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Final report

project

Horticulture industry development for market-remote communities: Cape York and Samoa

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Australia

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Acronyms and Abbreviations

ACIAR	Australian Centre for International Agricultural Research
CTA	Technical Centre for Agricultural and Rural Cooperation
DPI&F	Department of Primary Industries and Fisheries Queensland, Australia
GAP	Good Agricultural Practise
HACCP	Hazard and Critical Control Point
HAL	Horticulture Australia Limited
IRETA	Institute of Research Extension & Training in Agriculture
MAF	Ministry of Agriculture and Fisheries, Samoa
NGO	Non-government organisation
PRA	Participatory Rural Appraisal
RIRDC	Rural Industries Research & Development Corporation
RRA	Rapid Rural Appraisal
QUT	Queensland University of Technology
USP	University of the South Pacific

2 Executive summary

This report summarises the findings of project “Horticulture industry development for market remote communities: Cape York and Samoa”. The project focussed on the understanding the role of the provision of horticulture information in uptake by producers of improved practice in horticulture production systems. This study of horticulture information end users and horticulture information production and dissemination systems was conducted in Samoa and selected areas of Cooktown and central Cape York Peninsula.

The project was conducted in three stages. First was the analysis of local information systems. This information was then used to develop a model information system that was then piloted in both regions. The development of the model system incorporated a component of capacity building for local staff to continue to provide relevant information packages after the project finished. And finally the model system was evaluated to determine if the conclusions of the information analysis were valid and whether the changes had made an impact on horticulture production in the target regions.

Although the project locations in both countries had similarities they also showed diversity, providing confidence that the project methodology can apply broadly across the Pacific and to other areas of the world with limited information sources on tropical horticulture.

In Samoa, project co-operators included the growers of commercial crops, the sellers of produce and those involved in value adding to local produce as information end users, and the staff of MAF including researchers, advisors and information officers, staff of other government and non government institutions with similar aims as information providers.

In Australia, project co-operators included individuals and administrators of various Aboriginal communities on Cape York Peninsula, particularly Mapoon Community and commercial growers and support agencies in the Cooktown area.

Information analysis was conducted through a rapid rural appraisal (RRA) using card sort techniques, semi-structured interviews and focus group discussions together with participatory rural appraisal (PRA) activities comprising 52 interviews and farm visits, 8 meetings and 2 PRA's with participants from the four target groups in Samoa.

Semi-structured and Card sort interviews were conducted with 89 people in Mapoon, Napranum, Weipa, Lockhart River, Coen and Cooktown during 17 visits to the Peninsula and Cooktown. In addition, 2 visits by Cooktown and Peninsula growers to southern production areas, 2 focus groups held with commercial growers in the Cooktown area, and a public presentation day was conducted in Mapoon.

Capacity building for Samoan staff included 4 workshops on information product development and 6 visits to information and crops marketing locations in Australia.

Over 100 publications and 12 editions of the project newsletter were produced. More significantly, the ability to produce such items is retained and used in Samoa and the knowledge of information sources and an ability to research these sources is retained in the Cooktown and Peninsula Communities.

3 Background

Horticulture can make a significant contribution to the health, wellbeing, nutrition and income of people in remote regions. However, development initiatives for horticulture in market remote regions are often difficult to achieve because of poor access to information and its inappropriate use in planning and decision making at an individual, enterprise, community and government level.

In small and remote communities development decisions are made at both community and farmer level. Therefore the information needs at the community level as well as the needs of individual farmers must both be met for good decisions on practice change to be made. In this knowledge era, communities and individuals without access to, or the ability to find, use and interpret information, will become increasingly disadvantaged.

The aim of this project was to work with individuals, communities and commercial producers in Samoa and the Cape York Peninsula of Northern Australia to foster and enhance the sustainable development of horticulture enterprises to supply local and distant markets. To do this, the project sought to enhance the capacity for the development and use of technical and market information by extension personnel and farmers in these regions.

The two target regions were selected because both had committed to increased horticulture development, and both had stated in strategic plans that access to information on horticulture production was a high priority to stimulate that development.

In Samoa, the Ministry of Agriculture and Fisheries (MAF) had identified three groups whose needs had the highest priority:

1. Commercial growers of rambutan and breadfruit for export
2. Women producing vegetables for local sale
3. Processors: Growers seeking to process foods by drying/chipping for sale on both domestic and export markets.

Therefore, the primary beneficiaries of the project in Samoa were commercial farmers of rambutan and breadfruit and farmers who produce for roadside/local market sales. The availability of more fresh local produce would have the broader implication for the community through health benefits from the better availability of a larger range of fresh fruits and vegetables, and to the wider community from increased exports and their contribution to GDP.

Better understanding of the information delivery in Samoa would have benefits for other Pacific countries. The research methodology chosen had relevance for use in other countries and the dissemination of project outcomes was to be achieved through a communication plan.

In Australia, the Queensland Government accorded a high priority to economic development in Cape York. In a strategy paper developed by local residents access to better information is given a high priority. The project focused on two groups in Cape York:

1. An indigenous community growing produce for import replacement
2. Commercial growers.

Consequently, the primary beneficiaries in Australia were to be the individual and remote communities participating in the project, but again, the methodologies used would be directly relevant to other remote communities and individuals undertaking entrepreneurial development in Cape York.

As information providers, we needed to understand how people use information to target and package it more appropriately and precisely. We needed to know what information they needed to make a choice between various development options. It was critical to understand the social and cultural context in which information is used and how development decisions are made, and to target the information to not only those people in the community who need to use it, but to those who will influence the project from a position of power within the community.

In Cape York, decision making in an indigenous community is made by locally elected community councils and by the traditional owners of the land and the elders of that group.

Thus any development proposal must be understood by groups with different interests and differing needs for knowledge. Funding for development often comes from federal or state organisations that also have needs for information about development proposals. To meet these diverse information needs feasibility studies can cost as much as \$200 000 for a single proposal in a single community. Therefore development proposals frequently struggle to make headway until every party to the development has their own information needs satisfied.

In Cooktown, farms are more commercially orientated with larger freehold operations but significantly remote from mainstream marketing and information systems.

In Samoa community decisions are made through the 'Matai' system where family heads meet to discuss development options. The land is owned by members of the extended family under the supervision/guidance of the Matai" and, as individuals do not have ownership of their land, they must work with the decision makers to realize development opportunities, even though they work their own patch of land and can sell their produce for some personal gain.

Therefore, information packages were the key output of the project, designed and delivered to meet the researched needs of producers in Samoa and Cape York. Initially the project sort to gain understanding of individual and community information use. A research approach, using qualitative research techniques more commonly applied in the social sciences was chosen because success in horticulture industry development hinges on improving the capacity of the individuals and community within it to operate and make effective decisions in an information rich world.

This analysis phase will use a number of participatory research tools, including semi-structured interviews, to explore current preferences for information access for decision-making at community and individual level, noting any gender or age differences in needs. This will form the basis for the design and delivery of information products suited to the needs of the target groups. Finally these information packages will be evaluated for their effectiveness in reaching the target groups and achieving knowledge and practice change.

As a result of the project, through better information access, the target groups will have increased capacity to assess market prospects and develop horticultural enterprises, boosting both their chance of success and profitability. The collaborating organisation will have the capacity to conduct similar industry development projects for other groups and areas.

4 Objectives

The aim of this project was to:

1. Foster the sustainable development of horticultural enterprises to supply local and distant markets by producers in Samoa and Cape York Peninsula by
2. Enhancing the capacity for the development and use of technical information by researchers, extension personnel and farmers in these 2 regions.

An integrated research, development and capacity building process was used to improve production, distribution and use of appropriate and context specific horticultural information for market remote communities.

The project evaluated the application of participatory research techniques and Bennett's hierarchy as planning and evaluation tools to improve horticulture enterprises, and communicate the project results to stakeholders in the South Pacific region.

The following project activities guided the day-to-day operations of the project:

Fostering the sustainable development of local and distant markets for horticultural produce (in Samoa and Cape York Peninsula)

- 1.1. Document information use and needs for horticulture development in selected remote communities.
- 1.2. Develop a culturally and socially specific information strategy that takes into account gender/age needs.
- 1.3. Develop and distribute information 'kits' for a limited and specified number of crops; including, leafy vegetables, rambutan and breadfruit.
- 1.4. Project evaluation.

Enhancing capacity for the development and use of technical information by researchers, extension personnel and farmers

- 2.1. Increasing the capacity of extension staff to develop and conduct extension and social research projects.
- 2.2. Increasing the capacity of extension and research staff to produce targeted information products (including economic and marketing material).
- 2.3. Increase capacity of extension staff and farmers to access and use information including better record keeping for participative information generation.

The project was reviewed in May, 2007 and extended for a further 12 months. Five additional activities were recommended that the reviewers felt would considerably add value to the existing project outputs. These activities would enhance project impacts with an increased effort to fully utilize the value of the project information produced.

Based on the review recommendations, the project extension focused on:

1. Increasing the adoption of existing crop specific information products from the project in Samoa (Recommendations 1 & 5)
2. Increasing the capacity of the Samoan project team to train Crops Division staff and other information providers in the production of targeted information products (Recommendation 2)
3. Development of a resource manual to facilitate gardening projects (community gardens & nurseries, school, amenity & household gardens) in remote tropical locations - Australia
4. Completion of the remaining project outputs including training manuals, social research and evaluation reports (Recommendation 3 & 4)
5. Designing a succession plan to continue the publication and distribution of the project newsletter, Pacific Gardener

5 Methodology

A participatory research approach was chosen to better understand the needs and motivations of growers and other key stakeholders in using information when making decisions on enterprise options.

This participatory approach incorporated social research, development and capacity building activities aimed to bridge the gap between existing research and information and:

- Real problems being experienced by farmers
- Delivery of information and practical solutions to farmers
- Empowerment of farmers and other stakeholders in planning and decision making and by the use of other resources (MAF etc) in picking up on-going research needs.

Participatory research projects require that the case study groups participating in the project are aware of the project and agree to participate to share their knowledge and experience with the project team freely and openly.

Thus, the first phase of the project was to identify and confirm the target participants in Samoa and Australia. In Samoa, the project team held meetings with target groups to introduce the project and identify key issues for future focus. Community visits together with introductory interviews with key community members and potential project stakeholders were used to engage target participants in Australia.

A brochure introducing the project and its objectives was produced and distributed during project and community visits. The brochure was translated into Samoan.

5.1.1 Document information use and need

A rapid rural appraisal (RRA) using card sort techniques, semi-structured interviews and focus group discussions together with participatory rural appraisal (PRA) activities was used to gather data. Questions were asked to ensure that both the initial data and the evaluation would not only reflect project outputs but also show the changes in knowledge, attitudes, aspirations and social constraints that could be attributed to project activities. Particular attention was given to ensure that survey methodology and results were able to show variation in information needs and use for all participants.

The process used in the Card Sort interviews was a modification of a technique used by Daniells et al (1997) and Choices, a DPI&F Qld initiative, which were used to study decision making processes used by farmers and the key factors guiding their choices. Specifically, the interviews aimed to identify;

- How people used information
- Who or what they sourced information from &
- What information was really useful or valuable?

It was important to differentiate between strategic and tactical decisions. Strategic decisions or changes were those that affected or changed the capital structure of the farm or business, such as buying land or changing cropping systems. Tactical decisions or changes were those that did not affect or change the capital structure of the farm or business, such as applying extra fertiliser or planting a different variety.

An understanding of the motivation of farmers to make decisions, particularly strategic ones, and who influences these decisions enabled the project to better target its outputs. Appendix 1 (pg 55) details the Card Sort interview process together with interview examples from Samoa and Australia.

Semi-structured interviews were used in addition to the card sort interviews to put together a richer picture of the information issues of participants. These semi-structured interviews allowed the project team to pursue specific issues or topics of importance or a specific line of questioning. Examples of semi-structured interviews used by the project team are detailed in Appendix 2 (pg 70).



Figure 1. The Rapid Rural Appraisal tools used to document information needs and use included (clockwise from top, left) Card sort interviews, Semi-structured interviews, focus groups and Participatory Rural Appraisals.

Testing of these research tools was undertaken over three months with an exchange of project staff between Australia and Samoa to help the project team appreciate both the differences and the similarities of the target participants in the two countries. This testing and initial data collection ensured that the tools were culturally appropriate and that translation to Samoan did not affect the validity of the questions being asked.

Focus group discussions were conducted with commercial growers in Cooktown and with Advisory staff from MAF Crops Division. The project collected additional information from participatory rural appraisal (PRA) activities that Crops Division advisory staff were conducting with target participant groups.

In Samoa, this initial appraisal to understand the target groups information needs and use involved the project team and MAF Advisory staff responsible for working the participants being targeted by the project. In Cape York, this appraisal involved the Australian project staff together with visiting Samoan project officers.

The project used the testing and information collection as an opportunity to train advisory staff in the application of social research as a tool with farming communities. In addition, a basic workshop in social research theory was run with advisory officers (see Building Capacity pg 38).

5.1.2 Develop an information strategy

Data analysis followed the initial data collection. An information 'strategy' was developed with the participation of key industry participants and implemented in the crops under consideration. Continuing interaction with participants provided feedback throughout the

project, allowing the project to adjust to the changing needs of the target participants and other relevant organisations involved during the implementation phase.

Workshops were held in Samoa and Australia with target participants and other information stakeholders including FAO, SPC, USP, IRETA to present the results and conclusions, seeking their feedback and further ideas. Additional presentations were made to DPI&F Qld and MAF Samoa management and policy staff outlining the project and its benefits to each organisation.

5.1.3 Develop and distribute information 'kits'

The second phase involved the implementation of the information strategy for a limited range of crops and cropping systems. In Samoa, taro, papaya, Agro-processors and roadside stallers were the initial focus for the project. In Cape York Australia, community gardens and gardeners within indigenous communities were the primary focus together with commercial growers of passionfruit and tropical fruits in the Cooktown region.

An iterative participatory information development process was used to enable project staff to respond to the specific needs and feedback of target participants to the information developed and delivered. This iterative approach enabled the ongoing evaluation and improvement of information produced throughout the course of the project.

Attention was paid to ensuring that packages were designed to be able to be produced relatively cheaply and in-house where possible. The project provided the technology to achieve this.

The wide range of information options precludes any mention of specific products. They could include training packages, radio shows or videos, through to booklets or brochures. The mix of products was determined by the survey results and to some extent by budget constraints where additional funds for information projects cannot be sourced from Government or sponsor funding.

Final project workshops in Samoa showcased the project to target participants, information providers and other stakeholders. In Australia, workshops and meetings were run in target communities allowing project staff from both Samoa and Australia to present project outputs and showcase the project to the wider community.

5.1.4 Building capacity

Increasing the capacity of the project team and the advisory and research staff from MAF Samoa, in the development and use of technical information was seen as a primary aim for the project. Capacity building focused on three key areas;

1. Conducting extension and social research including needs analysis
2. Production of targeted information products
3. Improving the ability to access and use technical information.

Capacity building was to be achieved through a combination of formal training workshops covering social, production of training materials, experiential learning during reciprocal project visits between Australia and Samoa.

Specific areas to be covered include extension & social research, understanding audience needs, working with commercial growers, finding and accessing relevant information, developing information products (writing, designing, compiling), computer publishing (Word, PowerPoint etc.) and photography & video production.

In addition to these activities, project staff in both Australia & Samoa undertook postgraduate training in particular areas to improve their ability to conduct the project.

5.1.5 Project extension

A review of the project in April, 2007 recommended several additional activities which reviewers felt would enhance the project impacts.

6 Achievements against activities and outputs/milestones

Objective 1: To foster the sustainable development of horticulture to supply local and distant markets (in Samoa and Cape York Peninsula)

no.	activity	outputs / milestones	comments
1.1	Research information use and needs for horticulture development in selected remote communities	Confirm the participation of communities and identify key stakeholder groups/individuals	<p>Australia: Cape York</p> <p>Two planning workshops were held in South Johnstone and Cairns with regional DPI&F representatives including Mr Bill Dalton and Mr Peter McCulkin to finalise the communities identified. A review of Horticulture strategy documents for Cape York and developed community profiles</p> <p>Initial meetings were held with key stakeholders in the aboriginal community of Mapoon and stakeholders in several other communities including Napranum, Coen and Lockhart River. Each of these communities had established community gardens and similar goals of promoting horticulture development in their community but each was approaching it from different angles. During their visit to Mapoon, Mr. Roger Goebel and Mr. Rowland Holmes discussed the project with key people in the Mapoon community including Community Council Officers, Elected Councillors, Community Rangers and other interested individuals and groups in the community including the Community Store and the local Health clinic.</p> <p>Jason Pflugst (CEO) had developed a project proposal as part of the Councils Community plan community farm (Phingst, 2004). At the start of the project, there was no single person specifically responsible for the day to day management of the farm. Horticulture trainees, undertaking a Certificate II in Horticulture and community employment scheme staff, carried out the jobs on the farm which were assigned by a visiting consultant and later by the Mapoon Council Works supervisor.</p> <p>The Napranum community farm was focused on creating jobs and profit and had employed a sharefarmer to reinvigorate the farm. His initial focus was to grow turf and ornamentals to supply the new residential developments in Weipa and trialling a range of fruit and vegetables to re-establish a farm gate market stall.</p> <p>The community focus for the Lockhart River garden was on jobs and skills development rather than profit, opting to grow a range of fruit & vegetables for disadvantaged households in the community. Coen's community garden was in between farming projects.</p> <p>Australia: Cooktown</p> <p>In May 2004, Mr. Roger Goebel and Mr. Rowland Holmes held meetings with key Cooktown growers, the Cooktown Farmers Association, Hopevale community and existing information providers in Cooktown including the Botanical gardens and Natures Powerhouse. Discussions were also held with tropical fruit growers in the Cape Tribulation area.</p> <p>Samoa</p> <p>Introductory meetings were run with potential target participant groups in Samoa outlining the project objectives to gauge their response to the project proposals and identify specific issues that needed to be addressed. Four target groups emerged from these meetings: Commercial growers of Taro and Papaya, Agro-processors & Roadside stallers.</p>
		Project officers employed	<p>Mr. Roger Goebel was appointed on 10th February 2004, as a fulltime Development Horticulturist with the DPI&F, based at South Johnstone</p> <p>Mr. Philip Tuivavalagi was appointed in April 2004 as a fulltime Project Officer with the MAF Samoa:</p>

