WORKSHOP REPORT

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# Executive summary

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Executive Summary

A regional training workshop on tree propagation for agroforestry in the Pacific was held at the Fiji Forestry Training Center at Colo-I-Suva, Fiji from the 5th to the 8th of March 2012. This training workshop was organized by the Land Resources Division of the Secretariat of the Pacific Community in collaboration with JICA, the ACP FORENET and the Forestry Department of Fiji. It was attended by 30 participants from 14 SPC member island countries in the Pacific (Cook Islands, Fiji, Federated States of Micronesia, Kiribati, Marshall Islands, Nauru, Nuie, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu). The participants came from a wide range of backgrounds ranging from government forestry/agricultural department personnel to technical NGO staff working of agroforestry programs that ensured a diverse level of expertise and feedback during the workshop. Workshop program facilitation, technical presentations and training were provided by resource persons, namely; Dr Randy Thaman (USP), Dr Stéphane McCoy (Vale New Caledonia), members of SPC Land Resources Division (Cenon Padolina, Vinesh Prasad, Bale Wilikibau) and members of the Fiji Forestry Department (Forestry Training Center).

The objectives of the workshop were to share and exchange information between members of the island nations to establish synergies in terms of techniques and species assemblages for agroforestry. A synthesis of agroforestry country reports was provided by Randy Thaman on the first day of the workshop following the opening ceremony to highlight practices and potential synergies. There were technical presentations on organic farming, climate change ready (resilient) crops and trees, livestock production and supply and exchange of tree germplasm by SPC staff during the second day. The third day of the workshop was composed of nursery training at Fiji Forestry Nursery and a field visit to agroforestry plots managed by Pacific Reforestation (Fiji) Ltd at Naitasiri. Technical works with seed conservation, substrate preparation, cuttings and marcotting were conducted by participants at the Fiji Forestry nursery with qualified trainers enabled members hand on experience with nursery practices essential for a successful agroforestry program. Participants with experience in nurseries or agroforestry test sites were thus able to exchange techniques with those unfamiliar with these operations. Members participated on the fourth day of the workshop on an agroforestry project development exercise. Members were divided into groups according to similar island environment and economies and asked to develop their agroforestry project strategies. Results of these projects were presented on the last day along with a series of findings/take home messages showing that there were synergies between island nations and directions that could be taken on common themes. There were 33 recommendations made concerning how to improve agroforestry practices for Pacific Island countries.

Objectives of the workshop:

The objectives of the workshop were to:
Regional Training Workshop on Tree Propagation for Agroforestry in the Pacific, 5-8 March 2012, Coloi-i-Suva, Fiji

- Share and exchange information, knowledge and experience, including “success stories” on agroforestry from participating countries.

- Assess and evaluate existing Agroforestry practices/activities in the Pacific region and formulate research and develop programs for Agroforestry systems that would be suitable for each country in the Pacific.

- Conduct training on plant propagation and other nursery practices including species selection, seed collection, seed treatment and germination, potting and maintenance of seedlings, vegetative propagation/techniques, etc.

**Background**

Agroforestry is an old farming concept that has been practiced for thousands of years throughout the world when our forefathers started to develop farming systems that combined planting of trees with agricultural crops. The system has evolved over the years to adjust to the local environments, resulting in the development of a wide range of agroforestry systems. In most Pacific islands, particularly on atoll islands, where arable land is limited; the systems have evolved to include the planting of trees that can provide a wide variety of products and services to meet the needs of communities. But with the emphasis for increased production through monocultures, and given the current high level of reliance on imported foods and products by many PICTs, production from these agroforestry systems has either declined considerably or totally ceased. This has also meant that the people’s knowledge of the systems usefulness and also their management has also almost totally disappeared.

The continued use of the limited tree and plant resources by increasing populations has led to the steady depletion of these valuable resources. The continued loss and degradation of woodlands has become a serious concern over the sustainability of not only the economically and traditionally valuable tree and other plant resources, but also on agricultural land productivity, water supply and quality, habitable terrestrial environments. With major concern now on poverty, irreversible environmental degradation, loss of coastlines, uncontrollable loss of biodiversity and the deterioration of the rich Pacific Island cultures, the promotion and development of appropriate agroforestry practices is a priority in all the PICTs.

