Volume 4, issue 1 April 2016

Government of Vanuatu
Department of Forests

Forestry Newsletter

Mr Tate Hanington, Director of Forests

WELCOME REMARKS

Dear readers, stakeholders and owners of the Forests. We are delighted to bring you the first edition of the Forestry Newsletter for 2016, bringing you fresh news and happenings from your forests in the first four months of 2016.

Forests and trees are the most remarkable scenery greeting you wherever you go. To maintain this remarkability, it is important that we protect and replant our forests.

This year we are achieving other milestones in the forestry sector by launching the National Tree Planting Day, the National Forestry Week and the Decade on Reforestation. We are developing a strategy to involve everyone in tree planting.

So much has been said about climate change but still with lack of a clear direction and action. Growing trees is one of the solution, therefore you can join the climate change army today by growing a tree. As the saying goes *"You can never go wrong with Growing Trees"*.

Enjoy reading, and do try one of our questions to win one of the 10 prizes.

THE INTERNATIONAL DAY OF FORESTS WAS CELEBRATED SUCCESSFULLY WITH LAUNCHING OF HISTORICAL EVENTS FOR DEPARTMENT OF FORESTS SECTOR

The statement, *"Forest, land and people are inseparably linked"* is a statement that one cannot deny. The culture, custom, livelihood and wellbeing of the people in Vanuatu are hinged on the forests resources and forests ecosystems. Forests and trees has continued to provide a range of goods and services, some of which are clean water and clean air, soil fertility and stability, medicine, food, shelter, building materials, fuel-wood and a source of income. Because of the importance of forests, the Department of Forests joined the global community to mark this important day; THE INTERNATIONAL DAY OF FORESTS which celebrated on the 21st March. Every year on the International Day of Forests we celebrate the ways in which forests and trees sustain and protect us. This year we are raising awareness of how forests are key to the planet's supply of freshwater, which is essential for life. Thus, gives us a Theme of this year International Day of Forests as; "FORESTS AND WATER".

The Department of Forests and the entire Ministry of Agriculture, Livestock, Fisheries, Forestry and Biosecurity (MALFFB) celebrated the International Day of Forests on the 23rd March 2016. It turns out to be a success as the entire Ministry (MALFFB), forests industry companies, students and wider stakeholders have come to be part of the celebration.

In his speech, the **Honourable Minister, Matai Seremiah**, argued that the statement that people usually refer to as 80% of the rural population whom directly benefiting from the forests was not true as we should now accept that the entire Vanuatu citizens need clean and fresh air in their daily lives, thus comes from the forests. In our current situation, the urban dwellers use fuel wood and charcoal daily which are supplied by the forests. Due to this reasons, many countries in the world today refer to the forests as a **"free supermarket** and **free hospital**".

Hon. Minister Matai (left) in Summit Estate Boot

DG Howard Aru (Right) in Livestock boot

The Minister then explains two scenarios in comparison of which one is the best to help reduce Green House Gas emission:-

Scenario 1: Solar Panel

To produce a solar panel needs electricity. During the production process, a certain amount of Green House Gas (GHG) is released into the atmosphere. Once the solar panel is completed and used, it doesn't remove the Carbon Dioxide(CO2) from the air but maintains it instead.

Scenario 2: Growing Trees

When a tree is planted and grows, at the same time it removes GHG from the atmosphere. Trees need Carbon to grow so it removes CO2 from the air but releases Oxygen which you and I breathe in. "So planting trees is a tool to fight Climate Change. "I believed there is no one as yet in Vanuatu whom can manufacture a solar panel but I believe each citizen can plant a tree, thus I encouraged all citizens to plant a tree" said Mr Matai.

In order to show the world that Vanuatu is very serious about protecting its forest resources, we not only commemorating this special global day but we'll witness the launching of these three initiatives:-

(i). The launching of the Forestry Week,
(ii). The National Tree Planting Day and;
(iii). The Decade of Reforestation.

The Forestry Week (will take place every June from 21st to 27th) and the National Tree Planting Day (will take place every 21st June) will become an annual event, while the Decade of Reforestation will be a 10 years effort of reforestation or tree planting which start in 2015 to 2025. These initiatives are coming up to allow us realize the importance of Forests and how much it contributes to our livelihood.

In realization of the importance of the forestry sector, there is a need for visibility for whatever been done or said to promote the sector. Thus, the **Director General of MALFFB, Mr Howard Aru** proudly promoted the media as an important tool for the Productive Sectors to disseminate information to public at large. He urged that the Productive sectors must make use of media socially and economically for development and further stated that it's been far too long that the Productive sector has been on the sideline. He thanked the government of the day for finally come to realise the reserve player which is supposed to be on the field and it's the Productive Sector..

He extended an acknowledgement to the Private Sector as being the Engine of Economic development and the only way forward is a need for all Productive Sectors to start transferring information through awareness to schools or targeting our younger generation

Black sands Primary students

Malapoa College Students

The **Director of Forests, Mr Tate Hanington**, made a very encouraging remarks on the above mentioned initiatives which are to promote the implementation of the government policies in order to enhance the livelihood of the rural communities throughout Vanuatu. The Department of Forests has been emphasizing a lot on reforestation for the last ten years because we are aware that the world is in a war fighting Climate Change. Climate Change is our biggest war and we all are fighting against it.

So the main reason to launch those initiatives was because Vanuatu does not have the technology to build or create renewable energy sources or even cannot build solar panels, hydro or windmills but what we can do is to plant trees. Mr Tate continued by concluding with a very powerful practical statement that Vanuatu as a small island nation, we will use "Growing Trees" as our weapon to fight Climate Change.

It is also important to know that growing trees is not just forestry, but it is important to understand the purpose of growing trees. Since Forestry is included among the productive sector, one of the reasons of growing trees or managing the forests is for economic gain.