	Research tools developed and tested	<p>A semi-structured interview process was developed and tested during the initial project visits to Cape York in May and Samoa in June 2004. This interview was put together for farm or project or community visits with a list of questions to help focus the discussion onto food, horticulture and information needs and use. Information was recorded in travel reports. Focus groups were used with Commercial growers in Cooktown and MAF advisory officers in Samoa to discuss information needs and use. Semi-structured interviews were conducted with five stakeholders during the first project visit to Samoa. These interviews have been recorded in written form.</p> <p>A card sort interview technique was developed during the first visit to Australia by Samoan project staff. An interview template together with laminated cards was field tested with commercial growers in Cooktown during this project visit. The card sort interview tools were translated into Samoan for use with target groups in Samoa.</p>
	Data collected and analysed	<p>Samoa</p> <p>Fifty two card sort and semi-structured interviews were conducted with the Samoan target groups in combination with several PRA activities. Twenty taro growers, 19 Papaya growers, 6 Agro-processors and 7 Roadside stallers have been involved with these activities.</p> <p>Taro (talo) growing was based on very traditional family based information & decision systems. Information was verbal knowledge, transferred from generation to generation.</p> <p>Significant information on taro was not documented , while papaya had some information documented as export production was being driven by the MAF through its advisory staff.</p> <p>The main information issues raised by Taro growers during the interviews were the current confusion in identification of new varieties and their management and identifying pest and diseases and their control without the excessive use of chemical pesticides.</p> <p>Papaya growers wanted more information on growing, husbandry, harvesting and grading standards for papaya as well marketing information such as identifying export markets and price.</p> <p>Issues relating to packaging and labelling were the main concern for Agro-processors. Finding and accessing information on CODEX and food safety was also an issue for this target group. Overnight storage of produce and maintaining quality and shelf life of produce were the main issues for the Roadside stallers. The need for better record keeping has also been identified to help stallers access financial assistance to develop their businesses.</p> <p>Australia</p> <p>Semi-structured and Card sort interviews were conducted with 89 people in Mapoon, Napranum, Weipa, Lockhart River, Coen and Cooktown during 17 visits to the Peninsula. In addition, farm visits and focus groups were held with commercial growers in the Cooktown area. The interviews helped define stakeholder involvement in horticulture (growing and using), identifying information sources (within and external to the community) and specific information requirements.</p> <p>In Australia, the social research continued throughout the project with semi-structured interviews conducted during future visits to the Mapoon and Cooktown areas particularly as new stakeholders arrived or became more aware of the project activities.</p> <p>Informal data analysis was often conducted whilst travelling the extensive distances between locations within the Peninsula (12+ hours to drive from Innisfail to Mapoon). More formal data analysis was conducted during regular project meetings and Samoa-Australia project visits.</p> <p>Specific issues in Cape York</p> <p>The usual definition of horticulture was broadened for the project activities in the Peninsula to include native food plants, ornamental plants for landscaping, local plants for handicrafts together with fruit & vegetables for community farms and household food gardens.</p> <p>The key stakeholders in the Peninsula were identified as:</p>

			<ul style="list-style-type: none"> • Community council personnel. This was a broad group of people within the community that had some interest or role with the community farm but didn't have a direct role in the day to day management. This group included the Shire chairman, deputy & councillors, Council CEO, Works department, Community employment programs (CDEP) and Cook Shire councillor. • Farm managers, workers and trainees such as key personnel involved with the community farm at Napranum. • Community gardeners. This group were looking to develop a horticulture enterprise/activity and really want the information in the early development stage of an enterprise. They wanted the basic information straight away. They tended to lean heavily on successful, established gardeners or commercial growers of similar crops in other areas for information. • Support agencies. Those with a strong training and education focus that work within communities including various government and non-government organisations who used aspects of horticulture development for education and training. Examples include Field staff of the Nutrition unit of Qld Health, Council & school libraries, TAFE colleges (Horticulture trainees), consultants, advisors & Western Cape College staff. <p>Specific issues in Cooktown</p> <p>Most commercial growers had a basic collection of reference material and access to a home computer although as part of the project, a survey of computer use identified that growers relied on others, usually family members, to access information. Two public information collections were identified; Cook Shire Library and Natures Powerhouse.</p> <p>Most growers had well maintained, established information networks and were active information seekers. They had a financial motive for the enterprises they were involved with.</p> <p>The need to customise a wide range of horticultural information to take advantage of unique market windows and reduce the impact of the harsh environmental growing conditions were the main issues identified by growers. Information. Selection of varieties and methods of growing and managing specific crops were highlighted in farm note form on the CD.</p>
1.2	Develop a culturally and socially specific theory of information use that takes into account age/gender needs	Develop the Information delivery strategy that specifies the crops and information products to be produced	<p>The information strategy was developed using the concept of "Agricultural Knowledge and Information Systems" (AKIS). The specific activities the Information Strategy addressed included;</p> <ul style="list-style-type: none"> • Improving availability of existing information. A significant amount of horticulture information already exists. However, for various reasons, it is no longer accessible to either our target grower groups or the people providing information to them. • Filling information gaps through the production of targeted information products focused on topics and issues identified through the social research activities. • Developing and implementing a project communication plan. The primary target groups for the communication plan include project clients (commercial growers & gardeners on Cape York Peninsula, taro growers, papaya growers, roadside stallers, agro-processors and advisory officers in Samoa), government & corporate and other information providers (government & NGO's). Communication activities will focus on providing an update of activities in the project, improving access and awareness of new and existing information and demonstrate how the project supports corporate goals. • Foster networking to gather and disseminate information: With the amount of project activity in Samoa and Cape York, there are many opportunities for collaboration to enhance not only the project activities but those of other projects and initiatives. The project needs to generate a culture of working together and sharing information. By taking a lead in developing relationships and networking, the project can add to the information flows well through new and existing relationships. • Build capacity to develop & use information particularly with the MAF staff in Samoa and the growers in Cooktown.
		Research results seminar for grower participants and interested organisations	<p>Presentations to Management: Rowland, Roger and Philip gave presentations outlining the project and some of the early results to 30 DPI&F management staff in November 2004. Laisene & Philip presented a project progress report to the Senior Executive team of the Samoan MAF including the Minister and CEO in December 2004.</p>

<p>1.3</p>	<p>Develop and distribute information 'kits' for a limited and specified number of crops</p>	<p>Information products designed, written and produced</p>	<p>After identifying the various horticultural information sources accessed by project co-operators and reviewing the information available, a range of topics were agreed upon as most relevant and a series of formats were discussed. Publications to be written in English with selected ones translated into Samoan. Publications to include relevant photographs to illustrate practices where possible. Project publication formats included posters, pictorial field guides, and farm notes. A range of non project publications were selected to present information in other formats that included books, CD's, databases and video.</p> <p>This project farm note strategy was based on a modified farm note format of 1 to 6 pages. It included diagrams and photos. It made use of colour to enhance its initial attractiveness and readability but in most cases did not rely on colour to portray the message.</p> <p>Notes were on single crops or subjects. They took the reader to a first step level and pointed to more specific info as further reading when it was available.</p> <p>Developed in "word" as digital files then compressed as "pdf" to reduce size and add a degree of protection to the text.</p> <p>The farm notes topics were supported by posters, produced in Microsoft Power Point.</p> <p>TOOLS</p> <p>A small selection of topics were listed to trial the note concept. The overwhelming positive response to these publications and a lack of any comprehensive information collection at each project location encouraged the production of more notes and posters.</p> <p>A larger range of notes, posters and selected books and other publications were produced, obtained and collated to trial the mini information centre concept.</p> <p>The notes were primarily distributed as hard copies of individual notes for review and feedback then collated into 9 folders under subject headings. The delivery strategy was aimed at providing an information framework that was suitable for an individual, garden club or library to house and access. Its design not only allowed information both digital and hard copy to be added as it became available but encouraged people to add local experiences to it.</p> <p>The information collection in CD/DVD form added specific crop and issue content to "the community gardening project manual" in preparation.</p> <p>Australia – Cape York- information production</p> <p>The primary information production started with publications on basic locally relevant information which lead to more advanced information packages as interest increased.</p> <p>The primary package for Cape York is the 10 folder information presentation system "gardening in the tropics". These folders contain selected information on the following topics:</p> <ul style="list-style-type: none"> • tropical fruits • wet season vegetables • winter vegetables • native food plants • ornamental house plants • herbs, spices and flavourings • garden design and maintenance • propagating plants
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		<ul style="list-style-type: none"> • food nutrition uses and recipes • editions of pacific gardener newsletters <p>The notes are of 3 production types:</p> <ol style="list-style-type: none"> 1. Uniquely produced for the project – this applies to the majority of the notes but particularly those in wet season vegetables, native food plants, ornamental house plants and garden design and maintenance. 2. The body of the text lifted with acknowledgment from other DPI&F notes but having photos and a tropical location introductory paragraph as a summary for tropical conditions. The majority of these notes are in the winter vegetables folder. 3. Reproduced in full with permission and unaltered notes from other state departments and SPC notes on food. <p>Supporting the note series are posters promoting each of the folders and selected posters and notes produced for Samoan growers and by other authorities like NT Dept. Ag. FAO and SPC.</p> <p>Australia - Cooktown - Information production</p> <p>In addition to the “Gardening in the Tropics” hard copy and CD and the other selected books and posters as a basic collection, information presented to Cooktown growers included an extensive passionfruit information package. Passionfruit is the most significant crop in the area. This package included: Is Passionfruit growing for you?, Passionfruit Problem Solver field guide, and Passionfruit Growing Guide.</p> <p>In addition to the passionfruit information were;</p> <ul style="list-style-type: none"> • Tropical tastes - promotional book for tropical crops (particularly tropical fruits) • Taro pest - although aimed at pacific growers it is a useful guide and information source for Australian growers. <p>Australia -information distribution</p> <p>In addition to the notes and posters a selection of books(including selected ACIAR produced publications) were given to key information source locations of Mapoon Campus – Western Cape College, Cooktown Library, Natures Powerhouse reference collection .</p> <p>CD’s and selected hard copy notes were presented to Napranum farm and the DPI&F Information Centre near Coen for their reference and as a reference source for travellers, local station owners and Coen community.</p> <p>Selected hard copy notes were given to various residences of Mapoon to address specific areas of interest along with limited nucleus planting material not readily available.</p> <p>CD and hard copy notes were given to the current Mapoon Council works foreman and hard copy notes were given to local gardening identity, Bill Rofe. CD and hard copy notes and posters and books were given to the Cook Shire for their use and distribution to staff of the Cook Shire gardens. Copies of CD and hard copies were presented to Hopevale community council office. Involvement by project officers in other publications resulted in information being relevant and available to project co-operators. These publications were reviewed in various issues of the project newsletter “Pacific Gardener’</p> <p>Distribution of the “Gardening in the Tropics” CD was not restricted to Cape York and Cooktown. As people from other areas of Australia and Pacific locations become aware of the CD they have requested it and in most cases it has been supplied along with selected additional farm note print outs to increase the motivation to access the information on the CD’s. Additional</p>
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			<p>distribution of the CD includes:</p> <ul style="list-style-type: none"> • Indigenous Knowledge Centre – Cairns who have made it available to their community centres across Cape York and into the Torres Strait. • Queensland Sub-tropical Fruits Association: approximately 300 members based in Brisbane • Badu Island Council who support their island's fresh vegetable garden project • Solomon Islands garden coordinator on Bellona Island • Samoa Crops Information, Ministry of Agriculture • Kiribati: Takena Redfern Ministry of Environment, Lands and Agricultural Development • The 4 notes on breadfruit were distributed to all the participants of the First International Conference on Breadfruit held in Nadi, Fiji in 2007. <p>Samoa – information production</p> <p>In Samoa, project publication had a dual aim. To provide information on specialist commercial crop issues and to be tools for the publication production capacity building training. The topics addressed individual issues that were directly affecting growers rather than forming the foundation of a comprehensive information package.</p> <p>Information for taro, papaya, vegetables (cabbages, tomatoes, eggplant) and breadfruit have been produced specifically for Samoan co-operators.</p> <p>Various information package formats were produced and trailed in Samoa. These included; farm note, single sheets, field guides, wall posters, instructional flip charts, CD'S and power point presentations with photos, graphs and text. Some publications were produced on waterproof paper and some were laminated to help cope with field and shed conditions.</p> <p>Samoa –information distribution</p> <p>Publications produced for the project and other selected publications were made available to the Samoan public through the newly formed MAF farmer information centres and other government and NGO information collections. Co-operating growers received printed copies for their review and comment.</p> <p>Project staff seized the opportunity to use the project as a vehicle to identify, access and distribute selected horticultural information from cooperating staff in projects.</p>
1.4	Project evaluation	Project evaluation report	<p>Mr. Philip Tuivavalagi attended "Evaluation Training for Agricultural Research Projects" in workshop in Nadi, Fiji 13-16 April 2004. Funding was provided by ACIAR</p> <p>An evaluation plan and methodology were developed. All the evaluation activities were concluded in November 2007. An evaluation training workshop has been conducted with all project staff.</p> <p>Following Bennett's Hierarchy method each aspect of the project was evaluated during project meetings and reported through the trip reports, annual reports and the Pacific Gardener newsletter.</p> <p>At any one time, there were various activities at varying positions within the hierarchy and even after initial evaluations, further refinements and subsequent evaluations were conducted until the close of the project</p>

PC = partner country, A = Australia. Milestone completion dates evolved throughout the project as needs were identified

Objective 2: To enhance capacity for the development and use of technical information by researchers, extension personnel and farmers (in Samoa)

no.	activity	outputs / milestones	comments
2.1	Increasing the capacity of extension staff to develop and conduct extension and social research projects	Training workshop	<p>A workshop covering social research methods and their application to the project and other extension projects was conducted in Samoa. A facilitated focus group on information needs with advisory officers as a demonstration of how the methods discussed during the workshop could be used.</p> <p>Members of the project team participated in the workshop along with the Senior advisors (Barry Ale & Ma'anaima), the Information officer (Mafutaga Tinifu), Advisory Officers from Upolu and Savai'i and Advisory officer trainees. An evaluation of the event was conducted that identified the desire/need for further training in facilitation, running focus groups and pest & disease identification.</p>
		Manual of social research for extension staff	Existing extension and social research reference material were provided together presentation notes that were more specific to the project needs.
		Staff with an understanding of and the ability to conduct a social research investigation	Most of the interviews done by the project team included advisory staff with both formal and informal discussions. As a result, advisory staff integrated techniques/knowledge from social research approaches into their daily routine with the focus on documenting findings. This is highlighted above in their ability to utilise their experience through doing their work using the social research methods.
2.2	Increase the capacity of extension and research staff to produce targeted information products	Training workshop & manual	<p>On the initial visits to each project area, the capacity for local information production was observed and recorded in the trip reports.</p> <p>Growers in Australian project areas of Cape York Peninsula and Cooktown relied almost solely on information obtained from southern sources and had no capacity to generate and distribute information other than local farm visits and grower meetings. The solution identified was to encourage recognised local information repositories to stock more appropriate information with the longer term aim of adding to this collection. The target crops for Australia were considerably diversified.</p> <p>In Samoa the situation was different as there was an established information collecting, production, storage and dissemination system in the MAF that worked with other information providers.</p> <p>The project opportunity was in more appropriately packaging of the information needed and significantly reducing the time from identification of a need and the supply of an appropriate information package. This was achieved through identifying key staff with an understanding of and an interest in producing the information needed and supplying some basic equipment and training.</p> <p>The main equipment needs were computer, digital camera, printer and laminator. Initial information for the chosen topics was supplied from local observations and Australian experiences. The development of skills was primarily facilitated during four training workshops, two in Australia and two in Samoa. These workshops concentrated on digital camera techniques and organisation of images and computer publishing using Microsoft Word and Power point.</p> <p>The opportunity was taken on all Australia/Samoa visits to broaden the awareness of the uses and styles of computer publishing and sharpen the skills of the project staff. Use was made of existing training manuals to which more detailed and up graded project based information was included. In total, 4 training workshops (2 in Samoa, 2 in Australia) were completed.</p>

2.3	Increase capacity of extension staff and farmers to use information including better record keeping for participative information generation	Record sheets, Soil types rainfall crop yield, Export %	<p>Increasing the capacity of extension staff and farmers to use information was achieved by providing information that was immediately more appealing, was produced in a form that was not difficult to understand and contained a positive message based on facts that were relevant to solving the issue. These features were identified in interviews and observations as strongly encouraging people, who were often reluctant to read large volumes, to reach out for the documents and read them. In addition to providing basic answers the publications also pointed to where the reader could source further information either more specific or related.</p> <p>For taro and other vegetables, the project focused primarily on advisory and research staff actively involved with presenting information to growers. For export crops including papaya, breadfruit, eggplant training with industry development, marketing, export development and supply chain management was facilitated through project visits to Australia. These visits were in addition to scheduled project visits.</p> <p>Several training workshops run during project visits to Samoa and reciprocal visits to Australia covering the access and use of horticultural information. Training in managing electronic information has been ongoing throughout the project and has continued during project visits by the Samoan project team members to Australia.</p>
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PC = partner country, A = Australia

Objective 3: Project extension objectives

no.	activity	outputs / milestones	comments
3.1	Increase the adoption of existing crop specific information products	Collation of dissemination and comments on the information provided	<p>Maintaining contact with current and additional groups that will trial the information was an important part of the evaluation process.</p> <p>Feedback on various information issues that needed clarification from growers are positive with minor changes to be done – mainly in the translation</p> <p>Most of the growers are using MAF as a source of information and also the using of the libraries both in Upolu and Savaii.</p> <p>Schools and village centres are being given the information in all forms for the community to use</p> <p>The MAF are frequently being asked questions whenever a need arises from growers</p> <p>Radio talkback shows are being done on a weekly basis from the different sections in the Crops Division.</p> <p>The papaya growers are replanting and the MAF is now producing their own seed instead of importing</p>
3.2	Increase the capacity of project team to train Crops Division staff and other information providers	Training workshops conducted	<p>Training course in information production conducted by Samoan project team for Ministry information providers. Training was conducted on an individual basis for staff with the capacity and willing to learn in using computer skills and digital photography for improving the presentation of information for growers.</p>
3.3	Development of Community gardening resource manual	Gardening manual written and produced	<p>An advanced draft of the Community Gardening manual has been produced. The manual has been reviewed by community staff responsible for gardening in the Mapoon and Hopevale communities and staff at the Cooktown library. The Gardening in the Tropics folder series has been collated onto an indexed CD and included as an appendix for the gardening manual.</p> <p>A print ready draft is in the final stages of editing. With continued interest in gardening and government funding for community horticulture projects, the manual will always be subject to update in any relevant research.</p>

3.4	Completion of the remaining project outputs	Social research report, Project evaluation report & Training manuals completed	The reports have been finalised and the training manuals completed and distributed to Samoan project collaborators to assist with the "Train the Trainer" workshops held in Samoa
3.5	Succession plan for the project newsletter, Pacific Gardener	Succession plan implemented	Additional newsletters produced and distributed A succession plan for the Pacific Gardener has been developed with the Commercial Section of Crops Division producing a quarterly newsletter. Training for Samoan project staff in writing for communication was conducted during the final project visit to Australia in November 2007

7 Key results and discussion

7.1 Confirming target participants

Samoa

Introductory meetings were conducted to finalise the target groups and identify the specific individuals the project would work with. An introduction to the project was given at these meetings explaining what it was about, the intended outcomes and how it would link to long term plans of developing a marketing information system.

