Pacific Islands FORESTS and TREES

Incorporating SPRIG, ACIAR, Pacific Forestry Update and PNG-ACIAR Forest Domestication Project

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From the Programme's Desk

In this first issue for 2003 of the Pacific Islands Forests and Trees Newsletter, we introduce some of the main activities the Regional Forestry Programme plans to undertake this year. The programme comprises the SPC/AusAID Forests and Trees Project and the SPC/GTZ Pacific German Regional Forestry Project.

In addition, we also bring you other programme news, updates from some of our member countries, and technical contributions from our collaborating projects, including SPRIG and PNG-ACIAR.

While still with our collaborators, we would like to welcome the new ACIAR-funded Regional Forest Health Surveillance Project, which begins operation this year. Project staff will also contribute regularly to this newsletter, and no doubt, we will be hearing a lot more about the project during the course of this year.

Main Programme Activities for 2003

In addition to the planned activities for specific member countries, the following main regional and sub-regional activities will also be undertaken during the year:

- **Pacific Islands Heads of Forestry Meeting**

The 8th meeting of the Pacific Islands Heads of Forestry will be held in Nadi, Fiji, from 19-23 May 2003. Details are in the meeting announcement which has already been sent to all our member countries, collaborators, donors and other agencies.

- **Planning Meeting**

Immediately following the Heads of Forestry meeting, a planning session for the SPC/GTZ-Pacific German Regional Forestry Project (SPC/GTZ-PGRFP) will be held from 26-27 May 2003. In addition to the current project countries, Tonga, Solomon Islands and FSM will also participate in the meeting.

- **Mangrove Management**

A review of mangrove and other littoral forests management plans for a number of our small island countries will be made this year with the support of the USDA Forest Service.

In addition, a training workshop on mangrove/littoral forest management, planning and implementation will be conducted for participating countries soon after the review.

Participants in action at the Forest Inventory Training Workshop

INSIDE

QUOTE

"In order for me to protect you I need to know you"

Randy Thaman
on
pacific islands forests and trees

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- **Forest Certification**

Fiji, Vanuatu, Samoa and the Solomon Islands are expected to formalise their national working groups on forest certification this year. In support of this initiative, some technical assistance will be provided to the four countries to facilitate this development using the experiences of the PNG national working group.

A joint meeting of representatives of the working groups is planned for the end of this year to gauge progress and enable the countries to exchange information.

- **Forest Inventory and Data Analysis**

A two-week regional training workshop on forest inventory and data analysis, followed by a one-week training workshop on experimental design and statistical analysis were recently completed in Fiji.

A separate article on these training workshops will be included in the next issue of this newsletter.

Sairusi Bulai
Adviser

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FIJI TEAM VISITS SWITZERLAND & GERMANY

The SPC/GTZ-Pacific German Regional Forestry Project (SPC/GTZ-PGRFP) sponsored a 10-day study visit to Europe from 07–18 January 2003. The purpose was to allow a team from Fiji to observe the organisation of forest owners in Switzerland and Germany in managing their forests.

Members of the team included the SPC/GTZ-PGRFP Team Leader, Ms Evelyn Reigber, Mr Emosi Toga of the Native Lands Trust Board (NLTB), Senator Ratu Kinijoji Maivalili, representing the landowners of the Sustainable Forest Management Project (SFM) in Drawa, Vanua Levu, and Sairusi Bulai, SPC's Forestry Adviser.

The main objective of the study tour was to observe the operations of the Forest Owners' Associations in Switzerland, and identify aspects that could be applied in Fiji, especially in the SFM Project area in Drawa. Germany mainly provided the team with a more complete picture of the operations of the Forest Owners Associations in Europe.

The visits were organised by the Forest Owners' Associations in the two countries, in consultation with Ms Reigber who also acted as the liaison officer and interpreter during the tour.

The following is a report on the team's main observations.

Forest Management in Switzerland

Switzerland is a confederation of 26 cantons, which are further sub-divided into a number of municipalities. The cantons exercise a great deal of autonomy, and have a large number of responsibilities for their administration and legislation.

There are two distinct levels of responsibilities for forestry administration - the federal and the canton levels.

Forest policy at the federal or national level is determined by the Confederation, which is responsible for adopting measures designed to serve as models, as well as for overseeing the proper implementation of forest legislation.

The cantons, on the other hand, are expected to decide the exact nature of forest regulations, and to enforce the law within their area of jurisdiction. Although cantons are organised along similar lines, their division of responsibility and organisation of tasks differs from one canton to another. The present Swiss Law on Forests, which came into effect in 1993, replacing the Forest Police Act of 1902, extends the concept of protection of the whole forest as an ecosystem and encompasses the forest's multiple functions, including ecological, social, protective and commercial. The law gives equal weight to these four functions, which are its guiding principles.

It is important to note that the Swiss forest owners have total responsibility over the management of their forests within the limits prescribed by both national and canton laws. The industry or the wood processors do not involve themselves in any forest operations at all. Their role, although essential to the whole forestry scheme in the country, is limited only to the purchase of logs on the roadside.

Swiss forests are managed in such a way that their ability to perform their functions in a sustainable manner is ensured. No replanting is done, total dependence is on natural regeneration to sustain forests. Clearfelling is actively discouraged. Because of this, forests are multi-age and, in some cases, multi-species. This means that a forest owner can harvest trees every year and depending on the size of the forest, harvesting can be continuous. Also, a multi-age and multi-species forest provides considerable flexibility to the owner in selecting markets that will give him the maximum return at any one time.

A forest owner advises the forest service at the canton or district level when he wishes to harvest his forest.

The forest officer responsible inspects the forest with the owner, and together they identify and mark the trees to be harvested. Selection is based on the need to protect and encourage natural regeneration, prevent growth of undesirable weeds, remove diseased trees, and also the need to provide adequate space to the leftover trees to quickly reach maximum growth. The owner is then given a three-year permit to undertake his harvesting.

At this stage it is up to the owner to decide whether to harvest his trees himself, or to employ a contractor, or to do both. His choice will most probably be dictated by whether he has the skills and the equipment necessary to harvest at the required

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standards. Accurate directional felling is vital during harvesting of multi-age and multi-species forests to prevent damage to natural regeneration and leftover trees.

By this time the forest owner will have identified a buyer who will need to inspect the logs on the roadside before a price can be finalised. The forest owner normally does the scaling of logs; however, the forest service can provide this for a fee if the forest owner cannot do this himself.

Switzerland has a very well developed infrastructure that is vital to the effective management of forests and the efficient distribution of logs for the industry. The infrastructure has been developed through the cooperation of the federal government, cantons, districts, communities and forest owners.

The availability of various government subsidies to support the forest sector is vital in ensuring that stakeholders' demands on forests are met at all times. However, because of recent government budget cuts, it is anticipated that the level of government subsidies will continue to decline, and forest owners are now encouraged to look at other sources of income from their forests such as fees for hunting and bike riding to supplement their income from timber.

Most privately-owned forests are small, averaging 1.3 hectares, but owners see their forests as a useful source of income, fuel and also for their own domestic construction purposes. At the same time, most of these forest owners are also farmers or have full-time employment. This non-dependency on forests as a sole source of income also contributes to the sustainable management of their forests.

Swiss Forest Owners' Association

The Swiss Forest Owners Association has evolved to its present status since 1919. It evolved from a response by forest owners' to various outside influences on their forests, and the need to have a strong and united voice to fight for the protection of their interests. The Association operates on three levels – national, canton and district.