The small island countries are the most vulnerable to the adverse effects of climate change such as drought, flooding, cyclones, salt spray, increase in water salinity, sea level rise, etc. There is now an urgent need to come up with necessary adaptive and mitigating measures to avert their negative effects to the community. The practice of agroforestry in many small island states needs to be re-assessed and reviewed with a view to identify effective strategies and actions for its promotion and increased use towards enhancing the Pacific people’s resilience to adapt to the adverse effects of climate change in the region.
Location:
The venue for the Regional Training Workshop on Tree Propagation for Agroforestry was the Fiji’s Forestry Training Centre in ColoISuva, Suva, Fiji Islands.

Participants/Countries /Facilitators:
Participants were Forestry Officers, Agricultural Officers, Research Officers and project coordinators of governments, NGOs and community based organizations from countries in the Pacific including Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Marshall Islands, Nauru, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu, who are dealing with agroforestry as part of their terms of reference.

Duration:
(05-08th March, 2012)

Program contents of the workshop:
Technical presentations, applied field activities, agroforestry plot visit and group strategy development

Technical Presentations:

Synthesis of Regional Pacific country Agroforestry reports (Dr. Randy Thaman, USP)

Historical background, statistical data and highlights on Agroforestry in the Pacific

General: Although multi-purpose trees have long been integrated into agricultural land use systems to improve overall productivity and sustainability, including soil improvement, many systems have been abandoned and the trees and associated knowledge about systems forgotten in the face of decades of the promotion of monoculture export cropping and plantation forestry.

Samoa: Have and ongoing program, from 2009 to present, plant 1,000,000 trees and have coastal plantings to protect coastal areas since the 2009 tsunami.

Fiji: Planting of nitrogen-fixing hedgerows and erosion controllers; “Plant One Million Trees Initiative, 2010-11; and extensive nursery propagation and distribution throughout Fiji to support this.

Federated States of Micronesia (FSM): Agroforestry as the best basis for food and productive security (the supermarket, hardware store, chemist/drugstore and warehouse – all in one!!). Many community-based initiatives (Pohnpei, Kosrae, Chuuk and Yap) led by a variety of agencies (churches, local NGOs, action groups and supported by governments).
Kiribati: Coordinated efforts to address non-communicable diseases (NCDs) and food and productive security through agroforestry and the systematic promotion of agroforestry and provision of breadfruit and other planting materials to outer isolated atolls.

Solomon Islands: Promotion of agroforestry in oil palm, coconut and cocoa plantations; strengthening of tree-rich agroforestry in the southeastern Temotu Province; growing high value teak and mahogany in an agroforestry system with *Flueggea* and crops; and, “S. I. Custom Gaden Association” to promote multi-species home gardening, in which vegetable and other seeds are provided from a seed bank into which people give money back to after they sell the crop.

Vanuatu: Extensive promotion of the planting of improved indigenous trees (*Alphitonia, Endospermum*) in smallholder agroforestry plots; use of boundary planting/living fencing/windbreaks along with sun-loving crops.

PNG.: Coffee and cocoa under *Leucaena* and *Terminalia* spp. (tropical almond); bananas, taro, sugarcane and other crops with *Leucaena*; cattle under *Araucaria* (2 spp.) pines; traditional planting and intercropping with *Casuarina* in PNG to improve soil fertility and provide firewood; cocoa under coconut; and, smallholder balsa farming.

Marshall Islands: Major effort to recover and promote the conservation of traditional *Pandanus* cultivars and the replanting and regaining respect and use of *Pandanus*, one of the two “atoll trees of life.” (note: also an unappreciated tree of life everywhere, where it is food, medicine and handicraft and construction material = wealth!!)

Nauru: Establishing nurseries and programs to propagate and distribute trees/plants for food and productive security (Taiwan project) and restoration of mined-out lands, although agroforestry nursery has been abandoned with the emphasis being placed on plant production for the restoration of mined-out lands on topside.

*Traditional Practices and list of tree species and crops commonly use in agroforestry in the Pacific (Refer to Appendix 1)*

Samoa: *Erythrina (gatae)*, cocoa, coconuts and ground crops.

Fiji: multi-purpose trees integrated into the agricultural land use systems to improve overall productivity and sustainability; also included protecting trees in surrounding coastal and inland area to reduce erosion (*Calliandra, Vetiver grass, Gliricidia, Leucaena, Sesbania, Erythrina*).