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Therefore one of the highlight of the day was sawmill display by;

i. Mobile Sawmill Company



There were also other activities which made the event very successful were:-

a. Tree planting to earmark the event.


JICA rep (R)


Port Vila Lord Mayor (R)


MALFFB DG (L)

b. Displays by relevant government departments and industry sectors:-


Livestock


Fisheries


Agriculture


Lapita Café


Sandalwood products by Summit

Computer Network Services

a. Panel discussions live on air.

L-R, MALFFB DG, Director of Forests, REDD+ Project Coordinator, Acting Director of DARD, Director of Livestock

b. Distribution of free seedlings by Summit Estate.

It would be remiss of the Department, from the outset, not to mention those whom contributed to the event. The Major sponsors of the event were **Forest Carbon Programme Facility (FCPF) World Bank REDD+ Project, FAO & GEF Forest Protected Area Management Project (FPAM), New Zealand High Commission, and Departments under the MALFFB.**

The Department of Forests will offer two free seedlings to anyone answering both questions correctly?

Questions

1. What are the commercial forestry priority species promoted for reforestation in Vanuatu?
2. What is Agro-forestry and why is it important?

Please email your answers to the following email address,
pkamasteia@vanuatu.gov.vu

REMINDER

The National Tree Planting Day is an annual event and it will be on June 21st, 2016 where each person will plant a tree. Please start preparing healthy seedlings for your family members to plant on that special day!

"REMEMBER PLANTING A TREE WILL GIVE US FRESH AIR, MAINTAIN THE QUALITY OF WATER AND HELP FIGHT CLIMATE CHANGE!"

Mele Youths Tree Planting Day a Success.

Last Thursday, 7th April was a very special day for Mele Youths Development Group that saw the Director of the Department of Forests successfully launching their tree planting program. It was not only a success for Mele Youth but a big plus for forestry as it boost its reforestation activities. The program was initiated due to the impact after the youth attended the celebration of the International Day of Forests event on March 23rd 2016 that was organized by the Department of Forests.

The main theme at that time was "Forests and Water" encouraging communities of Vanuatu to use these two natural resources in a sustainable manner.

Chief Teriki Massai, in his welcome remarks, mentioned that "before Vanuatu became an independent nation in 1980, there used to be huge Tamanu (Calophyllum inophyllum) trees scattered along the coast of Mele Bay".

He recalled in 1970s, where the Suango Center School is now located, used to be a log yard where logs are stored ready for shipment to overseas by batches.

Students

Chief Massai further emphasized, that the real present situation is the coastal erosion along the bay and he is challenging his people to replant more trees on the most affected areas. The main reason in planting trees is not only to protect our marine resources but most importantly to give us clean and fresh air which we breathe every day and to keep us healthy.

The day was witnessed by many school students and their teachers., The Principal of Melemaat Center School , Mr Roy Charlie stressed the importance of these two natural resources "Forests and water" which are naturally connected. The quality of water depends on the forests. If the forests is overharvested or disturbed, the water will be affected. *"These two important components of the creation must be managed well in order to avoid the consequences should we face in the future",* said Mr Charlie.

In response, Mr Tate Hanington, the Director of Forests, acknowledged the interests shown by the villagers and schools who were present especially school children; again stressing the importance of forests and water. This year's International day of Forests global theme is "Forests and Water" and in Vanuatu we celebrated it on the 23rd of March, 2016 at the Tagabe Agriculture Station.

He further stressed on important connection of forest and water by making a statement "when you turn on your tap, you are tapping into the forests".

Tree Planting Day was already launched on the International Day of Forests and two other initiatives, *the Forestry Week and Decade of Reforestation* was also launched to become annual events. In order to have a successful tree planting day, it requires a good nursery production of seedlings. "*For this reason I encouraged each student and community to engage in community nursery and to plant two trees each year in order to achieve our goals",* said Mr Hanington

As part of the commitment of the department to Mele Youth tree planting program, the Director handed over some items to the schools and the Imere Youths which include :- (i). Sandalwood Guideline Books,(ii) Sandalwood seeds and seedlings.

Handing over

The Director of Forests concluded by saying that, Port Vila has already been declared as as a **PORT VILA SANDALWOOD CITY** in 2014 by the Port Vila Lord Mayor, Mr Ulrich Sumptouh. which saw the commitment of forestry department and the Port Vila Municipality engaging in sandalwood planting in Port Vila.

This idea could be adopted here in Mele, considering Mele being known as the largest village in Vanuatu, why not having Mele declared as a Sandalwood village in the future?

Pastor Maseaha Nato's Vision and Passion in Forestry.

By Ioan VijiNakarai Vutilolo.
Chairman of Vunausi Environmental Conservation Organization. VECO.REDD+ & Project Coordinator
Monday, May 02, 2016.

The struggle and excitement prior to the independence in the early 80s was materialized as citizens of a new independent state witnessed the flag raising on 30th of July, 1980. The glimpse of their vision or dreams of independence observed in the events or activities dramatized in the celebration.
The Presbyterian Church of Vanuatu in the history of Independence were amongst other churches that produced charismatic leaders who fight for Independence; thanks to the Missionaries whom significantly molded these great leaders.
During the Missionary era, one of the Presbyterian Church Missionaries had the vision to establish the first ever Forestry Research Trial in Vanuatu (or New Hebrides then) on Tangoa Island, SANMA province; trialing mostly indigenous and exotic tree species – the latter including the Mahogany tree species. Today the Department of Forests is sending seeds or planting materials from Tangoa Mahogany Provenance throughout the country for planting in the islands. Thirty five years (35 years) after independence to reflect in the forestry sector one could said we have moved even ahead and this can be assessed by the sustainability of resources that is available being an indication of people's active participation in forestry sector, thus reflects visions or dreams laid out by great leaders of this nation.