On the national level, the Association operates as the umbrella organisation of the Swiss forest owners. Its main functions include lobbying and providing services to its members, including forestry technical training, sale of forestry equipment, electronic data processing programmes and company advisory services, and public relations.

Members of the umbrella organisation include regional forest associations, all cantons and private forest owners.

An important service provided by the Association is the provision of forestry technical training in upgrading felling skills and in using best practices and appropriate equipment in harvesting operations.

At the canton level, there are 24 associations representing each canton. The canton association represents the owners of community public forests, canton forests, Swiss government forests and private forests.

Some specific activities done by the association at the canton and district level include the promotion of wood sales, promotion of best harvesting practices, defending members against what are perceived to be unfair laws and unfair demands by environmentalists, and to engage in public relations. With assistance from the umbrella organisation, the canton and district association provides market information and assists individual forest owners in securing contracts for the sale of their logs. However, the final decision on who buys their logs rests with the forest owner.

During the team's visit to one of the forestry districts, it was apparent that a good relationship between the forestry officials, the Association and the individual forest owners is vital in ensuring that forest management benefits all stakeholders.

In terms of operating costs, the Association, at all levels, is financially independent of the national government. The national Association, for example, derives 85% of its annual budget from the sale of its services with the rest coming from members' fees.

Forest Management in Germany

A privately owned forest, was visited to provide the team some insight to forest management in Germany. The forest, which is multi-age and multi-species has a total area of 3200 hectares, and is managed on a sustainable basis. In addition to replenishment by natural regeneration, reforestation is also undertaken, especially in situations where the owner wishes to change species or when browsing animals have done considerable damage to natural regeneration. The owner relies on his forest for his livelihood. To supplement his income from wood sales, he has also begun to offer his forests to hunters for a fee.

The forest owners in Germany, like their Swiss counterparts, have total responsibility for the management of their forests within the limits of current forest laws. In this regard, forest owners, with forest areas of more than 30 hectares, are required to submit to the state a 10-year management plan for approval before any operation is undertaken. This plan, among other things, should include the annual cut and reforestation plans. It is only after the plan has been approved that the owner can begin his activities. In implementing the plan, the owner must ensure that he does not exceed the annual cut, and that there is no clearfelling.

Forest officers are required to assist owners of small forests (i.e. less than 30 hectares) in the proper management of their forests through direct advice, including tree marking before felling. However, for larger forests, these services are only provided on request.

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In managing their forests, owners should ensure that accurate detailed information about their forests are produced and maintained properly as a new management plan will need to be re-submitted to the authorities to approve the continuation of activities for a further 10 years.

After the reunification of Germany, many forests were passed on to the federal government, courtesy of former East Germany, which had taken over these private properties under its communist regime. Because of the high costs of managing these forests, the federal government decided to sell these off to private owners. The team visited the organisation, BVVG, created by the government, who is responsible for this purpose. The private visited was one of those purchased through this organisation.

The method of sale used by the BVVG was to tender forests using the Internet. Because of the government's concern with sustainable forest management, a major criterion in the BVVG's final decisions on tenders is the proposed management concept. It was very apparent that they were able to do this effectively because of the availability of good information, providing a very clear picture of the forests to potential tenderers.

German Forest Owners' Association

The German Forest Owners Association, like the Swiss, has evolved to its present status over a long period of time, and also operates at various levels. However, the Association's only function is to lobby the federal government. It does not provide any of the services that the Swiss umbrella organisation provides.

The Association is funded through membership fees paid by each state according to their forest areas. The rate per hectare of forest is fixed to the annual budget of the Association.

Some of the issues presently dealt with by the Association include the review of forest laws, national forest programme, standardisation, certification, the development of rural areas, the global climate change and nature conservation issues.

A major concern of the Association is how best to organise forest owners into cooperatives that will help them prepare for new challenges, (e.g. logistics and markets). A working group on cooperatives is currently examining this, and some of the issues include training needs of cooperatives managers, how to change forest laws to allow cooperatives to fulfil their functions, determining whether they concentrate on forestry only or also provide other services to improve income, and how to give owners the freedom, within a certain framework, to manage and utilise their forests.

Because it is recognised that most forests are small and family owned, the Association co-founded in June 2002 the International Family Forestry Alliance (IFFA), a networking forum for exchanging information and ideas on how family forests can become more effective in enhancing benefits to owners. The Germans have opted for the Pan-European system of forest certification because it is more appropriate for small family-owned forests. The Association indicated that they considered the Forest Stewardship Council (FSC) system, but found it to be more suitable to larger forests.

Relevant Lessons Learnt

1. Switzerland and Germany recognise the vital roles that forests play ecological, protection, social and commercial - and has enacted laws that put these as equal guiding principles in the management of forest resources.

2. The Swiss and German Forest Owners Associations have played an important role in providing a strong voice for forest owners in:
1) lobbying the federal government to recognise the importance of their forests, and
2) providing the necessary support to ensure owners will continue to manage their forests on a sustainable basis, and at the same time getting maximum economic benefits.

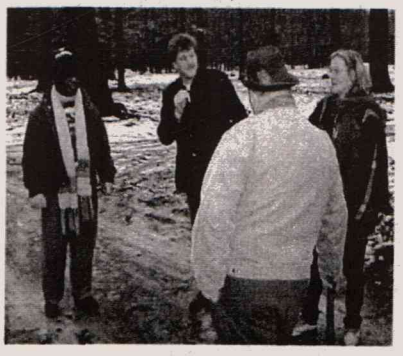
3. The Swiss and German Forest Associations are self-financing, giving them the independence they need to pursue activities that will effectively protect the interests of their members.

4. The availability of accurate information on forests in both Germany and Switzerland facilitated the formulation and implementation of effective forest management plans.

5. Forest owners in both Switzerland and Germany are given total responsibility for the management of their forests within the ambits of both the federal and canton/state laws.

6. Vital support is provided at the federal and canton/state levels, ensuring that forest management benefits all stakeholders. However, in the long-term, forest owners are encouraged to identify potential extra sources of income from their forests to supplement their timber income.

Photos from the Switzerland/Germany visit (1)



Photos from the Switzerland/Germany Visit (2)

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7. Most forest owners have small holdings, and are also either farmers or have other full-time employment.

8. Infrastructure is very well developed, allowing ease of access to forests, and also resulting in the effective flow of wood from the forests to the wood processing industry.

9. A forest management regime, resulting in a multi-age and multi-species forest, ensures a ready source of income for the owner, and provides some flexibility to cope with different market demands for different species.

Areas for consideration

Some areas needing consideration should changes be made in the current administration and management of forests in Fiji include:

1. Forest laws to be reviewed to take into account the need for the country to manage its forests on a sustainable basis, and to consider equally the important roles of forests viz. ecological, social, protection and commercial.

2. Forest owners, within the premise of the forestry laws, to have full responsibility in managing their forests. Industry participation needs to be limited to the purchase of logs on the roadside.

3. Active government support to be provided in the vital areas of infrastructure development, training, marketing and research to enhance the forest owners' share of benefits and to achieve sustainable forest management.

4. Formation of self-financing forest owners association to protect the interests of the forest owners through lobbying and providing technical support to the members.

5. Forestry development needs to be integrated with other sectors of the economy.

6. Forest owners to identify other potential sources of income to supplement their income from timber.

7. Forest owners to look at possibilly forming cooperatives to give them the strength and the flexibility to face new challenges in pursuance of their forest management objectives.

Acknowledgement

The Fiji team wishes to thank the SPC/GTZ-PGRFP for its generous support in sponsoring the study tour. The efforts of the Forest Owners Association in Switzerland and Germany in organising our visits, and support provided by Ms Evelyn Reigber, both as a guide and an interpreter, are gratefully acknowledged.

