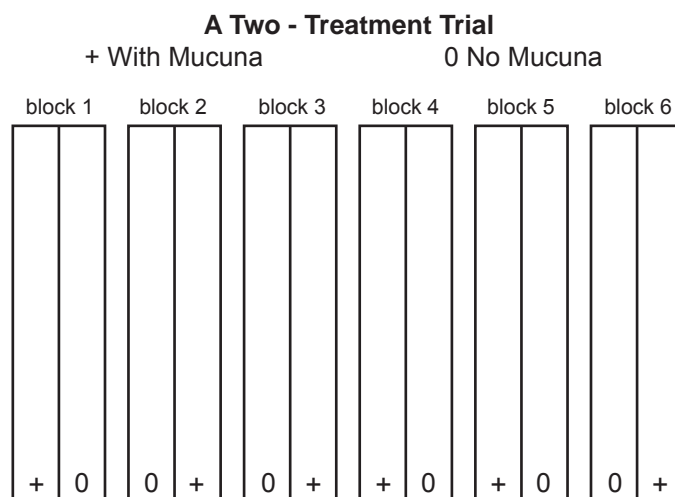


Figure 1. A typical randomized two-treatment on-farm trial with six replications (blocks).

### **Treatment Selection**

On-farm trials should be kept simple. Choose a small number of treatments to compare that endeavour to answer a limited number of questions. The more questions that a trial is asked to answer, the more difficult it will be to determine direct treatment effects. Treatments should accurately reflect a comparison of new and existing technologies or methods. As in our design treatments - use of mucuna as green manure compared to the existing fertilizer recommendation used by squash growers in Tonga. Design the trials carefully to ensure that they are answering the questions being asked and that the treatments chosen can generate those answers.

### **Data Collection**

Data to be recorded should be identified at the beginning of the trial, and every effort should be made to record the data in an orderly and timely manner. The type and timing of data collection will vary with the nature of the trial.

Since a great deal of on-farm trials are ultimately concerned with the yield impacts of various treatments, the method of harvest and the appropriate equipment and people involved in yield data collection should be identified.

Communication between those involved in trials is important to ensure that an entire season's work is not lost because a weighing balance or the right people are not present when required in the field

In general, the data that should always be recorded for an on-farm trial include:

- planting date
- harvest date
- cultivar or hybrid
- sampling/assessment dates (tissue, soil samples, height, flowering dates, etc.)
- soil type, soil condition at planting
- tillage system used
- fertilizer amount, type, time and method of application
- weed control program or other inputs used
- daily temperature (minimum and maximum)
- rainfall
- notes on site with reference to any factors that could contribute to plot variation including



history of land usage by the farmer in the last say 5 years.

## Data Assessment

### Using T-test

#### AN EXAMPLE OF A PAIRED-COMPARISON TRIAL AND ITS ANALYSIS

Pair number	Treatments		Difference (X)	(X-X)	(X-X)2
	No Mucuna	Mucuna			
	(Yield in kg /plot)				
1	198.9	228.9	30	16.19	262.12
2	200.9	217.1	16.2	2.39	5.71
3	149.9	196.6	46.7	32.89	1081.75
4	126.9	165.5	38.6	24.79	614.54
5	274.4	218.9	-55.5	-69.31	4803.87
6	182.2	189.1	6.9	-6.91	47.75
n = 6			Σd= 82.9		Σd² = 7961.15

#### Mean differences:

-  $\frac{\Sigma d}{n} = \frac{82.9}{6} = 13.82$  kg/plot, which is the difference between the 'Mucuna' and 'No mucuna' treatments.

#### Standard deviation of mean difference:

$$s_d = \sqrt{\frac{\Sigma d^2 - \frac{(\Sigma d)^2}{n}}{n - 1}} = \sqrt{\frac{7961.15 - \frac{82.9^2}{6}}{6 - 1}} = \pm 36.92 \text{ kg/plot}$$

#### Standard error of mean difference:

$$s_{\frac{d}{\sqrt{n}}} = \frac{s_d}{\sqrt{n}} = \frac{36.92}{\sqrt{6}} = \pm 15.07 \text{ kg/plot}$$

**Student's  $t_{.5\%, 5} = 2.571$**

Get t from a "t table." A high school statistics book would have a t table. "5%" (sometimes called "α") is the chance of an error at the 95% confidence level. "5" is the number "n" minus 1, or (6-1) here. The table may use the term "degrees of freedom" for the number (n-1). The correct number for t is in the table at the intersection of the "5%" column and the "5" row. You might want to demand a higher level of confidence (99%), or you might settle for a less stringent burden of proof (90%, 80%).

In this comparison between 'No mucuna' and 'Mucuna', we would like to test whether there is a real difference between the two treatments. For this comparison, we will need to calculate a 'No-difference region' using the standard error of mean difference calculated above and the t value obtained from the t-table as follow:

$$\text{No-difference region} = t_{.5\%, 5} \times s_{\frac{d}{\sqrt{n}}} = 2.571 \times 15.07 = \pm 38.75 \text{ kg/plot}$$

To decide whether there is a real difference between 'No mucuna' and 'Mucuna' using the 'No-difference region' is quite straight forward and it goes like this: If the mean difference is inside the 'No-difference region', then the difference between the two treatments is not real. On the other hand, if it is outside this region, then the difference is real.

So here the observed mean difference ( ) was inside the 'No-difference region' of  $\pm 38.75$  kg/plot 95 times out of 100. That is, the mean difference observed was not real at the commonly used 95% confidence level. So in this case there was no real yield difference between the squash that received mucuna and the squash that received the recommended fertilizers.

### Using Economics

The current prices for inputs can be used in calculating the economics of trials. Average fixed and variable costs and time requirements can vary greatly from farm to farm.

### INPUT COSTS AND YIELD COMPARISON OF SQUASH GROWN ON GENUIE GRASS AND MUCUNA BEAN FALLOW LAND (2007 SQUASH SEASON)

By Minoru Jr. Nishi

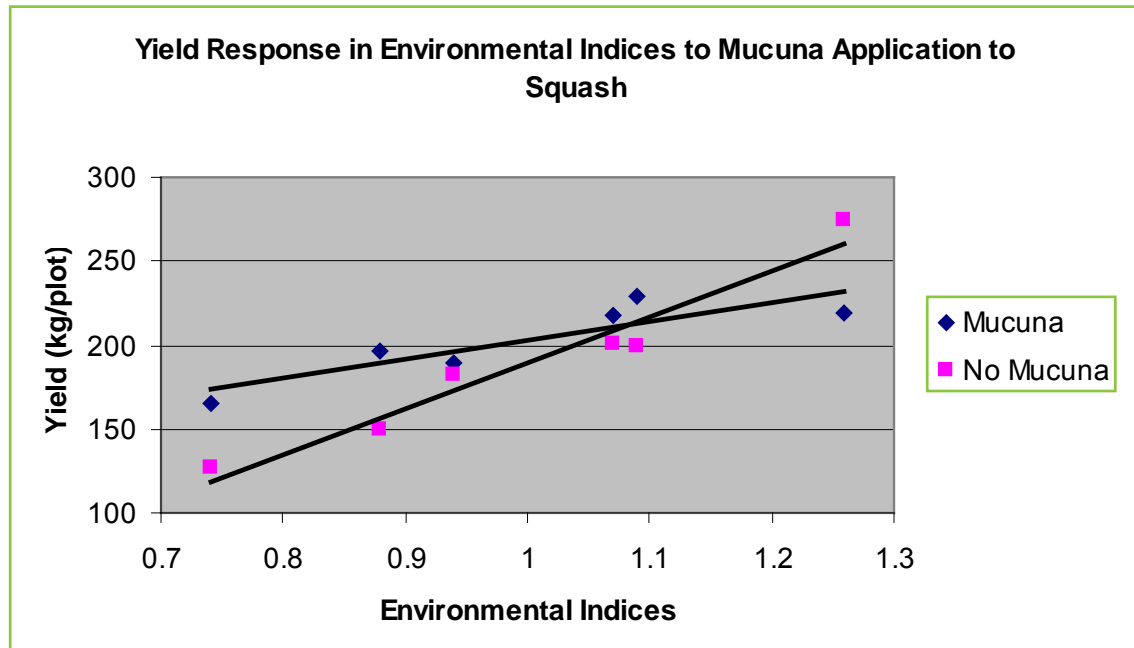
(In collaboration with DSAP and MAF)

INPUTS	GENUIE FALLOW			MUCUNA FALLOW		
	QUANTITY (unit)	PRICE PER UNIT (T\$)	TOTAL INPUT COSTS (T\$)	QUANTITY (unit)	PRICE PER UNIT (T\$)	TOTAL INPUT COSTS (T\$)
1) Squash seeds	700 (g)	\$226.15/700g	\$ 226.15	700 (g)	\$226.15/700g	\$ 226.15
2) Slashing	-	-		20 (min)	\$20.00/20min	\$ 20.00
3) Ploughing	3 (hr)	\$200.00/hr	\$ 600.00	-		
4) Disk harrowing	20 (min)	\$60.00/hr	\$ 20.00	10 (min)	\$10.00/10min	\$ 10.00
5) Planting	20 (min)	\$150.00/hr	\$ 50.00	20 (min)	\$150.00/hr	\$ 50.00
6) NPK	600 (kg)	\$38.00/40kg	\$ 570.00	600 (kg)	\$38.00/40kg	\$ 570.00
7) Urea	160 (kg)	\$36.00/40kg	\$ 144.00	-		
8) Insecticides:	(L or kg)					
Insecticide 1	1 (L)	\$28.00/L	\$ 28.00	1 (L)	\$28.00/L	\$ 28.00
Insecticide 2	1 (kg)	\$60.00/kg	\$ 60.00	1 (kg)	\$60.00/kg	\$ 60.00
Insecticide 3	1 (kg)	\$50.00/kg	\$ 50.00	1 (kg)	\$50.00/kg	\$ 50.00
9) Fungicides:	(L or kg)					
Fungicide 1	750 (g)	\$140.00/750g	\$ 140.00	750 (g)	\$140.00/750g	\$ 140.00
Fungicide 2	2 (kg)	\$40.00/kg	\$ 80.00	2 (kg)	\$40.00/kg	\$ 80.00
Fungicide 3	2 (kg)	\$22.00/kg	\$ 44.00	2 (kg)	\$22.00/kg	\$ 44.00
10) Weeding	10 (min)		\$ 36.00	10 (min)		\$ 36.00
11) Boom spraying	30 (min)		\$ 75.00	30 (min)		\$ 75.00
12) Harvest operation			\$ 790.00			\$816.00
<b>TOTAL COSTS</b>			<b>\$ 2,913.15</b>			<b>\$2,201.15</b>
<b>YIELD</b>			<b>9.5MT</b>			<b>10.2MT</b>

The cost analysis showed that mucuna saved over TOP700 per acre.