FSM: coconuts, mango, beach hibiscus, citrus spp., breadfruit, Tahitian chestnut, noni, and betelnut.
Policies, laws and regulations and agencies involved in the implementation of agroforestry activities.

Samoa: Yet-to-be implemented AusAID funded program in the planning stages.

Kiribati: SPC agroforestry program in 2009 and UNDP SLM (sustainable land management) program; run by Environment and agriculture, women’s association, and FSP.

Vanuatu: VRTC (Vanuatu Agriculture Research & Training Center) and the SPRIG project.

Problems and constraints

Samoa: Fast-cash minded and clear or poison trees and use of herbicides, instead of using traditional conservative systems; problems with fire and burning which encourages invasion by weeds, such as *Leucaena*.

Fiji: Shallow, easily eroded soils; expansion of monocropping on to steep lands. E.g: Cassava; and the abandonment of traditional agroforestry.

FSM: NCDs and increasing cash orientation.

Technical bottlenecks in seed and seedling production: Seed collecting, processing, substrate selection and preparation (Dr Stephane McCoy, Vale NC, New Caledonia)

Many agroforestry projects in the Pacific have often had great difficulty starting up because of the lack of information concerning seed collecting, processing and storage techniques for target species. Another bottleneck is nursery cultivation of many agroforestry seedlings through lack of knowledge of general principles of substrates selection and amendments available to assist growers overcome substrate problems.

The presentation on seed collecting, processing and conservation provided technical information on the following elements:

- Fruit and seed collection of Pacific species
  - Types of fruits and seeds,
  - Material used for fruit and seed collecting depending on species height, seed collecting weather and precautions before seed collecting.

- Seed processing
  - Field cleaning of fruits and seed.
• Technical considerations when dry and wet sieving of fruits to separate seed.
• Precautions when processing dry seed under tropical climates.

• Seed storage
  • Seed dormancy types (orthodox, recalcitrant, intermediate), their proportional representation on Pacific islands and how to distinguish them.
  • Technical considerations with storage of seed based on their dormancy.
  • Medium to long term storage conditions for orthodox seed.
  • Material used for seed drying when storing seed for medium to long term periods (classical techniques and their alternatives).

The presentation concerning substrate selection and preparation provided technical information on the following elements:

• Technical aspects that may influence choice of substrates
  • Substrate choice based on target culture species.
  • Determining factors (availability, costs, chemical suitability for horticultural production, environmental conditions of the nursery).

• Technical aspects concerning choice of amendments.
  • Types of organic amendments used for substrate mixes
  • Advantages and disadvantages or organic amendments.
  • Types of non-organic amendments for substrates
  • Advantages and disadvantages or non-organic amendments
  • Types of fertiliser amendements
  • Organic fertilisers, their advantages and disadvantages.
  • Synthetic fertilisers, their advantages and disadvantages.

• Obtaining a substrate mix adapted to your plant needs and nursery conditions.
  • Amendment preparation
  • Substrate mixes based on nursery environment.
  • Mixing substrates and soil amendments.
Organic Farming for Agroforestry (Ms. Kareen Mapusao, Poetcom Coordinator, SPC)

The technical presentation provided by Kareen Mapusao, delivered background information on the importance of organic farming in the Pacific region in maintaining sustainable economies faced with loss of biodiversity and climate change of island nations. She presented information concerning criteria standards developed by SPC for Pacific organic farming – POETCom (Pacific Organic and Ethical Community) and current programs for regional certification of Pacific organic products using certified branding “Organik Pacifica” to assist in establishing markets for organically produced products from the Pacific.

Climate Change Ready (Resilient) Crops and Trees (Ms. Valerie Tuia, CePaCT Curator, SPC)

A technical presentation was provided by Valerie Mapusao on CePaCT objectives concerning current tissue culture conservation and transfer programs for different strains of high yield tropical agricultural crops. This tissue culture and transfer program was set up to assist with regional agricultural development of SPC countries by providing new climate ready crop strains (salt, acid soils, waterlogging resistance) to ensure agricultural sustainability. 15 SPC countries are integrated in the program with exchange currently existing for banana and taro cultivars. Programs are also under development for agroforestry tree species such as Sandalwood, Pandanus and Breadfruit.