Submitted by:
Senator Rt. K. Maivalili
Landowners Representative
Emosi Toga
Native Land Trust Board
and
Sairusi Bulai
Forests and Trees Adviser

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PNG Forestry and Conservation Project

In the last issue of the PIF&T newsletter (No.4/02), an overview of the World Bank-Government of PNG funded Forestry & Conservation Project was provided. In this issue we would like to share with you how the project plans to assist government agencies in addressing prevailing land and landownership related issues that exist or are associated with forest resource development and/or conservation. In this article, we feature the first project component , referred to as the Landowner Forest Decision-Making'.

Objective for Landowner Forest Decision-Making Component

This component aims to review and formalize an improved legal framework, develop procedures and provide information for landowners to make more informed decisions on the management and conservation of their forests, and to facilitate the development of feasible options.

Scope of Work Under the Component

Activities will include support for more participatory, relevant and effective decision-making processes and fully representative landowner decision-making bodies.

This component will assist landowners to learn more about the range of forest development alternatives, including viable conservation and sustainable-use opportunities. In this way, their decisions will derive from a firm foundation of knowledge to which few resource owners currently have access. Development options will be based on land use planning, undertaken at the provincial, district and local level.

The component will make available to landowners information pertaining to forest legislation, their legal rights, basic negotiation issues, and the range of forest management options. The Project will assist in identifying mechanisms to pursue support for the landowners' chosen development option. Legal mechanisms will be established to give recognition and protection to local clan land and forest use decisions. Landowner capacity to select appropriate and sustainable forest operations (and to benefit equitably from those choices) will be developed. This will include the capability to pursue conservation-based activities in place of extractive ones.

A Landowner Decision and Organizational Unit (LDOU) will oversee the organizational, technical and training requirements of the landowner component. This includes carrying out Development Options Studies (DOS), assisting landowners in organizing themselves, and pursuing conservation activities if they so desire.

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There are three principal sub-components to the Landowner Forest Decision-Making Component. Each sub-component is briefly described as follows:

Sub-Component 1-1: Development Options Study

This sub-component will provide the institutional and resource base for initiating a Development Options Study (DOS) process. Communities participating in the DOS process will be screened carefully. DOS activities will be targeted towards areas of biological significance that are likely to have forest development, and where there is local capacity and clear demonstrations of local motivation, which directly relate to the Project's sustainable resource use objectives.

The LDOU will oversee and coordinate the organization and implementation of all DOS activities. This oversight will include the provision of technical expertise to DOS teams, logistical support and establishment of information linkages. The LDOU will arrange training of DOS team members in techniques of (a) community engagement (animation), (b) participatory planning, and (c) conservation management. The composition of the DOS teams will vary in response to community needs and local forest and land use situations. The strategic outputs, activities and support identified under this sub-component will include:

- § Strategic Planning and Development of mechanisms for the DOS process;
- § Training (of field teams) in DOS processes;
- § DOS implementation in selected pilot sites;
- § Education and awareness materials planning; and
- § Education and awareness materials in action.

Support for the sub-component will include provision of vehicles, office and field equipment; boat and aircraft charter to reach forest operations; technical assistance; and funds to cover incremental government allowances; overtime; local travel and recurrent operational costs. Further, education activities will require appropriate computer hardware and software; technical assistance in selected education concepts and education material preparation; and support for operational recurrent costs; education material production and printing costs.

Sub-Component 1-2: Strengthening of Landowner Representative Mechanisms

In this sub-component the project will enable landowners to establish representative organizations, which can facilitate equitable landowner participation in development project activities. The basic unit for landowner organization is the Incorporated Land Group (ILG). This mechanism allows autonomous customary land-holding groups (frequently clans) to gain legal recognition and organize themselves for improved decision-making on resource management and land use. ILGs are established and regulated under legislation. However, experience indicates that current legislative and regulatory provisions do not adequately address all issues arising from customary group management of resources. ILG structures are not suitable for all social organization systems and there are few resources available to help landowners to effectively utilize these representative organizational forms, if they decide that mechanisms of this sort would assist the community's development.

Sub-component 1-2 will endeavour to develop a sound policy and legislative basis for supporting landowner decision-making using ILGs and similar structures. It will also establish an institutional basis for supporting and facilitating representative group formation and operation through the LDOU and DOS activities.

The strategic outputs, activities and support identified under this sub-component will include:

- § Policy and legislation;
- § Land group implementation training; and
- § Land group implementation.

Support for the sub-component will include the provision of appropriate computer hardware and software; office equipment; provision of technical expertise in land group association legislation, design and management, and, as necessary for training; and publication costs for training and procedure manuals.

Sub-Component 1-3: Land-Group Based Conservation and Resource Management

Evaluating options through the Development Options Study process may lead certain groups of landowners to conclude that their long-term development options would be enhanced by establishing conservation areas, or engaging in some mixture of conservation and forest resource development. Sub-component 1-3 will make such conservation more feasible and accessible to interested land groups by providing help in designating Wildlife Management Areas (WMAs) or Conservation Areas under existing legislation.

Sub-component 1-3 will also assist in the development of the appropriate institutional capacity within the Department of Environment & Conservation (with assistance from LDOU) to help landowner groups designate protected areas. Land groups (as recognized through ILGs or an alternative structure) would form the foundation for cooperative approaches.

In order for communities to participate in the program they must meet certain criteria. This would include a demonstrable level of motivation linked directly to

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sustainable resource use, rather than a motivation that relates more to anticipated material assistance from the project or another donor. This distinction is crucial in whether or not conservation activities will be sustained in PNG.

The strategic outputs, activities and support identified under this sub-component will include:

§ Policy development for conservation management;
§ Conservation area capacity-building for the department of environment and conservation; and
§ Conservation area establishment

Support for the sub-component will include the provision of appropriate computer hardware and software; vehicles, field and office equipment; provision of technical expertise relevant to protected areas establishment and legislation; funding for incremental staff, allowances, overtime and local travel; support for operational recurrent costs; boat and aircraft charter to reach potential CMA sites; technical assistance; and publication costs relevant to training and procedural manuals and other printed materials. Two million dollars of GEF support will also be provided for the establishment of conservation areas and sustainable forest use activities.

(In the next issue of the PIF&T newsletter, we will bring you a brief overview of the second component to the PNG Forestry & Conservation Project - the PNG "Mama Graun" Conservation Trust Fund).

Submitted by:

Kanawi Pouru
PNG Forestry & Conservation Project
Port Moresby, PNG

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Eco-Forestry Programme in Solomon Islands

Mission Statement

Strengthening the quality of village living through conservation and sustainable utilisation of the nation's forest wealth.

Background

The Eco-Forestry Programme is a joint initiative between the Solomon Islands Development Trust (SIDT), Greenpeace Pacific and the Imported Tropical Timber Group (ITTG) in New Zealand. The programme owns a marketing body known as the Village Eco-Timber Exporters (VETE). VETE links village producers with overseas customers. It acts as a direct selling agent for trained eco-timber producers in Solomon Islands.

1995-1998

The programme has trained 56 land owning groups across the nation and consistently provides ongoing extension support services and monitoring to those who already reached eco-timber production.

VETE was established in mid-1996 to handle, grade, bundle and export the increasing volumes of eco-timbers that were flowing into Honiara from the Islands.

Over the period VETE has developed strong market relations with major Australian and New Zealand based timber merchants, who have agreed to pay a "premium price" to all eco-timbers sourced from well-managed indigenous forests.