The four target participant groups identified from these workshops were:

- Commercial growers of papaya with a specific interest in export
- Commercial taro growers
- Roadside stallers
- Agro-processors

The actual groups changed from the original proposal to place a stronger focus on export development as MAF Samoa had gained market access to New Zealand for papaya and breadfruit using a high temperature forced air (HTFA) protocol.

Follow-up meetings were held with the target groups to gauge the response of the target groups to the project initiatives and provide an opportunity for informal discussions to provide ideas on any specific issues raised during the meetings.

Cape York

Of the numerous aboriginal communities on Cape York, Mapoon near Weipa, Umagico (at the tip close to Bamaga) and Hopevale (close to Cooktown) had shown the most recent interest in horticultural industry development. All had horticulture trainees who had the basic horticulture skills necessary for local garden projects, which were expected to develop into commercial enterprises.

Two planning workshops were held in South Johnstone and Cairns with regional DPI&F representatives including Mr Bill Dalton and Mr Peter McCulkin to review Horticulture strategy documents for Cape York, develop community profiles (Table 1) and finalise the communities for the project to work with.

The Mapoon community was selected as the focus because a community farm had recently been established, the council had an existing community amenity planting program and a significant number of keen individual gardeners live in the community. This wide variety of gardening projects allowed the approach and information produced to be applicable to other Peninsula communities.

While the project focused on one community, the information from this experience was extended to other communities within the Cape including Napranum, Lockhart River, Aurukun, Coen, Hopevale and the Weipa community.

Table 1. Profile of Community Gardening or Nursery Activity in Cape York Peninsula (December, 2003)

Community locality	Region	Garden	Road access	Comments
Wujal Wujal	Co (east)	N	½ day	Close, DPI&F presence, Restricted access, Plenty of water
Hopevale	Co (east)	Y	½ day	Good access, DPI&F presence, Community involvement in garden, Horticulture trainees, Resident European farm manager, Out-station farms
Laura	Co	N	½ day	On the Peninsula Development road
Port Stewart	CEN (east)	Prev	1 day	Limited road access,
Coen	CEN	Prev	1 day	On the Peninsula Development road, DPI&F information centre, Resident European farm manager
Kowanyama	CEN (west)	Y	1 day	Mango farm, Training centre
Pormpuraaw	CEN (west)	N	1 day	
Lockhart River	CEN (east)	Y	1 ½ day	Good track record, fair garden, Limited road access, Resident European farm manager
Aurukun	CEN (west)	Prev	1 ½ day	Out-station farms
Napranum (Weipa)	CEN (west)	Y	1 ½ day	Old garden, Good access, Serviced by Weipa infrastructure, Resident European farm manager, DPI&F presence (Weipa)
Mapoon	CEN (west)	Y	1 ½ day	Good access, Newly funded community garden project, Horticulture Trainees, DPI&F presence (Weipa)
New Mapoon	NPA	N	2 days	New nursery, Horticulture trainees, Limited water availability
Umagico	NPA	Prev	2 days	Previous nursery and garden
Injoo	NPA	N	2 days	Existing nursery
Seisia	NPA	N	2 days	Restricted water
Bamaga	NPA	Prev	2 days	Previous community farm & nursery, Large school infrastructure, AQIS & TAFE presence

Region: Co - Cook town, CEN - Central, NPA - Northern Peninsula area (above the Jardine river). Garden (Current status of farms or nursery in the community): Y - Yes: existing garden or nursery, N - No garden or nursery facility, Prev - Previous garden or nursery. Road access: Average driving time from Cairns when accessible

Commercial horticulture growers in the Cooktown were identified. Meetings were held with several commercial growers in and the Cooktown Growers Association. The Cooktown area includes unique growing conditions that are suitable for out of season crops currently available on the southern markets, new crops of tropical fruit, vegetables and others and crops suitable for local sales.

With the recent completion of an all season sealed road from Cairns to Cooktown, transport of produce to southern markets is more practical and numbers of visitors have increased considerably. From the initial meetings with established growers in the Cooktown area, it was clear that there was considerable interest in anything we could contribute through the project that would assist horticultural development in this area.

7.2 Researching information use and needs

7.2.1 Samoa

A combination of 52 interviews and farm visits, 8 meetings and 2 PRA's were conducted with participants from the four target groups including 20 taro growers, 19 papaya growers, 6 agro-processors and 7 roadside stallers.

The "card sort" interview technique collected information on how and where farmers got information, whether it is relevant and practical and how it is used in making decisions. Questions were asked about the preferred media for the ministry to provide the information including television programmes, video productions, booklets, radio and posters.



Figure 2. The card sort interviews helped the project team understand what information was important for decisions making

People relied greatly on interaction face to face. Information is not always provided within a single question, the longer the communication went the more information it will bring out. Most growers tended to seek information to solve particular problems rather than implementing management practices that would prevent or minimise problems particularly in the case of managing pests & diseases.

Traditional growers or families who have been living all their lives as growers are mainly seeking information from their relatives or friends rather than the MAF. The MAF is only consulted when it comes to a new technology or a disease outbreak. Illiteracy was a significant issue and most growers preferred learning from hands-on experience or being shown things rather than reading information. Thus, any information developed needed to be visual with more illustrations and pictures and less writing.

In general, motivation to develop and be able to sustain the day-to-day financial needs of the immediate and extended family and to a lesser extent, the wider community influenced

enterprise choice. The focus was on being able to make use of available produce that was grown within their farm or community.

Little emphasis was placed on producing extra produce for financial gain unless there was an immediate family need eg. births, marriages etc.. This point was highlighted as a key issue by roadside stallers and agro-processors specifically related to getting consistency of supply of raw produce. This issue contributed strongly to the transient state of the roadside stallers and during the project resulted in the loss of this group as a target participant.

Families were identified as an important source of information, particularly related to decision making for traditional crops such as taro, breadfruit and banana. Information was being passed directly from generation to generation from parents or relatives to children. Assistance was provided as observation and information sharing through to “hands-on” help from their extended family and close friends. The interviews highlighted that family played the most important role when it came to making a decision, particularly when going into a new enterprise.

Another common source of information is through listening to radio programmes such as awareness and radio talkback broadcast live by the local radio station.

The MAF played a strong role in driving development of new horticultural cropping for specific markets including the export of red-flesh papaya and breadfruit to New Zealand. Information from field days, awareness sessions and training conducted by MAF together with on-farm visits were playing a central role in encouraging and supporting these growers.

The results of the RRA were consistent with those of the agricultural information needs assessment in Samoa conducted by the Technical Centre for Agricultural and Rural Cooperation (Tofinga, 2004). This assessment was part of a wider assessment of needs in Africa, Caribbean and Pacific (ACP) states in an effort to improve the access to agricultural information, generation and management of agricultural information needs in these countries with the view of developing their own information and communication management strategies.

The interviews provided the project team with the opportunity to distribute both existing and new information in development to growers for their comment and to suggest additional information issues or topics to meet their requirements.

Specific issues for target participant

The key points for each of the target groups in Samoa as collected from the interviews, meetings and PRA's are summarised below:

Taro

- There is a strong belief that significant traditional knowledge already exists and information on growing and harvesting taro is handed down through the family. Farmer or village groups exist in most areas.
- Growers tended to only use the MAF for information on major, emergency issues which affected the wider industry such as taro leaf blight or Giant African snail.
- Taro leaf blight, general pest problems and adverse environmental conditions (i.e. recent cyclones) had made the commercial growing of taro a food security issue.
- Finding new and consistent markets for their crop was an additional issue identified, but supply chains for taro (production and marketing) need to be developed and given the right information.
- The traditional information flow needed to be supplemented by providing better access and awareness of information on specific topics.

- These information packages need to be available to the complete supply chain from the nurseryman providing planting material, to the grower, through to the marketer/exporter and the customer storing and eating.
- The main information issues raised by taro growers were the correct identification of new varieties and identifying and managing pests and diseases without excessive use of chemical pesticides.

Papaya

- This was a new export industry, based on a new, imported red-fleshed papaya fruit (Sunrise Solo) variety being driven by the Samoan Government.
- The export market for papaya had different customer requirements (hermaphrodite fruit) to the local market which would require changes to the traditional growing methods currently being used for papaya in Samoa
- MAF had appointed specific papaya advisory staff (including Keneti Leavasa) which provided a focus for capacity building related to industry development.
- A great need to develop the relevant and correct information to go alongside the development of this new industry
- In contrast to taro, MAF was the primary source for most information on growing and harvesting these new varieties of papaya.
- Issues with quality and consistency of papaya seed being imported from Taiwan and Hawaii necessitated the need to develop seed and nursery production in Samoa for its long term development as an industry
- A Papaya Growers Association was formed with the support of MAF to support the development of this new export industry
- Papaya growers were very hungry for any information they could get, wanting more information on growing, harvesting and grading standards for papaya as well marketing information to identify additional export markets and prices

Roadside stallers

- This group was not a traditional target group for MAF but had been identified an important middle man in the supply chain for agricultural producers sometimes acting as retailers
- Many members were transient, only operating when money was needed or there was surplus produce which made it difficult for continual interaction throughout the project
- The initial target participants stopped selling produce midway through the project and had no further interaction with project staff
- Important information sources for this group included Women in Business (a local NGO) and Hospital Health centre
- The information strategy focused on improving information access and flow to these organisations due to their ongoing role in supporting this group
- Consistency of supply of produce was a key issue as was the need for better record keeping to help stallers access financial assistance to develop their businesses
- Information on the opportunity cost of steady market (lower prices) versus ad-hoc marketing (higher prices) was needed to educate the growers on the importance of consistent supply
- Overnight storage of produce to maintain quality and improve the shelf life together with packaging to improve shelf life of produce such as pak choi, watercress were the main issues for the roadside stallers



Figure 3. Packaging for overnight storage and extended shelf life was a key information issue for Roadside stallers

Agro-processors

- A very well developed cottage industry in need of some tightening up of their procedures particularly in relation to packaging and labelling
- A lot of information regarding processing chips exists which need to be documented and collated
- Food safety had emerged as a major issue for this group. Finding and accessing dependable information on food safety standards including CODEX, HACCP and GAP had been a problem for members of this target group
- Labelling to meet food safety standards and packaging for export were specific issues identified by agro-processors
- As with roadside stallers, the consistent supply of raw materials (taro, papaya and other crops) was identified as a major impediment to growing processing markets. Some processors were using incentive schemes in conjunction with grower and village groups to get consistent supply

Breadfruit

An additional target group was added as the project developed; growers supplying breadfruit for export to the HTFA plant at Atele research station. Samoa started exporting breadfruit to New Zealand market in November 2004 under a HTFA protocol.

As with Papaya, MAF were driving the development of this export industry by doing the harvest, collection and treatment of breadfruit and facilitating export of the packed product to New Zealand. MAF wanted to transfer the harvesting and collection role to farmers and communities.

7.2.2 Australia

Cape York

The initial focus of the project was on community farms in the communities of Mapoon and Napranum. A series of semi-structured interviews were conducted with a wide cross section of the Mapoon community and the key personnel involved with the community farm at Napranum. These interviews helped define people's interests in horticulture (both growing and using) and identifying information sources that were used and valued within the community and those external to the community.

The Aboriginal community of Mapoon had established a community farm with the aid of a private consultant and infrastructure funding from the Queensland State government.

Mapoon Council have an expectation that the farm will be able to supply fruit and vegetables to the community through the local store and replace some of the imported produce. Jason Pfingst (CEO, Mapoon Community Council) had developed a project proposal as part of the Councils Community plan which outlined community aspiration regarding enterprise development and healthy lifestyles (Pfingst, 2004).

No single person was specifically responsible for the day to day management of the farm and its workers. There were several horticulture trainees (doing their Certificate II in Horticulture) who carry out the jobs assigned by the consultant during his visits.

Initial discussions with indigenous members of the council suggested there was a strong interest in growing native indigenous bush foods and growing fruit and vegetable gardens in backyards.

Napranum had employed a sharefarmer to reinvigorate the community farm. The main focus initially had been on growing turf and ornamentals to supply the new residential developments in Weipa and replace imported ornamental plants. The sharefarmer was trialling a range of vegetables to identify their suitability for the area. He also re-established a farm gate market stall.

People working in an extension role, providing information in the Peninsula and Cooktown areas were difficult/hard to identify. Most were crop consultants/farmers who worked relatively autonomously

The usual definition of horticulture needed to be broadened in the Peninsula to include native food plants, ornamental plants for landscaping, local plants for handicrafts together with fruit & vegetables for community farms and household food gardens.

The key stakeholders in the Peninsula were identified as:

- **Community council personnel.** This was a broad group of people within the community that had some interest or role with the community farm but didn't have a direct role in the day to day management. This group included the Shire chairman, deputy & councillors, Council CEO, Works department, Community employment programs (CDEP) and Cook Shire councillor.
- **Farm managers, workers and trainees.** The group is involved with the day to day activities on the farm and play a direct role in management decisions.
- **Community gardeners.** This group were looking to develop a horticulture enterprise/activity. They want information in the early development stage of an enterprise and wanted the basic information straight away. They tended to lean heavily on successful, established gardeners or commercial growers of similar crops in other areas for information.
- **Support agencies.** Those with a strong training and education focus that work within communities including various government and non-government organisations who used aspects of horticulture development for education and training. Examples include field staff of the nutrition unit of Qld Health, Council & school libraries, TAFE colleges (Horticulture trainees), consultants & advisors & Western Cape College.

Cooktown

In Cooktown, the information supply chains centred around three key growers. These growers had played a major role in the developmental decision making of the wider grower group. They have used their own information networks to help other growers develop their horticultural businesses and expand into other crops.

Wider or group information needs such as "Land-care", general passionfruit information and commercial tropical horticulture had traditionally been met by growers working together through their Cooktown Farmers Association. The project direction took both of these issues into consideration in the production and dissemination of information.

These growers had been receiving information from visiting DPI&F research and extension staff working in lychees and other tropical fruit. Several had travelled to Mareeba and Innisfail to attend workshops and field days on topics of interest.

The research highlighted a short decision making process, wanting others to do the hard work and then allow them to copy. Decision making was strongly linked to trusted growers (people considered peers) who had 'done it already'. In addition, the card sort interviews helped farmers better understand the decision making process to assist in future business opportunities.

The need to customise a wide range of horticultural information to take advantage of unique market windows and reduce the impact of the harsh environmental growing conditions were the main issues identified by growers. Information on the selection of varieties and methods of growing and managing specific crops were highlighted.

7.3 Information strategy

Using the information gathered from the social research, an information strategy was developed using the concept of Agricultural Knowledge and Information Systems (AKIS). Rölöng (1990) describes an AKIS as "a set of agricultural organisations and/or people and the links and interactions between them, engaged in such processes as the generation, transformation, dissemination, storage and retrieval of knowledge and information to support decision making, problem solving and innovation in a given country's agricultural industries".

An AKIS focuses on integrating farmers, researchers, extensionists and information providers to harness knowledge and information from various sources for better farming and improved livelihoods. Thus the specific activities the project Information Strategy addressed included;

1. **Networking & collaboration:** With the amount of project activity in Samoa and Cape York, there are many opportunities for collaboration to enhance not only the project activities but those of other projects and initiatives. The information strategy needed to improve synergies between these regional information providers.

The project needed to generate a culture of working together and sharing information. By taking a lead in developing relationships and networking, the project can add to the information flows well through new and existing relationships. This activity was closely linked to improving communication.

2. **Improving availability of existing information:** A significant amount of horticultural information already exists: However, for various reasons, it is no longer accessible to either our target grower groups or the people providing information to them. This is because people either have difficulty accessing it or they don't know it exists.

In some cases, this information was confined to past horticultural development projects. Information being generated by these projects has often been "lost" or became unavailable once the project had finished. Other examples included information products that were now out of print but were still relevant to existing horticulture enterprises.

3. **Filling Information gaps:** While some information exists, the social research has identified a range of topics or issues for which information needs to be developed. This information needs to be customised to various end users including advisory officers, other information providers and commercial growers. The appropriate packaging and dissemination of this information needs to be further investigated to ensure adoption.
4. **Improving communication:** There is little or no communication between the many information providers working in both Samoa and Cape York, Australia. This lack of

communication exists at many levels within the Agriculture Departments, between Government and Non-government information providers at a National and Regional level and amongst the various domestic and international funding agencies.

5. **Build capacity** of the project team, information providers and target participants to access, develop and use information to improve knowledge and decision making amongst agricultural organisations.

7.4 Implementing the information strategy

7.4.1 Samoa

In Samoa, the focus was on writing and developing a series of crop notes to address information issues identified during the social research. A number of posters highlighting specific aspect of postharvest management for export were developed and distributed to target participants.

A collection of existing and relevant information was collated and distributed to relevant information centres and providers.

Taro

To reduce confusion over the various taro varieties being grown, a series of identification leaflets were produced. Leaflets were produced on each of the most important taro varieties including the traditional varieties known to avoid confusion with the newly bred ones. Variety sheets for 20 varieties were completed and distributed to commercial taro growers.

The issue of pest identification was addressed by working with the TaroPest project on beta-testing the information and diagnostic kit and the production of a complementary poster covering various pests and diseases specific to Samoa.

In response to the review, a series of identification cards were produced and distributed to wholesalers and roadside stallers to increase the adoption and awareness of variety identification.

Papaya

Initially, the project provided copies of existing information on papaya production and marketing from Queensland. This reference material was added to library/information centre and Advisory officers' information centre at Nu'u research station and the information centre on Savai'i and provided to staff at the Atele research station.

Crop management information together with quality standards for export were the key issues identified initially. To satisfy the need, the project team, produced several crop management notes including.

- Growing your own papaya seed: Making your own seed
- Growing seedlings
- Selecting hermaphrodite plants in the field: Planting method to get a high ratio of hermaphrodite plants.

The notes are held in electronic form and can be printed on demand and easily modified as changes are observed to suit a grower's specific situation. This information was distributed to the commercial papaya growers by the Advisory staff of the Crops division and through the newly formed Papaya Growers Association.

The notes were translated into Samoan following feedback from the growers. Additional notes have been added to the series covering fertiliser application and drip irrigation.

Several posters on exporting papaya and papaya grade standards for exports were produced and translated into Samoan. Approximately 70 copies of the posters have been produced and disseminated.

In response to the review, a demonstration plot was established at Nu'u research station and used in conjunction with grower field days farms to highlight and distribute the information produced by the project.

Breadfruit

Breadfruit emerged as a target group for the project when it gained market access to New Zealand. Initially, harvesting and collection was undertaken by MAF staff based at Atele research station. To facilitate a handover of these roles, the project produced 2 posters (in English and Samoan) for breadfruit growers:

- Breadfruit Quality Control, detailing maturity stages for common varieties, harvesting techniques and correct packing methods
- Breadfruit Quality Standards, detailing defect levels and fruit size tolerances.