Livestock Production and Agroforestry (Mr. Nick Nonga and Mr. Andrew Tukana, Animal Health and Production Team, SPC)

A technical presentation was provided by Nick Nonga on current agroforestry practices used in conjunction with livestock. Examples of livestock use with plantation crop systems, sylviculture, horticulture and alley cropping were given to highlight the socio economic and environmental benefits of these techniques. More collaboration needed between stakeholders to promote combined livestock agroforestry practices in the light of diminishing land resources, food security issues and climate change.

Supply and Exchange of Tree Germplasm for Agroforestry (Mr. Cenon Padolina, Forests and Trees Programme, SPC)

A technical presentation was provided by Cenon Padolina on the strategy and status of programs for supply and exchange of tree germplasm at the Pacific Island Tree Seed Center at SPC Fiji. Details of equipment installed at the tree seed center along with a program of future activities encompassing development of material transfer agreements, establishment of seed orchards, germination facilities and training for targeting production and transfer of priority species were also presented.
Applied Field activities:

*Hands on nursery propagation work at Fiji Forestry Nursery*

The objective of applied field activities was to provide general hands on experience on different nursery activities carried out with tree seedling production. The different activities were organized and supervised by Dr. Stephane McCoy, Mr. Cenon Padolina, Ms. Sanjana Lal, Mr. Binesh Dayal and Mr. Peni Cawani at the Fiji Forestry Department Forest Nursery at Colo-I-Suva on the third day of the workshop on the 7th of March. Seed processing and germination, substrate preparation, cuttings propagation and marcotting (air layering) were selected as activities for participants as they are fundamental in the success of nursery production of many agroforestry tree species. Participants were divided into three small groups of 10 people to ensure that all members were able to actively participate at each activity, understand techniques and collaborate with supervisors on best practices. Approximately 1 ½ hours was consecrated for each activity.

Participants were given an explanatory visit of all installations at the Fiji Forestry department nursery (insect collection, seed processing facility, substrate storage and nursery) by Ms. Sanjana Lal and Mr. Peni Cawani from the Fiji Forestry Department to provide information on their utilization and best practices (ex: clean, air-conditioned facilities for optimum insect and seed conservation, dry substrate storage, ergonomic seedling culture on tables). Tree species grown at the nursery were provided with informative labeling to assist participants with their identification.
Seed processing and germination

Seed processing and germination activities were carried out at the seed processing laboratory at the Fiji Forestry department under the supervision of Ms. Sanjana Lal. The viability of *Santalum album* seed lots was determined by participants who sub sampled seed lots, cut select seeds to determine their viability and estimated the number of seed per gram and within each lot using an analytical balance. *Santalum album* seed was used as the test species for germination with different substrates prepared by participants and seed sown using a spacing that ensures optimum seedling survival.
Substrate preparation

Substrate preparation was carried out at the Fiji forestry department nursery by participants under the supervision of Dr Stéphane McCoy and Mr. Peni Cawani (Fiji Forestry department Nursery supervisor). This activity was selected to demonstrate the importance of adapting substrate types to propagation techniques to ensure good seedling survival and also the fundamental elements when mixing substrates (dry storage and sieving). A substrate composed of sand (50%) and mahogany compost (50%) was prepared by participant groups using classical sieving and manual mixing techniques. Directional growth tubes used for the cuttings exercise where then filled with the substrate.

Cuttings propagation techniques

Cuttings propagation techniques were performed by participants on Santalum album trees in proximity to the nursery under the supervision of Dr Stéphane McCoy. The objective of this exercise was to provide fundamental information on cuttings selection (size, health), field equipment necessary for collecting and transport cuttings (moistened paper, esky, secateurs), root hormone application and
cuttings establishment in pots. Stem and shoot cuttings were made by all participants which were dipped in a powder root hormone and placed in pots with cutting substrate.

Marcotting techniques were performed by participants on a *Fagraea bertroana* tree at the Fiji Forestry Department grounds under the supervision of Mr. Cenon Padolina. The objective of this exercise was to provide fundamental information on selection (size, health), field equipment for marcotting. Each participant was made to establish a marcot.
Figure 5 a (top left): Incision and removal of bark for marcotting. Figure 5 b (top right): Addition of organic in pastic wrapping. Figure 5 c (bottom left): Attachment of marcotting mixture. Figure 5 d (bottom right): Groups work with marcotting.