**Adaptability Analysis**

The adaptability analysis regarded each experiment as a trial. The average yield of all treatments in a given trial is representative of the conditions of crop production at that location and becomes the environmental index. It is then plotted against the yield of each treatment. The relative height of the plotted line represents the general yield of the treatment; the slope represents its adaptability to different environmental conditions. A flat slope represents a stable response, whereas a steep slope represents the opposite. It is recommended that a minimum of 12 to 14 sites of a range of environments is sufficient to gain accurate estimates of the treatment differences.



The figure shows that the mucuna treatment is more stable and that in lower EIs mucuna did better and around EI of 1.1 the two treatments were doing the same but at higher EIs the no mucuna treatment did better.

# MONITORING AND EVALUATION

## A. What is Monitoring and Evaluation?

- **Monitoring**

Monitoring is the regular observation, recording, and reporting of activities taking place in a project.

- **Evaluation**

Evaluation is judging/valuing what the project has achieved in comparison to its objectives and plans.

## B. Types of M&E

Two types of M&E employed by DSAP

### 1. Conventional M&E

Conventional M&E is planned and managed by donors, outside experts, and project implementing agencies. Success is measured by externally-defined and mainly quantitative indicators and target beneficiaries only provide information. (IDS, Sussex Uni Website)

### 2. Participatory M&E

Participatory M&E is planned and managed by local people, project staff, and other stakeholders often helped by a facilitator. Success is measured using internally-defined indicators including more qualitative judgments. Target beneficiaries collect and analyze data, share findings and link them to action. Beneficiaries constantly design and adapt the M&E methodology. (IDS, Sussex Uni Website)

## C. M&E as applied to DSAP

DSAP integrated these two types of M&E, Conventional and Participatory M&E, but showed extraordinary commitment to remedying issues filtered out from Participatory type M&Es.

Information from Participatory M&E can also be filtered into the Conventional M&E. (Eg: Hunga Women did monitor and count the number of paper mulberry plants planted by each household. This quantitative information goes directly to Conventional M&E data)

A project that commits to Participatory type M&E is an indication of the project's commitments to ground and sustain "good process". Every project employs a "process" through which it delivers "products" to primary beneficiaries. A project with good process delivers "meaningful" products to beneficiaries - meaningful through indicators set by beneficiaries.

Participatory M&E requires tools such as; tensiometer, partnership matrix, H-Frame, Spider web, ball exercise, etc; and a facilitator with an understanding of the target group.

If the target group is a village community it is required that the facilitator has knowledge of the social and natural resources and it interplays. Social structure has leverage on who to participate and why. Such social information is vital to building a community project that has inclusive impacts. Social information can be used to set strategies to create new relationships and new social inclusiveness/order enhancing project participation. Creating new relationships often occurs when target community, especially community leaders, is encouraged to take ownership of the Participatory M&E process. With the support of project staff, the community themselves seeks out those who are not participating.

A different set of PM&E tools and approaches would be employed if the target group is a group of farmers scattered all over the island and wants to work with Extensionists and Researchers testing a technology to address a shared agricultural production problem. Constantly working with farmers to select relevant indicators, and PM&E tools and approaches to use in M&E is the positive element of PM&E. Again it gives farmers the sense of ownership of the process and hence the project.

Triangulation is very important in collecting qualitative data in Participatory M&E. Triangulation cross-checks the qualitative information collected from PM&E workshops ensuring the validity of data. Individual conversation after PM&E workshops is one form of triangulation. Often facilitator walks/drives to every household or farm to do triangulation conversation and observation with individual beneficiary. This triangulation visits also collects quantitative information that feeds well into the Conventional M&E database.



### What is Monitoring?

Monitoring is the regular observation and recording of activities taking place in a project or programme. It is a process of routinely gathering information on all aspects of the project. To monitor is to check on how project activities are progressing. It is observation; — systematic and purposeful observation. Monitoring also involves giving feedback about the progress of the project to the donors, implementers and beneficiaries of the project. Reporting enables the gathered information to be used in making decisions for improving project performance.

### Purposes of Monitoring

Monitoring provides information that will be useful in:

- Analysing the situation in the community and its project;
- Determining whether the inputs in the project are well utilized;
- Identifying problems facing the community or project and finding solutions;
- Ensuring all activities are carried out properly by the right people and in time; and
- Determining whether the way the project was planned is the most appropriate way of solving the problem at hand

Monitoring should be an integral part of every project, from start to finish. Monitoring should take place at and be integrated into all stages of the project cycle: project planning, project implementation, and project evaluation. And monitoring should be executed by all stakeholders in the project.

In the project planning phase, project stakeholders conduct situation analyses and develop problem tree, hierarchy of objectives and ultimately a project logframe with goals, purposes, outputs and activities. To achieve the objectives of a project, it is essential to assess the resources available within the community and those that can be accessed from external sources. The planners, implementers and community members should also identify the constraints they may face in executing the project and how they can overcome them. Based on the extent of the constraints and positive forces, the implementers may decide to continue with the project or to drop it. The goals, purposes and outputs provide the basis for monitoring and evaluating a project. They are the yardsticks upon which project success or failure is measured

Once the stakeholders and the actors agree on the logframe, the next step is to agree on how the project should be implemented. And this is developing of the work plan. A work plan is a description of the necessary activities set out in stages, with rough indication of the timing. The work plan is a guide to project implementation and a basis for project monitoring. It therefore helps to:

- Finish the project in time;
- Do the right things in the right order;
- Identify who will be responsible for what activity; and
- Determine when to start project implementation.

The implementers and planners have to agree on monitoring indicators. Monitoring indicators are quantitative and qualitative signs (criteria) for measuring or assessing the achievement of project activities and objectives. The indicators will show the extent to which the objectives of every activity have been achieved. Monitoring indicators should be explicit, pertinent and objectively verifiable. In logframes, the indicators are stated as objectively verifiable indicators (OVIs).

### Evaluation:

Evaluation is a process of judging value on what a project or programme has achieved particularly in relation to activities planned and overall objectives. It involves value judgment and hence it is different from monitoring (which is observation and reporting of observations).

### Purpose of Evaluation:

Evaluation is important to identify the constraints or bottlenecks that hinder the project in achieving its objectives. Solutions to the constraints can then be identified and implemented.

Evaluation also enables the project planners and implementers to assess the benefits and costs that accrue to the intended direct and indirect beneficiaries of the project. If the project implemented is, for example, the protection of a spring, evaluation highlights the benefits to the people who fetch and use water and the cost to the people whose land is wasted and whose crops are destroyed during the process of water collection.

Evaluation is essential for drawing lessons from the project implementation experience and using the lessons in the planning of other projects in that community and elsewhere.

Finally, evaluation should provide a clear picture of the extent to which the intended objectives of the activities and the project have been realized.

### **The Process of Evaluation:**

Evaluation can and should be done: (a) before, (b) during, and (c) after implementation.

Before project implementation, evaluation is needed in order to:

- Assess the possible consequences of the planned project(s) to the people in the community over a period of time;
- Make a final decision on what project alternative should be implemented; and
- Assist in making decisions on how the project will be implemented.

During project implementation: Evaluation should be a continuous process and should take place in all project implementation activities. This enables the project planners and implementers to progressively review the project strategies according to the changing circumstances in order to attain the desired activity and project objectives.

After project implementation: This is to retrace the project planning and implementation process, and results after project implementation. This further helps in:

- Identifying constraints or bottlenecks inherent in the implementation phase;
- Assessing the actual benefits and the number of people who benefited;
- Providing ideas on the strength of the project, for replication; and
- Providing a clear picture of the extent to which the intended objectives of the project have been realized.

Below is the logframe used as example in this toolkit with the objectively verifiable indicators.

	OVI	MOV
<b>Goal:</b> Increased food security and incomes for farming households.		
<b>Purpose:</b> Crops and livestock production increased.	Number and quality of livestock. Yield and area of crops.	Project reports
<b>Outputs:</b> 1. Planting materials made available (PGR)  2. Pests and diseases controlled (PPS)  3. Improved animal husbandry (LS)  4. Market structure established (POP)  5. Soil fertility improved  6. Improved communication  7. M & E conducted	Number of cvs collected. Gene banks established.     Number of groups formed. Market house. Linkage with NGOs  Fertility parameters improved. Yield improved.  Connectivity to project sites.  Relevant and appropriate content.  Number of training.  Activities on time. Results achieved. Farmers are happy. Impacts of project activities.	Project reports

**Monitoring Plan:** Below is a monitoring and evaluation matrix that can be used for the whole logframes. It can be used every six months to report to project management and other stakeholders including donors. The matrix is adopted from the one that was developed for the DSAP six monthly monitoring and evaluation reporting.

### SUMMARY PROJECT INFORMATION SHEET

**Project Title:** Development of Sustainable Agriculture in the Pacific

**Duration:** 4 years (January 2003 - December 2006)

**Project Purpose:** Increased food security and income for farming households

**OV Indicators:**

- Increase in the contribution of locally grown foods to diets
- Household expenditures

**General Progress:**

### 2. SUMMARY OF PROJECT ISSUES

**Issues affecting achievement of purpose:**

**Priority actions to address these issues:**

**GENERAL EVALUATION OF PROGRESS (scale of 1-5 where “5” is no progress towards objective and “1” is likely to be fully achieved):**

**Purpose Level:**

**Result Level:**

**Project score definition**

- 1 Likely to meet purpose in full
- 2 Expected largely to meet purpose
- 3 Expected partially to meet Purpose, at least meeting threshold levels.
- 4 Limited achievement of Purpose expected with significant shortfall from threshold.
- 5 Substantial shortfalls against threshold target.