The project began filming of a video covering harvesting and postharvest handling for export. The video is currently in production.

Other target participants

Grower information centres were completed in several locations identified as well as proposing a few more be established for the same purpose. Information was provided to growers with regards to chemical spraying program and the roles of the different players involved. The project officers supported the formation of a grower information centre on the island of Savaii by providing information and ideas for its structure, layout and content.

The target participants in Samoa changed as the project progressed. The target participants amongst the roadside stallers stopped selling produce midway through the project and did not have further interaction with project staff. This highlighted the transient nature of this group and the difficulty for the MAF to engage them in agricultural development.

7.4.2 Australia

Crop notes

Information on many of the fruits, vegetables and ornamental plants grown in the Peninsula is often difficult to find. The project team began by collecting information on a range of crops that were commonly grown in the Peninsula and compiling it into a series of crop notes.

These crop notes were produced in a draft form to promote discussion with co-operators and highlight what the project could achieve in providing specific information on growing these crops for their conditions.

The subject and content of each publication is intended to be directly applicable to the co-operators needs and in a style that is easy to understand and allows quick access to important points.

Three types of notes were produced initially:

1. **Peninsula garden notes:** These notes covered important traditional food crops. The crop plants and farming techniques outlined were chosen and documented with the specific requirements and constraints of the areas of Cape York Peninsula in mind.

Each note contained information covering uses, background, growing, harvesting, marketing and recipe.

2. **Ornamental houseplants in the Peninsula:** This series came about following discussions with workers at the Napranum farm nursery. This series of one-page notes covered ornamental plants commonly grown and sold in the Peninsula in pots for home gardens. The one-page notes contained photos, uses and basic cultivation information for the Peninsula area. Propagation methods were a topic for a specific note.

Plants for this series were selected from those that would grow in the Peninsula area, were in demand by local home owners, were being propagated locally and were not considered an environmental threat or toxic. By encouraging locally produced ornamental plants, it was hoped that more local business opportunities would develop and a general interest in horticulture be fostered.

The Ornamental series was extended to Samoa following feedback from information providers and target participants.

3. **Native food plants of the Peninsula:** These notes came about as specific requests from community members being interviewed during the social research. Native food plants or 'Bush Tucker' were much sort after but people had difficulty accessing detailed information to source and plant in their home gardens. Similar to the Peninsula garden notes, these notes contained uses and recipes, propagation, growing and harvesting methods for home gardeners or backyard production. The notes listed references to other publications with useful information on commercial growing methods.

A list of the crop notes produced for each of these series is listed in Section 10.2. List of publications produced by project (page 51).

Gardening in the Tropics information series

As the crop note series' expanded, a need arose for a filing and retrieval system to allow for ready access and updateability of the individual crop notes. In addition, growers in Cooktown and community members of Mapoon identified 'the lack of a local horticulture information site' as an important issue to improve access to the large amounts of tropical horticultural information currently available. With this focus the Gardening in the Tropics information series was developed.

This series include the compilation of existing information relevant to tropical conditions from a range of printed and electronic sources including the existing crop notes produced by the project. Additional fact sheets and crop notes were produced to fill gaps in the information specifically relating to horticulture in tropical climates.

This information was created in hard copy and collated into a number of folders. The first folders included notes on:

- wet season vegetables
- winter garden vegetables
- ornamental house plants
- tropical tree fruits
- native food plants
- plant propagation
- herbs, spices and flavourings
- garden design and maintenance

These folders were located at central points in each community that had been identified during the social research. Users were encouraged to complete evaluation forms to record how useful the system was and what additional information they would like. An electronic

version of the information series was compiled on CD as the project progressed. Toward the end of the project, two additional folders were added to the series; nutrition, recipes and uses for tropical garden produce folder and Pacific gardener newsletters folder

A series of posters was produced to complement the folders and CD to provide more visual material. The folders and posters combined activities 1 and 2 of the information strategy.



Figure 4. Examples from the poster series

Information collections and centres

The project identified a need for specific locally available tropical gardening information collections or centres in the target communities. A number of existing sites were identified as potential 'information centres' for the project to work with to improve access to and availability of tropical gardening information. In addition, these sites provided access to computers and the internet to assist information availability.

In the Peninsula locations were identified including

- Cook Shire Library, Cooktown
- Natures Powerhouse, Cooktown
- DPI&F information and inspection centre, Coen
- Mapoon Council
- Western Cape College, Weipa
- Community Council office, Hopevale
- Indigenous Knowledge Centre, Cairns

Project publications including crop notes and the Gardening in the Tropics folders were distributed to these centres. In addition, a range of relevant texts and information were collected and distributed to these locations. These included ACIAR publications (Coconut book, Sweet Potato disorders), Tropical tastes

A full list of publications made available through information sites is listed on page 51.

Community gardening manual

During the evaluation of the "Gardening in the Tropics" information series, it became clear there was a need for a comprehensive text to assist community gardening projects. The idea for the manual came from a similar publication produced by FAO called "Setting up and running a school garden" (FAO, 2005).

The Community Gardening manual was aimed as a resource to facilitate new and existing gardening projects including community gardens, nurseries, school, amenity & household

gardens in remote tropical locations of Australia. It targets project leaders, work supervisors, community leaders, teachers and other support agencies working with gardening projects specifically in Cape York.

This manual was designed to present information on planning and developing a community garden, potential crops and their management, propagation techniques, uses including recipes and sources for further information.

The community gardening manual provides a primary information & teaching resource for remote or indigenous communities, Government, NGO agencies, community and school groups with an interest in remote horticulture development by supplying information on locally specific horticultural information and links to other resources.

A draft of the manual has been produced seeking editorial and content feedback.

7.4.3 Collaborative information development (Samoa & Australia)

The need to proactively network and develop strong partnerships influenced a number of the information collection, development and dissemination activities of the project. Existing networks and relationships were heavily utilised by the project team to locate information, obtain feedback and contribute to other information packages that would ultimately assist the information needs of the projects target participants.

Two specific activities demonstrate how the project took an active role in building relationships to improve the information availability and flow to target participants.

Taro

Pest and disease control was an important information topic identified by taro growers and MAF Advisory officers during the social research. To assist with addressing this issue, the project team linked to the TaroPest project (CP/2004/01) that was being undertaken by researchers at QUT with funding provided by ACIAR.

The aim of the TaroPest project was to develop a CD or web-based interactive information and diagnostics package for identifying the pests and diseases of taro in the South Pacific. The project was being led by Anthony Clarke and Amy Carmichael at QUT with collaborative effort the Secretariat of the Pacific Community (Fiji) and the National Agricultural Quarantine and Inspection Authority (PNG) and began in January 2005.

In November 2005, the project hosted a visit by Amy Carmichael to north Queensland to hold discussions on potential linkages between the two projects and the Taro Industry Development project (funded by RIRDC). The visit provided an opportunity for Ms Carmichael to visit taro growers and collect additional pest and disease information for inclusion in TaroPest.



Figure 5. Amy Carmichael (centre) demonstrating TaroPest to the project team in Australia (left) and to MAF research and advisory staff at Nu'u research station, Samoa.

In addition, the two projects linked to carry out formal beta-testing of TaroPest with target participants in both Samoa and Australia to fine tune the package so that it was both user-friendly and accurate.

Amy & Tony visited Samoa in October 2006 and ran two TaroPest workshops with MAF researchers, advisory officers and other information providers. The visit provided the opportunity to showcase TaroPest to taro growers in Samoa and collect additional photographs and information for the program. Feedback from this beta-test group in Samoa highlighted the necessity for a hardcopy weather-proof version of TaroPest, to enable in-field identifications.

A photograph-rich field guide was produced by QUT in response to this need. Thanks to our collaborative efforts copies of this excellent guide were provided to Samoan and Australian taro growers. The field guide includes an electronic copy of TaroPest on a self running CD.

Amy Carmichael visited Samoa once more in May 2007 to run a workshop introducing the new field guide and distributing copies to Samoan target participants. The TaroPest field guide is currently being reprinted as an ACIAR publication. The website established for the project has now been closed.

A poster, Pest & Diseases of Taro: An awareness guide for growers, researchers and advisory officers of the main pests and diseases of Taro in Samoa, was produced to complement the field guide. Forty copies of the poster have been distributed.

The linkages with TaroPest to address information needs in Samoa was an excellent example of how building bridges with outside organizations and particularly projects, added a great deal of value to the project.

Passionfruit

Passionfruit had been identified as an important crop in the north Queensland area. Panama Red was the main variety planted by growers around Cooktown who had an out of season production window in the Queensland market. A key information resource, DPI&F's Passionfruit Agrilink information kit was being updated through a HAL funded project; Improving the Effectiveness of Passionfruit Information.

With Jeff Daniells' prior involvement with the information kit, an opportunity was provided to increase the relevance of the new information being produced for the Cooktown growers. Both Jeff Daniells and Roger Goebel assisted with the production of three information

products for Australian passionfruit growers. These products included an information leaflet, *Is Passionfruit growing for you?*, the *Passionfruit Problem Solver Field Guide* and the *Passionfruit growing guide*.

Copies of these information products were distributed the various information collection locations identified by the project and were publicised through the project newsletter, *Pacific Gardener*.

The production of passionfruit information demonstrated how existing networks could be used to enhance the activities and outputs from the project.

In addition to these two examples, collaborative project related activities included:

- **South Pacific Food Leaflets (SPC):** These leaflets provided information on the culture, nutritional value, storage, preservation and cooking of Pacific Island food plants but were out of print. The project received permission from SPC to reproduce and distribute copies of the leaflets in Samoa and North Queensland, with 25 folders of the leaflets distributed to individuals, information centres and collections.

The project also converted the hardcopy leaflets into an electronic form and provided these back to the Lifestyle section of SPC. The distribution of the leaflets is a good example of improving the availability of existing information under the projects information strategy.

- **“Tropical Tastes-Fruits, foods and flavours of north Queensland”.** Roger Goebel is co-author of this 59 page book on significant crops for tropical climates. Complimentary copies of this publication have been given to project staff and co-operators.
- **Revision of the South Pacific Food Leaflets (SPC):** Jeff Daniells and Roger Goebel assisted Lois Englberger from the Island Food Community of Pohnpei to revise the South Pacific Food Leaflets on dessert banana, cooking banana, taro, breadfruit, pandanus and coconut that have subsequently been published.
- **Insect pest field guide:** This guide for identifying insect pests and their natural enemies produced by DPI&F had direct relevance for vegetable insect pests in Samoa. The project distributed 40 copies of the guide to Advisory officers, Nu’u library and the Savai’i information centre in Samoa with the aim of developing a similar guide for Samoa. The project linked with TaroPest and the IPM in a sustainable production system for Brassica crops in Fiji and Samoa projects (ACIAR, CP/2004/063) to address this need.
- **Bananas:** The Australian Banana monograph series covering Variety identification, Clean & Green Bananas and Banana Streak disease were converted into electronic form and made available through Bioversity International (formally International Network for the Improvement of Banana and Plantain (INIBAP)). A number of hard copies of the monographs were distributed to the Nu’u library and project officers
- A poster, “Atoll Banana Growing in the Pacific Region. Growing Banana Varieties Resistance to Sigatoka, Leaf Spot Disease on Atoll Islands for Food Security” was produced as part of the FAO Atoll Banana TCP project for the Marshall Islands and Kiribati by Dr Matt Porea from FAO in Apia Samoa. The project printed and distributed 85 copies of the poster in Samoa, Cape York, Australia and a number of Pacific islands.

These activities helped to foster networks and build relationships that would go on to improve information availability and flow past the completion of the project.

Developing and implementing a project communication plan became an important activity under the information strategy. The primary target groups for the communication plan were identified as Project clients (Commercial growers & gardeners in Cape York, Taro

growers, Papaya growers, Roadside stallers, Agro-processors and Advisory officers in Samoa), Government & Corporate and other Information providers (Government & NGO's).

Communication activities focused on providing an update of activities in the project, improving access and awareness of new and existing information and demonstrate how the project supports corporate goals.

The project established the newsletter, *Pacific Gardener*, as a key vehicle for the communication plan to keep stakeholders and other interested groups up to date with project activities. Presentations were made to management staff and other information providers at key milestones during the project outlining the project and updating progress to date.

The project was able to capitalise on these press releases with Australia and Pacific wide coverage through radio interviews given by project staff throughout the project.

7.4.4 Other key points

Project identity

A "Corporate look" for all publications produced by the project was developed based on the DPI&F Qld corporate identity. This provided a clear, easily recognisable identity for all publications initiated from the project. Templates for crop notes, newsletters, posters etc were developed with this identity in mind.

The overall designs used different colour patterns for publications distributed in Samoa & the Pacific and distributed within Australia. The Samoan MAF colours and the DPI&F Qld colour schemes were used with all publications having the logos of these two organisations along with the funding agency ACIAR included.

Electronic library

An electronic photo library was developed by the project to catalogue the 10,000 images generated through project activities. The photographs were used in the various publications and reports produced by the project and shared with numerous information providers to produced additional information to enhance project activities (e.g. TaroPest and the Passionfruit Information kit).

A filing system for managing, storing and sharing these images was developed amongst the project team. Copies of the photo library were established with project team members in Samoa and Australia.

7.5 Project evaluation

Evaluations conducted on the various components of the project were done in a formal or semiformal manner. The seven tier structure of Bennett's Hierarchy was used to guide our evaluation activities throughout the project. Formal evaluations were conducted on a regular basis, mainly during project visits but also by correspondence between project staff. Semiformal evaluations were undertaken on the spot, usually while travelling after the interviews.

Evaluation was occurring throughout the project. Each activity was evaluated and the sum of the related activities was evaluated before or as a guide to undertaking the next stage of the project. The material for evaluation was collected in note form, photographs or observed through the numerous visits and other contacts with key co operators. Contacts with key co-operators were grouped into interviews structured either formally in a card sort interview or semi-formally in a story type interview. In addition to the verbal information supplied by the co-operator, observations were recorded. Each activity was also

evaluated. Activities included the publications produced and the training workshops conducted.

Card sort interviews

By undertaking these interviews with a wide range of people the activities and approaches of various people as recorded by the final card placement, could be compared to find common or important issues.

This method of interview enabled complex issues to be broken down into comparable units. The same or similar topics were used with the interviewees but additional questioning was available to follow topics of interest.

Semiformal interviews

Common values and useful aspects of remote area horticulture were gleaned from undertaking these interviews. The interviews were carried out with the widest range of people and numbered in excess of 100. The wide range of people and the relatively large number of people interviewed gave the broad base from which opinions could be compared.

Although this interview style is semiformal in name, it is a very in-depth interview that has the capacity to explore numerous topics quickly and honestly as cross checking is a valuable tool in this interview technique. Short notes were made during the interviews which were recorded more comprehensively immediately after. Many of these interviews were recorded as “stories” which summarised the essence of the interviewee’s background and opinions.

Publications

The publications were on many topics and in various formats. Some topics, like Papaya sex determination, were presented in a range of formats for grower criticism. Publications were displayed at every opportunity to gauge interest which was followed up by discussion and observations on who requested copies and what they did with the copies. Audits of publications already given out gave information about their use and ability to be functional.

Basic farm notes in the Gardening in the Tropics series were given to end users to read. These people were given green and red highlighter pens to mark any confusing, incorrect or difficult to read parts of the note. The green pen was used to mark parts of the note the reader thought were very interesting.

Training workshops

These more formal gatherings had an evaluation component in their programme as well as an informal but equally important evaluation session at the close. In addition to questioning the participants, an abilities comparison prior to and after the event proved valuable. The acquisition and use of skills was monitored after training.

7.6 Build capacity

During the project a range of information package styles have been adopted. Information presentation systems using skills that include, photoshop, word, powerpoint and digital photography have been used to produce targeted information products. A series of comprehensive training courses were organised and conducted during the project in both Australia & Samoa. Publications from these courses and resulting from using skills developed at these courses, were field tested with project co-operators.

7.6.1 Social research/needs analysis

A workshop providing an introduction to social research methods was run for MAF Advisory officers. The newly appointed MAF Information officer (Mafutaga Tinifu), Advisory officer trainees and members of the project team also attended the workshop. As a demonstration, a focus group on information needs was facilitated following the workshop.

Further research on Advisory officers' decision-making and information gathering and use is needed to improve their ability to deal with commercial groups including the participant groups. An evaluation of the workshop identified the desire and need for further training in facilitation, running focus groups and pest & disease identification. A report on the workshop and the evaluation is located in Appendix 3: Evaluation of the Social research methods training workshop.

In August 2004, Mr. Philip Tuivavalagi and Ms. Emele Ainuu visited Australia to undertake training in the use of social research tools including card sort and semi-structured interviews. These research processes were field tested and modified to help the project team identify the key issues in relation to the access and use of horticultural information relating to decision making.

7.6.2 Enhancing capacity to produce targeted information products

Digital camera workshops were run in Ayr and Innisfail coinciding with project visits from Samoa. The workshops were presented by Mr Paul Zborowski of Close-Up Photolibrary, a widely acknowledged insect photographer. The workshops focused on improving the knowledge and skills of participants in relation to both print and digital photography. The workshops also covered basic manipulation of images on the computer as well as managing and archiving digital images.



Figure 6. Digital camera workshop in Ayr. (l-r) Paul Zborowski (Close-Up Photolibrary), Barry Ale, Tony Parker, Rowland Holmes, Tai Matatumua

Members of the project team conducted additional digital photography workshops with key advisory and information staff in Samoa during projects visits. So far the project has produced over 10,000 digital images for information products.

A series of computer training workshops with Samoan project staff were conducted during Australian project visits. Training focused on using Word and PowerPoint as publishing tools and creating document templates

During project visits to Australia, examples of horticultural information sources and systems have been heavily featured to help the project gain an understanding of how information is accessed and used. DPI&F information centres, Call Centre, Growsearch and Market Information Services have provided significant insights into information providers. This information has assisted the Crops Advisory division (MAF) with the establishment of two Horticulture Information centres at Nu'u research station and on Savai'i.

Training workshops covering information use and production and using Word and PowerPoint as publishing tools have been carried out during project visits to Samoa. An additional training workshop in using Word to create document templates and reports and using it as publishing tool was delivered to Crops Division staff.



Figure 7. Computer training workshop in Samoa; (L-R) Tuulima Laiti, Parate Matalavea, Billy Fuifatu Enosa, Pueata Tanielu, Barry Ale & Rowland Holmes

Training in storing and managing electronic files on computers has been ongoing throughout the project with a series of computer training workshops focused on using Word and PowerPoint as publishing tools and creating document templates. This training has continued during project visits by Samoan project team members to Australia.

The travel between the two countries has provided project staff with opportunities to collect and compare information, particularly photographs and other background support information that enhances the usefulness of publications. The associated workshops have provided the opportunity to learn more efficient ways of developing information packages and distributing them.