Field agroforestry visit

Participants were given a field visit of agroforestry plots managed by Pacific Reforestation (Fiji) Ltd at Naitasiri on the 7th of March. Technical information of the establishment of the different trials and objectives behind the experimental plots was provided by Mr. Ponijesi Bulai of Pacific Reforestation (Fiji) Ltd. The first agroforestry plot was established in a mature Mahogany stand that had been thinned. *Acacia crassifolia*, was established in the early 1990s and interplanted later with *Flueggea flexuosa*. Sandalwood trees planted in the late 1990s are now 5 to 6m tall. The next agroforestry plantation visited was established more recently and composed of Sandalwood trees, *Pometia pinnata*, *Casuarina*, *Leuceana*, *Gymnostoma vitiensis* was established as a perimeter windbreak along the road 4 years ago.
Group strategy development:

*Development of project proposals for Pacific Agroforestry based on different regional Pacific island constraints*

Participants were presented with a group exercise on agroforestry project development on the 6th of March and results of this work were presented on the final day of the workshop as oral presentations. The objective of this exercise was to develop an agroforestry project based on the economic and environmental constraints of the island archipelago. Participants were grouped into 5 groups. One project was presented by participants of Solomon Island and PNG for high Melanesian islands. Two projects were presented by participants of Fiji and Vanuatu for medium Melanesian islands. A project was presented by participants from Nuie, Samoa, Tonga and Cook Islands for Medium Polynesian and island archipelagos. A project for Polynesian and Micronesian island archipelagos was presented by participants from Marshall, FSM, Kiribati, Nauru and Tuvalu.
IMPORTANT FINDINGS/TAKE-HOME MESSAGES.

1. That all of us dedicate to promoting AF as part of our life work for the benefit of future generations.

2. The central role that AF plays in protecting and creating alternative livelihoods, poverty alleviation/prevention and addressing climate and environmental change and extreme events.

3. Holistic integrated approach with collaboration with forestry, agriculture, livestock, environment, NGOs, private enterprise, etc. with local communities and farmers.

4. Importance of creating a working trees list or menu of trees that can be selected for propagation and planting.

5. The need to promote AF in both rural and urban areas and in all places where trees can be protected and planted.

6. Identification of bottlenecks (e.g., tree selection, seed/seedling selection, propagation, nursery practices, planting and maintenance) that needs to be overcome.

7. Presentation on successful approaches and programs from the participating countries.

8. The protection and enrichment of agroforestry systems as one of the most important means of reducing vulnerability/adapting to climate change and extreme events.

9. The importance of protecting and planting native species, which have wide cultural and environmental importance.

10. The central importance of involvements of local communities in the planning, implementation, maintenance, assessment, monitoring, evaluation and adaptation/change (optimization) of agroforestry programs/projects.

11. The importance of visiting smallholder agroforestry developments, such as Lex Thomson’s agroforest that had been developed on land that was formerly grassland.

12. The critical importance of multi-ecosystem multi-species AF (e.g., use of erosion control plants, soil-improvement plants) due to the close interconnectivity of island ecosystems, the importance of ridge- or lagoon-to-reef management systems and the important role that AF can play in watershed restoration and management.
RECOMMENDATIONS:

1. More technical assistance, in country, on techniques for collection, propagation, planting, maintenance, etc. and more hand-on training in these areas.

2. That systematic awareness and education programs on the diversity and cultural, economic and environmental importance of trees and AF as a living bank account, insurance policy and retirement/pension fund be implemented in all appropriate areas.

3. That models and the importance of AF be included in the school curricula at all levels.

4. Recommendation to be tabled at the Heads of Forestry/Agriculture Meetings about the need for cross-sectoral and multi-partner and community-based coordination and collaboration in multi-species multi-ecosystem AF.

5. Establish regional standards/protocols for quarantine for preventing and controlling/eradicating invasive alien species (IAS) and diseases.

6. That coastal protection and reforestation/rehabilitation be a priority area of both urban and rural AF development.

7. That all countries have a National Agroforestry Action Plan, with specific goals for the conservation and planting of trees and forests (inland, coastal and agroforests), with special emphasis on the protection of existing species- and cultivar-rich polycultural agroforestry systems.

8. That agroforestry priorities be incorporated into national land use plans.

9. That models for sustainable multi-species mangrove and coastal littoral forest conservation and planting be developed as part of regional, national and local agroforestry and climate change and biodiversity conservation programs.

10. That abandoned lands be devoted to agroforestry development to take pressure off clearing new lands and to provide livelihood opportunities to the landless and people with limited cash-earning opportunities.