Am writing this brief narrative to share the interest and vision in forestry of a great leader Pastor Maseaha Nato of the Presbyterian Church whom I admired greatly. I am hopeful will shade some light as you read what is not only preached at the pulpit by this gentleman but acted on and carrying on what the early Presbyterian Church Missionary did for the forestry sector. Imagine a great turn around it will be in achieving the vision or dreams of independence if leaders of this nation could spend valuable time supporting their people in developing the natural renewable resources such as the forest resources. "*Every time is priceless even if plenty or small not to live in regret for a vision or dream*" is a food for thought as we journey towards our dreams or visions.

I had the privilege to meet this gentleman at the Presbyterian Church of Talua Theology Ministry, Pastor Maseaha from Tautu village, North East Malekula. As I recalled, Pastor Maseaha has a passion for growing trees and he and his wife enjoy and love their gardening. His passion is to know more about the different trees, their values and benefits and wishing that one day, he would become a great teacher to share information about growing trees.

Recalling his words; "*Forestry i important yufala I mas plantem ol tri blong helpem life blong yumi*" (Forests is important, we must plant trees, it's the source of our lives).

Pastor Maseaha Nato at his Sandalwood nursery, Tautu village, North East Malekula.

Pastor Maseaha during his stay at Talua Ministry, he spends most of his time visiting woodlot in South Santo and shared experience in the field. He collects planting materials such as seedlings or seeds to get back home to his land in Tautu, North East Malekula to plant. He is a great naturalist and farmer; I do admire his knowledge and skills in growing trees.

Pastor Maseaha attended one of my Workshops in Lakatoro in Malekula and with excitement he shares what we were doing and that was to me very humbling of a great leader to have interest in trees and to teach people importance of trees and encourage them to grow and care for trees and the environment.

I visited Pastor Maseaha's home and I am greatly impressed to see that even with the demanding schedule of the church and his commitment with Talua Theology Ministry and being an elderly person, he still prioritize growing trees. He has a fruit trees orchard beautifully landscaped around his home and a nursery with healthy Sandalwood trees growing. He proudly showed his trees and that what he was doing was similar to what am doing back home. It is rewarding to see this gentleman and his wife share the same dream or vision in forestry and actively practicing and teaching it.

Pastor Maseaha is a teacher at the Presbyterian Church Talua Theology Ministry at South Santo but continue to have great interest in growing trees and teaching or passionately talking about trees to people he meet.

I salute Pastor Maseaha Nato and his wife and family for their significant contribution for his vision and dream in forestry to grow trees to support the live of the rural community he works with and also his community of Tautu, North West Malekula and at the same time he is actively witnessing at the Talua Theology Bible Ministry for the all Vanuatu.

REPUBLIC OF VANUATU

FORESTRY ACT [CAP 276]

Forestry (2016 Sandalwood Harvesting Season) Order No. of 2016

In exercise of the powers conferred on me by paragraphs 47(6)(a), (b) and (c) of the Forestry Act [CAP 276], I, the Honourable MATAI SEREMAIAH, Minister of Agriculture, Livestock, Forest, Fisheries and Biosecurity, on the advice of Director General, make the following Order:

1 2016 Sandal harvesting season

The sandalwood harvesting season for 2016 will commence on 15 May 2016 and ending on 15 August 2016, for all the islands of Vanuatu, where sandalwood trees can be harvested.

2 Licence quota

The Licence quota for the 2016 sandalwood harvesting season is not more than 60 metric tons.

3 Prices for various grades of sandalwood

(1) The minimum prices for the various grades of sandalwood heartwood are set as follows:

(a) First grade heartwood - VT 4000 per kilogram;

(b) Second grade heartwood - VT 3000 per kilogram;

(c) Third grade heartwood - VT 2000 per kilogram.

4 Offences

A person who fails to purchase sandalwood heartwood at the minimum price set out in clause 3 commits an offence and is liable on conviction to a fine of VT 100,000.

5 Commencement

This Order commences on the day on which it is made.

Made at Port Vila this 29 day of April, 2016.

REPUBLIC OF VANUATU
MINISTER OF AGRICULTURE, LIVESTOCK, FORESTRY, FISHERIES & BIO-SECURITY
REPUBLIQUE DE VANUATU

Honourable MATAI SEREMAIAH
Minister of Agriculture, Livestock, Forest, Fisheries and Biosecurity

Progressive Report on the IFAD funded Tools and Materials for Forestry Recovery effort



Picture 1: Handover of tools and materials to Dept. of Forests by *Acting DG to Forestry* *FAD t focal point o Penama*

By Godfrey Bome
IFAD _ Forestry Focal Point
Department of Forests, Port Vila

Background
The Department of Forests (DoF) was among four departments within the MALFFB to received financial assistance from the IFAD for Cyclone Pam recovery effort. The funds allocated for the DoF was 13,000,000 Vatu equivalents to 117,293 US Dollars. The primary goal of using the funds is to enable the forestry sector in the affected areas recover from the natural disaster and to improve the long-term resilience forestry farmers.

The original intention was for the fund to provide assistance in purchasing Chainsaw/ Mini-mills to utilize windfall trees and Nursery materials for nursery rehabilitation. Due to the geographic location and the scattered islands of Vanuatu, the Department of Forests tried very hard to make sure that the distribution of the materials be quick and be fairly distributed to the affected communities.