7.6.3 Increase capacity of extension staff and farmers to use information

Samoa

In Samoa, the exercises to build capacity within the MAF were exciting because there was a recognised information delivery infrastructure and a strong desire to produce locally relevant information. Initial reactions to sample information products in common use in Queensland were positive and generated interest in being able to produce similar publications locally. The production of the project newsletter "Pacific Gardener" besides

having a communication role also illustrated the ease with which local publications could be produced.

On the initial visit to Samoa an assessment of the currently available advisory publications was undertaken. The most common publication formats were brochures (Double sided A4 page handouts folded in 2) in greyscale and colour wall posters, mainly from other countries. Most of the publications were in English and Samoan. The A4 hand outs were photocopied on request. Most of the posters had been developed with assistance from other funding bodies working on specific issues and bulk printed.

MAF staff were given training and support in the use a range of audio visual equipment to produce a range of information packages for distribution to advisory staff and growers and to enable MAF staff to better present their advisory and research findings at seminars and meetings. The specific training was in photography, particularly digital photography as this allowed the collection, processing and storage of thousands of images at little cost.



Figure 8. Jeff Atoa (standing), secretary of Commercial Papaya Grower's Association addresses the discussion on crop information packages at Nu'u Research Stn. L-R Christina, Keneti Sio, Mosolata, Roger Goebel, Mafutaga Tinifu, Keneti Leavasa

A comprehensive local image library allows the production of high quality information items quickly. Training in the use of Microsoft Word and Microsoft Power Point was undertaken as these programmes were selected as the most suitable for the various tasks that included producing farm notes, posters and presentations. The training was in the form of group discussions, "one on one" instruction and continual support and encouragement. The publications produced in Samoa during the project and those produced since are strong indicators that the training has facilitated the development of a team of information specialists.

The people involved in producing the project publications were somewhat proud of their efforts and were keen to identify the supporting bodies by incorporating into the design, the identity badging of ACIAR, MAF and DPI&F.

Observations by project staff on visits to each other's countries assisted the design and implementation of a crop market reporting system and centres with agricultural information for public access (information centres).

One issue of concern in Samoa and north Queensland is the effect that tropical environments and fluctuating power supplies have on electrical equipment. Even with some degree of air-conditioning, the operation of some equipment is considered less

predictable. Maintenance and support is usually some distance away and it is expensive and slow.

Australia

In the Australian project areas of Mapoon and Cooktown capacity to develop information was restricted as information users mainly sought information on issues as they arose. Most of what they needed was supplied by other growers or authorities that they knew and respected. Most Cooktown growers had access to computers but often enlisted the help of someone else to search for answers.

Mapoon gardeners were less likely to use computers for various reasons that included no interest in having one, not aware of the potential as an information resource and not confident in their use with little prospect of suitable training. The horticulture trainees commented that they would use computers more, if they had access to them and most of those in the community that had access to a computer linked to the internet, were not in a position to use the computer for garden information searches or had no interest in gardening.

In both locations, to increase awareness of the value of computers and access to the internet, farm notes often referred to web addresses for specific information. Although the farm notes were made available on CD and in printed form, farm notes distributed for feedback were in printed form to encourage reading and notations. The collated farm notes on CD were offered to all participants and were received with enthusiasm by The Western Cape College in Mapoon, DPI&F inspection and information centre at Coen, Cook Shire library and Natures Powerhouse at the Cooktown Botanical gardens. All requests for the gardening note series outside the project areas were keen to receive a CD.

The most significant steps in capacity building were the identification of the four key information collection sites of Western Cape College- Mapoon, DPI&F Information and Inspection Centre- Coen and the Cook Shire Library and Natures Powerhouse Reference section – Cooktown. These sites now hold sufficient locally specific information to attract interested growers and with the current or similar management will maintain this information and add to it as opportunities arise.

7.6.4 Training undertaken by project team

Additional training was undertaken by project team members to enhance their skills in the delivery of this project. Specific activities included:

- Mr. Philip Tuivavalagi attended "Evaluation Training for Agricultural Research Projects" in workshop in Nadi, Fiji 13-16 April 2004. Funding was provided by ACIAR
- Mr. Rowland Holmes undertook a Social research methods course at the University of Melbourne, attending 2 residential workshops (15-18 March & 15-17 April, 2004).
- Mr Philip Tuivavalagi completed a Postgraduate Diploma in Agriculture with the University of South Pacific (USP) in December 2005.
- During 2005, Mr. Roger Goebel undertook training courses to compliment his work in Cape York including "Training in Indigenous Cultural Heritage" and "Indigenous Cultural Awareness workshop". He also attended a DPI&F workshop on Information Sources.
- Roger Goebel undertook accredited training in chainsaw operation to allow him to assist in the clean up after cyclone Larry. Experience from this event assisted in the production of information articles relating to cyclone recovery of tropical crops. This information proved useful in both Australia and Samoa.

- Philip Tuivavalagi undertook training at the USP Alafua Campus on Scientific Writing for Agricultural Researchers in the Pacific. The training focused on writing scientific papers on completed and existing research.

7.6.5 Project travel

The project provided an opportunity for an extra six Ministry staff to visit Australia in conjunction with planned project visits. These visits were tailored to peoples specific work needs and interests to further build capacity amongst MAF Staff. Feedback from each of the officers was very positive and their experiences had a beneficial flow on effect with the development and dissemination of information in Samoa. Specific areas of interest included extension systems particularly related to tropical fruit industries, market price recording, product quality awareness and supply chain management

7.7 Project operational issues

7.7.1 Personnel changes

Continued personnel changes in both the project team and the target participants had an adverse effect on the operational activities throughout the project. Rowland Holmes replaced Mrs Irene Kernot as the project leader in December 2003 who moved into a management position with DPI&F. This delayed the start of the project by 6 months.

Australia

A “revolving door” of key personnel with the target communities in Cape York provided a continual challenge for project staff and the activities of the project. Most visits to communities required the project team to ‘re-introduce’ themselves and the project to community members who had become involved with the community farm. Additionally, there was a reluctance of local Mapoon community residents with excellent gardening expertise or interest to get involved with the community farm.

Continued changes of the Chief Executive Officer and other key managerial staff in the community of Mapoon, the departure of the two sharefarmers from the Napranum Community garden and the gardens project officer from Aurukun Community have had an adverse effect on continuity of some project activities in the Cape York region.

While these changes in personnel were not totally unexpected, they slowed the progress of the project within these communities. Despite this, these changes did not have the full negative impact that could have occurred as continued visits to the area and maintaining contact with key personnel gave reasonable warning of changes to the project team and allowed timely induction of new appointees to the project's activities.

Samoa

The project team in Samoa had a number of changes which influenced the continuity of project activities throughout the project. Mr Philip Tuivavalagi was appointed as the project officer in April, 2004. In June 2004, the Samoan project leader Ms. Laisene Samuelu was promoted Acting CEO Crops Division, Ministry of Agriculture & Fisheries.

Mr. Barry Ale (Senior Advisory officer, Upolu) was promoted to Manager (Commercial & Export Crop Development) in December 2004 and took over leadership of the project. In January 2006, Mr Barry Ale again changed positions to become the Manager (Research).

At this stage, the project officer, Mr Philip Tuivavalagi took over temporary project leadership in Samoa. This temporary arrangement became permanent in May 2006, when Mr Tuivavalagi was promoted to acting Manager (Commercial & Export Crop Development). He had been filling this role since Mr Barry Ale had moved to Manager (Research).

Ms Mafutaga Tinifu, an information officer with the Crops Advisory group, formally joined the project team in July 2005. Ms Tinifu had been collaborating with the project through the production of information products and participation in training activities.

Mr Keneti Leavasa and Mr Liu Pueata Tanielu joined the project team in July 2006.

7.7.2 Travel & distances

By its nature, the work being undertaken in these market-remote areas required significant travel which was costly and intrusive to family life. Relationships between Samoan and Australian were forged through the ability to visit each other and interact on a personal level. This interaction gave each person the ability to rapidly acquaint themselves with local expectations and provided numerous opportunities where knowledge was more accurately gained for mutual benefit.

The operational centres in Samoa were relatively close to the airport but a dedicated vehicle or vehicle hire was critical to maximising work undertaken, particularly during the visits by Australian staff.

Travel routes between Samoa and Australia were regularly varied to make best and economical use of time available. One budget issue was the large price variations between carriers and certain flights.

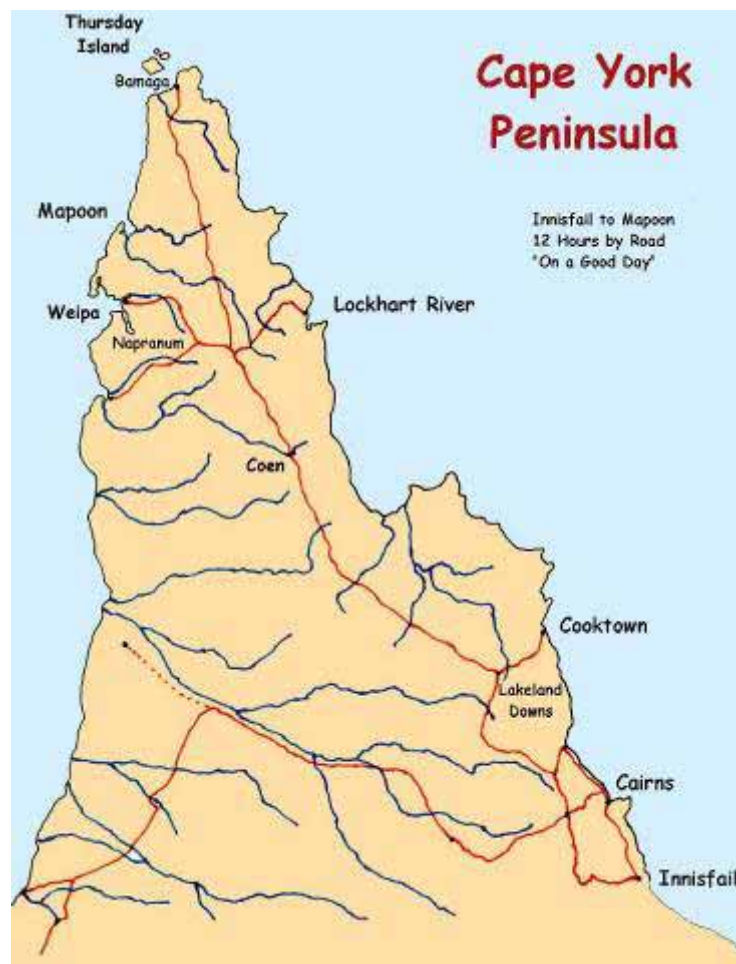


Figure 9. Map of Cape York Peninsula highlighting the major rivers that made wet season access to indigenous communities impossible. The trip from home base, Innisfail, to took 12 hours by road when conditions were favourable.

In Australia the travel distances were large and often required air travel up and down the east coast from Cairns and Townsville (operational centres) to Brisbane (Central population, markets and transit to Samoa). Travel between Cairns, Townsville, Ayr, and

Innisfail was undertaken in conventional vehicles. Cairns to Ayr takes approximately 6 hours by vehicle.

Travel to the project locations such as Cooktown and areas further up the Peninsula was by adequately equipped 4 wheel drive. Innisfail to Weipa took at least 12 hours. Flights from Cairns to Weipa and even Mapoon are possible but the cost and severe constraints on project work made vehicle travel the most suitable throughout most of the year.



Figure 10. Access to remote communities in Cape York Peninsula created numerous challenges for the project team

7.7.3 Nature's interference

Cyclones

In March 2006, Cyclone Larry, caused considerable damage to Innisfail and the surrounding area disrupting project activities for several months with Roger Goebel and Jeff Daniells seconded to recovery and clean-up operations for two months in the Innisfail office operations. In April 2006, Cyclone Monica crossed the Queensland coast in line with Lockhart River, Weipa and Mapoon which delayed access to the Peninsula areas for several months causing additional delays to project activities in the Mapoon and Napranum communities.

In Samoa, cyclones in early 2004 and 2005 delayed project activities and restricted planned travel by the project team. A severe tropical depression in 2006 contribute to a major disease outbreak in papaya (see below)

Phytophthora outbreak in Samoa

Unusually persistent heavy rains in January and February of 2006 contributed to an outbreak of Papaya rot (*Phytophthora palmivora*). Up to 80 per cent of papaya plants in Samoa were thought to be infected resulting in fruit shortages for both the local and export markets in papaya. Exports of papaya from Samoa to New Zealand were put on hold and only resumed again in 2007.

8 Impacts

In Samoa, growers have a choice of seeking information from a Ministry Advisor or from their own search and research. The project has focused particularly on capacity building within the Ministry advisory and information system.

In northern Australia, growers have extremely limited access to advisory/extension staff. So much so that their own research and information search is often the only option to overcome an issue. Growers in the Cooktown area have their Association but its main function is to address policy issues, organise guest speakers and occasional farm visits not addressing the day to day information needs of each member. In communities the knowledge is more often that of a few keen gardeners within the community or buy in the knowledge in the form of visiting consultants.

This project has had major advances in two areas of both Cooktown and the communities.

- Develop a nucleus of locally relevant growing information
- Encouragement of local reference centres in each area where this and other useful information is stored and available.

8.1 Scientific impacts – now and in 5 years

- Foundation for future projects. During the project numerous approaches from other Pacific island countries and communities throughout northern Australia were made to members of the project team requesting similar work be done with them.
- Development, implementation & evaluation of a targeted information strategy based on social research methods that meets the information needs of commercial horticulture growers in Samoa and indigenous communities in Cape York Peninsula, Australia
- Relationships have been strengthened between various scientific institutions which will enhance the delivery of RD&E projects in coming years. These institutions include QUT, SPC, USP, QDPI&F, MAF and UQ.

8.2 Capacity impacts – now and in 5 years

- Information collections have been established and boosted and are expected to continue to be used and developed
- Improved confidence of project officers to produce targeted information products that meet the needs of clients and stakeholders
- Officers being able to deliver in- house trainings for their staff (Samoa)
- Achievement of academic qualifications by two project staff (Philip Tuivavalagi & Mafutaga Tinifu)
- Opportunities for project staff to further their academic qualifications –studies

8.3 Community impacts – now and in 5 years

- Improved understanding of information availability and usefulness to participant communities in relation to specific horticultural groups and commodities particularly those in remote tropical areas
- Improved access and availability of information relevant to target clients and other information providers that is useful and meets their needs
- Growers (Samoa) willing to seek the opinion of the ministry whenever information is scarce.
- Successfully providing of horticultural information to growers providing produce during the hosting of the South Pacific Games & ability to provide similar information in future

- Community groups coming together to formulate future development projects (farming/value adding)

8.3.1 Economic impacts

- Increased volume and diversity of agricultural production in existing enterprises, in Samoa through increased quantities of correctly graded fruits (primarily breadfruit and papaya and eggplant) available for HTFA treatment and export to New Zealand.
- In Cape York, increased volumes and variety of production in commercial and community farms and gardens is anticipated.
- Improved ability to service market opportunities and requirements. Grading information for commercial fruits in Samoa has positively impacted on market opportunities and requirements. Potential exists to utilise Taro variety identification information to stimulate local market opportunities.
- An increase in the volume and diversity of vegetables and some fruits at the local market in Samoa, Cooktown & Weipa.

8.3.2 Social impacts

- Increased horticultural enterprise development as a result of information provided, with new community gardens being developed and increased cultivation of native crops and ornamental plants anticipated.
- Variety of produce or products to available within Cape York communities has increased by creating more interest in horticulture, providing nucleus planting material of useful crops and providing support in the means of information and relationship building.

8.3.3 Environmental impacts

The projects focus on growers obtaining relevant information will result in practices that maximise crop quality and quantity while minimising chemical inputs and farm runoff. Cropping enterprises in remote areas will have their impacts on the local environment minimised by implementing best practice methods.

8.4 Communication and dissemination activities

Project newsletter: Pacific Gardener

A project newsletter, the “Pacific Gardener”, was established to keep key stakeholders and other interested groups up to date with activities within the project. Twelve issues of the newsletter were produced and distributed in both electronic and paper formats to 180 subscribers throughout Australia, Samoa and other Pacific countries.

The newsletter was distributed in two formats, one for Australian subscribers and one for subscribers from Samoa and other Pacific countries.

8.4.1 Samoa

Presentations

- May 2007: Presentation to ACIAR review team of project progress and results at Nu'u research station
- December 2006: Presentation of project outcomes to Executive Management Team. Distributed a publications folder with examples of information produced by the project

up to. Publications included Project newsletter & brochure, crop notes, A4 copies of posters & taro variety notes

- December 2006: Presentation of project outcomes by the whole project team to project co-operators and information providers at Nu'u research station
- October 2005 & 2006: Project displays at the annual Agricultural show held in conjunction with World Food Day on Upolu and Savai'i
- December 2004: Presentations to the Samoan MAF CEO and Senior Executive team by Laisene Samuelu outlining project progress and early research results

8.4.2 Australia

Presentations

- November 2007: Present an open day display for the Mapoon community. This was attended by garden staff and school children and their teachers
- December 2004: Presentation of project progress the MAF Samoa Senior Executive team of the Samoan Ministry of Agriculture and Fisheries in December by Laisene
- November 2004: "Tropical Tastes: Taking Horticulture R&D to Remote Communities. Project presentation in Brisbane by Australian & Samoan project staff profiling the project and some of the early results to 30 people including DPI&F Qld policy and management staff, information providers and press. Included taste sampling of native foods, traditional dishes and remote grown produce.
- June 2004: Roger Goebel presented an outline of the project aims, objectives and progress to date to the Joint Operations Group (JOG) which is made up of State and Commonwealth staff working in Cape York Peninsula on primary industries and border protection issues

Media: Press

- Mr Anthony Hoy, Rural editor for the Bulletin Magazine, visited Mapoon with the project team in November 2005. Anthony wrote a comprehensive article about the project activities in Mapoon. However, the article is unlikely to be published as Anthony has left that employment.
- Mr Ian Gerard, journalist with the Australia newspaper, visited Mapoon and Napranum with the project team in November 2006. The article was published in January, 2007
- Partners in Research & Development (ACIAR newsletter). Two articles were published; The missing link (Autumn 2006) & Fruits of change (October 2005)

Media: Radio

- The project received Australia and Pacific wide coverage through radio interviews given by project staff in November 2005.
- Philip Tuivavalagi, Roger Goebel and Mapoon community identity Silver Blanco conducted a three-way interview with Tony Allen on Radio National's Bush Telegraph during their trip to Mapoon. The interview focused on the goals of the project and how it is helping the local people. Silver spoke of the need for and benefits of more gardening activities within the community and how good information can help overcome their problems and give a greater chance of success.
- Philip Tuivavalagi and Roger Goebel were interviewed by Isabelle Genoux for Radio Australia's "In The Loop" in Innisfail which is broadcast throughout the Pacific. This interview focused more on the aspect of cooperation between Samoa and Australia and how this cooperation was able to help growers. In both countries, growers were

benefiting from the information packages being produced as a result of the needs identified in interviews with them.