11. That mixed agroforestry systems be favored for the restoration of degraded and deforested lands, including lands invaded by invasive species.

12. That vetiver grass and other appropriate erosion control and soil improvement plants and models for their planting be made part of systematic AF promotion programs and plant propagation and distribution programs.
13. That model agroforestry systems/target trees species and numbers be developed for all appropriate ecosystems and land use types (e.g., perennial plantation agriculture, indigenous and exotic plantation forest development, steep slopes, houseyard gardens, invade lands, etc.).

14. That effective local and community-based, district/province or outer island nurseries and distribution networks be strengthened.

15. That all relevant government agencies, NGOs, private and public enterprises, research and educational institutions AND local communities collaborate to implement relevant multi-species, multi-ecosystem agroforestry development schemes in appropriate ecosystems/areas with appropriate local stakeholders.

16. That local communities, especially older knowledgeable men and women, be involved in species selection, propagation and planting activities and in the recording and conservation of traditional knowledge of the importance of these plants and different systems for propagation, planting, intercropping, tree or garden clearance, soil improvement, animal husbandry, etc.

17. Research be conducted to shorten the time to maturity of important fruit and food trees.

18. That an integrated AF website be established.

19. That field visits be arranged to successful agroforestry schemes within the region, with consideration being given to local community representatives being included in such visits.

20. Establish a training center for agroforestry in the Pacific.

21. That a regional agroforestry center or network be established in the Pacific under the leadership of SPC.

22. SPC lead partnerships to lead capacity building assist countries set up trial or model agroforestry plots systems in different ecosystems, with an emphasis on building on and enriching existing systems.

23. A regional Agroforestry and Trees Policy Framework to be developed together with SPC.

24. That the Franco-phone, and other appropriate PICTs be more involved in ongoing AF initiatives because they have similar challenges.

25. Designate a year as the regional year of Agroforests, because of the central role that agroforestry plays in PICTS, especially for small islands, and coastal and urban areas where there are few remaining natural forests and little potential for commercial forestry and plantation forestry.

26. Planting of trees with cultural importance be made part of landscaping programs in towns and villages and institutional grounds, particularly on atolls and small islands.
27. Regular exchange of programs implemented by different countries after this workshop thru: a Newsletter – 2X a year and regional meetings to update programmes

28. Develop trees and planting programs to specifically address coastal erosions.

29. Document exchanges and dissemination of information on known success stories and productive agroforestry system on a regular basis among network members in PICS

30. That consideration be given to achieving greater gender balance in the future development of AF due to the critical knowledge that women have in the management of many of the trees and plants of AF (e.g., medicinal, handicraft and fragrant and sacred plants).

31. That emphasis be place on the commercialization and developing markets for new products for Pacific Islands AF systems.

32. Emphasis is placed in awareness raising of the importance of AF in addressing threats of climate change, extreme events, food and livelihood security and invasive species.

33. That we have more regional workshops.
Appendix 1: List of tree species and crop species used in Pacific agroforestry based on SPC member country reports 2012.

<table>
<thead>
<tr>
<th>Common name</th>
<th>Scientific name</th>
<th>Samoa</th>
<th>Fiji</th>
<th>Federated States of Micronesia</th>
<th>Kiribati</th>
<th>Solomon Island</th>
<th>Vanuatu</th>
<th>Papua New Guinea</th>
<th>Marshall Islands</th>
<th>Nauru</th>
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<tr>
<td>Coconut</td>
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<td>Guava</td>
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<tr>
<td>Mango</td>
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<tr>
<td>Beach hibiscus</td>
<td>Hibiscus tiliaceus</td>
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<td><strong>Vegetable and leaf crops</strong></td>
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Appendix 2

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REGIONAL TRAINING WORKSHOP ON TREE PROPAGATION FOR AGROFORESTRY IN THE PACIFIC,
5-8 MARCH 2012, COLO-I-SUVA, FIJI

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REGIONAL TRAINING WORKSHOP ON TREE PROPAGATION FOR AGROFORESTRY IN THE PACIFIC,
5-8 MARCH 2012, COLO-I-SUVA, FIJI

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REGIONAL TRAINING WORKSHOP ON TREE PROPAGATION FOR AGROFORESTRY IN THE PACIFIC,
5-8 MARCH 2012, COLO-I-SUVA, FIJI