In the three-year span VETE has exported **860 cubic meters** of freshly cut eco-timbers to those markets bringing in a total net profit of **SBD$1,535,100** to the local communities after a 15% deduction for VETE commission.

1999–2002 (social unrest period)

The periodic production of 1999–2002 has reached 1,685 cubics, bringing home SBD$ 3,007,725.

Even though this period was seen as the most difficult one the nation had ever gone through, most producers in the provinces, other than Guadalcanal, had increased their production volumes, almost doubling their previous exports. The increase of eco-timber production is expected to continue this year due to limited options left for income generation in villages, and because of the continuous high demand for sustainably harvested tropical hard wood from Solomon Islands by the oversea customers.

... the FACTS about it!

♦ Out of 56 trained groups, 24 have already reached the marketing stage with a strong commitment to sustainable forest management.

♦ Since the 56 communities received the eco-forestry training, none of them have reverted back to logging.

♦ VETE has secured and supplied eco-timbers to 12 guaranteed oversea markets since 1996.

♦ The programme has recorded 14,600 people as beneficiaries of eco-forestry through out the nation.

♦ A total of 40,200 hectares of primary forest have been licensed for eco-forestry activities.

♦ A total of 15,300 hectares from the total licensed areas were protected and reserved for conservation.

♦ Project members know how to face new challenges through cooperation and hard work.

Submitted by:
Felix Narasia
SIDT Eco-Forestry Manager
Solomon Islands

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OTHER NEWS

(This is a reprint from The Overstory # 117)

Introduction

Agroforestry is an approach to plant and animal production that intentionally integrates natural resources conservation objectives into the system. By strategically selecting combinations of woody and herbaceous plants and managing them to perform complementary agroecological roles, often with animals, the sustainability of producing multiple products with comparatively minimal external inputs can be enhanced. Environmental benefits that agroforestry systems generate are often captured directly by the managing landowner through the creation of niches that over time favor the production of a variety of unique and profitable products.

This article explores the potential for producing nontimber forest products in agroforestry systems. By identifying options for this type of practice we aim to foster appreciation for the numerous opportunities that are present, and yet to be invented, for integrating specialty forest products into farms and rural enterprises. Expanding market demand for NTFPs provides an important incentive for landowners to invest in conservation farming practices through agroforestry. Such practices can serve also to limit the overexploitation of nontimber forest products from their native habitats.

Enthusiasm for designing and managing NTFPs in agroforestry systems is growing. Such practice is complex and uncertain, however, and experience has not been widely shared. Success will depend on a constellation of factors. Strategies for investing in NTFP production through agroforestry need to consider technical, economic, social, and institutional feasibility within particular cultural and ecological settings. We draw attention to key issues that influence the potential effectiveness of agroforestry approaches to producing NTFPs and suggest some means of addressing them that may help to unblock current constraints.

Wildcrafting and the Problems of Nontimber Forest Products

According to legend, when the English colonizers of North America arrived, a squirrel could travel from the Atlantic to the Mississippi without ever touching the ground. Forests were, and remain, the dominant ecosystem in some parts of North America. European colonists, with a strong agrarian cultural tradition, never really learned to live in or with American forests, which were used as a source of timber, fuel, and fertilizer in the form of potash. Occasionally a special forest product such as naval stores - the sap from longleaf and other pine trees (primarily used for caulking in wooden sailing vessels) - became a key resource in support of the emerging imperial economy in Great Britain. No attempt was made to conserve this resource, and converting even longleaf pine to farmland signaled the "advance of civilization" (Williams 1992).

In the colonial process of usurping land and rights to the land of native peoples, much indigenous knowledge acquired by Native Americans over the millennia was lost. But Native Americans held and continue to hold an abundance of knowledge about native vegetation and technology for its use. A notable example is the sugar maple (*Acer saccharum*), which is a major tree species of the forests in the Northeast, from Kentucky to Minnesota and Maine, into Ontario, Quebec, and the Maritime Provinces in Canada. Indigenous people in this region knew the sweet quality of the sap and developed ways to condense the sap into syrup using stone bowls and hot rocks (Nearing and Nearing 1950), technology that over time was adapted by white people to eventually create today's maple sugar and syrup industry.

Indians taught colonists about the medicinal uses of slippery elm (*Ulmus rubra)* and coneflowers (*Echinacea spp.*) (Missouri Dept. of Conservation 1993). They also identified the value of black cohosh (*Cimicifuga racemosa*) for treating the symptoms of menopause. Black cohosh, a herbaceous perennial forest understory plant, is the main ingredient in Remifemine, an over-the-counter botanical packaged in Germany and sold in health centers. These are just four in a wide array of so-called nontimber forest products, or special forest products (SFPs), that have modern-day international markets.

Foresters have long overlooked the value of these plants and have directed their efforts to silviculture and timber extraction, and more recently to rotational production of timber in monocultures or mixed stands. Another group of forest users has tapped the resources of the understory, often without the knowledge and consent of the landowners, whether the U.S. Forest Service, timber companies, or private landlords. In the eastern mountains of North America, these folk learned to derive an income from the land in niches ignored by the mainstream (Krochmal, Walters, and Doughty 1971; Crellin and Philpott 1990). Wildcrafters, as this group is sometimes called, glean the forests for roots, fruits, bark, branches and sap, or other products that they then sell to middlemen or processors. Some wildcrafters also actively manage sections of land for production, though not necessarily in a systematic fashion (Emery 1998). Many plants of economic or cultural value are potentially at risk and alternative production systems should be considered. Determining ways to propagate and cultivate these plants in an economically viable way is essential. New ways of managing and harvesting plant populations will be situated somewhere between wild grown stock and open field monocultures.

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Agroforestry Examples

There are four main characteristics of agroforestry systems:

* First, they are intentional. Conscious efforts are made to incorporate trees into farming systems to improve the overall productivity and health of the farm, including the on-farm forest.

* Second, such systems are intensive. When these systems are in place, the overall complexity and diversity of spatial or temporal use of land rises, as does the type of management interventions.

* Third, agroforestry systems are interactive. Relations between the trees and crops are manipulated, enhancing the production of more than one product while simultaneously providing conservation benefits such as erosion control or expanding wildlife habitat.

* Fourth, these systems are integrated. The trees and crops are not seen as separate units but are managed together to increase productivity and protect the farm's soil and water.

Though all agroforestry systems share these characteristics, the practices themselves are highly variable, depending on the ecology of the farm, the types of products the farmers wish to grow, and the ability to market them. Until recently, some NTFPs have not been considered major components of these systems, while others have been part of some systems from the earliest stages. There are five categories of agroforestry systems that vary regionally across the continent but have similar spatial characteristics. These are considered in turn, with examples of appropriate NTFP management.

Forest Farming

"Farming the agroforest" generally refers to turning the understory region of a forest environment into a production zone for NTFPs in an intentional, intensive, and integrated fashion. Forest farming involves manipulating forestlands to create conditions that are conducive to introducing agricultural or cropping techniques into the forest system (Hill and Buck 2000). Many farms have some woodland. These areas traditionally were sources for fuelwood, fenceposts, and building material from selected woody species and sometimes provided a haven for farm animals from temperature extremes. Farm woodlands occasionally were sources for wild berries or fruits as well but for the most part were left unmanaged and underutilized.

Each region of the country will feature different understory crops. Any location with the potential to sustain a forest, however, will likely have a healthy selection of herbs, botanicals, fruits, mushrooms, and more that can be managed in the understory among the trees. An example from the southeastern United States is saw palmetto (*Serenoa repens*), a low-growing palm that occurs as a major understory plant in pine (*Pinus clausa)* scrub and savanna throughout Florida and northward into parts of South Carolina and Mississippi. This endemic plant is important to many species of wildlife for nesting and protective cover and as a food source (Tanner, Mullahey, and Maehr 1995).