Expected Outputs
The expected outputs of the project in cyclone affected areas are that target households/ communities are able to:

- Utilize windfall timber to rehabilitate and reconstruct their homes
- Rehabilitate the damaged nursery
- Establish nursery for replanting of new tree crops

Update Activities
The update activities or achievements so far were;
(i) Handing over of tools and materials to the Department
(ii) Distribution of Chainsaw/ Minimill to Erromango, Tanna, Epi Malekula, Tongoa, Emae, Efate Ambae.
(iii) Distribution of Nursery Materials to Erromango, Tanna, Tongoa, Emae, Epi
(iv) Rehabilitation work on nursery in Epi, Tongoa, Emae, Erromango, Tanna
(v) Seed Collection and seedling Production.
(w) Seed Distributions
(x) Chainsaw & Nursery Training

Utilization of Windfall Trees Tools distribution

Vanuatu Palm Oil Ltd brief report

By Godfrey Bome
Senior Utilization Officer

Background
The Vanuatu Palm Oil Limited established as a project following the Government resolution no. 108 by the Council of Ministers clearly decided that: to establish Vanuatu Palm Oil Industry. On the 5th of April, 2006, the Ministers of China and Vanuatu signed the agreement "Assisting of cooperation of Vanuatu palm technology project" in the 1st session of the "China- Pacific Islands Countries Economy Development Cooperation Forum". And this project launched the process of Vanuatu oil palm industrialization. From January 2007, according to the agreement between China and Vanuatu, China has completed the following works:
Providing the seeds of oil palm, cultivating oil palm seedlings for 5,000 hectares' plantation; Training Vanuatu Government related institutions' officers and farmers, to make them acquire knowledge and abilities developing oil palm industry.

During this period, based on the 19th July 2007 no. 66 resolution and 12th June 2008 no. 80 resolution, Vanuatu Council of Ministers decided that for solving the land usage of oil palm project. The two countries decided to build a joint venture (*namely Vanuatu Palm Oil Ltd., hereinafter short for VPO*), and made clear regulation for promoting oil palm industrialization. On the account of the agreement between China and Vanuatu, the grow seedlings land should be prepared but it had not been realized; thus, VPO made contribution to secured the land. The promised back then according to the agreement is to see smooth implementation of the project..
The main works completed for oil palm industrialization were:- Emphasizing on amplifying bilateral and multilateral communication and study, VPO had host several conferences with the President of Papua New Guinea Economic Sustainable Development Company and Australia's Foreign Ministry officers and went to Solomon Islands for oil palm project inspection.

VPO is emphasizing on collecting, analyzing and clearing up the compositions and study reports about Global and South Pacific oil palm industry,;

Continued on page 15.

Enhancing management and processing systems for value-adding in plantation-grown whitewood in Vanuatu

By Rexon Viranamangga,
Project Coordinator of ACIAR Whitewood II Project Santo

Introduction

In 2015 Vanuatu encountered two severe natural disasters, cyclone Pam (category 5) on March followed by a drought from second quota to end of year. Cyclone Pam memorably created its landmark on the environment, infrastructures and livelihood of the Ni-Vanuatu.

Project activities commenced at a slow pace as people aspire to get their living back to normal. Most of the government officers were involved in the cyclone relief programme collecting, recording cyclone damages and assist to distribute food to affected areas.

Fortunately Santo was not severely affected compared to the islands in the southern provinces. All the project materials and equipment were safely stored except for minor damages to the Timber Research Facility (TRF). The only unrecoverable damages of the project investment are on Epau and Epule Whitewood pure, mix and agroforestry trials on Efate. Nevertheless the project and Department of Forests (DoF) have assured the landowners to replant the areas but not as project trials.

The main activity which the project invested on this year is investigation on how to process the small diameter Whitewood trees at Sara belonging to Mr Malakae Vele, one of the prominent Whitewood farmers in Sanma Province and Vanuatu. Mr Vele, his sons and grandsons are acknowledged for being very instrumental during the entire operation at Sara and without them the operation wouldn't be that successful. Still under processing much of the project investment and efforts is spent on upgrading the timber research facility to be able to accommodate the various level of secondary processing anticipated by the project. The furniture manufactured from the small diameter Whitewood trees have indicated outstanding results compared to old Whitewood trees from natural forests. The implementation of the project activities are in accordance with questions cited from the project document;

Research questions

What mixed species and food crop agro forestry systems can provide early and medium term returns to growers and encourage planting of Whitewood?

i. What are optimal thinning ages and intensities to maximise clear wood production and minimise risks such as weed and wind for Whitewood grown at various spacing?

ii. What is the optimal pruning regime to maximise clear wood development in Whitewood trees?

iii. What preservative treatment practices would increase the durability and marketability of small dimension Whitewood?

iv. What sizes and grades of Whitewood can be used in structural applications rated for cyclonic winds?

i. What growers and processor group structures will facilitate knowledge transfer, marketing and increased planting of Whitewood.

Project Aim

The aim of the project as cited from the project document *is to improve the management, productivity and profitability of planted timber resources in Vanuatu through enhancing landholder capacity, improving the development of wood products from young trees*.

Project Objectives

Objective 1: **Increase scientific knowledge for a range of locally appropriate agroforestry and plantation stand management systems to maximise returns to smallholder landowners.**

Associated Activities1.1: Design stand management regimes appropriate to large plantations and mixed species agroforestry systems.

Agroforestry and plantation management

Agroforestry system is substantially the basis of Whitewood woodlot establishment in Vanuatu as mentioned in my thesis on "*Whitewood value chain in Vanuatu*." In view of the fact that Whitewood farmers are subsistence farmers, need agricultural crops for food while managing growing trees. In addition to food the agricultural cover crops are used for suppressing weeds providing a micro-environment to Whitewood. During the first 12 months crops such as island cabbage and cassava; provide competition to whitewood at the early stage. Consequently a semi –industrial Whitewood plantation located at Monexile, Santo belongs to Mr. Benwel Tarilongi which adopted the agroforestry system of mixed tree species consisting of Whitewood, Mahogany, Natapoa, Nangai and Sandalwood.

Mr. Tarilongi divided his plantation into an hectare blocks and allocated to farmers from nearby villages to do gardening provided he supply seedlings to plant among their crops. He employs supervisors in collaboration with the Department of Forests to ensure seedlings are properly planted.