JAPAN INTERNATIONAL COOPERATION AGENCY

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E-mail: balew@spc.int
## WORKSHOP PROGRAMME

### Monday, 05 March 2012

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Presenter(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:30am-8:30am</td>
<td>Registration</td>
<td>Ms. Bale Wilikibau</td>
</tr>
<tr>
<td>8:30am – 9:30am</td>
<td>Opening Ceremony</td>
<td>Ms. Bale Wilikibau</td>
</tr>
<tr>
<td></td>
<td>- Devotion</td>
<td>Mr. Sairusi Bulai, Group Coordinator, LRD SPC.</td>
</tr>
<tr>
<td></td>
<td>- Welcome Address</td>
<td>Mr. Samuela Lagataki, Deputy Conservator of Forests</td>
</tr>
<tr>
<td></td>
<td>- Key Address by the Chief Guest</td>
<td>Mr. Inoke Ratukalou, Actg, Director, LRD, SPC</td>
</tr>
<tr>
<td></td>
<td>- Introduction of participants &amp; House Keeping Announcement</td>
<td>Mr. Cenon Padolina, FAT, LRD, SPC</td>
</tr>
<tr>
<td>9:30am – 10:00am</td>
<td>Morning tea and group photo</td>
<td></td>
</tr>
<tr>
<td>10:00am – 1:00pm</td>
<td>A. An Overview of SPC Agroforestry Programme in the Pacific</td>
<td>Mr. Cenon Padolina</td>
</tr>
<tr>
<td></td>
<td>B. Discussions, Synthesis and Lessons Learned from Agroforestry Activities in the Pacific Islands region</td>
<td>Dr. Randy Thaman</td>
</tr>
<tr>
<td></td>
<td>(Based on analysis and inputs from country reports, country representatives and resource persons)</td>
<td></td>
</tr>
<tr>
<td>1:00pm – 2:00pm</td>
<td>Lunch</td>
<td></td>
</tr>
<tr>
<td>2:00pm – 3:30pm</td>
<td>Review and Assessment of Traditional Agroforestry Practices in the Pacific focusing on:</td>
<td>Dr. Randy Thaman</td>
</tr>
<tr>
<td></td>
<td>- Multi-species, multi-ecosystem agroforestry</td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>Session Content</td>
<td></td>
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<tr>
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<td></td>
</tr>
</tbody>
</table>
| 3:30pm – 4:00pm | - Role of agroforestry in mitigation and adaptation to environmental, climate and economic change and extreme events  
   - Ecosystems, habitats and land use types that are priority for agroforestry conservation and development  
   - Current Agroforestry Development Successes and Models  
   - Threats to Agroforestry conservation and development |
| 4:00pm – 5:30pm | • Seed collection and processing  
   • Technical considerations when collecting seed (equipment, meteorology, population sampling) Processing techniques (manual depulping, sieving, scarification, cleaning, Seed conditioning techniques and conservation requirements based on different dormancy criteria (orthodox, recalcitrant, intermediate).  
     o Types of seed dormancy  
     o Overview of different dormancy groups in Pacific  
     o Technical considerations for storage of seed based on dormancy criteria  
     o Technical specifications for good seed storage of orthodox seed.  
   • Nutrient properties of different substrate media (compost, manures, humus) advantages and disadvantages.  
     o Physical and chemical fertility of soil  
     o Nutrient elements in soil and their use by plants.  
     o Types of non nutrient amendments (advantages & disadvantages)  
     o Types of organic nutrient amendments (advantages & disadvantages) |
|              | Afternoon tea                                                                  |

Dr. Stephane McCoy
### Substrate selection and preparation for germination.
- Technical considerations for substrate selection for nursery use
- Typical substrate types for germination and cuttings
- Substrate preparation (manual vs mechanical)

<table>
<thead>
<tr>
<th>6:30pm</th>
<th>Traditional Welcome (Kava) Ceremony</th>
</tr>
</thead>
</table>