- 1 Outputs being completely delivered
- 2 Outputs being substantially delivered with slight shortfalls.
- 3 Some shortfalls in progress but not fundamental to Outputs.
- 4 Significant problems with achievement of Outputs
- 5 Outputs not being achieved

Result 1	OV Indicators		Progress to Date
Planting materials made available	Number of cvs collected Genebanks established		
Activities		Progress	Comments
Collect planting materials.			
Establish conservation gene banks on-farm.			
<b>General Comments:</b>			
1. Number of farmer consulted		2. Number of crop varieties collected	
3. Number of visits by GREAS to field sites		4. Number of genebanks established	
5. Number of women involved			

Result 2	OV Indicators		Progress to Date
Soil fertility improved	Fertility parameters improved. Yield improved.		
Activities		Progress	Comments
Identify appropriate soil management technologies			
Conduct on-farm trials.			
<b>General Comments:</b>			
1. Number of on-farm trials established		2. Number of demonstrations established	
3. Number of visits by GREAS to field sites		4. Number of women farmers involved in on-farm trials	
5. Types of technologies being tested			



Result 3	OV Indicators		Progress to Date
Improved communication	Connectivity to project sites. Relevant and appropriate content. Number of training.		
Activities		Progress	Comments
Conduct farmer and staff training.			
Produce. Package and disseminate extension materials.			
<b>General Comments:</b>			
1. Number of NARES staff trained in communications		2. Number of NGO (and other stakeholders) trained in communications	
3. Number of Resource/ Information Cafes established		4. Number of promotional materials produced	
5. Number of women involved in training			

Result 5	OV Indicators		Progress to Date
M and E conducted	Activities on time. Results achieved. Farmers are happy. Impacts of project activities.		
Activities		Progress	Comments
Develop PM & E methods.			
Conduct PM & E.			
<b>General Comments:</b>			
1. Number of progress reports prepared for the DSAP NC		2. Number of progress reports prepared for the NSC	
3. Number of project updates prepared for other stakeholders, farmers.		4. Number of other activities to highlight DSAP	

Alternatively one can use a matrix/template developed for each output of the logframe as below. An example is also given below using one of the outputs of the Vanuatu logframe.

Result	Indicator Definition	Target	Data Collection				Data analysis
			Sources	Disaggregation	Frequency	Persons or entity responsible	Methods and Procedure
Programme purpose:							
What will happen as a result of having implemented my activities?	How will I know it happened?	Who & how many will it affect?	Where will this information come from?	What categories are important for data analysis: Monitor: In order for me to adjust my programme? Evaluate: In order to show whether or not it made a difference with my target/	How often will I need to collect the data	Who will assure that I get this information?	How will I calculate the indicator? What is important to keep in mind? How will it look at my data?

Below is a monitoring and evaluation of one of the outputs of the Vanuatu logframe: Soil fertility improved.

Result	Indicator Definition	Target	Data Collection				Data analysis
			Sources	Disaggregation	Frequency	Persons or entity responsible	Methods and Procedure
Programme Purpose : Crops and livestock production increased							
Soil fertility improved	Productivity improved	Increase in yield of root crops by 30% in the target areas	On-farm trial assessment and reports	By gender, by location, by social group	Every crop	The National GREAs	Use adaptability analysis and cross margin analysis.

### Partnership amongst Stakeholders

## BALL EXERCISE: A STAKEHOLDER ANALYSIS TOOL

### Aim

To allow stakeholders to reflect on the past partnership performance through discussing their accessibility to project resources so to identify avenues to build better partnership and service the target group better

### Introduction

Ball Exercise requires a ball and one representative from all stakeholders. The exercise gives an indication of how close partner stakeholders have been to the project. It allows discussion about reasons why some stakeholders are distant from the project

### Instructions

Steps:

1. A ball is placed in front of the room.
2. Ask stakeholders to reflect on their accessibility to project resources.
3. After their reflection ask them to stand and place themselves away from the ball in relation to their accessibility to resources.
4. After they place themselves, ask to explain why they place themselves where they are.
5. Give them news prints to outline issues they would like to see improved so that their partnership involvement with the project improves
6. From the issues identified the project management discusses with the stakeholders and tries to reach consensus on strategies for improvement and way forward.
7. The agreed strategies are printed and distribute to stakeholders soon after the workshop.

### Facilitators notes

- It is critical that before the exercise starts the participants are asked to momentarily disengage from the world and have an open mind towards the mistakes made by the project management in the past. (This can be done by emphasizing that the project management is here to improve where there have been weaknesses. Management is opened for constructive comments about its weaknesses.)
- Allowing partners to comment on the project management weaknesses initiates a sense of sharing of their own weaknesses as well.
- The facilitator needs to be skilled and ensure that during the discussion no partner feels threatened by maintaining an atmosphere of peaceful, respectful and constructive dialogues.
- This is an energizer exercise that allows participants to generate and exchange information. A good exercise to do after lunch.
- The ball exercise can be used alongside the Tensiometer and Partnership Matrix tools to elicit cross-check collected issues related to partnership performance
- It is very important to have follow-up with regular meetings to monitor the implementation of agreed strategies for improvement.

### Example



This has been used to identify partners who have been quiet participants in projects. The exercise intrigued participants and project management to discuss reasons why some partners have been quiet and to discuss how they would be inspired to engage more.

## CONDUCTING STAKEHOLDER EVALUATION WORKSHOP

### 1. Objectives

This w/s is about evaluating relationships with partners and finding ways to improve the relationships in order to have a greater impact of the activities undertaken together. The w/s has the following objectives:

- a. To identify positive and negative aspects of partnerships.
- b. To identify existing problems and discuss them.
- c. To identify solutions to problems.
- d. To agree and endorse solutions by partners.

The objective is not to evaluate the activities themselves, the focus is on the partnerships. It is about process however when farmers are involved expect that issues regarding effectiveness of agricultural technologies (or products) tested on farm may be raised.

### 2. Preparation

Step	How	Who	Comment
Identify and invite partners	<ul style="list-style-type: none"> <li>- Prepare a list of all DSAP staff stakeholders you have worked with.</li> <li>- Choose those most appropriate to participate in the w/s.</li> </ul>	DSAP staff	<ul style="list-style-type: none"> <li>- Aim for 20 to 25 persons in the workshop, not more (keep it manageable). Invite maybe 2 persons per organization.</li> <li>- Do a careful selection of partners - those that are not/ not expected to be heavily involved may become bored.</li> <li>- Make sure farmers are included (select carefully, e.g. 1 or 2 per activity).</li> <li>- When inviting, explain why you want to hold the w/s.</li> </ul>

### 3. Holding the workshop

DSAP staff has a double role, being both facilitator and participant in the w/s.

Session	How	Who	Comment
Setting the scene	<ul style="list-style-type: none"> <li>- Introduce by explaining the rationale of the workshop</li> <li>- Prepare a Venn diagram showing the institutional landscape and linkages with DSAP and each other, analyse the links.</li> <li>- Access to DSAP resources exercise (ball exercise, then analyse distance from ball).</li> </ul>	<p>Facilitator</p> <p>All participants</p>	To give everyone an understanding of the objectives of the workshop. In the Venn diagram use 3 thicknesses of lines denoting weak, medium and strong linkages.

Identifying activities undertaken together	Brainstorm and list activities undertaken in partnership with DSAP, mentioning which partners were involved, when the activities occurred (timeline) and if possible reach a consensus on the importance of the activities (ranking).	All participants	<ul style="list-style-type: none"> <li>- If possible include all activities undertaken with DSAP during the years.</li> <li>- This will further help “set the scene”.</li> <li>- Criteria for ranking according to importance need to be identified (on-going or recent activities, major activities, those with greatest learning...).</li> </ul> Facilitator needs to be watchful that the groups talks about process, not product.
Choosing activities to be analysed	Decide together on a manageable number of activities to be analysed and list in order of priority.	All participants	Check if everyone is happy with the ranking exercise, if not adjust by consensus.
Do a separate analysis of each activity	Per activity: <ul style="list-style-type: none"> <li>- Prepare a timeline of the steps passed to complete the activity</li> <li>- Use tensiometer results as basis to list positive and negative aspects in partnership</li> <li>- Discuss the negative aspects in detail</li> <li>- Relationships matrix, then analyse in a matrix the nature of the relationship (why strong, why weak).</li> </ul>	All participants	Methods to analyse: <ul style="list-style-type: none"> <li>- Partnership problems because DSAP.../ we...</li> <li>- Metacards can be used to identify positive and negative aspects - pin them up in two columns (positive and negative). If necessary they can be ranked.</li> </ul>
Identifying solutions	<ul style="list-style-type: none"> <li>- Prepare a list of solutions to the problems identified, e.g. to improve the process, what should we do?</li> <li>- Prepare action list</li> <li>- Get endorsement from participants.</li> <li>- If time: create a shared vision for the partnership</li> </ul>	All participants	<ul style="list-style-type: none"> <li>- Solutions can be identified in sub-groups or with metacards.</li> <li>- Action list to mention what, who and when.</li> <li>- Shared vision can be a starting point for evaluation in next years' stakeholder analysis.</li> </ul>
Evaluation	How do you expect the stakeholder analysis to change the way partnerships operate in Tonga?	All participants	