Human interest in the plant has grown as "enviroscaping" has expanded, saw palmetto being naturally drought- and insect-resistant and requiring no fertilizer. Landscapers have found it difficult to transplant the species from the wild and have it survive, thus nurseries specializing in native species have begun to raise plants from seed to supply this market demand (Tanner, Mullahey, and Maehr 1995). The medicinal value of the saw palmetto fruit for relief of prostate gland swelling has led to its commercialization, and in 1995 its economic value began to make the news when the price for raw fruit exceeded three dollars per pound. A strong projected demand for the fruit by European pharmaceutical companies can supply an added economic value to the pine-dominated landscape from which it originates.

Alleycropping

In years after the term agroforestry was coined, alleycropping received more research and extension attention than any other agroforestry practice. As the name implies, alleycropping involves alternating rows of trees and crops in a cultivated setting. Tree rows may be straight or follow contours. Spacing between rows differs based on the types of benefits desired from the trees. In tropical settings, one benefit sought was enhanced soil stability and fertility, using deep-rooted trees, commonly nitrogen-fixing, to stabilize soils and add nitrogen through leaf litter to the cropped area of the field.

In this system, trees are closely planted in rows that are spaced from 10 to 30 feet apart depending upon conditions. Frequent pruning of the trees is required for nutrient release and to reduce light competition. These systems have tended not to be popular with farmers due to the high levels of labor and management required to control competition and obtain their multiple benefits. Alleycropping in developing countries tends to be most successful in contour hedgerow configurations where controlling erosion is important and in commercial, cash crop situations on relatively high-potential lands.

In North America, alleycropping, or intercropping with trees, is focused less on nutrient cycling benefits and more on producing an annual crop from the tree itself. The predominant species in these systems is black walnut (*Juglans nigra)*, with research on its value in field settings conducted by various institutions from Missouri to Ontario.

Continued on Page 12

South Pacific Regional Initiatives on Forest Genetic Resources (SPRIG)

SPRIG PHASE II

1. SPRIG NEWS

Training

Mr Maloni Havea (Tonga) and Mr Fred Pitisopa (Solomon Islands) have enroled in graduate diploma training at the School of Biology at the University of the South Pacific in Suva, Fiji, while Mr Ioan Viji (Vanuatu) and Ms Susana Tuisese (Fiji) have enroled in MSc studies at USP.

Personnel

In Samoa our SPRIG Project Scientist, Mr Tolusina Pouli, has recently been appointed as Senior Research and Utilisation Officer...congratulations Tolu!

Mr Tolusina Pouli

Analysis of Sandalwood Samples from Fiji

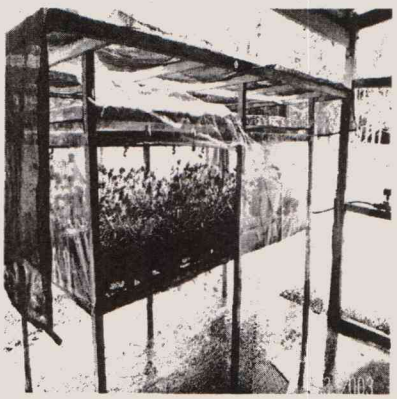
During January, staff from the Silvicultural Research Division and the PTL collected 24 wood samples from 14 trees of sandalwood, including the native *Santalum yasi*, *S. album* and hybrids. These are being analysed for oil content and composition by Dr Joe Brophy (University of New South Wales), with inputs from Dr John Doran (CSIRO FFP essential oils expert).

Recalcitrant Seed Project

Seed testing equipment, including desiccators and balances, has been procured and is being supplied to tree seed counterparts in each SPRIG country to enable the research on recalcitrant seeds to proceed. In Samoa, the seed of *Syzygium inophylloides* has been recently collected for this work.

Country Update – Vanuatu

Whitewood (Endospermum medullosum) Improvement - In mid-2002 over 70 superior individuals within the Department of Forestry (DoF)/SPRIG whitewood provenance/family trials at Shark Bay were identified and hedged. These trees were decapitated at 1 metre. In late December 2002 Mr Mesek Sethy, SPRIG Operations Manager in Santo, went through and trimmed back the coppice from these trees. Due to extremely dry hot weather up to 20 stumps had died. In early 2002 the porta-propagator that had been used for vegetative propagation was destroyed by a cyclone. Mr Sethy had constructed a new frame for the porta-propagator. In March Mr Ken Robson, SPRIG propagation specialist, visited Vanuatu and assisted with completed the irrigation system and covering. During Mr Robson's visit the whitewood coppice was assessed and 800 cuttings of 32 superior clones of whitewood were set in the porta-propagator. It is planned for cuttings to be set for a further 8 clones soon. A further 10 clones had either died or had only weak coppice. The cuttings material will be used to establish a clonal seed orchard which will be providing genetically superior seed within about three to four years.



Rebuilt porta-propagator in Shark Bay, Vanuatu with whitewood cuttings

Dracontomelon vitiense (tarawau or nakatambo)

The genus *Dracontomelon* belongs to the family *Anacardiaceae* in the Order Sapindales. *Dracontomelon* comprises about 8 species naturally distributed throughout the Asia-Pacific region (Smith 1985, Kochummen 1989, Lemmens *et al.* 1995). The most common local names for *D. vitiense* are tarawau (Fiji, also tarawau dina, 'arawau, 'arawau tina and tarau), favrau or faorau (Rotuma), nakatambol (bislama, Vanuatu) and dragon plum (English, rarely used). The species has numerous local names in among different islands and languages in Vanuatu (Gowers 1976, Wheatley 1992, Walter and Sam 1993, Curry 1995).

"Tarawau" - Dracontomelon

Importance

A moderately slow growing, multi-purpose tree species with potential for wider planting, especially in mixed species plantings near to human settlements. The fruits of *D. vitiense* are widely consumed in season and sold in bundles and in small paper bags in local produce markets places in Vanuatu and Fiji. The timber is important for local uses, especially in building and construction, furniture, canoes and craft objects. It is moderately important in traditional medicines and various parts of the plant are used for treating a variety of ailments. The tree is occasionally re-transplanted or planted and is protected during gardening and hence more frequent near villages and in forests altered by human activity. It

is also a common tree in houseyard gardens in urban areas in Fiji.

Botanical Features

Botanical descriptions of *D. vitiense* are provided in Smith (1985), Wheatley (1992) and Walter and Sam (2002):

Habit

D. vitiense is a moderate to large tree, about 10-25 (-30) m tall and up to about 1 m in diameter (above buttresses). Mature specimens are characterized by extensive, widely spreading, often spectacular, buttresses. These are variable, plank-like, strong and up to 2.5 m tall and spreading over 5 to 6 m in diameter at ground level. Trees have a spreading, dense, rounded crown. The bole is cylindrical or slightly twisted up the point of crown break. The bark is light grey to reddish-brown, smooth when young, becoming rough and scaly with age.

Foliage

The leaves are compound, about 30-40 cm long, and arranged in spirals towards the branch ends. Each leaf consists of 4-9 "pairs" of sub-opposite or alternately arranged leaflets, plus a terminal leaflet. Leaflets are glossy green above and dull light green below, entire, oblong lanceolate to slightly ovate, 8-15 x 3-5.5 cm, basally asymmetric with a pointed tip. The leaflet stalk is short, 3-5 mm long.