### Tuesday, 06 March 2012

<table>
<thead>
<tr>
<th>Time</th>
<th>Technical Presentations:</th>
<th>Facilitator</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00 – 10:00am</td>
<td><strong>Technical Presentations:</strong></td>
<td>Dr. Stephane McCoy, Workshop Facilitator</td>
</tr>
<tr>
<td></td>
<td>a. Organic Farming for Agroforestry (Ms. Kareen Mapusao, Poetcom Coordinator, SPC)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>b. Climate Change Ready (Resilient) Crops and Trees (Ms. Valerie Tuia, CePaCT Curator, SPC)</td>
<td></td>
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<tr>
<td></td>
<td>c. Livestock Production and Agroforestry (Nick Nonga and Andrew Tukana, SPC)</td>
<td></td>
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<tr>
<td></td>
<td>d. Supply and Exchange of Tree Germplasm for Agroforestry (Mr. Cenon Padolina, SPC)</td>
<td></td>
</tr>
<tr>
<td>10:00am – 10:30am</td>
<td><strong>Morning tea</strong></td>
<td></td>
</tr>
<tr>
<td>10:30am – 1:00pm</td>
<td>Formulating and Developing Strategies and Action Plan for a Sustainable Agroforestry System</td>
<td>Dr. Randy Thaman, Dr. Stephane McCoy</td>
</tr>
<tr>
<td></td>
<td>- Field and ethnobotanical surveys</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Choice of tree species and cultivars</td>
<td></td>
</tr>
<tr>
<td>1:00pm – 2:00pm</td>
<td><strong>Lunch</strong></td>
<td></td>
</tr>
<tr>
<td>2:00pm – 3:30pm</td>
<td>Formulating and Developing Strategies and Action Plan for a Sustainable Agroforestry System</td>
<td>Dr. Randy Thaman, Dr. Stephane McCoy, Mr. Cenon Padolina</td>
</tr>
</tbody>
</table>
### Regional Training Workshop on Tree Propagation for Agroforestry in the Pacific, 5-8 March 2012, Colo-i-Suva, Fiji

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Facilitators</th>
</tr>
</thead>
<tbody>
<tr>
<td>3:30pm – 4:00pm</td>
<td><strong>Afternoon tea</strong></td>
<td></td>
</tr>
</tbody>
</table>
| 4:00pm – 5:30pm  | **Formulating and Developing Strategies and Action Plan for a Sustainable Agroforestry System**  
- **Group Work** | Dr. Randy Thaman  
Dr. Stephane McCoy  
Mr. Cenon Padolina |

#### Wednesday, 07 March 2012 (Field Trip)

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Facilitators</th>
</tr>
</thead>
</table>
| 8:00am – 1:30pm  | **Hands on training on plant propagation**  
  a. Seed treatment and storage  
  b. Seedling production  
  c. Vegetative propagations (Cuttings, grafting, budding, marcotting, etc.) | Dr. Stephane McCoy  
Mr. Cenon Padolina  
Ms. Sanjana Lal  
Mr. Binesh Dayal  
Mr. Peni Cawani |
| 1:30pm – 2:00pm  | **Lunch**                                                               |                                     |
| 2:00pm – 5:30pm  | **Field visit to the Pacific Reforestation (Fiji) Ltd at Naitasiri.**      |                                     |

#### Thursday, 08 March 2012

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Facilitators</th>
</tr>
</thead>
</table>
| 8:00am – 10:00am | **A. Group Presentations of proposed strategies and development plans**  
B. Discussions | Dr. Randy Thaman, Workshop Facilitator |
| 10:00am - 10:30am| **Morning tea**                                                          |                                     |
| 10:30am – 1:00pm | **A. Group Presentations of proposed strategies and development plans (Cont. . . )** | Dr. Stephane McCoy |
### B. Discussions

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:00pm – 2:00pm</td>
<td><strong>Lunch</strong></td>
<td></td>
</tr>
</tbody>
</table>
| 2:00pm – 3:30pm | Final Discussions on Strategies and Action Plans for Agroforestry in the Pacific  
- Draft Recommendations |  
Dr. Randy Thaman  
Dr. Stephan McCoy  
Mr. Cenon Padolina  
Mr. Vinesh Prasad |
| 3:30pm – 4:00pm | **Afternoon tea**                                            |                                                   |
| 4:30pm – 5:30pm | Closing Ceremony  
- Closing Address  
- Closing Prayer |  
Mr. Sairusi Bulai,  
Coordinator,  
FAT\FAD, LRD, SPC  
Mr. Vinesh Prasad  
Mr. Binesh Dayal |
| 5:30pm        | **End of Training Workshop**                                 |                                                   |
| 7:00pm        | **Farewell Dinner**                                          |                                                   |