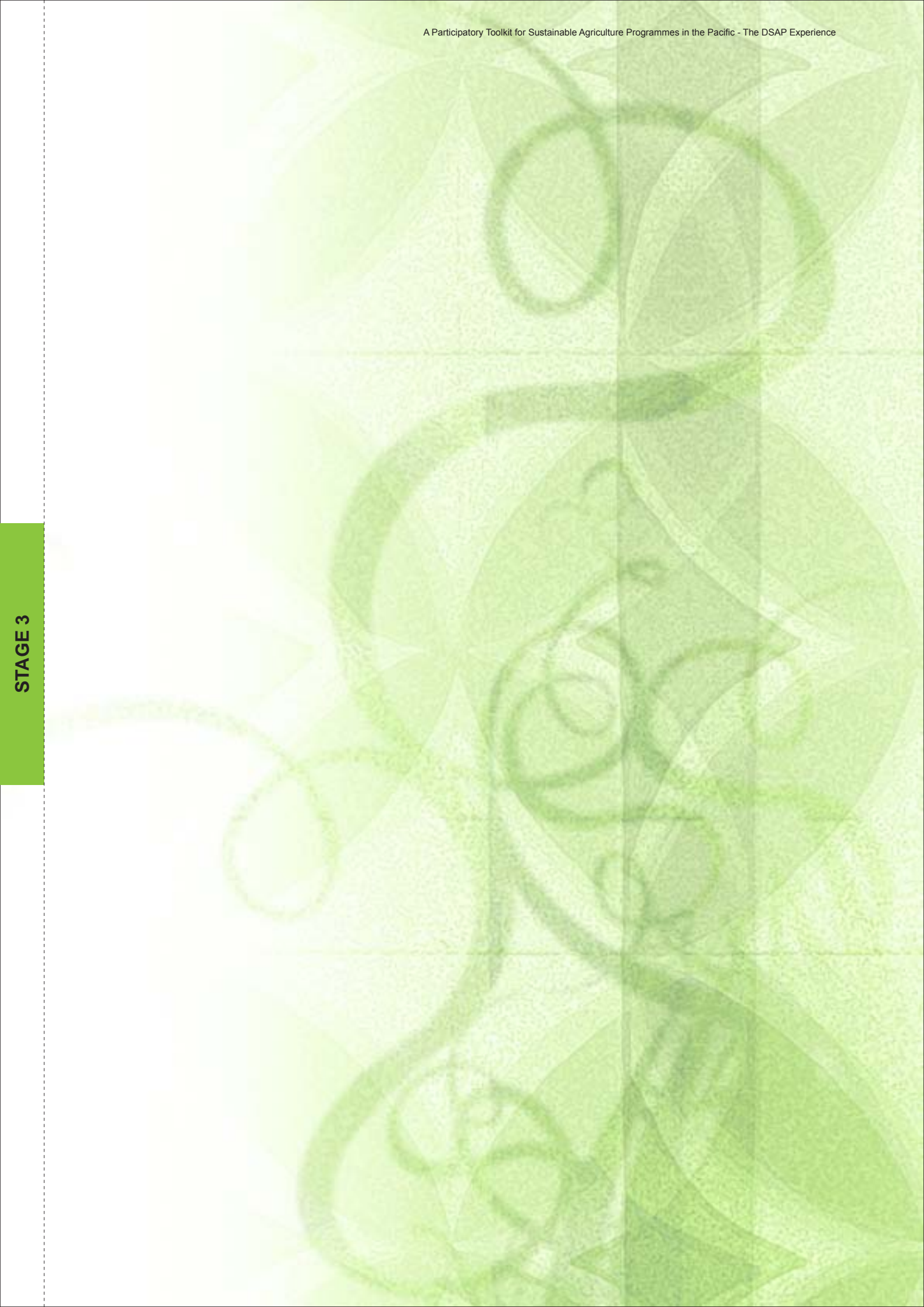
**4. Toolbox**

Use tools as appropriate during the w/s.

- Flow and Venn diagrams (e.g. institutional landscape with linkages)
- Time trends (e.g. Tensiometer)
- Matrices (e.g. relationships matrix)
- Ranking
- Voting
- Causal analysis

**5. After the workshop**

- Send everyone a copy of the endorsed action list.
- Use results of this w/s as input for next year's stakeholder analysis.
- One outcome could be to hold participatory planning/budgeting w/ss with sub-groups (women, youth, farmers in a certain location etc) immediately after the stakeholder analysis w/s.
- Another outcome could be to hold monthly progress meetings with partners (organizations) where issues could be raised.
- Consider creating a shared vision for a specific activity or even DSAP as a whole.



## **STAGE 4**

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### **SUSTAINING THE PROJECT**

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## SUSTAINING THE PROJECT

- Scaling over strategy
  - Farmers and stakeholders to absorb some of the activities.

Refer: participatory Approaches hand book:

### **Farmer Schools and community Base training Centres**

**Farmer Schools:** A learning centre where farmers come together to share knowledge and ideas. It provides a centre where resource people could carry out training a develop demonstration plots for farmers.

**Community Base training Centre :** Centres of learning build by community but it differs as it concentrates on livelihood issues. The communities used this for sharing farming knowledge, learning carpentry skills mechanic skills and live skills like cooking, sewing weaving and fishing technique. These centres is used by many stakeholders and a best place for carrying out immersion .

### **Importance of sustaining activities through FS and CBTC**

These are community based initiatives which includes the building of learning centres to share knowledge and training on livelihood issues. These centres have been used by NGO's, for farmer participation in livelihood issues. They are looked after by key farmers and leaders of the community. The up keep of these centres is the responsibility of the community and bears no cost to the government.

The use of these centres have foster improved collaboration between stake holders (government researchers, extension officers and , NGOs and DSAP) This is different from the concept of farmer field schools that is practiced in the Philippines and other Asian countries where the field is used as learning classrooms for farmers. In the case of the Solomon islands the farmers build learning centres and areas around the centres could be used as demonstration.

Sustaining the activities through these centres will empower the community to continue carrying tasks after the project departs. The soil improvement plots developed by DSAP ( Alley Cropping , Contour and mucuna) will be used by the centres for crop improvement, gene bank etc. It provides a place for the extension and NGO to carry out programs after the project ends.

These centres also provide and avenue for farmers to come together to share knowledge both local and learned. Innovations ( refer Solomon islands cases studies) that are developed could also be shared through these centres and researchers could also carry out participatory on farm trails in these centres.



## Capacity Building for Communities

For sustainability of development programs, capacity building must be included in the development activities.

The training needs of the community has to be identified at the early stages of project implementation - preferably during the PRA exercises through conducting a basic training needs assessment where the community identifies areas where they need training. Identification of training needs can also be carried out through discussion with communities or even mere observation.

In farming communities where there has been very little intervention from the Ministry of Agriculture officials, the training programs could focus on best agricultural practices, land conservation, post-harvest handling, fertilizer and chemical application, marketing, farm management to name a few. The choice of training topics will also depend on the agriculture activities that the farming community is engaged in. If livestock production is conducted in the farms then it is advisable that the best practices in relevant livestock area be included in the training topics.

The training programs must be consistent; say every 3 months - especially in the first year of the program. Towards the end of the first year, facilitators should be able to monitor the performance of the communities and analyze areas where communities still need training. These training proposals must be discussed with the communities before the next set of training programs are finalized. It is also advisable to broaden training topics and incorporate life skills programs. Such topics include Time Management, Positive Attitude, Team Building, Leadership and Motivation to name a few. When trying to influence communities to be involved in the program activities, the facilitators must seriously consider changing people's attitude which is indirectly influencing their choice. Capacity Building is one of the avenues that can change people's perception and attitude towards development programs.



It is important to note that training programs should be designed in a manner that will be easily understood by the communities. In farming communities, establishing a demonstration farm and conducting hands-on practices is an effective way for illustration of best farming practices. Hands on practices include teaching farmers physically on the field the best farming practices; for instance how to plant, when to plant, distance between plants, how and when to water the plants, when to apply fertilizer.



Facilitators must also note that when conducting workshops and training, the training materials and presentations must be simple and effective.

## EXIT STRATEGY BRIEF FOR DSAP COUNTRIES

### Introduction

The mention of exit strategy in development aid project can cause panic among communities, NGO staff, government and other stakeholders. Many will suggest why talk about exit strategies when indications are for increased needs. And can there be realistic discussions of exiting when the operating environment and funding situation still appear uncertain.

This guidance is to help improve the understanding of DSAP Countries of Exit Strategies and better enable them to develop appropriate and flexible exit strategies as DSAP enters its final year.

### Concepts and Terminology

An exit strategy for a program/project is a plan describing how the program/project intends to withdraw its resources while assuring that the achievement of development goals is not jeopardized and that progress towards these goals continues. An exit strategy may use graduation from specific areas as steps towards the eventual total withdrawal of resources, or exit may take place at one time across the entire program/project area. In both cases, the underlying goal of an exit strategy is to ensure sustainability of program/project impacts after the program/project ends.

The term graduation refers to the withdrawal of all externally provided program/project resources from specific program/project sites or activities.

Exit refers to the withdrawal of all externally provided program/project resources from an entire project area.

**Sustainability of impact** or progress towards development goals does not necessarily mean continuation of the same activities carried out by the national component under the original program. In some cases communities, individual, or other organizations sustain impacts through actions that are different from the program/project activities. In other cases, very few or no explicit activities are needed to sustain impact. Different types of program/project activities lend themselves to different approaches to assuring sustainability.

### Three Approaches to Exit Strategies

**Phase down:** *The gradual reduction of program/project inputs, is the preliminary stage to both phase over and phase out.*

**Phase over:** *Refers to the transfer of responsibility for activities aimed at accomplishing goals (current activities, or other activities aimed at achieving the same outcomes) to another entity.*

#### Phased over to communities

When phasing over activities to the community, sustaining desired outcomes depend on a number of factors:

- Recognition by community members of activities' proven value and their visible and valued outcomes.
- Ownership and commitment to continue on the part of the community or community group.
- Empowerment of individuals, communities and service providers to demand quality services.
- Extent of transfer to community members, groups and service providers of the skills and knowledge needed to generate desired outcomes.
- Institutional capacity of community-based organizations and farmer organizations and capacity of key individuals in those organizations.
- Adaptability of community-based organizations and farmer organizations in the face of unpredictable political, environmental and social changes.
- Explicit plans for resource generation when consumable supplies (e.g. seeds, agrochemicals) are needed to sustain impacts.



*Phased over to government or other permanent organizations*

We can also phase over to an organization or institution that is active in the area on a long-term basis to take over responsibility for program/project activities. This phase over approach aims to integrate project activities into existing sectoral programs. In many instances obtaining government commitment to maintain a program seems ideal, especially in cases where continued resource, staff, or infrastructure inputs are needed. But some governments find it difficult to provide the level of resources required or lack the technical capacity needed to take over activities sustainably. An exit strategy that involves phase over to the government must be based on a realistic assessment of government capacity, commitment and resources.

In developing an exit strategy that will rely on phase over to government entity, an important question is which level of government is appropriate to partner with. In many cases multiple levels of government will need to be involved; for example, central government may provide legal authorization while local government may be responsible for implementation. It is important to develop partnership and linkages with the appropriate government entities early in the program cycle and to transfer responsibility gradually, with formal agreements when appropriate.

***Phase out:*** Refers to the withdrawal of program/project inputs without making explicit arrangement for the inputs or activities to be continued by any other entity, because the program/project itself resulted in changes that are likely to be sustainable without these.

*Changes that are self-sustaining and permanent: Phased out*

Some activities can yield changes that are self-sustaining. Examples of such changes include behavior changes, improved production and marketing practices.

Behavior changes related to food production practices, health and nutrition can become permanent without requiring continued efforts or activities. The changes are likely to be self-sustaining among those who receive capacity building in these areas and benefits are perceptible and changes feasible. If the aim of the program is to continue expansion of beneficial changes after the program exit, then systems for further dissemination may need to be put in place as part of the exit strategy. Systems may depend on community workers trained as part of the program, with support from agricultural extension systems or they may depend on informal or traditional networks. In all cases, some mechanism for maintaining motivation and for refresher training is likely to be needed.

