COUNTRY REPORT – SAMOA
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1. INTRODUCTION

1.1 FOREST AREA

Samoa is an island country in the South Pacific. It lies between latitudes 130 and 150 S, and between longitudes 168 and 173 W. The land area which consists of a group of islands is 2 857 sq. km. The population estimate in the year 2000 was 175 000.

Of the total land area of Samoa, 37% (ie. 1057sq. km.) is estimated to be under forests (Iakopo 1992). This includes both indigenous and plantation forests. The indigenous forests of the country are mostly tropical rainforests, and can be best described and categorized in three broad categories; (i) lowland forests (0 - 230m), (ii) Foothill forests (230 - 550m), and (iii) Upland forests (550m and above). The remaining forests estimate is best describe by Martel (1996) in the table 1 below.

Table 1: Indigenous Forests Area Estimates (1996) - Samoa (in ha.).

<table>
<thead>
<tr>
<th></th>
<th>Upolu</th>
<th>Savaii</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Merchantable forests</td>
<td>6,450</td>
<td>1,8434</td>
<td>28,483</td>
</tr>
<tr>
<td>Non-Merchantable forests</td>
<td>4,019</td>
<td>48,858</td>
<td>52,877</td>
</tr>
<tr>
<td>Protection forests</td>
<td>18.,114</td>
<td>9,935</td>
<td>28,049</td>
</tr>
<tr>
<td><strong>Total Indigenous forests</strong></td>
<td><strong>28,585</strong></td>
<td><strong>77,227</strong></td>
<td><strong>10,5810</strong></td>
</tr>
<tr>
<td>Village Conservation area</td>
<td>1,414</td>
<td>6,846</td>
<td>7,900</td>
</tr>
<tr>
<td>O le Pupu Pue National Park/Mt Vaea</td>
<td>2,864</td>
<td></td>
<td>2,864</td>
</tr>
<tr>
<td><strong>Total Forest Reserves / Conservation</strong></td>
<td><strong>4,274</strong></td>
<td><strong>6,846</strong></td>
<td><strong>10,764</strong></td>
</tr>
</tbody>
</table>

Source: Martel 1996

The land tenure system in Samoa is however a sensitive but a clearly defined issue. The ratio of public to customary land ownership is around 20:80 with some government plantation forests leasing on customary lands. The major local species dominating the indigenous forests are Pomatia pinnata (Tava or Tawa), Planchonella samoensis (Mamalava), Dysoxylum spp (Maota), Syzygium inophylloids (Asi), Calophyllum samoense (Tamanu), Palaquim stehlinii (Gasu), Terminalia richii (Malili), Diospyros samoensis (Auauli), Canarium samoense (Ma'ali).

The major plantation species are now confined to mainly Swietenia macrophylla (mahogany), Tectona grandis (Teak), Eucalyptus urophylla and E.tereticornis.
Plantation forests are now concentrating on planting a mixtures of native and exotic species.

1.2 POLICY AND MANAGEMENT OBJECTIVES.

Samoa's Indigenous merchantable forests are declining rapidly and the plantation forests (severely damaged by cyclones Ofa and Val in 1990 and 1991 respectively) are now not able to immediately replace the indigenous reserve as the main source of domestic sawn timber and wood. This has prompted Samoa's Forestry Division to review and formulate a National Forest Policy which will set in place strategies to address the urgent issues of resource management. The Samoa's forests are managed in accordance with its National Forest Policy which was reviewed 1994, and such was adjusted with the continuing changes in overall Government policy as well drawing government attention to the underlying importance of the Samoan Forest Resource for the present and future societies. The National Forest Policy is guided by principles as (i) Optimal and Sustainable Use, (ii) Forest Protection, (iii) Environmental Protection, (iv) Individual and Collective Responsibilities and (v) Economic Development. The various Acts and Regulations provide the Forestry with mandatory status relating to the management of the forest resource of Samoa.