- During January 2006, Roger Goebel undertook a series of weekly interviews on the availability and uses of various tropical fruits, vegetables and flavourings with Brisbane ABC radio host, Peter Gooch.

9 Conclusions and recommendations

9.1 Conclusions

As a capacity building and relationship building exercise, this project was very successful. The social research component was fully appreciated by the co-operators whose comments and opinions were listened to and acted upon to produce information in packages that made sense and conveyed ideas that helped their businesses. This project has complemented previous horticultural projects in Samoa as well as projects that were linked into.

Various items of information are considered valuable by different people at different times and not all information is appreciated by all people. Some people only want the relevant information when they need it or sometimes after it would have been most useful. One way to accommodate grower's needs is to have available a person (advisor) to visit regularly and provide timely information. This is becoming unrealistic. Another option is to maintain a localised information centre that contains or finds relevant information. A third option is for growers to work closely together finding and sharing information. This is a system that grower's associations can provide. The ideal is to have all systems but a combination will give reasonable results if the information that is needed to base a decision on is known, available and understandable.

In relation to remote Aboriginal communities in the Cape York Peninsula area, there are two distinct areas where horticultural information is needed. These can be treated as gardens in private homes and gardens in public locations like schools and community farms. Communities may have between 300 and 1500 residents, many being children. Often young adults leave the community leaving a gap in knowledge and continuity of management within the community. To add to these constraints, most communities have land and water supplies that are a limiting or at least a challenging factor. This is considerably aggravated by distance to areas with more established knowledge pools. It is more likely that people will rise to meet a challenge rather than be motivated by profit alone to achieve horticultural successes and it is when these people communicate and work together or in friendly rivalry that a local knowledge pool will develop. This project has provided a proven method of recording horticultural knowledge in such isolated places.

The findings from this project indicate that providing useful information together with the encouragement of growers to attempt to identify likely issues then reach out to seek the information is considerably aided by a small group of enthusiastic staff that have basic training and equipment to manage relevant information for local issues. Horticultural information is one lot of information to manage but the ability to manage that information in a way that aids horticultural development is also critical.

9.2 Recommendations

Additional topics need to be added to the folders and additional folders will be developed as they increase in size but as the folders are a foundation for a small scale information centre they are far from comprehensive. Their true worth is in providing an information

storage and retrieval system that will allow large amounts of extra information to be incorporated at the editor's discretion.

Follow up visits are not planned but sufficient rapport has been built with project staff and various co-operators that monitoring progress in application of skills developed in the project has already begun and is likely to continue.

Future project work in Samoa should include additional capacity building components to help staff keep up with the ever-changing equipment and applications.

Encouragement should be given to translate basic information into Samoan to give village farmers confidence in the value of published information packages. Similar encouragement could be given to promoting the production of short instructional videos.

In relation to Aboriginal Communities in the Peninsula, a range of initiatives are needed to maintain and build on the local supply of horticultural produce.

- Publication and distribution of a text that is a concise guide to the range and management of horticultural projects in remote communities
- The facilitation of visits by motivated people to areas, like Innisfail and Samoa where successful production of suitable crops is able to broaden their understanding
- The provision of trial amounts of produce that is able to be grown locally and the support needed to encourage the preparation or use of these foods
- Access to mentoring staff or similar system to encourage the searching for and retention of useful locally applicable information
- The "Land Sea Centres" appeared to be on the right track but local information indicated that they were too general and not able to provide the specific information on local horticultural production that was needed. Also these centres were said to be restrictive to general study.
- Local schools have run horticultural projects that have had a positive effect on students and provided a more pleasant environment for learning. More community involvement in school activities should encourage these projects to have more continuity
- The Samoan approach to nutrition would worth trying in peninsula communities. This involves the education on the value of home gardens, the use of produce from home gardens and the supply of nucleus planting material of a range of crops suited to local conditions
- In Peninsula communities horticultural development crosses many boundaries including economic development, health and wellbeing, education, job skills, environmental management and recreational activities. There is room for government and non-government organisations to work more closely to reduce the impediments to successful horticultural project outcomes.

10 References

10.1 References cited in report

Annandale, M. (2003). Cape York Peninsula Community Forestry and Horticulture Business Development Project. Queensland Department of State Development

Croft, D., Edwards, H., Guivarra, P., Inderbitzin, F., McGuffie, K., Rutherford, H., Woibo, E. and Paul, M. (2002). Cape York Peninsula Cropping and Horticulture Industry Strategy (February 2002). Prepared by the Cropping and Horticulture Planning Team

Daniels, J., Woods, E., Walters, S. Gibson, D. & Hayden, J. (1997). Evaluation of the impact of farm business management training using the card sort technique. From 'Evaluation of Training Activities to Improve Business Management Skills of Farm Families' final project report. RIRDC

FAO (2005). Setting up and running a school garden. A manual for Teachers, Parents and Communities. Food and Agriculture Organisation of the United Nations, Rome 2005.

Pfingst, J. (2004). Mapoon Market Garden & Horticulture Project. Strategic Issues for Implementation. Prepared by Jason Pfingst, CEO Mapoon Shire Council

Röling, N. (1990). The Agricultural Research-Technology Transfer Interface: A Knowledge Systems Perspective. In: Making the link; agricultural research and technology transfer in developing countries, D. Kaimowitz (ed.). Westview Press, Boulder/San Francisco/London (1990) 1-42.

Tofinga, Mareko P. (2004) Assessment of agricultural information needs in African, Caribbean and Pacific (ACP) States for CTA's Products and Services. Phase 1: Pacific. Country report: Samoa. Prepared by for Technical Centre for Tropical and Rural Cooperation (CTA). Project reference no.: 4-7-41-152-3d, December 2004.

10.2 List of publications produced by project

10.2.1 Communication

Project brochure

The first publication of the project presented the background to and aspirations of the project. It was produced in both English and Samoan

Project newsletter

Twelve issues of the Pacific Gardner were produced in two different formats, one for Australian subscribers and one for subscribers from Samoa and other Pacific countries. The newsletters were distributed to 180 subscribers in Australia, Samoa and other Pacific countries.

10.2.2 Australia

Crop notes

- Peninsula garden notes: Breadfruit, Cassava, Cooking banana, Limes, Taro
- Ornamental house plants of the Peninsula: Alpinia, Aloe, Beefsteak plant, Coconut (Village Dwarf), Cooktown orchid, Cordyline, China rose, Jasmine, Lipstick palm, Miracle fruit, Weipa lily
- Native food plants of the Peninsula: Beach Cherry, Botany bay greens, Peanut tree, Panja nut (Water chestnut), Wongai

Gardening in the Tropics series

- 55 cropping notes in 8 hard copy folders produced to fill gaps in the information specifically relating to horticulture in tropical climates compilation of existing information relevant to tropical conditions from a range of printed and electronic sources.
 - **Wet season vegetables:** Aibika, Bamboo shoots, Cooking banana, Kang kong, Cassava, Queensland arrowroot, Sweet potato, Tannia, Yam bean, Winged bean, Taro in Samoa, Taro variety sheets, Pests and diseases of Taro (poster), Sweet leaf, Breadfruit, Breadfruit quality control (poster), Breadfruit quality standards (poster), Pit pit, Luffa, Greater yam, Ceylon spinach, Amaranth
 - **Winter garden vegetables:** Bok choy, Cabbage, Carrot, Cherry tomato, Jerusalem artichoke, Pea, Rhubarb, Tomato, Zucchini, Sweet corn, Pumpkin, Lettuce, Artichoke, Cauliflower, Capsicum, Broccoli
 - **Tropical tree fruits:** Atoll banana growing in the Pacific (poster), Granadilla, Limes, Thinning Papaya, Selecting papaya trees for hermaphrodite fruit, Papaya crop thinning handy guide, Papaya quality standards poster, Guyana chestnut, Monstera
 - **Native food plants – fruits of the bush:** Beach cherry, Peanut tree, Wongi, Botany bay greens, Panja nut
 - **Herbs, spices and flavourings:** Cultivation of mushroom in Samoa
 - **Garden design and maintenance:** Styrobox garden, Tyre garden, Bees-removing from walls, Friends of the garden
 - **Plant propagation:** Saving seeds and grafting, Breadfruit propagation, Growing vegetables – saving your own seed, Producing sunrise solo papaya seed, Growing papaya seedlings
 - **Ornamental house plants:** Cooktown orchid, Coconut-village dwarf, Aloe, Weipa lily, Lipstick palm, Jasmine, Beef steak plant, China rose, Cordyline, Alpinia, Miracle fruit
- An additional folder was added covering uses, recipes and nutrition for tropical garden produce: Oka, Breadfruit- the tropical potato that grows on a tree, Books with breadfruit recipes, Wendy's rosella jam, Josie's spaghetti sauce
- 8 copies of the garden folders were distributed in Mapoon, Napranum & Cooktown

Posters

- Garden design, Herbs & Spices, Native foods, Ornamentals, Plant propagation, Tropical fruits, Wet season vegetable, Winter vegetables

10.2.3 Samoa

MAF Crop notes

Information on these selected topics, was presented in crop note format. The topics chosen were ones that were seen as currently of high importance and where information was not readily available.

- Producing Sunrise Solo Papaya Seed
- Thinning Papayas in Samoa
- Selecting Hermaphrodite Papaya Trees & Filifiliina o esi itulua (Samoan translation)

- Growing papaya seedlings & Gaosiaina o fatu esi (Sunrise Solo) (Samoan translation)
- Papaya rot
- Taro

Taro variety identifier notes

These notes were produced to aid the correct identification of Taro varieties released from the Taro Breeding program. Varieties included Taro Seu (Nu'u 20), Taro Asu (Nu'u 21), Taro Seve (Nu'u 2), Taro Suga (Nu'u 15), Taro Pale (Nu'u 1), Taro Apu (Nu'u 19), Polo Lakapi, Taro Pefu, Taro Palau 16 (P16), Taro Niue (Traditional variety), Polovoli (Palau 10), Taro Fili (PSB-G2), Taro Nema (N 14), Taro Ave (Nu'u 5), Taro Semi (Nu'u 28)

Posters

Information on selected topics that was presented as a full size poster (A1) or as an information sheet or poster (A4).

Produced & printed through the project (60 copies of each to date)

- Papaya Quality Standards
- Breadfruit Quality Standards
- Breadfruit Quality Control
- Filifiliina o ulu mo maketi (Samoan translation of Breadfruit Quality Control)
- Cultivation of Mushroom in Samoa
- Pests and Diseases of Taro in Samoa
- Crops Advisory poster (Displayed at FAO World Food Day & MAF Ag show)

10.2.4 Conference proceedings

- Goebel, R. (2007). Breadfruit – The Australian Scene. International Symposium on Breadfruit Research and Development, Nadi, Fiji, 16-19 April 2007. ISHS Acta Horticulturæ 757, ISBN 978-90-66056-50-3
- Tuivavalagi, P. & Samuelu, L. (2007). Breadfruit in Samoa: The Past, Some Recent Studies, Current Activities and Future Potential. International Symposium on Breadfruit Research and Development, Nadi, Fiji, 16-19 April 2007. ISHS Acta Horticulturæ 757, ISBN 978-90-66056-50-3
- Samuelu, L. (2004). "Export of Sunrise papaya to the New Zealand market" (poster). Australian Society of Horticultural Science conference, "Harnessing the potential of Horticulture in the Asia-Pacific", Coolum Queensland, 1st-3rd Sep 2004
- Daniells, J (2004) "Taro. Tapping the full potential of a minor Australian crop" (poster). Australian Society of Horticultural Science conference, "Harnessing the potential of Horticulture in the Asia-Pacific", Coolum Queensland, 1st-3rd Sep 2004

Collaborative project publications

With their significant experience in tropical horticulture, the project collaborated on a range of publications that were directly relevant to information requirements of the target participants. These included:

- Rowland Holmes, Jeff Daniells and Roger Goebel (2006). TaroPest. QUT
- Jeff Daniells and Roger Goebel (2006). Passionfruit growing guide (QI06036), Passionfruit Problem Solver Field Guide. DPI&F, Queensland.

- Roger Goebel (2005) "Tropical Tastes-Fruits, foods and flavours of north Queensland", Department of Primary Industries, Queensland
- Jeff Daniells and Roger Goebel (2005). Is Passionfruit growing for you? & Passionfruit Problem Solver Field Guide. DPI&F, Queensland. QI05044
- Australian Banana Monograph series (2004): Variety Identification, Clean & Green Bananas, Banana Streak disease
- Atoll Banana Growing in the Pacific Region poster (2005). Growing Banana Varieties Resistance to Sigatoka, Leaf Spot Disease on Atoll Islands for Food Security (Matt Porea, FAO Apia, Samoa). 85 posters have been printed and distributed

10.3 Internal project publications

10.3.1 Travel reports

Reports have been compiled for project activities associated with project travel.

- Cooktown: 2004 (May, August, September, October), 2005 (January, April, September), 2006 (February, July)
- Peninsula (Mapoon, Weipa, Napranum & Lockhart River): 2004 (May, August, September) 2005 (June, October, November), 2006 (November)
- Australia to Samoa: 2004 (June, December, December (JD Sup), 2005 (May, July), 2006 (October, December), 2007 (May)
- Samoa to Australia: 2004 (August, September, November), 2005 (June, November)

11 Appendices

11.1 Appendix 1: Card sort interviews

11.1.1 Card Sort Interview Procedure

Introduction

This survey is about the ways in which farmers / businesses make decisions / changes on their farm, property or business. We are interested in all the things you have done on your farm (in relation to (farm, community store etc.) during the last 2 years and how you go about getting the information you need to make these changes / decisions. By understanding the types of information you look for we can provide / develop a better information service.

To begin with, I would like to ask you a few general questions about your farm, property or business. Then I would like to identify any changes or decisions you have made in relation to your farm, property or business over the last 2 years.

I would then like to select some of these changes or decisions and look at the actual steps you went through to implement some of the changes or make some of the decisions in more detail.

This interview should take about 2 hours to complete.

The specific information you provide will be confidential. Putting together a report of the results and will provide you with a copy.

General Information sheet

Fill out the “General Information sheet”

List of changes or decisions made during the last two years

I am interested in any/all the changes/decisions you have made in relation to your farm, property or business over the last two (2) years. These changes could be major ones such as building a new shed or buying land or smaller ones such as using more fertiliser, planting a new variety

Try and remember back over the last two years all the changes you have deliberately made on the farm, property or business. We will write them down on this sheet as you think of them

Present the “List of changes” recording sheet. If they want to write the changes/decisions themselves, let them do so or record them for him

Try to categorise the changes/decisions into “Strategic” or “Tactical” using the following definitions:

Strategic: Decisions or changes that affect or change the capital structure of the farm, property or business. Eg. buying land,

Tactical: Decisions or changes that do not affect or change the capital structure of the farm, property or business. Eg. putting on extra fertiliser, planting a different variety

Can you think of any others? We want a list of changes that we can discuss in detail later

Present the list of “Changes / decisions Checklist” to assist recall. Mark any additions with a “C” to indicate being prompted

Now, if you think of any others, we can write them down as we go. We would like to examine several of these in detail.

Identify the decision or change process

Select several changes / decisions that they have made recently to examine in detail. Try to get at least one strategic and one tactical decision. Depending on time, try to examine 2-5 changes or decisions.

First of all, can you tell me why you wanted to make a change (what was your motivation behind this decision)?

Record the answer on the "Recording sheet"

Now we would like to identify the steps you went through to implement these / make these decisions.

Spread the "Activities" cards (Blue) on the table with these explanations:

- Thinking - thinking about doing something
- Discussing - talk and listening about the decision with other people, feedback
- Looking - observing, looking at photographs, pictures, drawings, posters etc.
- Action
- Asking - you are asking questions
- Reading
- Listening - you are listening only (eg. TV, radio, speech) and not asking questions
- Practising - you have a trial run, plant a trial plot
- Planning

I also have some extra cards of each step if you need them.

Have a number of extra copies of each card in case any activity was repeated in the process.

Now, if we think about the steps you went through to do (change selected) , can you lay the cards out to describe what you did.

Arrange the "Activity" cards to describe the process.

We would like to find out exactly what you did for each step of the process.

Prompt them to provide exact details of each step. Write this down on the "Content cards" (White) and put them beside the appropriate "Activity" card.

Identify resources used (Green)

Next we want to identify the resources you used during each step of the process. Please write the name of each resource you used on one of these cards and place it in the correct place.

Present the orange cards and ask them to write the actual resource they used on them and place it beside the appropriate activity

For example, You said you did some reading here, What did you read?

When the person has finished this, record the process on the "Recording sheet" putting activities, content in the appropriate columns

Decision cards (Orange)

Use the decision cards to clarify with each person what part of the decision process each activity was addressing. Use the following examples:

- -Motivation (Need for recognition) - The reason making the decision
- - Search for information
- - Evaluation - Weighing up the different options, Comparing things
- - Planning
- - Deciding to do it

These cards represent various steps in a decision process. I would like to clarify with you what role each activity was playing in the decision process?

Place the appropriate “Decision” card beside the activity it is representing

Record the results on the “Recording sheet”

Value of Resources (Red scale)

I would now like to find out how helpful the resources you used were. Could you please place each of the resources you used on this scale? One (1) is very valuable and five (5) is of no value.

For example, take (name of person or article etc.), how valuable was (he/she/it)? Where would you put them on this scale?

Why was most valuable?

Record the results on the “Recording sheet”

Document next change or decision

I would now like to select another of the important changes or decisions we listed and we’ll look at the process you used there.

Collect all the cards and present the “Activity” cards again. Select another change or decision and repeat steps 3 to 6 again.

Layout each of the “Recording sheets” when finished

Wrapping up

Thank you very much for your help and your time. Would you be interested in attending a local meeting to discuss the results and how we could improve the information and support we can provide to you and your business?

Decisions / Changes

Crop

Planted a new variety

Fertilising

Pest and disease control

Weed control

Spraying glyphosate to control weeds in Passionfruit

Pruning Rambutans

Harvesting / Marketing

Selling produce to a particular market

Farm Machinery/Capital items

Purchase of a major capital item (Capital): Eg. tractor, dozer, utility

Purchase or sale of land

Property development: clearing land, building dams for irrigation

Home improvements

New buildings (equipment shed etc.)

