



Government
of Samoa

Plant Life

**Common plants at
Samoa Trust
Estate Corporation
plantation,
Mulifanua, Upolu**

This is a publication under the EU-GIZ ACSE project; ***Energy Bill and Sustainable Bioenergy, Samoa***

The 35.5 million Euro regional European Union (EU) programme Adapting to Climate Change and Sustainable Energy (ACSE) is funded out of the 10th European Development Fund (EDF 10).

Under this regional programme, the EU-GIZ ACSE component is administered by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. It aims to enhance sustainable livelihoods in fourteen Pacific Island countries and Timor Leste by strengthening the countries' capacities to adapt to the adverse effects of climate change and enhancing their energy security at the national, provincial and local/community levels.

EU-GIZ ACSE operates from the GIZ Pacific Office in Suva, Fiji.

Published by the
Energy Policy Coordination and Management Division
Ministry of Finance
Level 3
Central Bank Building
Apia, Samoa
T +685 34436
F + 685 21312
www.mof.gov.ws
September 2017

Disclaimer

This publication has been produced with the assistance of the European Union. The contents of this publication are the sole responsibility of the author(s) and can in no way be taken to reflect the views of the European Union.

Contents

● Acknowledgements.....	2
● Introduction.....	3
● Samoa Trust Estates Corporation, Mulifanua site.....	4
● Plant Species	
i. Pafiti.....	5
ii. Puluvaio.....	6
iii. Pulumamoe.....	7
iv. Aoa.....	8
v. Moso'oi.....	9
vi. Niu.....	10
vii. Tamaligi.....	11
viii. Tavai.....	12
● Summary of Scientific Analysis.....	13

Acknowledgements

This publication is a result of the valuable contributions from various individuals, project partners, Government Ministries, Departments and Organisations in Samoa. In particular, sincerest appreciation is extended to the following:

- Technical Working Group (TWG) members of the Samoa-EU-GIZ Adapting to Climate Change and Sustainable Energy (ACSE) Project. Representatives of the following agencies comprise the TWG:
 - Attorney Generals Office
 - Electric Power Corporation
 - Ministry of Natural Resources and Environment
 - Ministry of Finance, Energy Policy Coordination and Management Division – Secretariat to the TWG
 - Samoa Trust Estates Corporation
 - Scientific Research Organization of Samoa
 - Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, Fiji
 - The Pacific Community, Geoscience Division
 - United Nations Development Programme, Samoa Office
- ACSE Project management team; Mr Sione Foliaki, Ms Flavia Luamanuvae Vaai and Ms Lorraine Salesa.
- GIZ Technical Adviser Mr Ravinesh Nand for support and guidance.
- The European Union and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH for the financial support under the EU-GIZ ACSE project.

Introduction

Samoa is home to abundant plant life including indigenous species and some foreign introduced plant species. A majority of the foreign plants were introduced to Samoa in the pre-independence era through arrival of the early missionaries, Germans and Japanese, for various purposes from medicinal use to construction. These plants can be found across all the four islands; Upolu, Savai'i, Manono and Apolima.

As part of the EU-GIZ Adapting to Climate Change and Sustainable Energy (ACSE) programme, a component of the **Energy Bill and Sustainable Bioenergy, Samoa** project focuses on biomass resource assessments at the Samoa Trust Estates Corporation (STEC) Plantation at Mulifanua, Upolu. Through fieldwork for biomass resource assessments at the non-leased land areas within the STEC Mulifanua plantation, eight common plants were identified and further scientific analysis on each was conducted by the Scientific Research Organisation of Samoa (SROS).

SROS laboratory tests took place over a period of 14 days using the Quality Management System implemented by SROS and which also meets the requirements of the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC) standards, ISO/IEC 17025 (2005).

Thus, this publication provides a brief description of these plants as well as some data on moisture content and energy content under different conditions.

Samoa Trust Estates Corporation, Mulifanua site



PAFITI



Scientific name:
Jatropha Curcas

Common name/s:
Jatropha, American
purging nut, Barbados
nut, Bubble bush,
Physic nut, Purgenut

Family:
Euphorbiaceae

Status:
Invasive

Description:
Pafiti is a highly drought-resistant species that grows well in the harshest of conditions and the poorest of soils. A small tree or shrub it grows between 3 to 5 meters in height and can attain heights up to 8 to 10 meters under good conditions.

Drying period (days)	0	4	7	10	14
Moisture (g/100g)	67.63	29.11	18.33	19.18	15.6
Energy (kJ/g)	4.79	12.85	15.11	11.36	12.62

PULUVAO



Scientific name:
Funtumia Elastica

Common name/s:
West African rubber tree, Lagos silk rubber tree, Bush rubber

Family:
Apocynaceae

Status:
Invasive

Description:
Puluvao can grow up to 30m. It is a medium sized tree with glossy opposite leaves, milky sap and paired long woody pods bearing numerous plumed seeds. It is also a source of very good quality latex and was extensively harvested in the late 19th century.