Inflorescences, flowers and fruits

Flowers are arranged in terminal panicles up to about 35 cm long. The flowers are bisexual, small, c. 8 mm across, white; sepal and petals in 5's, with 10 stamens fused on the petal tub and one central style. Fruits are borne abundantly in hanging bunches. The fruits are sub-globose drupes, slightly flattened, 2-3.5 cm in diameter with five small depressions just below the apex. Immature fruits are green ripening to a dull yellowish-green, then light to dark yellow or light brownish yellow. The fruits comprise an edible, firm fleshy, light yellow mesocarp surrounding a single stone. The stone is lens-shaped and contains five small seeds.

Phenology

In Fiji *D. vitiense* flowers from January-March and fruits about five months later, from June-August (Smith 1985). In northern Vanuatu flowering occurs from October–January and fruits mature from May–June, with flowering/fruiting 1-2 months later further south (Walter and Sam 2002).

Variation

Genetic variation in species has yet to be investigated, but in Vanuatu local people distinguish two varieties on the basis of fruit size (Walter and Sam 1993, Walter and Sam 2002). The larger fruited trees have fruits 3 cm diameter and the smaller-fruited trees have fruits < 3 cm diameter. Some trees have fruits with a sweeter pulp, which is much preferred for consumption.

Distribution

The species is most abundant in northern and central islands of Vanuatu and throughout Fiji (Smith 1985). It is less common on the southern islands of Vanuatu (Wheatley 1992). It is almost totally unknown in Samoa with no recorded Samoan names. It is also planted on Rotuma, which is geographically located between Fiji and the Santa Cruz Islands in the Southern Solomon Islands. It is recorded as native to Solomon Islands (Henderson and Hancock 1988, Walter and Sama 2002), but this needs confirmation. The species mainly occurs at lower elevations from sea level to 200-300 m.

Environmental Amplitude

Climate

The species is mainly found in tropical, humid lowlands. Climate descriptors for the species are as follows:

Mean annual rainfall: (1800-2000: 3200-4100) mm

Rainfall regime: summer maximum monsoonal.

Dry season duration: < 3 months
Mean annual temperature: 22-32°C
Mean maximum temperature of hottest month: 28-35°C
Mean minimum temperature of coldest month: 16-22°C
Absolute minimum temperature: 12-15°C

Although common in lowland areas of Fiji, it is uncommon or rare at higher elevations, such as near Namosi in south-central Viti Levu and near Navai at about 700 m in north-central Viti Levu. The cooler temperatures and/or higher rainfall may inhibit flowering or the survival of flowers and the setting of fruit.

Vegetation and soils

In Vanuatu *D. vitiense* is a dominant tree in lowland tropical closed forest, especially in near-coastal areas, and is reported to be less frequent in areas with a pronounced dry season (Wheatley 1992). In Fiji the tree is mainly found in dry or open forest, in secondary and fallow forest and in cultivation, often as individual trees in villages or garden areas or in village tree groves (Smith 1985, Thaman and Clarke 1993). In Vanuatu it is found on fertile soils, on lowland coral plateaus. It is found on a variety of acid to neutral, medium to heavy textured soils, including alluvial soils and swampy locations.

Silviculture and Management

There are about 500-800 (average 600) cleaned fresh stones per kg. While there are five seeds per fruit, only two or three appear to be viable (Leslie 1994). Accordingly the number of viable seeds is about 1,200 per kg of fresh stones. Germination was increased by soaking the seeds overnight in diluted vinegar, viz. 38% in 1:2 vinegar/water, 18% in water cf. 15% with no soak (Leslie 1994). The stones are planted in a horizontal position at a depth of about 5 mm. Seeds do not retain viability for long (Anon. 1996) and are presumably recalcitrant as for the closely related *D dao (lemmens et al. 1995).*

SPRIG News

In Vanuatu the species has been included in three field trials (Barrance 1989, Leslie 1994). In one trial at Vanafo, Santo 7-year old plants had attained a height of 6.7 m and dbh of 11.9 cm. In another trial on Santo, plants had low survival (44%) and slow growth (49 cm tall) after one year. The mean annual growth increment in Vanuatu for the first four to five years is 0.9-1.0 m height and 1.5-1.9 cm dbh (Barrance 1989). Surprisingly, (Anon. 1996) characterised the growth of *D. vitiense* as vigorous in open, fully lit situations. It appears as though *D. vitiense* is a slow starter, requiring good weeding in early years, and thereafter grows at moderate rates, especially in open situations and on fertile soils. Trees display good self-pruning characteristics (Anon. 1996) and are moderately resistant to stem breakage during cyclones (Barrance 1989).

The species regenerates well in abandoned gardens and is reasonably shade-tolerant (Anon. 1996).

Threats and Conservation Measures

The species is moderately abundant in most areas where it occurs and is generally protected during gardening. However, there are variable reports on the extent to which the tree is replanted. In Fiji, it is considered by native superstition to be "the business of the dead" to plant it (Cambie and Ash 1994), and such beliefs may be a barrier to more extensive re-planting in some areas. In Vanuatu it is considered to be an exclusively wild species (Walter and Sam 1993).

USES

Products

- **Wood**

D. vitiense produces a valuable, multi-purpose timber, however timber properties and appearance vary considerably between heartwood and sapwood. The sapwood is creamy yellow and rather soft and non-durable. The heartwood is pale brown, drying greyish brown (Wheatley 1992). In Vanuatu the wood has important local uses including for aerial members in house construction, furniture (doors, tables, stools and chairs) and craft objects (including food bowls), and is used for making canoes (Wheatley 1992, Walter and Sam 2002). It is also considered to be highly suitable for decorative wood end uses (Barrance 1989).

- **Non-wood**

The species is one of Vanuatu's major local fruit trees (Walter and Sam, 2002), and the fruits are also very popular in Fiji. The fruits are mainly consumed raw and have a rather bland, slightly acid taste; they may also be cooked in coconut milk (Walter and Sam 2002). Consumption of fresh fruits may have an unpleasant side effect of causing flatulence. The skin of the fruits may be dried, ground and cooked in coconut (English et al. 1996). Nutritional analysis of fruits is given in English et al. (1996): they contain limited protein (2.1 %) and sugars and starch (9%), as well as nutritionally-useful amounts of minerals and vitamins. Various plant parts of this species are used in traditional medicines in Fiji and Vanuatu.

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Continued from Page 9

"Alleycropping....."

The tree has two major sources of value: the nut, harvested annually from trees that are 15 years old or more, and timber, especially from veneer-quality logs derived from well-pruned and managed plantations (Garrett et al. 1991). Trees are planted in rows between 40 and 60 feet apart to allow for use of farm equipment and thinned and pruned in the rows to an eventual density of approximately thirty trees per acre.