The Policy Framework and Management Objectives identified sustainability directives which are (i) Productivity, (ii) Security and Stability over time,(iii) Environmental Protection, (iv) Economic Viability and (v) Social and Cultural acceptability. Notable achievements of the Forestry Sector included the National Forest Policy, the National Environment Management Strategy, Village Conservation Agreements, and the setting up of Environmental NGOs, thus the support to forestry development from politicians, policy makers, business people and urban and rural communities had been quite encouraging.

1.3 MAJOR FOREST TYPES.

The two main islands of Samoa, namely Upolu and Savaii have been identified with eight Forest Types named with major native species and also both islands have been mapped according to indigenous forest Classifications. (Refer Appended Maps.1,2,3,4.)

2. MAJOR FOREST HEALTH PROBLEMS.

2.1 INSECTS.

Almost all of the native and exotic forest plantation species are susceptible to the tropical and sub-tropical shoot borer (*Hypsipyla. spp*) and the Powder post beetle (on Sapwoods), the *Lyctus spp*. The indigenous species common pest is the dogwood termite (*Cryptotermes domesticus*) while the Ambrosia beetle (*Crossotarsus extermedentatus*) damaged the Mahogany plantation species with internal rots, as well as the stem borer by *Xyloborus spp.*
The rose beetle (*Ardoretus versutus*) causes defoliation with *Flueggea flexuosa* (poumuli). The *Anua coronata* (Larvae) also cause defoliation with *Terminalia* *spp*.

### 2.2 DISEASES

There are not so many serious diseases identified for forest trees in Samoa. The most common but controllable ones are the Brown Root Rot (*Phellinus noxius*) for *Eucalyptus* *ssp*, *Flueggea flexuosa* and Mahogany trees.

Although there are these interceptions of pests and diseases in Samoa, they are considered not very dangerous / serious at the moment as they are confined to particular areas, plus the tight control by the Quarantine Organisation in Samoa.

### 2.3 THE ABIOTIC FACTORS

The hot season which used to be around July to November is one of the two abiotic factors causing severe fire problems to forest health. The other most common one is the impacts of strong /gale wind forces usually lead to cyclones, that normally caused extensive devastation to the Forest Resources of Samoa.

### 3. RESOURCES AVAILABLE FOR FOREST PROTECTION

Since Forest Health Surveillance Program is now in its proposed stage for the Forestry Development of Samoa, there are no certified procedures and facilities currently approved for Samoa. However, the forest protection issue for Samoa is long exercised using its old Fire Fighting Equipment in stock since NZODA Program was assisting Forestry in Samoa. The Research unit of the division is still in small scale to promptly identify any serious forest interception outbreak at the moment but the increasing capacity of the Samoa Quarantine Service is helping a lot with Forestry protection regards pests and diseases. The Nursery operations ensured healthy seedlings dispatched for field planting is normally practiced, with chemical controls carefully used. Forest maintenance operations (weeding and tending) and silvicultural activities.(thinning and pruning) also assist us with limited Forest Health Facilities.

So, in reality with Samoa's Forest Health Surveillance Program, there is no direct involvement of the organisation with actual Pests and Diseases control measures and related procedures for identification and examinations. It is hoped with our initial participation in our proposed program today that we will seriously consider every aspect of this workshop for Samoa's preparation for their Forest Health Surveillance Project in the very near future.
4. QUARANTINE MEASURES.

4.1 LEGISLATIONS AND REGULATIONS

The Quarantine and Regulatory Division (QRD) is also one of the divisions of the Ministry of Agriculture, Forests, Fisheries and Meteorology (MAFFM), which has the role of developing and implementing laws, regulations and standards to prohibit the introduction and spread of pests and diseases detrimental to primary industry and biodiversity.

QRD's role in respect of passenger and cargo clearance is to prevent incursions of unwanted pests and diseases into Samoa's agriculture, forestry, marine sectors and the wide environment. It also monitors and control the import and use of agricultural chemicals. They also facilitates the export of Samoa's agricultural products by providing the essential inspection, certification and technical advice required by the importing country.