Another type of intervention that can produce self-sustaining changes without the need for continued outside inputs or activities is the establishment of improved agricultural production and marketing practices. If the practices are feasible and profitable or demonstrate other clear benefits to farmers, then they are likely to continue the practices, and other farmers may emulate them. Examples include the introduction of new varieties, affordable soil improvement techniques, and establishment of new marketing structures such producer cooperatives and revolving credit funds.

**Exit Criteria: What determines “When to Exit?”*****Time limit***

It is important that an explicit exit strategy is built into the project design from the beginning and include specified time line for the exit process, making it less likely that the project either withdraw without proper preparation or simply roll over from cycle to cycle. The project should increase its focus on establishing systems for sustainability, using the time frame guide the process.

**Achievement of impact targets**

Program impact can be used as a criterion for exit and to focus graduation efforts on those program components that have been effective. The use of impact indicators as criteria for exit does pose risks. If communities know that reaching a given level of impact will trigger the withdrawal of program benefits, their motivation to achieve that impact may be reduced.

**Achievement of benchmarks indicating progress toward feasible exit**

Benchmarks for progress are simply the measurable indicators of identified steps in the graduation process of an exit strategy. They are part of the Monitoring and Evaluation planning matrix from the onset. Benchmarks should be linked to the graduation process and to the program components to be phased out or over.

**Examples of Benchmarks for Monitoring**

- Community-led programs (gardening, etc) in place and active
- Community groups mobilized and prepared to support phasing over activities
- Nutrition knowledge and skills at sufficient level to be shared with others over time
- Production knowledge and skills at sufficient level to sustain phasing over or out of activities.
- Community groups/members linked to government agencies
- Sufficient number of program participants adopting or using improved technologies

**Setting the Timeframe for Program Exit**

There are several considerations when establishing the timeframe for program Exit Strategies. Exit strategies should be built into the design of the programs from the beginning. This will encourage the development of interventions that are sustainable, since an Exit Strategy is, in essence a **'sustainability plan'**. It will require the involvement of communities and local partners from the outset.

Establishing an exit timeline that is linked to the program funding cycle, and clearly communicated to the community is essential. Since program implementation will influence Exit Strategy activities, it is important that the exit plan remain flexible with the expectation that some of the exit criteria and benchmarks may need to be modified during the program cycle.

Further, implementing exit plans in a gradual, phased manner is recommended, as staggered graduation of project sites can contribute to sustained outcomes by applying lessons learned from earlier sites to those that come later. Lastly, after phase over or program phase out is complete, continued contact with communities will help support sustainability of outcomes.

**Exit Strategy Monitoring and Evaluation**

Ongoing and timely monitoring of benchmarks is critical to the successful implementation of Exit Strategies. The monitoring of Exit Strategy benchmarks should, in fact, be integrated into the overall program's monitoring and evaluation plan. This will prevent duplication of monitoring efforts and maximize use of existing data. While **'process indicators'** are helpful to gauge the program or local partner's progress along a developed continuum, **'result indicators'** may help to graduate communities or assess readiness to phase out programs. An example of a process indicator may be the number of farmers visited by project staff, whereas a result indicator would be the increase in production because of the use of a cover crop like mucuna.

To determine the success of an Exit Strategy, an evaluation should be conducted after a period of time has elapsed following the program exit. Since funding is not usually programmed in this manner, Exit Strategies are rarely evaluated.

There are 3 measures to gauge the success of an exit strategy

- If the program impact has been sustained, expanded or improved after program end;
- If the relevant activities are continued in the same or modified format; and
- If the systems developed continue to function effectively

### **Important Things to Note for Exit Strategies**

#### ***Generation of Alternative Resources***

For many activities, a key to sustainability is the ability to generate resources when needed. Provision of agricultural inputs may require continued supply.

#### ***Communication with Stakeholders***

Establishing clear communication with the community - beneficiaries, community-based providers of services, local authorities and other stakeholders - about the program's eventual departure is a central element in a graduation or exit strategy. Clear and consistent communication from the beginning of the program helps prepare the community for graduation, which may eliminate a sense of dependence on the program and encourage communities to become self-reliant through creation or strengthening of community groups or other mechanisms. Communications can reduce risk of resentment of the withdrawal of resources and can help generate greater ownership of the sustainability components by involving community members in planning at an early stage.

## PRACTICAL GUIDE TO DEVELOPING EXIT STRATEGIES

### PROPOSED STEPS

#### 1. Where to Start:

Discuss this question within the organization as well as with the community, beneficiaries and other relevant stakeholders. The level of Exit Strategy to be developed (program, community, district) will determine who to include in the discussions,

The overall question to answer when planning exit strategy is: ***What outcomes from the program do we want to sustain after it has ended?***

#### 2. Planning Matrix - An Exit Strategy Tool:

Conduct the process with the same group of people that were included in the previous step. This can be done in a group meeting, or in the form of a facilitated workshop.

After having discussed the above question, follow a similar participatory process with the same relevant stakeholders and apply the Planning Matrix for Exit Strategies. The planning matrix includes 6 key elements of planning Exit Strategies extracted from literatures.

#### Planning Matrix for Exit Strategies

##### Questions:

1. What is your program's objectives?

2. What parts of your program and which of its outcomes do you want to sustain?

Component	Key Questions
1. Plan for exit from the earliest stages of program design.	<ul style="list-style-type: none"> <li>• How will we phase down our program? Will we phase out activities or hand them over to local actors.</li> <li>• What is the appropriate time line?</li> <li>• How will we know we are on track for phase out?</li> <li>• What indicators or benchmarks will we use? How will we monitor them?</li> <li>• What are the specific action steps to reach the benchmarks?</li> </ul>
2. Develop partnerships and local linkages	<ul style="list-style-type: none"> <li>• With what type of organizations should we partner?</li> <li>• What will our partners bring to the partnership? What can we offer?</li> <li>• How will the partnership prepare for exit?</li> <li>• How can the partnership help facilitate a successful exit?</li> </ul>
3. Build local organizational and human capacity	<ul style="list-style-type: none"> <li>• What capacities are needed?</li> <li>• What capacities already exist?</li> <li>• What indicators will we use to monitor progress in building these capacities?</li> </ul>

4. Mobilize local and external resources as an exit strategy	<ul style="list-style-type: none"> <li>• What inputs will we need to maintain services?</li> <li>• Who can provide these inputs? To what extent are they available locally? Externally?</li> <li>• Which benefits of the program can be sustained without continued inputs? To what extent can the benefits be sustained without ongoing inputs?</li> </ul>
5. Stagger phase out of various activities	<ul style="list-style-type: none"> <li>• What are the key elements of the program?</li> <li>• Which elements are dependent on others?</li> <li>• What is the graduation and exit plan and timeline for the program components? How will it be implemented? How will it be monitored?</li> </ul>
6. Allow roles and relationships to evolve and continue after exit	<ul style="list-style-type: none"> <li>• What types of ongoing support would be most useful (eg. Advise, mentoring, TA)</li> <li>• How will such ongoing support be funded when the project finishes?</li> </ul>

### 3. Defining the Exit Strategy and Planning the Exit Activities

After completing the above matrix, one should articulate the exit strategy. The following questions and matrix will assist in putting together an exit plan.

1. What should the strategy achieve? (What are the objectives?)
2. What exit strategy do you propose for this program or specific components of your program?
3. What will be your overall criteria for exiting?
4. What exit activities (as different from program activities) need to be implemented to meet the exit criteria of the exit strategy and to achieve the objectives?
5. Specify who should do what exit activity and when.
6. What are benchmarks for measuring the implementation and results of each exit activity?
7. Decide who should monitor each benchmark and when to monitor them.
8. Develop the budget for your exit strategy. Be sure to include the costs for each exit activity, and for monitoring.

#### Sample Matrix:

Exit Activity	Who will do this?	When in the project cycle will this be done?	How will it be monitored? What benchmarks will be used to monitor the activity?	Who will do the monitoring and when/	Budget
1.					
2					



### Developing and Implementing the Flexible Exit Strategy Timeline (5-year program):

- For a five-year Development Program (MYAP) it is advised that you develop your exit strategy **within six months of your program's inception.**
- In the first two years of the project, activities are implemented, steps for program exit and benchmarks continue to be identified and perhaps modified, and ongoing monitoring is conducted.
- Quarterly reviews of progress and results of monitoring activities are necessary to initiate shortly after program start up.
- The quarterly reviews and the midterm evaluation, other learning and changes in the political and environmental context may inform ongoing adjustments and revisions of the exit strategy.
- Over time, conceptual modifications may be warranted, particularly after the midterm evaluation. Specific exit strategy activities and benchmarks will also then need adapting. Any modifications in the strategy should be shared with stakeholders.
- During years three to five, the graduation and exit process is underway. Ideally, communities and activities are graduated sequentially while the sponsor observes and assesses the phase over/out process to draw and apply the lessons learned to the ongoing exiting process.

This brief was drawn from 2 sources:

1. Program Graduation and Exit Strategies: A focus on Title 11 Food aid program by Beatrice Lorge Rogers and Kathy E. Macias.
2. What we know about exit strategies: Practical guidance for developing exit strategies in the field by A. Gardner, K. Greenblott, and E. Joubert.

## ANNEXES

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## Simple Technologies for farmers

### BUCKET DRIP IRRIGATION SYSTEM



#### MATERIALS NEEDED

A - 1x 20L or 40L bucket

B - 1x male tank fitting 15 mm black

C - 1x 1m long main poly pipe 13mm

D - 1x tape lock take off 13mm

E - 1x 30m long drip tape by 13mm drip tape

F - 1x end cap

Contact your local DSAP office for the purchasing of materials and assistance (see back page for contact information).

**NOTE:** These instructions are for installing one row of bucket drip irrigation system using one 20L to 40L bucket and one drip tape that is 30m in length.



## INSTALLING A BUCKET DRIP IRRIGATION SYSTEM



1. Drill a hole at the bottom of the bucket (A). The hole should fit the male tank fitting (B).



2. Unscrew the tank fitting, insert it in the hole, and tighten by hand.



3. Connect one end of the 1m long main poly pipe (C) to the tank fitting and the other end to the take off (D).



4. Connect the other end of the take off to one end of the 30m long drip tape (E).



5. Close the other end of the 30m long drip tape by using the end cap (F). Cut a piece of the drip tape about 3cm from the end. Fold over the end of the tape (as shown) and insert it into the end cap to hold the bend together closing off the end of the tape.



6. Elevate the bucket to a height 1.5m from the ground by suspending it on a crossbar or placing it on a stand.



7. Lay the drip tape in the row to be irrigated. Make sure that the drip holes are facing upward and the tape is laid on flat ground (slope must never exceed 5%).