Opportunities for managing NTFPs in alleycropping systems will change as the tree component matures. During the establishment stage, a sun-loving herb such as echinacea might be grown in the alleys between rows of young trees. A shade-loving plant such as ginseng or goldenseal might be planted within the rows of trees even at an early stage in the development of the system. As the trees mature and cast more shade over a wider area, increasingly shade-tolerant species could be cultivated in the alleys. There are a number of multipurpose trees that might be used in these systems such as willow for floral displays, or pine for pins rope or pine straw. Presently, however, there is little experimentation or information upon which to evaluate the potential of this type of practice. Most alleycropping efforts emphasize nut production from black walnut, pecan (*Carya illinoensis*), or various cultivars of American hazelnut (*Corylus americana*), some hybridized with the common European hazelnut (*Corylus avellana).*

Shelterbelts and Windbreaks

Shelterbelts and windbreaks have been part of North American farming systems for a long time. One or more rows of trees planted perpendicular to prevailing winds reduce wind speed, prevent or limit snowdrifts, decrease evaporation, and increase infiltration of water in properly designed systems. Although often providing secondary products, such as fenceposts and firewood, windbreaks are seldom-considered product production sites. Through the 1970s and 1980s, U.S. agricultural

Continued on Page 13 (3rd Row)

PNG - ACIAR Forest Domestication Project

UPDATES:

The Papua New Guinea Forest Research Institute has had a long history of establishing planted field trials of both exotic and indigenous tree species in Papua New Guinea. However, many of these trials have not been analysed and written up resulting in potentially valuable information not being gained from these trials. Under the ACIAR funded project on 'Domestication of Papua New Guinea's Indigenous Forest Species' it was agreed to measure and analyse those planted field trials that comprised PNG species which had not undergone a domestication process and for which there was very limited information on growth performance.

As a starting point all field trial files that could be located were combined into a single centrally located filing system and linked to a database. The database recording information on each trial including species, file reference, location, type of trial and trial design. As a result of this exercise and drawing on the corporate knowledge of FRI approximately 55 trials were identified as suitable for measurement provided they can be located in the field. These trials were planted between 1971–2002. The table below provides a summary of the trials identified as being suitable for measurement.

In determining which trials to measure there were certain minimum requirements for initial selection:

1. Indigenous PNG tree species which had not undergone domestication
2. Location of trial
3. Date of planting known

Once in the field specific measurement procedures required to be followed:

- For replicated trials only measure plots with 12 or more healthy trees in each plot
- Do not measure buffer row trees

A number of trials were established as block plantings. In such cases the following procedure to be followed:

- Aim to achieve 5% sampling
- Measure blocks using random sample plots comprising 20–25 trees using an optical wedge or fixed radius length to produce circular plots
- The number of plots to be established in each trial is based on the 5% sampling strategy for each block planting.

Once the data has been gathered from all the available trial sites and data entered on a spreadsheet, it is proposed that the author will visit CSIRO Forestry and Forestry Products, Canberra in order to gain training in analysing and interpreting the results. Once the data has been analysed a report will be written presenting the finding. This information will hopefully provide some information on performance of a number of PNG tree species.

Table indicating location of planted fields trials of lesser know species in PNG for which it is proposed to undertake measurements.

Table.1 Indicates the location, quantity of trials and estimated No. of plots per site.

Location	Quantity of trials	Estimated No. of lots
Bulolo/Wau	7	10 +
Lae	6	9 +
Madang	9	43
Kavieng	6	32 +
Kerevat	5	18 +
Kimbe/Pomio	4	18 +
Alotau	14	20 +
Kuriva	4	12 +

Submitted by:
Mondor Karmar
PNG Forest Research Institute

Continued from Page 12

"Shelterbelts and Windbreaks....."

policies promoted efficiency in farm equipment, and commodity prices encouraged many farmers to take out windbreaks and shelterbelts. With crop prices down and incentive programs such as the Conservation Reserve Program encouraging them to take erodible land out of production, farmers again are considering these practices. Many express interest in also using these sites for producing additional products.

Developing a marketable product from plants growing in field borders and shelterbelts has precedents. A company called Minnesota Wild developed a line of products from wild chokecherries *(Prunus virginiana)* commonly found in fencerows and other farm sites. Now many farmers manage the chokecherry for fruit production rather than as an opportunistic invader of a field border. Probably the key lesson from the chokecherry is that market development pulls production more readily than surplus production can push marketing.

Riparian Buffer Zones

Probably no agroforestry land use has received more recent research support than the riparian buffer zone. The need to protect streams from erosion, nutrient loading, chemical pollution, and other forms of degradation associated with agriculture and urban sprawl spurs this research. Resources available to address these problems are large and growing (Tjaden 1998).

Tjaden (1998) lists a number of items that could grow in riparian zones for a profit. These include aromatic herbs, Christmas trees and greens, cooking wood, decorative cones, ginseng (upper flood plain only), nuts, shiitake mushrooms, and weaving and dyeing materials. To this list we could add poplars and

Other News

willows for harvest as fuel or wood shavings to use as animal bedding, various riparian florals like pussy willow or curly willow, and medicinal plants such as slippery elm. Slippery elm *(Ulmus rubra)* has an exceptionally wide range of traditional and medicinal uses by Native American groups throughout much of North America. Growing naturally in river bottoms and on low fertile hills from southern Newfoundland to central Florida, its ecological range extends west across much of North America. It is the white, inner bark of this 40 to 50-foot tree that is used as an aromatic as well as for a variety of medicinal purposes (Harding 1972).

- Silvopastoral Systems

Upon first consideration, integrating animals with special forest products may not seem a good idea. Given unrestricted access to forestland, animals will graze the understory down to bare soil, trample roots, and often browse or strip tree boughs and bark. In a silvopastoral system grazing needs to be carefully managed, which does not mean that the productivity of the animal component of the system must suffer.

In fact, there is strong evidence that intensive, rapid rotation grazing actually increases the carrying capacity of the land as well as stimulating understory and grass growth. Much of the information on such practices comes from the work of Allan Savory (1988) on holistic resource management. The basic theory is that cattle and other grazing or browsing animals in their natural state are always on the move. They move to avoid predators, keep ahead of flies, and pursue fresh fodder. Placing animals in a single field for long periods induces selective overgrazing and promotes degradation.

By making fields smaller, moving cattle regularly, and providing alternative watering systems, the animals tend to concentrate on grass and herbaceous material, do less trampling damage, and eat less woody growth. This approach can increase the survival of an established tree component and permit the harvest of tree-grown products, although understory products would suffer from periodic grazing.

Conclusion

Agroforestry is an important land use option for many landowners, particularly farmers who seek to diversify their operations ecologically and economically. Agroforestry practices can provide a variety of services such as crop protection from wind, riparian zone protection, soil conservation, and habitat for pollinators and pest predators. They also can provide products for additional income, such as fenceposts, firewood, foods, herbs, nursery plants, and others. NTFPs can fit into agroforestry systems to improve overall productivity, diversity, and ecological health.

Agroforestry, however, is not a simple solution. Such practices tend to require careful planning and design and knowledge-intensive management. Nor is agroforestry development a rapid process. Most NTFPs take time to establish and may require several years to bring a significant return.

In the long run, however, agroforestry systems that include NTFPs can contribute importantly to sustainable agricultural development and to forest quality improvement while generating significant economic returns to the landowner (Buck, Lassoie, and Fernandes 1999).

Accepting this challenge over more conventional pathways to crop development through monocropping is a mission that can help bind natural resources professionals and practicing land managers in their quests for innovative solutions to the imperatives of natural resources conservation and sustainable economic development.

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Mangrove Replanting: As Part of an Integrated Coastal Management

Mangrove planting and coastal reforestation will be part of the Integrated Coastal Management (ICM) in Fiji. The Coastal Resources Center (CRC) of the University of Rhode Island, through the Institute of Applied Science at USP, introduced ICM in Fiji last year (2002). It led to a very successful workshop in April 2002 and strong enthusiasm appeared from all sectors in Fiji for further implementation of ICM.

A model for ICM is urgently needed given the imminent return of legal control of all fishing areas *(i qoliqoli)* from state to local community control. These fishing areas also cover mangrove wetlands. Therefore there is wide acceptance in Fiji of the need to work with local communities to manage these resources. Commitment of key government sector such as Fisheries, Tourism, National Planning, Environment Dept. and Fijian Affairs is also needed. The Coral Coast is now identified as being the ICM Pilot Project area where the Fijian Affairs Board and the Nadroga Provincial Office will carry it out. This will involve other important stakeholders such as hotels, communities, government agencies and other NGOs such as the OISCA International.