Labour/Management Decisions

Employing casual labour

Increasing permanent labour force

Change in farm enterprise mix: eg. Planting a different crop

Planting a new crop eg. Limes, Mangosteens

Converting pasture or scrub to cropping

Order or buy produce for sale or processing

11.1.2 Examples of Card sort interviews in Samoa

Interview 1

Name: Naotala Tuala

Date: 18th Oct 2004

Village: Aleisa

Business: Papaya Grower

Key points

- Heard of the papaya program on the radio; an awareness program about the new variety of papaya
- Seek information on papaya: growing, nursing, etc.
- Got interested through attending papaya workshops held in Nu'u
- Registered as a member of the papaya farmers group before he receive his first 100 seedlings to start his farm

Decision: Growing papaya for export

Decision type: Capital

Interviewer: Philip Tuivavalagi

Activity (blue)	Content (white)	Decision process (orange)
Listening	Heard of the papaya program through radio announcement and the advisory officers	Motivation
Looking	Looking at the demonstrations done during trainings in Nu'u	Search for Information
Asking	Only ask advisory officers questions related to the development	Search for Information
Action	Taken when return from papaya workshop attended	Deciding to do it

Notes from interview

- Heard an announcement through the radio on a papaya program
- Got interested about this new development of papaya
- An advisory officer further clarify on the announced program and inform him of some of the issues related to the development
- Started attending workshops held at the station for papaya growers as well as getting him registered for the growers association.
- Receive his first planting materials from the ministry, this was about a hundred seedlings
- His main source of information is the ministry's advisory officers
- Ask them during presentation to clarify on some of the things that he missed out on.
- Had a look at he demonstration done by the trainers on different aspects of growing papaya.

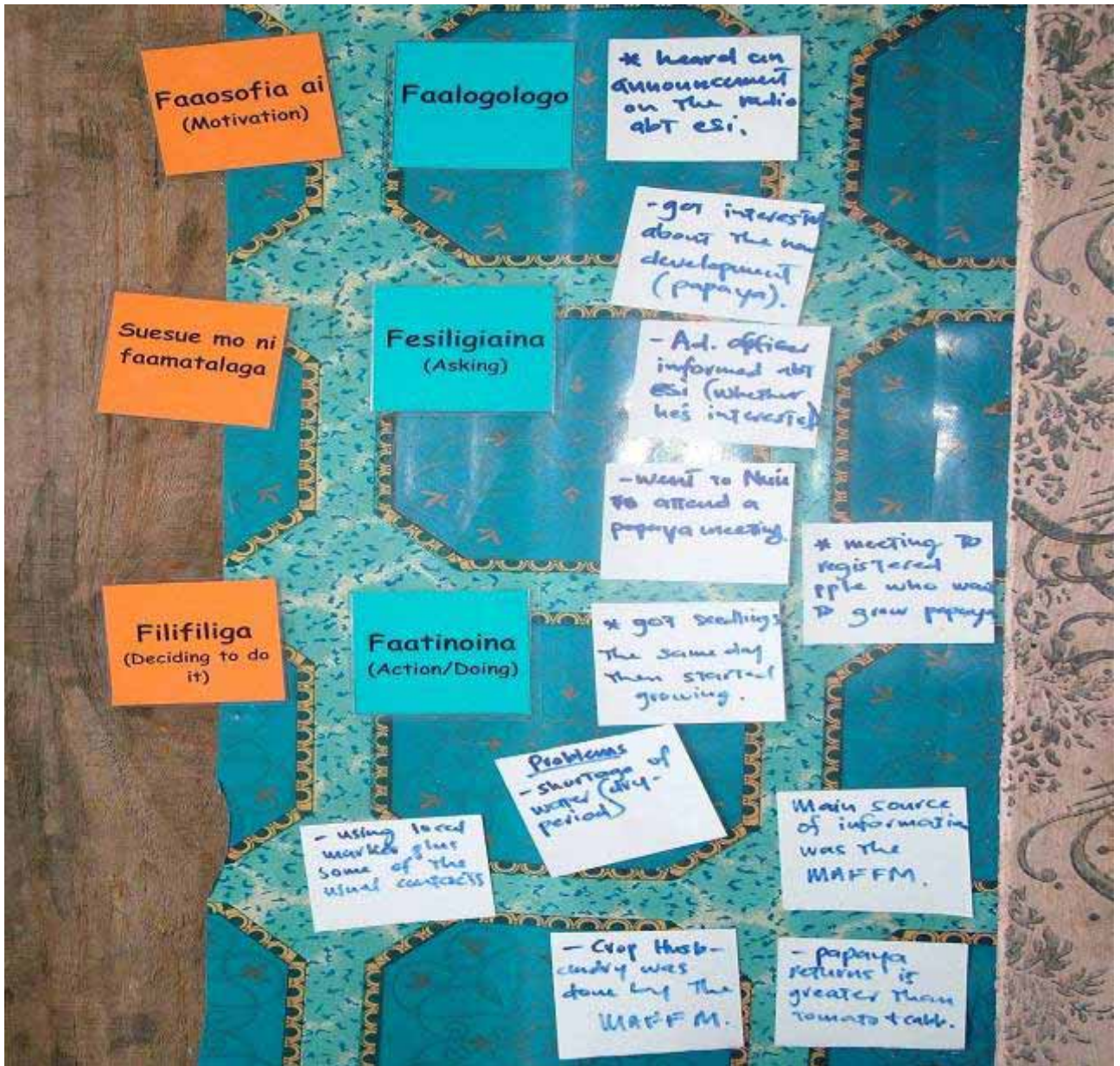


Figure 11. Picture of the card sort for Interview 1: Growing papaya for export

Interview 2

Name: John Walter

Date: 21st Oct 2004

Village: Aleisa

Business: Papaya Grower

Key points

- Advisory officers telling him about the papaya program
- Promise that there will be market available.
- Think for a short period of time before practising
- Got interested when had a look at one of the advisory officers papaya plot for demonstration
- He seems to get most of his information from the advisory officers
- What motivates him the most was mentioning of the markets; both locally and overseas. Heard of the papaya program on the radio; an awareness program about the new variety of papaya
- Seek information on papaya: growing, nursing, etc.
- Got interested through attending papaya workshops held in Nu'u
- Registered as a member of the papaya farmers group before he receive his first 100 seedlings to start his farm

Decision: Growing papaya for export

Decision type: Capital

Interviewer: Philip Tuivavalagi

Activity (blue)	Content (white)	Decision process (orange)
Listening	Heard of the papaya program through radio announcement and the advisory officers	Motivation
Thinking	He considered growing papaya as a potential cash crop	
Asking	He ask for some advices – growing papaya etc.	Search for Information
Reading	He was given basic information on growing papaya for export. (Grower – Exporter Agreement/Bond)	Search for Information
Discussing	He had several discussions with Advisory Officers regarding – Papaya cultivation, marketing, pests and diseases controls, nutrient deficiencies etc.	Search for Information
Listening	Most of the advice he got was through listening to MAF personnel	Search for Information
Looking	He visited some demonstration plots of papaya	Deciding to do it
Action	He started growing papaya immediately after being informed and expanding production	
Practising	Initially he started off with about 100 seedlings before expanding	Evaluation

Notes from interview

- John was initially informed by an Advisory Officer of the potential of growing papaya for export
- He was also informed of possible local markets/outlets to absorb production as well as potential export markets in NZ
- After a series of consultations with Advisory Officers, he became interested and started growing papaya

- Shortly after joining the HTFA program of the MAF, he attended Papaya Growers' meetings and trainings and also paid some visits to Demonstration plots of papaya on MAF's Ag. Stations
- Started by using some of his savings from his vegetables
- He is still doing vegetables together with papaya



Figure 12. Picture of the card sort for Interview 2: Growing papaya for export

11.1.3 Example of Card sort interview in Australia

Name: Darcy Gallop

Date: 5th Aug 2004

Business: Passionfruit and tropical fruit grower

Key points

- Narrowed his search for alternative crops down to 2 options Durian and Mangosteen on reading Tankard's book
- Used a lot of information sources before actually choosing and planting the mangosteens (Tasted fruit, saw at markets and on trees at Keith's place, Spoke to staff at Limber Lost nursery in Cairns)
- The shade shelter requirements for mangosteens weren't communicated well
- Stated he couldn't be messing around trialling something because his time was limited
- Thus, happy to make a decision based on information from someone he trust
- Needed to control weeds in passionfruit – chose mulching and glyphosate spray

Seemed to have a shallow understanding of plants and their management, and the importance of the people's background that give advice

- Weed management decisions as an example

Does get some information from TV (Landline) and Radio

Each person was very hungry for information: Explained why he or she were so impressed with nurseryman (Roger comment)

- AQIS (Biosecurity) were going to allow the importation of fresh mangosteen fruit from overseas which would affect the viability of the market in Australia: No one mentioned this
- Put a lot of trust in people, those they feel know lots or appear confident in what they are talking about
- Impressed by knowledge but don't understand where the advice is coming from; The bias behind the information being provided. Eg. nurseryman want to sell plants

Decision 1: Planting Mangosteens

Decision type: Capital

Interviewer: Rowland Holmes

Activity (blue)	Content (white)	Resources (green)	Decision process (orange)
Reading	Brought Tankard's book on Tropical fruits Selected Mangosteens. Also interested in Durian	Growing Tropical gardens in NT.	Motivation
Thinking	Lifestyle choice to grow fruit: Needed to make a decision quickly. Didn't want to have to trial much. Wanted a high value crop that suited the area. Very few pests were listed but long time to reach maturity		Motivation
Looking	Visited orchard at Bellenden Kerr and looked at trees Saw and tasted fruit in supermarkets in Sydney (Jacqui) Looked at and tasted fruit at retail level: "tasted beautiful"	Joe Zapala, Bellenden Kerr Supermarkets in Sydney Rusty's markets & Supermarkets in Cairns	Search for Information
Discussing	With existing growers Other areas (particularly NT) had a bad/poor reputation Word of Mouth	Joe Zapala, Keith McGuffie, Passionfruit growers from Mackay	
Reading	Tropical Fruit Gardens. (2001) Leonie Norrington (Illustrated by Colwyn Campbell. Bloomings Books, Melbourne		Search for Information
Reading	Aware of DPI publications on tropical/alternative crop options Passionfruit & Citrus Agrilink's, Abiu & Rambutan DPI notes	DPI Internet page & South Johnstone Office	Search for Information
Listening	Listened to radio programs on the ABC radio	Neil Hughes (Cairns ABC)	Search for Information
Looking	Watched Landline on ABC TV		Search for Information
Discussing	Discussed Mangosteens with a visiting Citrus expert over the phone	Neil Stackpol	Search for Information
Discussing	Keith McGuffie visited his property and suggested the river flat would an ideal spot for Mangosteens	Keith McGuffie	Deciding to do it

Action	Cleared the block		
Asking	Visited Limberlost Nursery and purchased 1 year old seedling stock	Mike Fabian	Search for Information
Looking	Visiting Digby Gotts orchard (Daintree) next week to look at mangosteens and other tropical fruits		

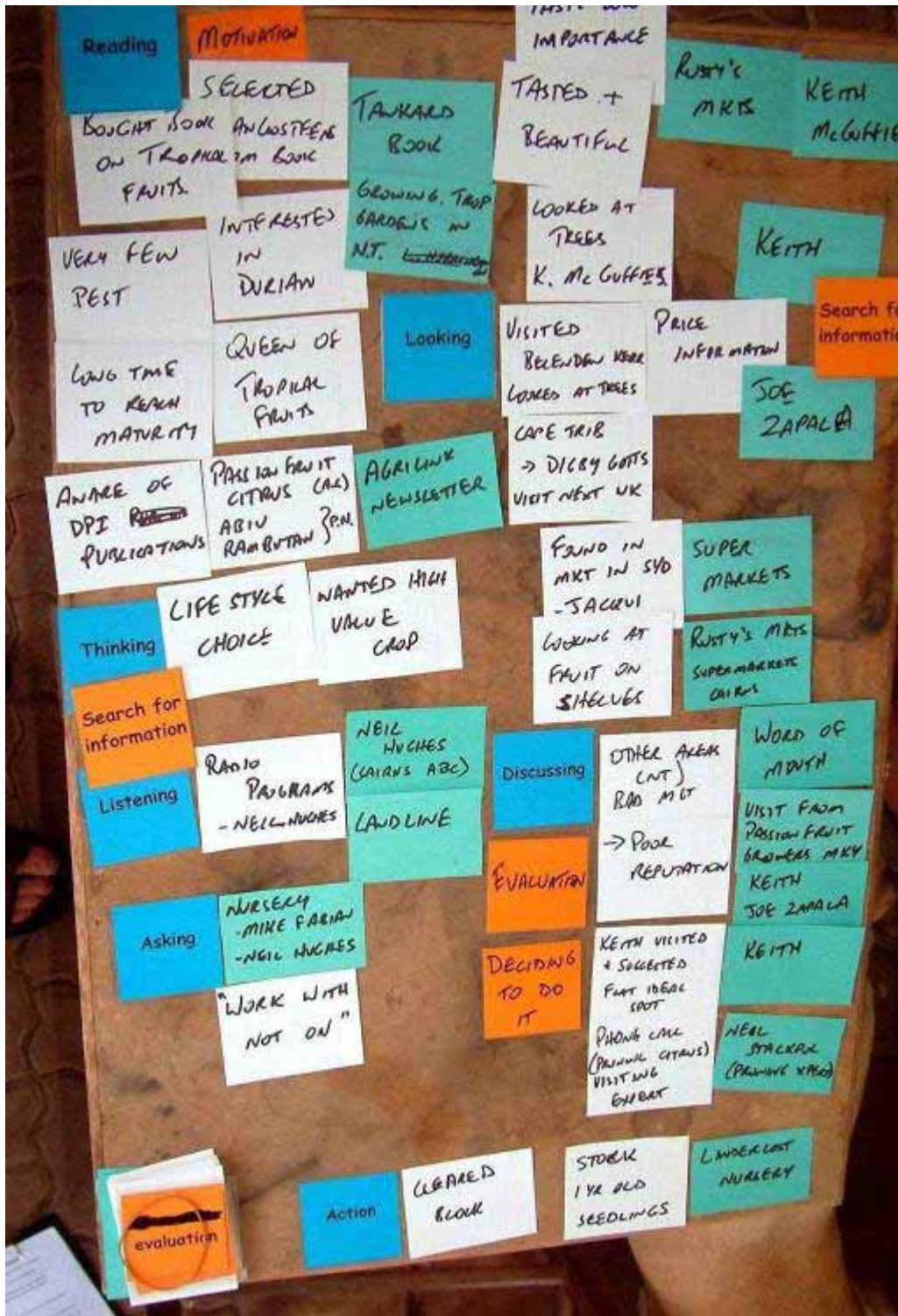


Figure 13. Picture of the card sort for Decision 1: Planting Mangosteens

Decision 2: Controlling weeds in Passionfruit

Decision type: Tactical

Interviewer: Roger Goebel

Activity (blue)	Content (white)	Resources (green)	Decision process (orange)
Thinking	Identified that weed control was important right from the start Very aware of the value of mulch both for weed control and water conservation		Motivation
Looking / Discussing	Visited Keith's place and other passionfruit growers around Cooktown and looked at their weed control practises - Found most growers don't use mulch	Keith McGuffie & other passionfruit growers around Cooktown	Search for Information
Practising	Sprayed some Roundup® on the advice of his son who uses it for fence lines, railway lines etc.	Son	Search for Information
Discussing	Also spoke to visiting experts who were undertaking noxious weed control about weed control in passionfruit but was less than impressed with their response.	Noxious weed management Officers	
Reading	Weed control section in the Passionfruit Agrilink Roundup label and the MSDS sheets for the product	Passionfruit Agrilink Labels and MSDS sheets	Search for Information
Practising	Has trialled mulching. Also hand chips and cultivates inter-row. Also trialling Gramoxone®, other glyphosate brands, Grazon®		Evaluation
Thinking	Identified the type of weeds from previous knowledge in running a cattle property and improved pastures The more he irrigated the more weeds that grew		
Action	Bought Gramoxone® the other day		Deciding to do it

Notes from Decision 2

Mentioned he is aware of the value of mulch

- For moisture conservation
- He hates spraying with Roundups: His Son favours it and was the one who bought it
- Darcy bought some 'weed killer' (Gramoxone) the other day

Visit Keith and other growers to discuss weed control

Read Passionfruit Agrilink

Found most other growers don't use mulch

Keith uses a lot of Roundup

Q: How was he irrigating his passionfruit blocks

- Used to pump out of river (with out permit). Now he has put in a bore
- Had a person come and survey the property
- Started with Micro sprays every 2m using a ¾" lateral (51m long)
- Now using Micro sprinklers with a 2m watering diameter
- The more he irrigates the more weeds he gets

After planting, he forms mounds around the young plants and keeps them clean with Roundup

- His son is the one with the knowledge of Roundup spraying around fence lines, railway lines
- He also got some information from Keith

Darcy's Observations

- Roundup does the job but is a bit slow (takes at least 1 week for plants to die)
- Gramoxone gives a quicker kill
- Roger provided some advise on the use of Gramoxone for weed control

Climatic conditions really important factor

- High winds or periods of heavy rainfall
- Both at the same time and weeds get away

Darcy is not confident on weed control: What chemicals to use to control weeds, When to apply them

- He is still hand pulling of weeds which is a major a problem

Got the information on mulch form Agrilink

- Mulch has a good/beneficial effect on the organisms in the soil and the structure itself
- See a conflict with herbicides

Darcy hasn't visited any other passionfruit growers in other areas because they are too far away

Motivation for controlling weeds: Personal experience with weeds growing once he had started to plant passionfruit

- Also talking to other farmers

Surprised by the importance of weed control

Have had advise from visiting experts for noxious weed control

- Eradicating Bauhinia and Annona glabra (Pond Apple) etc.
- These groups only treated the estuary but not the source: They cleaned up down river but didn't treat the source of the weeds up river They seemed to have limited knowledge on the weed plants that they were employed on but of no help on other weed control methods.

Main weeds: Sida sp., Crotalaria sp. (rattlepod)

How do identify your weeds

- Got to know names when grazing cattle on the property
- Also from looking at pastures during that time

Interested in where to place water: What is the root system of passionfruit?