Drying period (days)	0	4	7	10	14
Moisture (g/100g)	47	20.7	7.11	11.02	12.5
Energy (kJ/g)	11.1	15	15.13	14.17	13.82



PULUMAMOE

Scientific name:
Castilla Elastica

Common name/s:
Mexican rubber tree,
Panama rubber tree,
Castilla rubber tree

Family:
Moraceae

Status:
Invasive

Description:
Pulumamoe like Puluvaao can grow up to 30m tall with a diameter at breast height of up to 60cm. It has spreading or drooping branches, the young ones woolly-hairy. The plant produces abundant milky sap when slashed and yields latex, which used to be used in the rubber industry.

Drying period (days)	0	4	7	10	14
Moisture (g/100g)	66.2	39.5	7.38	11.72	12.7
Energy (kJ/g)	8.14	11.13	14.97	12.61	13.82

AOA



Scientific name:

Ficus Obliqua

Common name/s:

Polynesian banyan,
Strangler fig

Family:

Moraceae

Status:

Native/Indigenous

Description:

Aoa is a huge tree which can grow to a height of more than 21m and lives for many years. It has very extensive branches that spread out and send trunk like roots to the ground in order to support itself. The leaves are broad, oval and glossy. White milky fluid oozes out of leaves, if broken.

Drying period (days)	0	4	7	10	14
Moisture (g/100g)	60.37	41.35	26.33	21.39	18.05
Energy (kJ/g)	6.83	9.51	11.71	11.08	11.96

MOSO'OI



Scientific name:

Cananga Odorata

Common name/s:

Ylang Ylang, Sananga oil, Perfume tree, Kenanga wood

Family:

Annonaceae

Status:

Native/Indigenous

Description:

The Moso'oi tree can grow up to 40m tall and when grown for perfume extraction, it is normally not more than 3m tall. It has drooping branches and has yellow, long-petalled flowers whose fragrance can be smelt from a distance of 9m or more.

Drying period (days)	0	4	7	10	14
Moisture (g/100g)	58.4	31.02	18.81	13.92	14.7
Energy (kJ/g)	6.28	8.83	13.49	11.36	11.52



Scientific name:

Cocos Nucifera

Common name/s:

Coconut Palm

Family:

Areaceae

Status:

Native/Indigenous

Description:

The Coconut Palm is a large palm growing to 30m tall. It has pinnate leaves 4-6m long. Old leaves break away cleanly leaving the trunk smooth. It has been cultivated and utilised for a very long time in virtually every tropical location throughout the world. Its true place of origin is somewhat uncertain.

Drying period (days)	0	4	7	10	14
Moisture (g/100g)	53.85	33.64	26.21	15.3	18.5
Energy (kJ/g)	5.76	10.51	12.89	15.26	14.3

TAMALIGI



Scientific name:

Albizia Falcataria

Common name/s:

Peacocks Plume, Batai

Family:

Leguminosae
(Mimosoidae)

Status:

Invasive

Description:

One of the fastest growing of all trees, the Tamaligi reaches (under favourable conditions) 15m in height in 3 years, 30m in 10 years and 44m in 17 years. When grown in the open, its crown spreads to form an umbrella shaped canopy, but in plantations it has a narrow crown. Its flowers are creamy and has a slight fragrance.

Drying period (days)	0	4	7	10	14
Moisture (g/100g)	46.5	25.06	12.28	15.71	12.25
Energy (kJ/g)	8.68	12.48	14.77	12.91	11.76



TAVAI

Scientific name:

Rhus Taitensis

Common name/s:

Island Sumac

Family:

Anacardiaceae

Status:

Native/Indigenous

Description:

Tavai is a tree that can grow up to 30m tall. This small bushy tree has a spreading canopy, large compound leaves and sprays of white flowers. It is occasionally logged for its timber. The wood is used to make canoes, general construction and wood carvings to name a few. The plant has also been used to treat diarrhea and hearing loss.

Drying period (days)	0	4	7	10	14
Moisture (g/100g)	41.5	24.15	15.06	12.99	13.7
Energy (kJ/g)	9.06	13	13.13	13.61	14.23

Summary of Scientific Analysis

Drying Period (Days)	Pafiti	Puluvao	Pulumamoe	Aoa	Moso'oi	Niu	Tamaligi	Tavai
Moisture (g/100g)								
0	67.63	47	66.2	60.37	58.4	53.85	46.5	41.5
4	29.11	20.7	39.5	41.35	31.02	33.64	25.06	24.15
7	18.33	7.11	7.38	26.33	18.81	26.21	12.28	15.06
10	19.18	11.02	11.72	21.39	13.92	15.3	15.71	12.99
14	15.6	12.5	12.7	18.05	14.7	18.5	12.25	13.7
Energy (kJ/g)								
0	4.79	11.1	8.14	6.83	6.28	5.76	8.68	9.06
4	12.85	15	11.3	9.51	8.83	10.51	12.48	13
7	15.11	15.13	14.97	11.71	13.49	12.89	14.77	13.13
10	11.36	14.17	12.61	11.08	11.36	15.26	12.91	13.61
14	12.62	13.82	13.82	11.96	11.52	14.3	11.76	14.23

Source: SROS Laboratory Test Report, 2017

Proudly supported by:



Implemented by