The Role of OISCA in the ICM.

OISCA has been invited to be a

Other News

member of the steering committee that is to be established at the provincial levels at probably this February. Its role is to advice and assists the committee in establishing any mangrove replanting or coastal reforestation projects. OISCA has not only being working at provincial levels but has also worked at the *tikina* and village level. It has gained a wealth of experience in the last seven years in mangrove replanting and it is probably the only organization actively involved in mangroves in Fiji at the moment.

So far it has 12 mangrove planting sites around Fiji with a total area of approximately 43 hectares. There are four active sites along the Coral Coast at the moment and with OISCA's involvement in the Coral Coast ICM Project, it is probably going to increase.

The coastline along the Coral Coast is an area scattered mostly with hotels and resorts, farming communities and over 20 village communities. Together with other developments they do have a great impact on the inshore and offshore environment. Other factors such as over-fishing, coral harvesting, water pollution, land erosion and siltation of reefs has led to degradation of reef habitats and loss of species diversity. A recent study by the IAS of USP has shown that one of the occurring problems is the rising level of nutrient inputs to this coastal water. This has not only damaged reefs but also loss of fish stocks and a failing tourist attraction.

OISCA is now trying to address this by its mangrove replanting projects and inland tree planting Programme with local landowners and villagers. The lacking of mangroves along the Coral Coast can also be seen as a contributing factor to land or foreshore erosion and reef siltation. According to experiences by villages, mangroves can be seen as the foremost ecosystem for both marine and amphibian species where it becomes the breeding ground and feeding area for these species.

Mangroves: A Participatory and Experiential Learning Environment.

Participatory and Experiential Learning is the crux of all environmental promotions by OISCA. There has been a lot of training and educating concepts about the environment through awareness and promotional campaigns but there is still a need to cultivate environment ethics in the hearts of our citizens. Therefore OISCA has probably a different approach in Environment Education by seeking to cultivate environment ethics in the minds and hearts of the people through participatory and experiential learning activities.

Such activities include the direct involvement of the people in a community in all tree planting and waste management activities. School children and older members usually do the planting whereas OISCA provides the mangrove or tree saplings. These coastal communities are witnessing the growth of the mangroves and the changes it brings about to the marine ecosystem. Restoring mangroves closer to village foreshores increases fish counts and eatable crustaceans. Likewise it reduces the time factor of obtaining these food resources compared to previous occasions.

These are some of the convictions of the coastal communities who have been engaged in mangrove planting in the last 5 years. This also has prompted OISCA to try and enhance the promotion of mangrove conservation. But the only limiting factor faced by OISCA at the moment is the lack of its resources to establish more mangrove nurseries. In the hope of extending mangrove replanting in other areas it is now seeking partnership projects with other organizations.

OISCA now has a joint project with BP Oil at its Vuda Point Terminal foreshore and is hoping to be also assisted through the ICM, the Embassy of Japan and JICA. OISCA also believes that the interest of other coastal communities will further develop when they witness and experience the benefits gained by partnering communities who have been replanting mangroves.

Youth Volunteers working on mangrove nursery at Korotogo, Nadroga, Fiji

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(An Extract from Iko Forestri Nius Volume 4 Issue 5)

NATIONAL FOREST CERTIFICATION SERVICE FOR SMALL SCALE PRODUCERS

A Forest Certification Service Taking Shape

A feasibility study to look at possibilities to improve access to forest certification for small-scale timber products in PNG was conducted from August 2001 and June 2002. This article summarises the study's main outcomes, and how these will be used.

The Feasibility Study

More and more small-scale timber producers are becoming interested in forest certification, as they relies it can help them in managing their forest and business in a good way and also open up interesting overseas markets.

Many of them however, do not exactly know what is expected of them if they want to meet certification standards or only know that becoming certified is very difficult and expensive.

This situation prompted the Eco-Forestry Forum to ask a special Working Group to organize a feasibility study into the development of national Forest Certification Service (NFCS), aimed at improving access to certification for small-=scale producers.

The Study results

The main results and conclusions of the NFCS feasibility study are:

- There is a clear interest with small scale producers and a number of timber yards in certification
- Export market access, on-going technical support, and prestige are the main motivators for producers to adopt Sustainable Forest

adopt Sustainable Forest management (SFM) and certification

- A certification service should have both a forest management group certificate as well as a chain of custody group certificate for it to become financially viable
- The activities of a NFCS should focus on coordination of existing small producer services and support and where necessary improve and/or supplement these.
- Export market development and brokering should be part of the offered services
- The NFCS should start small, working with the most successful existing eco-forestry initiatives and timber producers
- The NFCS should be run as a separate, independent Not For Profit organization

Five different models of a possible NFCS were studied. The recommendation of the feasibility study report was to establish the NFCS model which has an independent forest Management group certificate as well as a Chain of Custody group certificate. In this way producers can be linked with timber yards or Central Marketing Units.

(CMU's) and the NFCS can coordinate the contacts of CMU's with overseas buyers to ensure efficient market supply and improved access to the certified timber export market.

Another recommendation was for the NFCS to start operating in the 'most promising' provinces, working with the best existing initiatives and producers. Depending on its initial results, it can later be expanded to other provinces of PNG.

What would the proposed NFCS look like?

The NFCS will be a so-called "group entity", managing an FSC forest management group certificate.. Individual producers that meet the set group certificate standards become group members. To cover the costs of managing the group certificate, members pay an annual fee based on the total production capacity of the operation, plus a small levy per cubic meter on al timber sold to certified central marketing units.

As any trader in certified timber is required to maintain their own 'chain of custody' certificate, the NFCS will also manage a group chain-of-custody certificate and offer membership to a number of selected timber yards or Central Marketing Units (CMU's). In every province the NFCS works there will be one certified CMU to which certified producers would be linked and can sell their timber.

The NFCS will help all certified CMU's to market their timber. It will try to combine the output of the CMU's so that buyers' requests, especially for larger volumes or specific species, can be more easily met. The chain of custody service will be income generating through an annual fee and a purchase levy system. The market promotion and brokering service will work on a commission basis.

And how would it work

The support and training needed for producers to reach the group certification standards will be organized by the NFCS. For this it will focus on coordinating exist in small producer services and support and where necessary improve and/or supplement these.

This will include producing new awareness materials and training manuals and modules. All NFCS members will be monitored t least once a year to ensure they continue to meet all group certificate standards.

The National Forest Certification Service will work closely with existing Eco-Forestry Forum and will include awareness and training of NGO staff on certification, training and assistance in producer preparation and monitoring and evaluation, marketing and chain-of-custody training and support.

The establishment and initial phase of this service will need outside donor funding, but it is expected that the NFCS should be fully self-supporting by its fifth year of operation through a combination of annual and service fees paid by its members and a small levy on exported certified timber.

What will happen next

The PNG-EFF has committed itself to help establish the NFCS. However the NFCS will not be an EFF service, but set up and run as a completely independent Not For Profit organization. The NFCS Working Group now has the task to find the funds necessary for the start or inception phase of the NFCS. They are aiming to have it ready for producers and timber yards to apply for membership by the end of 2003.

Interested?

Please contact us if you have any further questions or would be interested in the services of a national Forest Certification Service, or if you are interested in collaborating with the NFCS Working Group and the PNG-EFF on this issue. The NFC Working Group is very interested in your views on and possible involvement in this initiative.

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