The aim for most farmers are to sell their food crops at the markets while surplus for home consumption. The consistent planting pattern is observed on most blocks once the trees are planted and kava as a cash crop is the initial crop established among the trees followed by peanuts and vegetables. It used to be a cattle grazing area therefore, planting peanuts and vegetables allows farmers to maintain grass plus weed such as Biko/wild eggplant scientifically known as *Solanum torvum* and others.

Once peanuts and vegetables are harvested, they are replaced by cover crops such as sweet potatoes, water melon and pumpkin depending on planting seasons. The controlled activity suppressed weeds and do not have the chance to re-establish. Dry land taro is identified as the best final short rotational crops before leaving the kava and trees to continue growing. Kava plants dominate the site after dry land taro is harvested. Rotation of these crops do not only suppress weeds but restore nutrients to the soil and provide a growing environment for both kava and Whitewood. Taller crops such as cassava, island cabbage, sugarcane, banana and others are usually planted along the border of the blocks..

Value estimation of agricultural crops planted in between trees

The research question of "*what mixed species and food crop agroforestry systems can provide early and medium term returns to growers and encourage planting of whitewood,"* is first on the list in the project document. Agroforestry is one of the main awareness packages DoF uses to boost tree planting in the rural areas. However, the information provided lack research experiments to provide scientific data and reliable information for farmers to adopt.

To provide answers for that research question the project established a hectare plot each at Epule and Epau on Efate and Lorum on Santo to collect on agriculture rotation crops data for analysis. The experiment trails consist of 5 treatments with 3 replicates of pure and mix whitewood.

Based on the farmers expertise on traditional gardening, they decide on which crops to plant among and in between the rows at the beginning of the experiment.

The farmers decision on which crops is essentially driven by the planting seasons, traditional values and market. The figures table 1 below indicated the average stems per hectare planted at Epule and Epau (Efate) for the entire 2 ha trials.

The data should have presented on a level where the value of the crops are investigated according to the species composition and different spacing used in the 5 treatments. Unfortunately the two trials were thrashed by cyclone Pam on March 2015.

Nonetheless, the data collected on agriculture crops at Lorum 2, Santo will investigate and provide more accurate and statistically analysed data for DoF in future awareness.

Lorum 2 trial is well protected and fully fenced by Late Kalsei and his wife and grew plenty vegetables and root crops for generating income for their family.

The value of the agricultural crops presented in Table 1 albeit pseudo replicated and statistically incorrect, it could still be used to certain level with clarifications. Farmers definitely require market values of the crops as indication of early return on their tree planting investment. Furthermore, high value crops such as kava will significantly increase the early return to the farmers.

Associate Activity 1.2 Quantify log product quality outcomes under various spacing, pruning and thinning scenarios

Wood poles

Wood pole is the main construction material in the rural areas of Vanuatu compared to timber, steel and concrete. Ni Vanuatu use wood poles to build their traditional houses, traditional kitchen, community halls and other houses. The structure of the house starting with the post to the beam, rafters and purlin are all wood poles.

Table 1: *Estimated value of crops planted at Epule & Epau whitewood mix planting tri-*

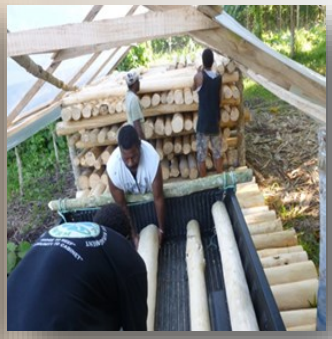
Crops	Stem/960m^2 (Experiment Size)	Stem/ha	Stump value (VT)	Stump value (VT)/ha
Peanut	728	7583	20	151667
Spring Onion	150	1563	5	7813
Corn	100	1042	10	10417
Capsicum	119	1240	20	24792
Kumala	120	1250	100	125000
Cassava	28	292	50	14583
Dry Land Taro	79	823	100	82292
Fijian Taro	70	729	50	36458
Banana	8	83	300	25000
Island Cabbage	34	354	20	7083
			Total Est. Value	**485104**

Large traditional buildings such as community hall use a lot of wood poles from large to small sizes (5 to 30 cm DBH). The wood poles are harvested either from the natural forests or old garden sites. Islands in the northern part of Vanuatu such as Ambae, Pentecost, South Santo and offshore islands normally use Namamau wood poles for traditional house buildings while central and southern provinces use other hardwood species .

Livestock fencing is another area of construction whereby wood poles is the source of materials. Cattle grazers use life wood poles from species such as *Hibiscus tiliaceous* (Burao), *Pterocarpus indius* (Rosewood), *Casauarina equisitifolia* (Erythrina) etc and dead wood poles from Namamao, Namariu and other hardwood species.

The aim of this associate activity is to investigate the quality of wood poles harvested from the Whitewood silvicultural trials established in the previous Whitewood Project. There are several silvicultural trials established in different areas on Santo however, the trials at Lorum were selected specifically to do thinning and also investigate the quality of wood poles following the applications of various silvicultural regimes such as intercropping with other timber/poles species, agricultural crops taking into consideration the spacing and pruning intensity.

Figure 1: *Thinning activity at Lorum*



Logs from shorter planting space 4mx2m & 4mx3m are more cylindrical, less branches and smaller in size compared to wider planting space 8mx3m & 8mx3m where the logs are bigger but larger and lower branching.

Both large and small logs have the advantage of meeting certain market requirement but the difference is, shorter planting space provides more logs compared to wider spacing. Nevertheless, wider planting spacing might compensated by the revenue collected from the agricultural crops planted among the trees.

Thinning of Silvicultural Trials at Lorum East Santo

Table 2: Lorum silvicultural trials selected for thinning and control.