- Aware of information on the extent of the root system but haven't personally assessed it yet
- Don't understand how feeder roots get nutrients back into plant
- Has noticed things when cultivating: breaking roots etc

Darcy bounces ideas off his farm neighbours, son & Jacqui



Figure 14. Picture of the card sort for Decision 2: Pruning Rambutans - 200 trees

11.2 Appendix 2: Examples of semi-structured interviews

11.2.1 Samoa

Interview 1

Name: Tony Holman

Date: Tuesday, 15th June 2004

Target Group: Processors

Village/District:

Crops/Products: Fried Chips (Banana, Taro, Breadfruit), Bananas, mandarins, variety of tropical fruits (Abiu, sapodilla, durian, rambutan), Interested in grapes for wine, honey (queen bees)

Location: In his home garden

Key points

- Tony has a wide range of interests and experience including Bees, Wines, Exotic fruits
- Currently producing a selection of chips: Taro, Breadfruit & Banana
- Uses unlabelled small heat sealed plastic bags (about 20 grams?) as packaging. Has packaged for other customers on request
- Correct packaging and labelling is a key issue he is trying to address
- Would like to export chips to Australia but Banana chips are restricted

Transcript

Background

- Beekeeping in New Zealand. Ran a bee company for several years
- Exported honey from New Zealand to Rotterdam. Best year 36 x 44gallon drums
- Has a permit to bring grape planting material into Samoa as he is interested in the prospect of growing tropical grapes for wine

Bananas (variety: Cavendish) has a small banana plantation

- Quality at the moment is poor due to the after effects of the cyclone
- Using what they can get from the market
- ST\$30-40 per bunch at the moment

Fiji is currently exporting a lot of fresh Taro corms

Uses a Malaysian blend of oil to cook his chips

- Got best results from soybean oil as it gave a golden product colour

Has packaged for other people: Sun?????

- Blue packet (Breadfruit), Yellow packet (Banana), Green (Taro)
- Exported 5000 packets of Breadfruit and also some Taro

By-products: Banana skins go to a mate who feeds them to his cattle

- High in potassium (according to Roger)

Andrew McGregor: Did a study on Breadfruit

- Identified varieties by leaf type, shape, fruit shape and size

- Looking for varieties that have a longer shelf life
- Some sit on the tree longer than others before they are ripe

Getting some of his breadfruit supplies from the local market

- Looking for very hard/firm fruit with a yellow flesh

How did he get started?

- Each year he was losing $\frac{3}{4}$ of his breadfruit onto the ground because he can't use them (or eat them)
- Decided to process them to make some use of the wasted product

Packaging is still an issue that he is looking at

- Looking for his own brand and packaging

Citrus: was netted but got ripped apart during the cyclone at the beginning of the year

- Fruit piercing moth is a major problem
- General problems with birds, rats with his exotic fruit trees (rambutans, sapodillas etc.)

Durian: Has flowered a couple of times but hadn't set any fruit till last season

- He hand pollinated them last year and got some fruit
- Found the flowers open at 2pm in the afternoon and there are also 2 bird species that do some pollinating
- Didn't like the taste of the fruit. Doesn't know what a good one should taste like

Figure 15.

Interview 2

Name: Sapati Neru **Date:** Monday, 14th June 2004

Target Group: Processor **Village/District:**

Crops/Products: Fresh Papaya fruit juice

Location: School ground

Key points / Summary

- Sapati has identified a need and has produced a product that sells well. He has an expanding customer base
- The initial juice line has already been added to and further trials are underway
- Supply of fresh fruit that meets his standard is a limiting factor for any expansion ideas he may have. The formation of the Papaya association will help his supply dilemma
- More juice and more staff will allow him to increase outlets already identified
- Currently juice is packed in heat sealed plastic bags with no label
- Working with a nutritionist to analyse nutritional value. Anecdotal evidence of the juices value from people who have drunk it ("Replaces a meal")

Transcript

We tasted papaya and passionfruit juice and were given a sample of grapefruit to try latter

- Comment: "Tasted really good"

Grows his own papaya and passionfruit (red variety)

Mixes yellow passionfruit with ripe bananas

Markets

- Sells fresh juice at the school on Tuesday and Wednesday: 20lt per day
- Golf club every Saturday: 40lt per day
- Also gets orders for special events, meetings etc.: Health Dept.

Doesn't own a freezer or coolroom

Uses local fruits adding a little sugar and water

Currently talking to a Nutritionist to have the juice analysed for nutrition content

Farm: ¼ acre near the old golf course

- Lost 75% of the top soil (and crop) with the last cyclone in a landslide
- Last year didn't have to buy any papaya as he grew enough
- This year has bought most of his fruit from the local market
- Finding supplies of acceptable consistent quality has been a major problem
- Has also sourced from other farms for big orders

Looking to source funding to set up a processing factory

- Has already bought some land
- When he develops his factory, he will source fruit from his own farm but also from other growers
- There is a local farming association that he thinks might help in sourcing fruit

- Papaya growers are forming an Association. So too are the Taro growers

Needs advice for the prolonging the shelf life of his product (eg. citric acid)

- Currently harvests fresh, process fresh and sells fresh
 - Looking to store some juice for a longer time
 - Seen the “Daily Fresh” concept: Everyday people come and buy fresh juice
- Has processed mangoes but is not the season

- Also looked at pineapple added to papaya
- Has also done some chip processing but getting labour is a limiting issue

How did you get started?

- His brother worked for a factory that produced processed fruit juices
- He used to go to work with him
- He then visited Japan where he saw the market for fresh processed fruit juice
- In 1989, he met a guy who presented a paper at a workshop about processing fruit juices
- He looked at the paper and also spoke with him briefly before he left the workshop
- He did some research and trialled some juices with his family: Squeezed the juice, added sugar and gave it to his children to taste
- Then conducted a taste panel (15 people). Everyone thought it was really good but 1 person said he needed to filter the juice before serving
- Also found that 500ml of the juice seems to be enough sustenance for a meal: from peoples comments and own experience
- He is aware of a number of examples of people who have drunk the juice and not been hungry afterwards

A few people have come directly to him to purchase fresh supplies of the juice

- Usually for a sickness in the family (colds and flu etc.)
- Some visit him at home to ask for his juice

Examples of the outcomes of semi-structured interviews in Australia

Interview 1

Stan's story

Background

Stan De Jersey has lived in Mapoon for around 15 years and is over 50 years of age. He is one of the earlier residents of the rebuilt Mapoon. With a European heritage he spent much of his early life in Tasmania. Stan is married to Zoe, a lady whose heritage includes Solomon islander and who's early life was in the Mapoon mission. Stan is well respected in the community, being a member of the "Men's Committee", the "Justice Committee" and the Community health programme.

Impressions

- Interviews 9 on visits to Mapoon, 12 phone conversations
- Is familiar with and grows some of the less available tropical vegetables like taro, cassava and yam. Having grown them in various gardens in tropical areas where he has stayed.
- Is also familiar with and grows some of the tropical fruits like mango, papaw, banana and citrus.
- Has a range of ornamental plants suited to Mapoon.
- Gets a lot of his information from talking to visitors to his home, keen gardeners that he visits and keen gardeners and others that he talks to by phone.
- He also is a keen experimenter testing and trying ideas he hears about or thinks about.
- He has reviewed many of the project notes, particularly of the crops he is interested in.
- He is aware of some of the value in using computers and accessing the internet but doesn't have or use a computer but relies on other persons who do.



Figure 16. Rowland (r) discusses food and gardening with Stan & Zoe De Jersey

Interview 2

Rob's story

Background

Rob Sims arrived as the Mapoon community store manager in 2004, soon after the project started. He has had extensive community store management experience in areas of Lockhart River and Woorabinda. Rob has experience as a share farmer growing vegetables. Although he has strongly supported the community farm by selling product that meets store standards and giving away other product that almost meets the standard, his job is to have the store product meet the highest standards possible while keeping the books balanced.

Impressions

- 4 interviews on visits, 3 phone interviews
- Through his background Rob has a good understanding of the quality variation in fresh fruit and vegetables and strives to keep his store standards high.
- To overcome some attitudes and reluctance by some community families to paying money for community farm produce, Rob packages farm product that meets shop standards in a similar manner to product imported from southern markets.
- Store management receives fresh supplies once each week. At least 2 weeks notice of availability of local product is needed before the stores order can be changed to account for local product. Once the order has been changed sufficient local supply of suitable quality must be provided otherwise the community goes without.
- Computer use is critical to running the store and Rob is skilled in its use but he doesn't have time to search for and distribute gardening information.

11.3 Appendix 3: Evaluation of the Social research methods training workshop

A Report on the Social Research methods training workshop and Focus group on information needs for MAFFM Advisory Officers held at Nu'u Research Station: Friday, 11th June 2004

Trainer: Rowland Holmes

Facilitator: Philip Tuivavalagi

Recorders: Laisene Samuelu, Emele Ainuu

Observer: Roger Goebel

Participants: Barry, Ma'anaima, Mafutaga Tinifu (Information Officer), Advisory Officers, Trainees

Actions arising from the training workshop

- Further training workshops need to be developed and delivered. These workshops need to be customised for the Advisory Officers and where possible translated into Samoan
 - Running focus groups, facilitating discussion and communication skills
 - Basic Pest & Disease management
- Do some more research on Advisory officers decision making, information use and needs. Conduct a skills analysis of the advisory officers: To identify future training and possible trainers
- Attend and review records of some typical PRA's
- Interview some research staff about information availability and flow
- Training for the Information Officer to improve skills in collecting and production of materials – use of computers and software appropriate for the production of materials.
- Analytical skills of Advisory Officers to identify issues and training needs in focus groups

Main points

Content

The first contact for information is other Advisory officers or the Senior Extension officer

- Especially those doing a similar thing or with more experience
- Village farmer > local extension officer > other extension officer or Snr. Extension officer

They depend a lot on the Information officer to provide (link) information either from the library, research or commercial section when the extension officers are looking for info

Most don't actively seek out further information

Some tools for searching for information are not available (Internet, books particularly recognised texts on various crops aren't available)

Topics they require information on a wide and varied

- Examples include vegetable growing, pruning cocoa, taro info, pest & disease issues, papaya

They try to involve the research section when they run farm meetings

- Mainly when there are specific issues from research to discuss
- More reactive
- Sometime proactive when there is new research or they know about it (the research)
- There are a few Extension officers that invite research officers to any PRA's they are running but not many

Trainees are getting some on the job training

Some information is available with the Senior Advisors but the advisory staff aren't accessing it

- They don't really go looking for information

Information needs to be updated

- New chemicals are now available that commercial farmers are using but there has been no research done on them: Using unregistered chemicals
- Farmers are using chemicals that haven't been trialled in Samoa
- There's a lot of research results with Research section that need to be packaged

There hasn't been someone dedicated to managing the MOA information system

- Recently appointed an Information officer: Mafutaga Tinifu
- Samoan is preferred language but Snr. Staff are comfortable with English
- There is a need to develop the skills of Information Officer in packaging and production of printed materials.

Information products

There was a preference for specific products. Pictures were important

Field guide: Professional and easy to carry around

- Information in Samoan would be very useful

Need real training in focus group discussion

- Running them, developing questions etc. Group needs more info on these

Liked the books that provided more detailed information on particular topics such as the Cocoa book in Samoan which had a lot of detail

Process

Group (25 participants) was too big to run as one focus group: Two groups may have been better

The process and forms need to be written and discussed in Samoan

- The information check wasn't filled out correctly each time. For example, some people said they had seen or used the Mango Pest Field guide which in fact was only very recently made available in Australia
- This section probably needs a lot more explanation and needs to be written in Samoan so that participants clearly understand what they are being asked
- Advisors aren't used to discussion
- When Advisory Officers were first trained on PRA techniques and skills, asking questions and discussion of issues were major areas they were trained in.
- It is presumed that discussion and asking questions is impolite.

- Although there is a procedure to follow, a lot of discussion is encouraged within to draw out and identify the real issues when raised; for clarification and information only

People were very self-conscious of their abilities and position in the group: This influenced the pattern for discussion

- May be a cultural issue in some situations

Training of facilitators and record keepers is needed

- Very important role

Evaluation

An evaluation was undertaken as a follow-up to the training workshop and focus group. A number of participants were interviewed in person. The results are listed below.

Q: What were the most interesting things you remember from the Social research methods workshop? List 2-3 points. Checking they are thinking about the right workshop

- Focus Group – facilitation, sharing of opinions within the group
- Presentations
- Discussion sessions
- Introduction (family photo)
- Publication materials
- Method similar to conducting PRA's
- Collection of information
- Knowing that most of the advisory officers don't use the library for information purposes.
- Collecting of information on the advisory officers relationship with their farmers
- Posters, mango booklet

Q: List anything from the workshop that you could use or incorporate into your advisory job or running PRA's?

- Publication displays
- Communication skills – methods and tools
- Using of focus to collect information
- Publication was very helpful in answering farmers questions
- Focus group is more interesting than the PRA
- Video tape
- Focus group

Q: What did you think about the Focus group run at the end of the workshop (as compared to running a PRA)?

General comment: Focus group is similar to running PRA

- PRA:
 - Withhold ideas from the young participants, i.e. only the chief's doing the talk.
 - Very formal – structured and narrow, culturally influenced
 - Prefer using PRA???? (Comment by David)

- Focus Group:
 - Allow everyone to give in their views/ideas (semi structured)
 - Very straight forward – simpler than PRA
 - One by one opportunity
 - Focus group can be indefinite in terms of discussions

Q: Is there any specific topic or issue you would like more training or information on, as a result of this workshop?

- Technical training
- Presentation
- Publications (producing)
- Focus group facilitation
- Human resource tools to do the job
- Training on updating the information available
- Plant diseases information of the crops in Samoa (in a book form)
- Training in Pest and Diseases of the crops in Samoa
- Training in advisory officers' approach towards farmers

Q: How could we improve this workshop or others in the future?

- Decrease the number of participants in a focus group
- Extend time frame of the training (2 days)
- More hands on exercise
- Time seems to be the main problem (not enough)
- More practical approach
- Language was one of the barriers, message to be delivered in a very simple manner
- Demonstration as well as farmers to be involved

11.4 Appendix 4: Examples publications produced by the project

Samoa



Figure 17. Crop notes

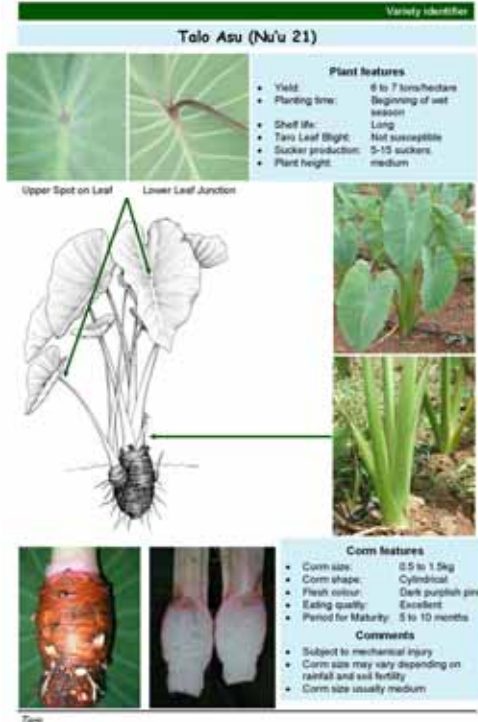
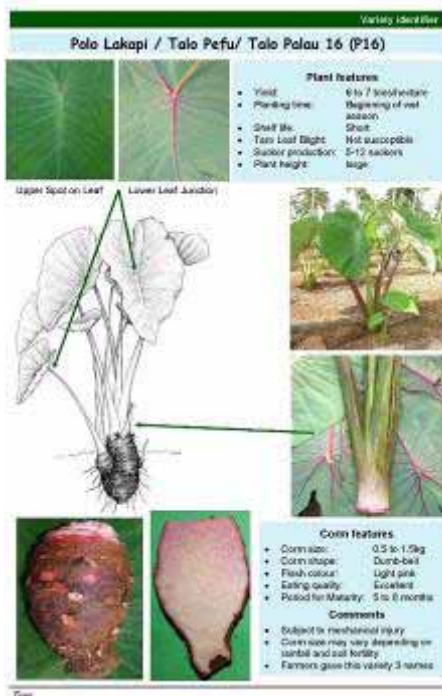
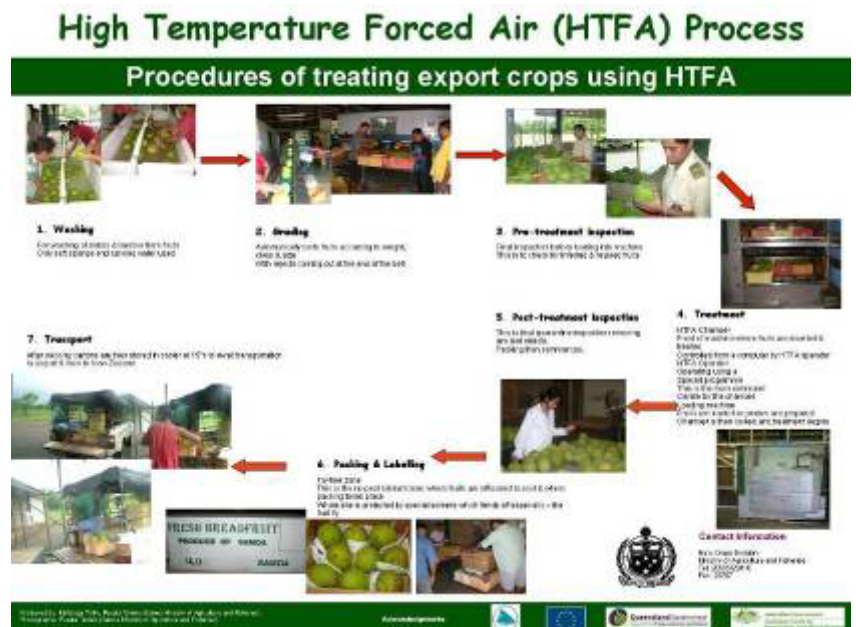


Figure 18. Taro variety sheets



Cultivation of Mushroom in Samoa



Figure 19. Posters

Ministry Identity

The publications pictured here showcase the Ministry identity developed during the project to build the profile of locally developed information products produced by the Crops Division of MAF.

Growing a healthier, wealthier Samoa

MAF Crop Note

Producing Sunrise Solo papaya seed

Philip Tuvaluvalu & Barry Aie, Ministry of Agriculture & Fisheries, Samoa, Roger Goebel
DPNSF, Queensland

Why do it
Commercial papaya growers can select plants more so produce, collect, clean and sell

Bagging flowers



Step 1: Selecting plants

- Select hermaphrodite plants vigorous, flowering well
- Try to find plants that are as that is characteristic of Sun



Step 3: Bagging flowers

- Put a paper bag over the fl
- Fold the open end over
- Secure the bag with a clip, 1 stop other pollen getting in

Ministry of Agriculture & Fisheries
Samoa

Growing a healthier, wealthier Samoa

Talo Asu (Nu'u 21)

Variety Identifier

Plant features

- Yield: 8 to 7 tons/hectare
- Duration: 100 days



Upper Spot on Leaf Lower Leaf Junction




Talo

Growing a healthier, wealthier Samoa

pacific gardener

Keeping you up to date with activities from the ACCOR project, "Developing Tropical Horticulture in Remote Communities: Cape York & Samoa" (PH/2005/03)

Issue number 4

April 2006

Pests & Diseases of Talo in Samoa

An awareness guide for growers, researchers and advisory officers of the main pests and diseases of Talo in Samoa



2006



Mafutaga Tinifu, Information officer, displays posters and other information produced by the project at the Samoa Agricultural Show in Apia, October 2006