8. Must clean water to fill the bucket once in the morning and once in the evening every day.



## ADVANTAGES OF BUCKET DRIP IRRIGATION OVER HAND WATERING

- Reduces water wastage.
- Reduces less water.
- Reduces labour costs.
- Saves time.
- Controls weeds as water is directed to each plant.
- Reduces the spreading of diseases and burning of wet leaves during sunny days as water is not splashed on plants.

## MAINTAINING THE BUCKET IRRIGATION SYSTEM

- Use clean water. If using non-tap water it must be filtered first by pouring it through a cloth tied over the top of the bucket.
- For adequate pressure, the bottom of the bucket must be elevated to a height of 1.5m above the ground.
- The length of the drip tube per 20L bucket must not exceed 30m.
- For best results, use the bucket irrigation system on level ground.
- To irrigate, fill the bucket once in the morning and once in the afternoon.
- Flush out the drip tape every week to prevent the outlets from blocking.

## FREQUENTLY ASKED QUESTIONS

### Where can I use the bucket irrigation system?

You can use the bucket irrigation system on vegetables and root crops grown on level land (slope must never exceed 5%)a

### Can I upscale the use of the bucket irrigation system?

Yes, the bucket irrigation system can be upscaled for irrigating larger vegetable or crop plots. Please contact your local DSAP office for assistance.

## QUICK COMPOSTING

### MATERIALS NEEDED

#### Compost box

- Wood and pieces of corrugated iron to form a bin in which to make compost.

#### Compost materials

- Dry coconut husks
- 1 wheelbarrow of soil / ash
- Kitchen waste (cassava taro, potato peels and tea leaves etc)  
NO PLASTICS OR PAPER
- 1-2 wheelbarrows of cow dung or pig manure
- Banana leaves, stems, grass clippings or any dry leaves
- Legume leaves (Leucaena, Calliandra, Gliricidia leaves)
- Water

#### For atoll island countries

Add some mangrove leaves to the compost.

**Note:** Do not cut down mangrove trees/branches for this. Collect and use mangrove leaves that have fallen on the ground.

### TIMELINE FOR COMPOSTING

- Heating phase - 2 weeks
- Cooling down phase - 2 weeks
- Maturity time - 2 weeks

### IMPORTANT POINTS TO REMEMBER

- Place coconut husks at bottom of heap to provide air for the compost.
- Layer the materials to be placed in the compost separately. For example, layer of crop peels, layer of dried leaves, layer of animal waste slurry (animal waste mixed with water).
- Include layers of green leaves to generate heat as this will enable the compost to break down more quickly.
- Heap should be turned once a week.
- Moisture content of heap should be right, not too dry or too wet.



## PREPARING A QUICK COMPOST



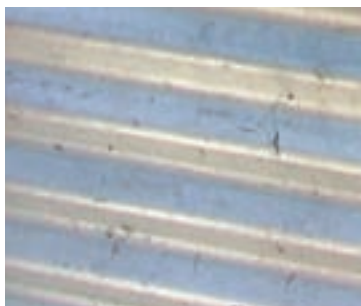
1. Chop or shred leaves and smaller stems.



2. Mix animal waste with water to make animal waste slurry.



3. Assemble the bin from wood and pieces of corrugated iron (height 1.5m, width 1.2m and breadth 1.2m).



4. Layer leaves and animal waste slurry in bin (leaves 15cm and slurry 5cm).



5. Water each layer once completed. DO NOT OVER WATER.



6. After 2-3 days, stick a knife inside and leave for about 5 minutes. Pull the knife out, if the knife is hot the composting process is taking place.



7. Turn heap once a week and moisten dry patches. DO NOT OVER WATER.



8. Cover the bin after turning the heap. After 6 weeks the compost is ready to use.

### USING THE COMPOST

For atoll soils  
use 1 part compost, 1 part  
soil

For volcanic and ash soils  
use 2 - 4kg per m<sup>2</sup>  
depending on soil fertility

## QUICK COMPOSTING

This composting method is part of the simple technologies that Development of Sustainable Agriculture in the Pacific (DSAP) is promoting. This composting method is one of the responses to farmer identified problems of poor soils on atoll islands.

This method uses animal waste and leguminous leaves (like *Leucaena*, *Calliandra*, *Gliricidia* leaves) to enhance the value of the compost.

Note: This composting method will not alleviate all soil fertility problems as there are different methods for different conditions of soil fertility.



## FREQUENTLY ASKED QUESTIONS

### Where can I use this compost?

You can use this compost in the field on vegetable and root crops.

### I do not have animals, what can I use instead of animal waste?

The DSAP countries that have been using this composting method so far have been using pig waste. Cow dung or chicken waste can also be used. If it is difficult to get animal waste, you can make slurry by mixing soil and water. Microbes that are needed for the composting are also found in soil.

### What are legume leaves? What do I use?

Legume leaves are from nitrogen fixing plants like *Leucaena*, *Gliricidia* and *Calliandra*. They are good for improving the nitrogen content. If none are available, use any green leaves from grass cuttings to breadfruit tree leaves and banana leaves.



## DERRIS-BASED PESTICIDE

### A natural pesticide that

- Protects your crops from insects
- Uses natural products from local trees
- Uses locally available materials

### Derris (*Derris elliptica*)

#### What is Derris?

Derris is a creeping tree that can be found growing in clusters on many Pacific Island Countries and Territories.



#### Why is derris useful?

Derris elliptica is a plant that contains a chemical substance often used by farmers for biological pest control. This substance is mainly extracted from the roots. In many Pacific Islands, derris is also used as a fishing method.

#### Materials needed

- 200-250 grams of fresh derris roots (about 15 pieces of fresh roots each about 20cm long)
- 1 litre of water
- 2 buckets
- 20ml of diluted soap water
- Spraying equipment

**NOTE:** When handling derris, protective clothing (hand gloves) must be worn to prevent any irritation to the skin and eyes.

## How to make derris root solution as a natural pesticide



1. Take 200 to 250g of fresh derris roots (i.e. about 15 pieces of fresh root each measuring 20cm long).



2. Pound the roots to separate the fibres.

**WARNING:** As derris contains chemical substances, you must wear gloves to protect yourself from any irritations to the skin and eyes. Wash your hands thoroughly after touching derris.



3. Put the pounded roots in a bucket and add one litre of water.



4. Let the mixture soak in a bucket for at least 12 hours to release the active substance from the derris root (you can also leave it for one whole day or night).



5. After allowing the roots to soak, remove them from the bucket. **Protective clothing must be worn at all times when handling derris.**



6. Add about 20ml of diluted soap water to the derris solution so that it will stick to the surface of the plants when sprayed.



7. Pour the liquid (derris solution and soap water) into a sprayer, filtering it (with a cloth) to remove dirt and large particles.



8. Now the solution is ready to be sprayed on your crops.

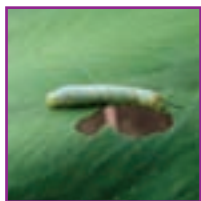


**WAIT AT LEAST 3 DAYS AFTER SPRAYING BEFORE HARVESTING THE CROP.**



### Derris root extract

can protect your crops and vegetables against the following pests



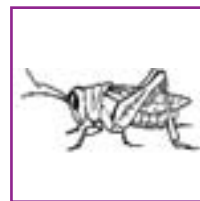
noctuid moths



nematodes



moths



grasshoppers



aphids



leafhoppers



leaf miners



scale insects

### NOTE

*This treatment can be used on both market gardens and subsistence crops.*

**IT SHOULD NOT BE USED ON IRRIGATED TARO PATCHES.**





## NEEM-BASED PESTICIDE

### A natural pesticide that

- Protects your crops from insects
- Uses natural products from local trees
- Uses locally available materials

### Neem (*Azadirachta indica*)

#### What is Neem?

Neem is a tree from Southeast Asia that can reach a height of 30 meters. It can survive in dry areas and on poor soil. Check with your local DSAP or local forestry department for locations of neem trees in your area.



#### Why is neem useful?

Neem is used in agriculture, mainly in market gardening, as a natural insecticide to combat diseases and pests. Neem contains a natural chemical substance called “azadirachtin” (neem oil). This substance is found in all parts of the tree. Neem oil does not kill insects immediately but changes their feeding habits and life cycles in such a way that they can no longer breed or survive.

#### Materials needed

- 1kg of neem leaves (Best to pick neem leaves before tree flowers)
- 2 buckets
- 5 litres of water
- 20ml of diluted soap water
- Spraying equipment

**NOTE:** It is advisable to wear protective clothing (hand gloves) to prevent any irritation to the skin and eyes from the neem.

## How to make neem leaf solution as a natural pesticide



1. Collect 1kg of green neem leaves in a bucket.



2. Add 5 litres of water to the bucket of neem leaves.



3. Let the leaves soak overnight (or 12 hours) to release the neem substance.



4. Remove the leaves and keep water in a separate bucket for later use.

**WARNING:** As neem contains chemical substances, you must wear gloves to protect yourself from any irritations to the hands thoroughly after touching neem



5. Grind or pound the neem leaves that were soaked in the bucket.



6. Press and filter the leaves in order to release the active substance from the neem leaves, while at the same time, adding the 5 litres of water that was used to soak the leaves (from step 4).



7. Add about 20ml of diluted soap water to the neem solution so that it will stick to the surfaces of the plant when sprayed.



8. Now you can treat your crops. Wait at least 3 days after spraying before harvesting the crop.



9. If you do not have access to a sprayer, you can use a branch of leaves to splash your crops with the neem-based pesticide.



10. You can make use of the remaining ground up leaves (neem cake) by spreading them around your crops.



11. Application in the evening is highly recommended as Azadirachtin (neem oil) is very sensitive to light.

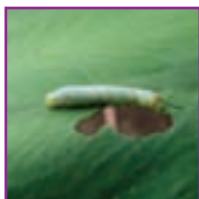


### Neem leaf extract

can protect your crops and vegetables against the following pests

### Other benefits of neem

- The remaining ground up leaves (neem cake) is a useful crop manure.
- Neem cake is also good feed for livestock as it contains 12-17% crude protein.



noctuid moths



nematodes



moths



grasshoppers



aphids



leafhoppers



leaf miners



scale insects

### NOTE

*This treatment is effective on both market garden and subsistence crops.*

**AFTER EACH TREATMENT WAIT 3 DAYS TO ONE WEEK BEFORE HARVESTING THE CROP.**



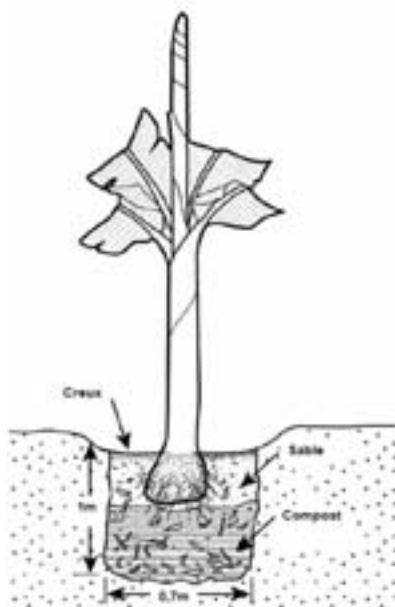
## MAKING COMPOST IN FRENCH POLYNESIA



### Using compost

1 or 2 months later, the leaves will have decomposed and the compost will be ready for planting.