Lorum thinning trial			
Plot no	Spacing	Thin	Control
1	8x3	☑	
2	8x2	☑	
3	4x3	☑	
4	8x3		☑
5	4x3		☑
6	8x2		☑
7	8x3	☑	
8	8x2	☑	
9	4x3	☑	
10	4x2		☑
11	4x3		☑
12	8x2		☑
13	8x3		☑
14	4x2	☑	
15	4x2		☑
16	4x2	☑	
17	8x3		☑
18	4x3		☑
19	8x3	☑	
20	4x3	☑	
21	8x2	☑	
22	4x3	☑	
23	8x2		☑
24	8x2	☑	
25	8x3	☑	
26	8x2	☑	
27	8x3	☑	
28	4x3	☑	
29	8x3		☑
30	Rip	☑	
31	8x3	☑	
32	Rip		☑

Figure 2: *Logs harvested from Malakai's Whitewood plantation at Sara, East Santo*

The project continues to harvest wood poles from Malakai's plantation especially from the smaller trees and the top of the logs which won't be able to process to timber (*Figure2*). Logs price offered to Malaki is at VT 2000 per cubic meter.

Blue stain & Ambrosia beetle observation on air dried poles

In spite of no experiment on blue stain observation on air drying of Whitewood poles since it is a structural product, similar situation is observed between outdoor and undercover air drying indicating in Figure 8 & 9 below. Whitewood poles air dried outdoor were invaded with blue stain and Ambrosia beetles in 8 days with mechanical defects such as checks and end split compared to undercover air drying where the poles were still white, less blue stain and no Ambrosia beetles observed (Figure 9).

Associate Activity 1.3: Identify current limitations to product quality and economic value, such as blue stain, insect damage and decay. Conduct analyses of remedial action to reduce the impact of identified limitations.

The fundamental aspect of this associate activity is to investigate the environmental factors that are impacting product value and returns for the Whitewood farmers. It involves analysis of possible solution through modification of Whitewood product development such as appropriate drying techniques, preservative treatment during processing and harvest, transport and processing systems. Proper action research and analysis of the Whitewood helps to understand the advantages and disadvantages of companies specialising in certain **products and how they are connected to final market.**

Storing and air drying of poles and timber at operation sites

Whitewood as being white in color and soft with plenty of sugar in the sap requires a great deal of attention after milling, until it is properly stored to avoid environmental, chemical and physical damage. Therefore, storage shed were built at the processing sites and the logs and timber (Figure 3) were initially stored and air dried before transported back to the Timber Research Facility (TRF) before pressure treated with coper azole preservative and borax in dip tank.

Figure 3: *Storing of poles and timber at operation site*

Blue stain experiment

Blue stain experiment setup at Sara operation site is to investigate various means of application to control blue stain. Blue stain is cause by fungi that grow in sapwood and partly for food. Even though it is not a stage of decay, it creates conditions that allow decaying fungus to invade the timber.

The most effective way to prevent timber from blue stain is to kiln dry where the moisture content in the timber is dropped to below 20%. At that level of moisture content it disallows the blue stain to invade the timber.
Construction of kiln dry either using solar of bio-fuel is in the initially planning of the project but was dropped out due to limitation of funds. Consequently having air dry as the only method of timber seasoning, chemical has to be used to prevent the timber from blue stain invasion.

The blue stain experiment comprised of 3 treatments, 4 replicates and experimenting in both outdoor and indoor air drying. Treatment one is a mixture two anti-moulds namely Taratek and Tanamix, second is bleach and third control where no chemical is used. The 3 treatments are replicated with 4 boards per layer and stack to 4 layers. The total number of boards per treatment is 16, board size 100mm x 25mm and 1 m in length.

Two boards from each layer, one from the middle and one from the edge are labelled to record the weights and observes blue stain invasion each week. Once the boards are labelled and placed into stacks the chemicals are mixed into a 20 litre container poured into a spraying bottle to spray the boards .

Preliminary results of blue stain experiment

Figure 4: *Blue stain observation on the outdoor experiment after one month*

As indicated in figure 7 the stack on the left is sprayed with mixture of Taratek and Tanamix, middle stack is control where no chemical is applied and stack on the right is sprayed with Bleach.

While Geoff Smith is still to provide formal results of the of the blue stain experiment, Figure 7 has indicated a clear observation that the mixture of Taratek and Tanamix provides the best outcome by stopping blue stain invasion on the boards after 4 weeks (outdoor) compare to the control and bleach. As a matter of fact there is no difference on blue stain invasion observed between bleach and control.

Blue stain & Ambrosia beetle observation on air dried poles.

In spite of no experiment on blue stain observation on air drying of Whitewood poles since it is a structural product, similar situation is observed between outdoor and undercover air drying indicating in Figure 8 & 9 below. Whitewood poles air dried outdoor were invaded with blue stain and Ambrosia beetles in 8 days with mechanical defects such as checks and end split compared to undercover air drying where the poles were still white, less blue stain and no Ambrosia beetles observed (Figure 9). The moisture content of the logs is regularly monitored to make sure the logs treated when the moisture content is below 20 %.

Figure 5: *Blue stain and Ambrosia beetles observed outdoor air dried logs after 8 days*

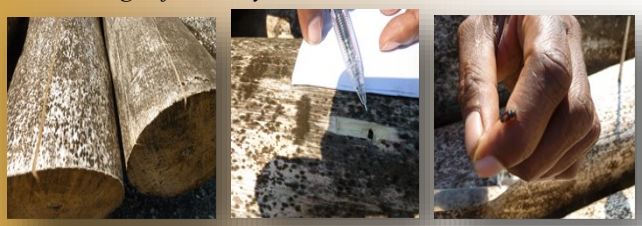


Figure 6: *Less blue stain, mechanical defects & Ambrosia beetles observed on poles air dried undercover.*

Timber research facility (TRF)

To carry out the research activities under Whitewood product development the project requires proper facilities to embark on these activities. According to the project document these facilities were anticipated to establish by the project. After few initial project consultations with its stakeholders especially the Department of Forest in Luganville and the Vanuatu Agriculture College, it was agreed for the project to renovate and upgrade the existing timber yard at Sapui, forestry Station into to timber research facility of TRF (Figure 7).