The establishment of the World Trade Organisation (WTO) and agreements such as the Sanitary and Phytosanitary Agreement (SPS) have brought into sharp focus the infrastructure necessary within Samoa, so as to facilitate the development of market access protocols with other countries. The ability of the QRD to attain its objectives is prompted by other government agencies such as Customs, Lands, Survey and Environment, Immigration, Health Dept, and Police, in close linkage, and also the willingness of the stakeholders and wider public to either into a partnership with them.

The QRD's mission is "To protect Samoa's unique biodiversity and facilitate exports by managing risks to plants and animal health" The operating environment for the QRD is framed by its Import Risks Analysis, and Development of Import Requirements.

The Quarantine Acts have been reviewed and are now awaiting Cabinet approval. At least 15 Acts of Parliament and numerous subsidiary ordinances, assign a wide range of responsibilities to the Minister, and these are delegated to the Director, and continuous to flow down the ladder of information.

Other regulations include:
- The Bilateral between Tonga, NZ, Fiji and Niue.
- The Multilateral - IPPC, FAO, PPPO and WTO.
- The Import Risk Analysis been created for the Pest List

4.2 RESOURCES.

QRD has a head office at Apia, but also maintains a presence at various sites around Samoa including airports, wharves and other sites. The Quarantine Staffs use to access and carry out the inspections. With the Australian Aid both with personnel and finance, they assist a lot in promoting the Quarantine in Samoa.

4.3 INTERCEPTIONS OF SERIOUS PESTS AND DISEASES

There have been no serious pests or diseases affecting forest trees in Samoa. The Quarantine in Samoa is aware of the Asian Gypsy Moth and the need to prevent its entry into Samoa. This moth is found in Asia and it skeletonises the tree leaves.
# LIST OF ESTABLISHED PESTS AND DISEASES

<table>
<thead>
<tr>
<th>SPECIES</th>
<th>COMMON NAME</th>
<th>MAIN HOSTS</th>
<th>TYPE OF DAMAGE</th>
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<tbody>
<tr>
<td>Cryptotermes domesticus</td>
<td>Dry wood Termites</td>
<td>Eucalyptus ssp</td>
<td>Wood Feeder</td>
</tr>
<tr>
<td>Crossotarsus externedentatus</td>
<td>Ambrosia Beetle</td>
<td>Swietenia macrophylla</td>
<td>Internal Rot</td>
</tr>
<tr>
<td>Ardoretus versutu</td>
<td>Rose Beetle</td>
<td>Flueggea flexuosa, Terminalia ssp</td>
<td>Defoliation</td>
</tr>
<tr>
<td>Anua coronata</td>
<td>Larvae</td>
<td>Terminalia richii, Terminalia catappa</td>
<td>Defoliation</td>
</tr>
<tr>
<td>Hypsipyla robusta</td>
<td>Cedar shoot borer</td>
<td>Cedrela, Swietenia, Toona ciliata</td>
<td>Shoot borer</td>
</tr>
<tr>
<td>Lycus spp</td>
<td>Powder post beetle</td>
<td>Meliaceae, Intsia bijuga, Terminalia richii</td>
<td>Borer</td>
</tr>
</tbody>
</table>

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<thead>
<tr>
<th>DISEASES</th>
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<tbody>
<tr>
<td>Phellinus noxius</td>
<td>Brown root rot</td>
<td>Eucalyptus ssp, Flueggea flexuosa, Swietenia macrophylla</td>
<td>Root Rot</td>
</tr>
</tbody>
</table>

KEY REFERENCES ON FOREST HEALTH.


Martel, F. Fyte, A. (1991) Cyclone Damage Assessment of the plantation forests of Western Samoa. Forestry Division, Department of Agriculture, Forests and Fisheries, Western Samoa.

LIST OF APPENDICES (not included here)

1. Map 1. Upolu Indigenous Forests Classification


8. Map of Savaii. Location of Significant Major Plantings / Plantations.