### Planting fruit trees:



Banana, lemon, papaya, breadfruit, etc.  
Cover the ditch with sand and plant the trees in the ditch or around the ditch.

### Planting vegetables:



Tomatoes, pota, cucumbers, sweet potatoes, etc.

Mix the compost with sand, i.e. half compost, half sand.

Use this mixture during sowing and transplanting.





1. Dig a ditch that is 1m x 1.50m and 60 cm to 1m deep



2. Cover the bottom of the ditch with a layer of coconut husks (10 to 15cm)



3. Fill the ditch with Tohonu leaves chopped up into small pieces - **Do not put in any branches**



4. Add a few shovelfuls of cinders or wood charcoal and manure



5. Spray lightly with water to dampen the compost



6. Cover with coconut leaves

7. Monitoring the compost: Every 10 days, aerate the compost with a pitchfork and make sure the leaves are damp. If not, spray with water.



## COCONUT FIBRE FARMING AS USED IN THE TUAMOTU ARCHIPELAGO

### Coconut fibre farming

Coconut fibre farming is a soil-less crop technique. It is particularly suitable for market gardening on family small-holds in the conditions found on atolls. It makes it possible to:

- grow tomatoes, cucumbers, pota, watermelons, citrus fruit, etc.
- in troughs, pots and on trays...
- outside or in a shade-house...

This fact sheet describes how to set up and care for planters made of 6m long troughs. The crops chosen are tomatoes, cucumbers, lettuce and pota.



## 1. Setting up troughs

### Recommendations:

- The land should be flat, with an accessible water supply.
- Protect crops from prevailing winds and the sun by selecting an area near a hedge or by putting up a windbreak (coconut fronds, shade house)



### A. Building the troughs

- Build wooden troughs that are:
  - 6m long
  - 20cm wide
  - and 20cm deep
- **Close off troughs at both ends** but leave one end partly open to let water run out.
- **Make a slight slope** \* so the water will run out the end of the trough that is open.



*\* You need a 6cm slope for a length of 6m*



### B. Preparing the troughs

- **Paint the troughs** with white oil-based paint so they don't heat up and to make them last longer.
- **Completely cover the troughs** (bottom and sides) with a single strip of black plastic sheeting\* and attach it with thumbtacks or staples to the outside edges.

*\* The strip of plastic must be at least 6.5m long and 80cm wide for each trough*

### C. Preparing the coconut fibre

- **Cut the coconut fibre** \* into about 4 to 5cm pieces.
- **Soak the pieces in water** for 24h before sowing or planting out in the troughs.



*\* You'll need 25 to 30 coconuts per trough*



## 2. Preparing the plants

A 6m long trough allows you to grow:

- **23 fruit-vegetable plants**, e.g. tomatoes, cucumbers, capsicums, eggplants, if at least 25cm of space is left between each plant
- **39 leafy vegetable plants**, e.g. lettuce, pota, parsley, if at least 15cm of space is left between each plant

### A. Varieties selected

Certain varieties are better adapted than others to coconut fibre farming on atolls.

Species	Recommended variety	Growth cycle (not including nursery)	Mean yield/ plant	Mean yield/ trough
Tomato	Heat master, Caribbean	5 months	1 to 2kg	20 to 45kg
Cucumber	Tokyo, Sweet slice	5 months	2 to 3kg	45 to 70kg
Capsicum	California wonder, Canapé (Bell)	4 months	1 to 2kg	20 to 45kg
Lettuce	Minetto, Batavia	1.5 months	0.3 to 0.6kg	12 to 24kg
Cabbage	KK cross	3 months	0.4 to 0.8kg	15 to 30kg

### B. Sowing

- **Direct sowing**
  - on fine coconut fibre \*
  - in potting soil
- **Pot sowing**
  - in plastic cups with holes
  - in trays (utilised in hydroponics)



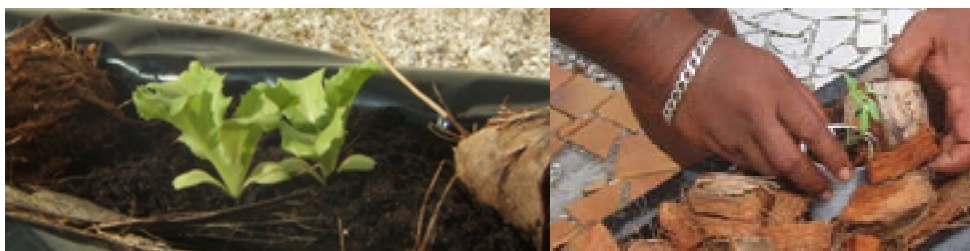
*\* If sowing is done using just coconut fibre, the seeds need to be watered on a regular basis using water mixed with a fertiliser rich in nitrogen and phosphorus*

- One the day the seeds are sown water **with plain water**



### C. Planting out seedlings or pots

- Plant out directly on coconut fibre **at the four-leaf stage** (+2 cotyledons) making sure to leave correct spacing between plants. (see top page)



## 2. Irrigation and fertilisation: fertirrigation

***Fertilisers are applied in the irrigation water: this is called fertirrigation (fertilisation+irrigation)***

Fertirrigation can be done using rain water or brackish water (from wells). If brackish water is used, it is better to measure its characteristics, i.e. the pH and conductivity.

### A. Measuring the characteristics of brackish water:

#### - Acidity of water (or pH):

The pH measures the acidity of liquids. It is a number between 0 and 14. You can measure pH with a pH meter or pH paper.



*pH meter and pH paper*

The optimal pH for market crops is between 5.5 and 6. However, the **pH of well water on atolls is more than 7, which is too high for crops.**

So, the pH\* has to be adjusted, i.e. lowered. To do this, acid or vinegar is used.

#### **\*Correcting the pH:**

*Measure the pH **after adding fertiliser** because some water-soluble fertilisers have an acidifying effect. Simply adding fertiliser can sometimes be enough to correct the pH.*

*If the pH is more than 6, add a teaspoon of vinegar and mix well. Measure again. If the pH is still more than 6, repeat this operation until the pH is between 5.5 and 6.*

### - Water salinity or electrical conductivity (written EC):

Conductivity indicates the amount of minerals in the water, i.e. sea salt and fertiliser dissolved in the water. It is measured using a conductivity meter.



Too much salt is not good for crops. But well water on islands is full of salt. So the amount of salt dissolved in the water must be measured.

To do that, the water's conductivity (without fertiliser) is measured and the results compared to the table below:

Conductivity	Lower than 1	Between 1 and 2	Between 2 and 3.5	Higher than 3.5
Possible crops:	All vegetables: Cucumbers, capsicum, melons, etc.	High conductivity vegetables: Tomatoes, pota, eggplant, cabbage	Tomatoes	No farming should be done

*\*Lettuce does not tolerate high levels of conductivity*

### B. Preparing fertiliser solutions

The following recommendations are designed for fertilisation using brackish water with a low conductivity level ( $EC < 1$ ) when growing leafy vegetables (lettuce and pota).

#### - Water-solution fertiliser:

Two types of fertiliser are used to make fertiliser solutions:





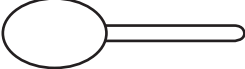



- **complete fertiliser:** type **12-12-36** or **8-12-36**
- and **calcium nitrate**

To prepare the fertiliser solutions, you simply add the indicated doses of fertiliser to the water:

- If watering is manual, make the mixture in a 12L watering can.  
Plan to water each tub once or twice.
- If watering is automatic, make a mixture in the recycling tub (e.g. 25L mason's tub). The solution is, in fact, pumped directly into the recycling tub.

*The solution can be stored in barrels (130 or 200L) and used as needed. In that case, certain precautions must be taken, e.g. the solution must be stirred before it is used, the barrel must be closed after every use and the barrel must be kept out of sunlight.*



FERTILISER DOSES				
	COMPLETE FERTILISER		CALCIUM NITRATE	
	12L watering can	25L	12L watering can	25L
<b>TOMATOES AND CUCUMBERS</b> Growing 	<b>1 heaping teaspoon</b> (= 6g) 	x2	<b>1 flat teaspoon</b> (= 6g) 	x2
Fruiting 	<b>1 flat teaspoon</b> (= 9g) 	x2	<b>1 flat teaspoon</b> (= 6g) 	x2
<b>LETTUCE AND POTA</b> 	<b>1 heaping teaspoon</b> (= 5g) 	x2	No fertiliser	

### C. Caring out fertirrigation

#### - Watering:

**Manual :**  
more appropriate  
for small units



**Automatic:**  
with drip irrigation system  
Using an aquarium pump or by gravity with a bucket



*In any case, recover **the watering solution** in a mason's tub or basin. **The same solution is used for two days.** In that way, the fertiliser in the solution is completely used up and the water discarded has fewer pollutants.*

Water and fertiliser are provided at the same time. For that reason, the amounts of water and fertiliser must match the stage in the growth cycle (see table on previous page).

**Also take into consideration the weather and the plants' status so as to adjust the amount of water given.**

**- Watering time:**

Watering times must be followed closely. Watering longer does not make the plants absorb more fertiliser and is just a waste of time!