Figure 7: *Construction of research timber facility*

Figure 8: *Construction timber drying shed at TRF*

The other infrastructure built was a TRF with concrete slab in the main building where the pressure cylinder and the chemical tanks are, drip tank to stack poles and timber once remove from the cylinder, permanent timber drying shed (Figure 8) and temporary poles drying sheds. Nevertheless, TRF still requires upgrading and installations of infrastructures to operate efficiently.

For instance installation of security fence and power supply for lights, air condition and equipment need to be installed in the wood science laboratory. Additionally other equipment such as the rip and docking saws, pressure treatment plant require power.

Currently the rip and docking saws do not operate efficiently with the power supply from the generator. Importantly the project needs to build a timber sale shed preferably at the DoF office in Luganville so that the consumers do not have to go to the TRF to buy timber, not only to avoid consumers expose to chemicals used at TRF but also safety for the equipment and materials at TRF.

Objective 2. Maximise value to growers through product development utilising lower value wood.

Associate Activity 2.1 Conduct product development research into the potential range of high value wood products from young plantation grown trees.

A search for opportunities to use small diameter trees from this project was conducted as part of an effort to improve the financial feasibility for the Whitewood farmers. While there are few reports on product development from Whitewood harvests from the natural forests, this project aims to identify potential products manufactured from small diameter trees thinned from whitewood plantation.

The investigation of potential opportunities for whitewood products is based on the existing product, processing and technology before moving to new products. The existing product opportunities includes structural timber, furniture, mouldings, panelling, finger joints and others while new product opportunities includes poles, biomass energy and other value-added products not listed in the existing products.

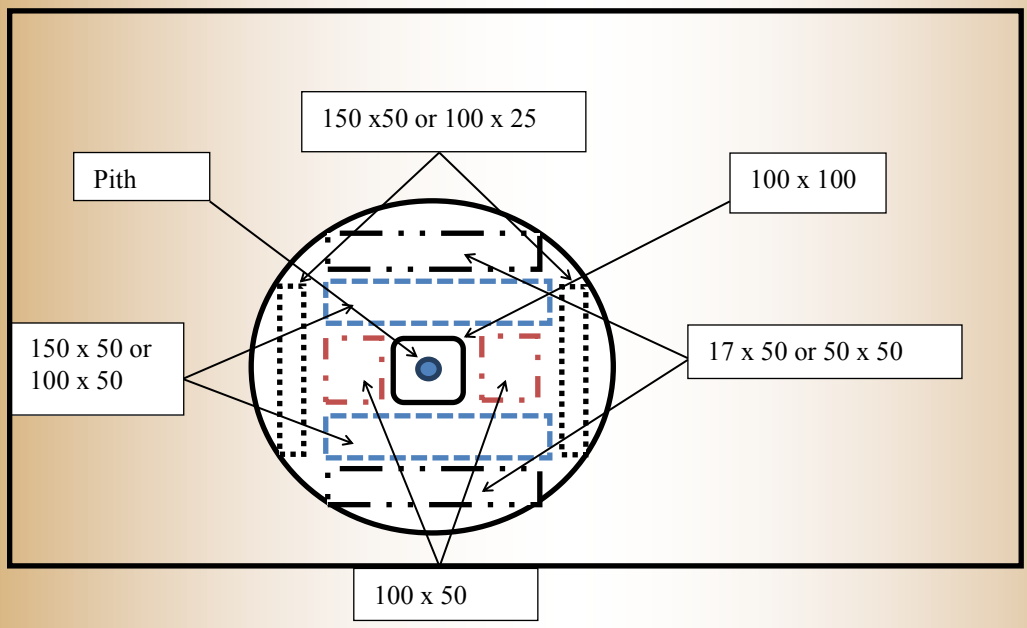
Plain-sawn is the sawing technique used to process the small diameter trees and not quarter-sawing technique. The reasons for selecting plain-sawing technique are;

(1) to maximise sawing recovery from the small trees

(2) to maximise number of clear timber from the first opening cuts on each side of the log

(3) to make sure the middle size timber is either 100 x 100 or 150 x 50 so the pith in the middle of the log is in the timber and (4) whitewood is stable and liable to withstand the mechanical defects normally determining to avoid in quarter-sawing technique.

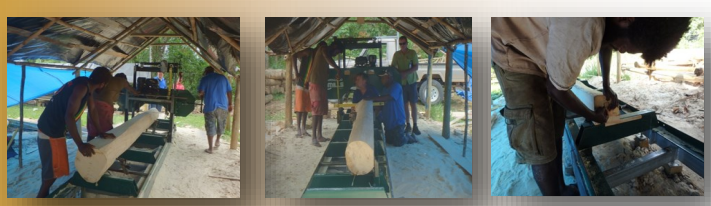
Figure 9: *Cross section of the log indicating where different sizes of timber are processed*



Correct positioning of the log on the sawmill rail considering the shape of the cross section of the logs, tapering and bending of the log is very important to maximise recovery. Nonetheless, with the small diameter whitewood logs, determining where the knots are likely to occur near the first few cuts is very important as well.

On the upper logs from the top section of the tree, knots in the log could be indicated by lamps on the bark and the logs but bigger logs from the base of the trees with smooth bark are unlikely to indicate. Therefore, determining which side of the logs knots are likely to appear in the first cuts is done before the logs are cross cut and skid to the ramp for debarking. In most circumstances the predeterminations of which side of the log the knots will occur closer or further in to the wood are correct. From observation this could have cause by closer planting space whereby branches in between trees are self-pruned early compared to the branches facing tree rows. The first grade clear timber normally at sizes 150 x 25 and 100 x 25 processed from the side of the logs where knots are located further into the logs and larger sizes 75 x 50 or 50 x 50 are processed from the side of the logs where knots are closer to the surface (Figure 8). Once the log is sliced in all four sides, timber size 100 x 100 is marked around the pith of the log before other timber sizes are decided to process (Figure 9).

Figure 10: *Marking the levelling the logs on the sawmill rail before processing*



After the log is correctly positioned on the rail, the log has to be levelled so that the log is cut correctly. This is done by measuring from the pith of each end of log and the small end is always tilted with bearers to level the large end and small end of the logs. The log is again level (Figure 13) before the second side of the log is cut. Each timber is marked with a measuring tape before sawing.

The project purchased two sawmills a bandsaw and turbo circular saw operated by a chainsaw. The principle idea is to investigate the quality of timber and especially the recovery rate from the two sawmills.

The recovery rate from the bandsaw operated at Sara processing Malakae's small diameter trees range between 35 to 45 %. Lower recovery rate usually comes from smaller logs from the top of the trees.

In spite of the small diameter logs the rate of recovery recorded from the bandsaw is adequate. Having the option to turn the logs while cutting maximises the number of timber produce per log.

Part of the report will be published in the second quarter issue on July, 2016

Vanuatu Palm Oil Ltd brief report

Continued from page 8

South Pacific oil palm industry and rain forest, biodiversity, small-sized farm mode, oil palm agriculture and Solomon Islands oil palm industrialization mode implemented in Papua New Guinea lead by Taiwan Agriculture Aid and Aus-

Oil Palm nuts

tralia foreign affairs and trade organization.

VPO has completed the study of Vanuatu oil palm industry land type, land trend and its countermeasures. At the same time, the company also made an operational mode of oil palm industry which suits for Vanuatu's conditions. The features of this mode are: Fitting for FAO recommended West Africa oil palm mode. Paying attention on biodiversity and protect conservation of water and soil while expanding the area of oil palm plantation with local farmers intercropping crop in oil palm spacing, harvesting crop while killing weeds. Based on the rule of *Test First*, VPO has brought more than 10 oil palm species from China Hainan, China Yunnan, Papua New Guinea and Costa Rica for test. After two years seedling, double four years 'preliminary plant test and pilot plant test, VPO has chosen proper oil palm specie which adapts Vanuatu natural conditions and produces 4 tons oil each hectare. From January 2007, according to the agreement between China and Vanuatu, China has completed the following works: Providing the seeds of oil palm, cultivating oil palm seedlings for 5,000 hectares' plantation; Training Vanuatu Government related institutions' officers and farmers, to make them acquire knowledge and abilities developing oil palm industry. During this period, based on the 19th July 2007 no. 66 resolution and 12th June 2008 no. 80 resolution, Vanuatu Council of Ministers decided that for solving the land usage of oil palm project. The two countries decided to build a joint venture (*namely Vanuatu Palm Oil Ltd., hereinafter short for VPO*), and made clear regulation for promoting oil palm industrialization. On the account of the agreement between China and Vanuatu, the grow seedlings land should be prepared but it had not been realized; thus, VPO made contribution to secure the land he promised back then according to the agreement is to see smooth implementation of the project.. The first plot established were research plots of which a total of 20 hectares has been cleared to establish research trails to test which oil palm specie will best suit Vanuatu While a 2 hectare plot was established as a research plot for small holder model in order to be able to engage landowners to engage in oil palm planting. From the original idea to acquire over 5,000 hectares of land; up to date a total of 318 hectares of land has been negotiated, agreed and signed between the Project and the Land owners. The research activities include the establishment of the research plots or planting started in 2008 and up to date a total of more than 2,000 trees had been planted. The nature of works of this project is in need of both manual labor and mechanization with the use of tractors and other implements for clearing purposes. It was evident that these machineries has helped a lot with the works so far, however some of these machines are in good order while some were already deteriorated.

It was good news to hear that the research stages of the project were over and the company has successfully identified the best variety suitable for Vanuatu. The success outcome was on both the 100% growth of trees and the oil content quality and quantity. That is to say that every palm trees that were planted were growing successfully with zero percent of dying trees. Even the recent Cyclone Pam had done no damage on the trees. The flowering and the fruit production of the research plot is high compare to that of Papua New Guinea and China. The Project is seriously considering the environmental impact that may have caused by the operation. With the inspection; the negative environmental impact is not visible at the moment. The project is very considerate for environment friendly operation; thus abide by its two principle of no operation or clearance on a slope of 25 decrees, and a second principle of no massive clearance, the idea is to

maintain some standing trees to divide the plantation. The current research outcome seems positive as it only takes three years for

L - R: Sample of maize (local) and peanut (local) harvested from site with samples of oil from trees from the site.

each tree to produce fruit. This has been tested in to model; the plantation model and the Smallholder model. The company has already secured potential market and that is for the Oil Palm product to be exported to China and Singapore which project to be started in 2017.

Through 5 years' efforts, VPO plans to take shape of Vanuatu oil palm industry and realize annual oil production reaching 22,000 tons. This target will also realize employment for 200 people, and make 600 Vanuatu planters' gain reach 5,000USD annually. It can practically promote local people's life and accelerate the development of Vanuatu oil palm industry to have excellent economic incomes and social benefits. VPO has the ability and confidence to realize this target of Vanuatu oil palm industry.

Forestry Books and Posters

Thanks to World Bank FCPF REDD+ Project for funding the printings of this newsletter.

To : _____

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Godfrey Bomee (Final Editor)
Phyllis Berry (Editor & Compiler)

Forestry Newsletter

The Department of Forests produces this newsletter quarterly and we welcome news or articles on any forests related activities. Deadline for submission of articles for the next issue is 15th June, 2016.

All contributions in English, French or Bislama, should be sent to:-

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