Stage	No. of sessions/day	Watering time	Amount of water per 6m trough	Length
Sowing	2	<i>Potting soil must be kept damp until sprouting</i>		
Planting out	2	5 min	8L / session	3 days
4 to 6 leaf stage	1	10 min	16L / session	2 weeks
More than 6 leaves	3	15 min	23L / session	To the end

***\*If it rains,** there is no need to water since the fertiliser will just be leached away. After a prolonged period of rain, the lack of fertiliser for those days must be compensated by a solution with a little extra fertiliser.*

## 4. Materials

Here, for information purposes, is a list of materials for a coconut fibre unit consisting of **2 six-metre troughs** with a **pump-driven drip irrigation system** (tomato and lettuce crops)

List of materials	Quantity	Price with tax (March 2008)	Note
Setting up troughs			
Treated wood boards: - 1' x 8' x 20" - Pieces of board for the ends of troughs	6 4	13 990	Old boards or wood that has not been treated can be used.
Cement blocks 15 x 25 x 50	4	960	
White oil-based paint 5L	1	7 895	Coconut tree trunks can be used as supports for troughs. 23L / session To the end
Black plastic sheeting 125 micron - 4m wide	7m	2 702	
Wall stapler/ thumbtacks			
Coconut fibre			
Coconuts	60	They are reusable. They just have to be rinsed and then set out in the sun to dry	
Seeds: - Tomato "Caribbean" - Lettuce "Minetto"	10g 20g	415 564	Plastic cups can be used but they are not very sturdy
- Hydroponics bucket - Hydroponics tray	23 39	207 280	
Sacks of potting soil 75L	1	2 900	
Pump-driven drip irrigation (for vegetable fruit trough)			
Aquarium pump 600L/h	1	3 805	One pump can be used for several troughs as long as the same fertilising solution is used
Serrated connection 3/4 outlet 13mm	1	155	
Pipe 13mm diameter	7m	585	
Elbows 13mm	2	137	
End cap 13mm	2	84	
Tricklers 2L/h	23	1 387	
Mason's tub 25L	2	1970	
Fertirrigation			
Sac of soluble fertiliser 25kg: - 12 - 12 - 36 - Calcium nitrate	1 1	5 330 1 375	25kg of fertiliser covers about 30 cycles of tomatoes
TOTAL COST OF SYSTEM			
Setting up troughs		25 547	TOTAL = 44 0231 F
Sowing in pots		4 366	
Pump-driven drip irrigation		7 403	
Fertirrigation		6 705	

## GENDER PARTICIPATION

DSAP project uses participatory methods and is gender sensitive to the implementation of its activities. The inclusion of gender sensitivity in the project is one of the contributing factors towards the success of the sustainability of the project.

Gender refers to the *social roles* of men and women in their societies. Such roles are construed by the societies' cultural norms and values, traditional beliefs, educational backgrounds, religions, economic status, health status and power (authoritative) status, etc. The roles are well defined by the community members using participatory methods tools e.g. Activity Profile.

Pacific Island Countries have shown different gender roles in all areas of activities including agricultural production ones. For example, in the Polynesian Island of Samoa, the men's role is to collect firewood and water. In the highlands of Fiji this role is confined solely to the women. It illustrates the importance of identifying the gender roles played by different members of the targeted communities. These roles are then capitalized upon when planning to implementation of activities. It would decrease the burdens of the target group rather than increasing it as they would not be tasked to do any activities that are outside of the roles.

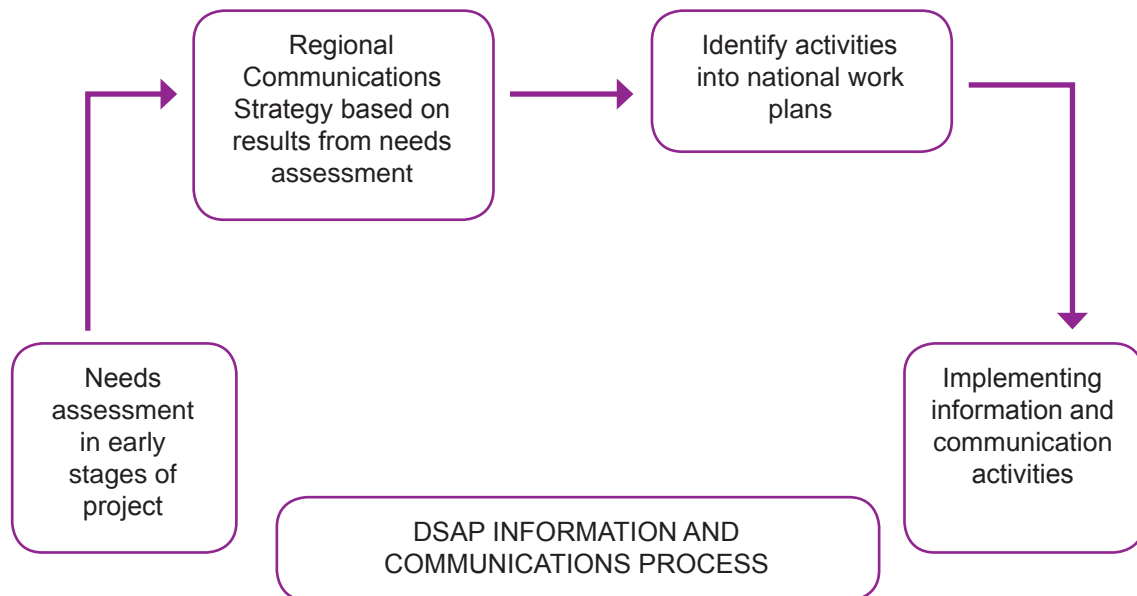
Women of Palau, Yap and Chuuk States of Federated States of Micronesia are responsible for swamp taro (*Cyrtosperma sp.*) cultivation. They are involved in the planting, maintenance (weed, sanitation, water management), and harvesting of the long term staple crop. It is only recently that men are seen in the taro patches assisting their womenfolk in maintaining the patches. Men of such caliber have gone through the hurdle of being called "*sissies*" by communities to be able to assist their spouses harvest staple food for the family. There are couples of women in Palau who have also changed roles from swamp taro cultivations to deep sea fishing, a men's traditional role. These women have brought in quantity of fish that have amazed their men fishing colleagues.

*Gender issues* have been identified from the conduction of participatory rural appraisal surveys, capitalized upon at the implementation stage of the activities. The DSAP GREAs are gender-sensitized having undergone gender sensitization trainings. In addition an effort is made that the National Steering Committee are gender balanced so to ensure that both men's and women's views are considered. Target groups are also encouraged to involve equal participation of both men and women, male and female youths and children.

The usage of participatory methods provided the opportunity to address and include gender sensitivity from the identification, planning, implementing, monitoring and evaluating the DSAP project. Equal participation and gender sensitivity are key factors that contributed to the success of the sustainability of the project.

## INFORMATION AND COMMUNICATIONS FOR DSAP

The objectives of the information and communications component of the DSAP project were specific, “that appropriate technologies promoted and capacity to produce and use promotional materials enhanced”. The following process was used to implement the information and communications component for DSAP,



### Needs assessment

Information and communications needs assessment were carried out with the following,

- Information and communication needs assessment of participating communities carried out as part of initial community consultations.
- Information and communication needs assessment of extension officers carried out during consultations with staff of department of agriculture.
- Information and needs assessment of stakeholders (NGOs and other government departments) carried out during staff consultations.

For the community consultations, the questions asked during the consultations can be found on page 18, for the extension officers and for the information officers within the ministry of agriculture, a more detailed questionnaire was filled out by the staff.

It is important to carry out the needs assessment of the community, staff and stakeholders as this assists with identifying the type of information required and how to communicate that information. For development projects, information and communication has to be strategic or else the message that is being communicated does not reach the intended audience.

### Regional communications strategy

A regional communications strategy that incorporated the results from the needs assessment was created. The strategy provided direction for the delivery and support of information and communications services for the project.



### Components of the communications strategy

- **know your audience**

For any communications work, it is important to identify your audience. For effective communications work, it is important to specify who you are trying to target. Using the term 'general public' is not an effective way to write a strategy, instead identify the target audience, example, DSAP GREAs or Extension Officers of Ministries of Agriculture.

- **identify key messages**

Key messages need to be identified for each group of target audience. Key messages refer to what message the project wishes to communicate with the specified target audience.

- **use most appropriate tool for communications**

Once key messages have been identified, it is important to identify the tools and methods that will help deliver the key messages. The tools for communications can be separated into internal and external communications tools. Internal communication tools include phone calls, country visits, training workshops, short term attachments etc. External communications tools include print/radio/TV media, Published resources (brochures, posters, leaflets, reports) and Public relations activities (agriculture shows, tshirts, hats etc).

- **monitoring and evaluating**

It is important to identify within the strategy some monitoring and evaluation activities for the communications component. Information is a constantly developing and evolving field that it is always effective to constantly ask if the project is using the right communication tools, or the right messages.

### **Identify activities into national work plans**

While the regional communications strategy is a regional one, at national level, the information and communications activities are written into the project work plans. When planning for each six monthly activities, DSAP staff liaise with the Regional Information Officer on information and communication activities to be implemented by the national project. These activities range from capacity building of information staff of the Department of Agriculture /Extension Officers to production of resources for the farmers.

For the DSAP project, the following were carried out,

Needs assessment of farmers and extension officers indicated the following -

Farmers - lack of agriculture information, would like to receive more information through frequent visits by Extension Officer. When Extension Officer completes visit, to leave behind a leaflet or brochure.

Extension Officer needs assessment identified infrequency in training to update and upgrade knowledge and skills of extension officer, lack of capacity of extension staff and agriculture personnel in information and communication skills and inadequate equipment for the production of agriculture information.

### **FOCUS GROUPS**

Focus groups were necessary when producing resources for the project to test the materials produced. Focus groups often consisted of farmers, extension officers, even members of the public not associated with farming. It is important to test materials with focus groups to ensure their effectiveness.

### **SETTING UP OF RESOURCE CENTRES**

A specific activity for DSAP was the setting up of resource centres to enable accessibility to agriculture information. The requirement of setting up of resource centres was feasibility and in all cases where a resource centre was set up, the first request often came through in the initial community consultations. When a request for a resource centre came up, a separate consultation was often held with stakeholders to determine the feasibility of a resource centre within the nominated locale. Consultations take into consideration the staffing, equipping and maintenance of the resource centres. Once the basic information and necessary set up was established the resource centres were set up with training facilitated by DSAP for their management and sustainability.

**Implementing information and communication activities**

The focus of the information and communications component of the DSAP project was on capacity building. The needs assessment identified a need to enhance skills and knowledge in the field of information and communications. This automatically highlighted the need for capacity building. There were various subjects covered under the capacity building for information and communications, which all came from the information needs assessment. Subjects ranged from effective communications, presentation skills, training in desktop publishing with Adobe Page maker and Photoshop, basic computer training, leadership training, media training - using the media as a tool for communication and training in filming and producing video programmes. Using these skills DSAP staff and extension officers are in a position to share information and knowledge with members of the community they are serving.

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