CocoVeneer: Estate planning

Resource supply and estate planning.
Contents

- Coconut palm: growth and senility.
- Senility profile and estate renewal: nut and log supply impacts.
- Guide to Community Development of Estate Coconut Renewal Plans.
Coconut in community

- Coconut plantations are a valuable economic and social resource for South Pacific communities.
- However, many palms in South Pacific coconut plantations are old and have lost their vitality and productivity.
Impacts of coconut senility

Trend of coconut nut productivity yields with palm age. Source: Forstreuter, SPC 2013
The profile of aging or senile palms in the estate creates an increasing drag on community income and development.

### Extent of the senile estate

<table>
<thead>
<tr>
<th></th>
<th>Samoa</th>
<th>Fiji</th>
<th>Solomon Is</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total area of coconut plantations (ha)</td>
<td>93,000</td>
<td>65,000</td>
<td>59,000</td>
</tr>
<tr>
<td>Percentage area of senile palms (%)</td>
<td>16</td>
<td>60</td>
<td>20</td>
</tr>
<tr>
<td>Total area of senile palms (ha)</td>
<td>14,880</td>
<td>39,000</td>
<td>11,800</td>
</tr>
</tbody>
</table>
Impacts of coconut renewal - Samoa

- Based on constant estate area with renewal over 30 years with harvest event at 5 yearly intervals.
- Nut production increases ~ 115% at year 45.
- Log supply around 91,500 m³/annum
• Based on constant estate area with renewal over 50 years with harvest event at 5 yearly intervals.

• Nut production increases ~ 230% at year 45.

• Log supply around 64,000 m³/annum
Impact of coconut renewal – Solomon Is

- Based on constant estate area with renewal over 30 years with harvest event at 5 yearly intervals.
- Nut production increases ~ 120% at year 45.
- Log supply around 61,000 m³/annum.
Coconut renewal generates a resource

Harvest of senile palms during estate renewal generates:

- Saw and peeler logs for wood products.
- Residue products:
  - At the estate: a bole, upper stem and fronds.
  - At the process mill
Community estates and log supply

Estates and communities:
- Own most coconut stands.
- Control coconut plantation renewal.
Community estates and log supply

- A regular coconut log supply for wood processing can result from communities deciding to *renew* their coconut plantations, and sell logs.
- To make informed decisions, communities need to develop and adopt an *estate coconut renewal plan*.
  - Once agreed, it can then be implemented.
Community estates and log supply

- Estate Coconut Renewal Guide
  - Section 1: Developing an estate plan for coconuts.
  - Section 2: Resource information.
  - Section 3: Support worksheets.
The guide proves a structured but achievable, 6-step process for a community to assess the impact of estate renewal and decide on actions.

1. Assemble the planning team
2. Map the estate
3. Assess coconut production
4. Estimate impacts of renewal
5. Establish community priorities
6. Planning any harvest
Step 3: Assessing coconut production
Step 3: Assessing coconut production

• The condition of estate coconut palms needs to be assessed for age and current productivity. This is to identify:
  – The number of healthy and unproductive palms.
  – Their distribution.
  – Current nut productivity.
  – Areas of pest or disease.
Step 3: Assessing coconut production

Trend of coconut nut productivity yields with palm age. Source: Forstreuter, SPC 2013
Step 3: Assessing coconut production

- The assessments can be summarised and provide the information needed to define the profile of low productive palms in stands and the estate.

<table>
<thead>
<tr>
<th>Palm type</th>
<th>% Palms in the estate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage senile palms</td>
<td>Divide the number of senile palms in Table 1 by the total number of palms then multiply by 100.</td>
</tr>
<tr>
<td>Percentage aging palms</td>
<td>Divide the number of aging palms in Table 1 by the total number of palms, then multiply by 100.</td>
</tr>
<tr>
<td>Total % low productive palms standing</td>
<td>Add the percentage of senile, and aging palms together.</td>
</tr>
<tr>
<td>Percentage fallen palms</td>
<td>Divide the number of fallen palms in Table 1 by the total number of palms, then multiply by 100.</td>
</tr>
<tr>
<td>Total % of low productive palms</td>
<td>Add the percentage of senile, aging and fallen palms together.</td>
</tr>
</tbody>
</table>

Table 2: Percentage of low productive coconut palms on the estate
Step 4: Impact of coconut renewal

Percentage of low productive palms

Preferred replacement period

Change factors for nut production and harvest volume

Current nut production and palm number

\[ \text{Current nut production and palm number} \times \text{Change in nut and log production} \]
Impact example

An estate, 1500 stems, 60% senile, producing 20,000 nuts a year, senile replacement in 25 years with partial harvest every 5 years.

What will happened to nut and log production at 20 and 40 years.
Section 2: Resource information

Community estate nut productivity with senile palm replacements over 25 years (60% senile)

- **Current production**: Baseline productivity level.
- **Post immediate harvest**: Productivity increase post-harvest.
- **Post harvest year 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60**: Productivity over subsequent years.

**Key Observations**:
- Initial productivity (304) post-harvest.
- Peaks in productivity at 285 for years 10-15.
- Gradual decrease in productivity post-peak.
- Stable productivity (57) from year 50 onwards.

**Legend**
- Orange bars: Number of palms removed.
- Blue line: Nut production in thousands.
### Section 2: Resource information

<table>
<thead>
<tr>
<th>Period</th>
<th>Est. change in nut production</th>
<th>Portion of palms harvested</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>50 year replacement</td>
<td>25 year replacement</td>
</tr>
<tr>
<td>Current est. production</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>After initial harvest</td>
<td>0.97</td>
<td>0.95</td>
</tr>
<tr>
<td>After harvest: Year 5</td>
<td>0.95</td>
<td>0.92</td>
</tr>
<tr>
<td>After harvest: Year 10</td>
<td>0.94</td>
<td>0.96</td>
</tr>
<tr>
<td>After harvest: Year 15</td>
<td>1.05</td>
<td>1.13</td>
</tr>
<tr>
<td>After harvest: Year 20</td>
<td>1.22</td>
<td>1.50</td>
</tr>
<tr>
<td>After harvest: Year 25</td>
<td>1.52</td>
<td>2.01</td>
</tr>
<tr>
<td>After harvest: Year 30</td>
<td>1.78</td>
<td>2.55</td>
</tr>
<tr>
<td>After harvest: Year 35</td>
<td>2.02</td>
<td>2.99</td>
</tr>
<tr>
<td>After harvest: Year 40</td>
<td>2.16</td>
<td>3.16</td>
</tr>
<tr>
<td>After harvest: Year 45</td>
<td>2.30</td>
<td>3.05</td>
</tr>
<tr>
<td>After harvest: Year 50</td>
<td>2.38</td>
<td>2.76</td>
</tr>
<tr>
<td>After harvest: Year 55</td>
<td>2.45</td>
<td>2.37</td>
</tr>
<tr>
<td>After harvest: Year 60</td>
<td>2.46</td>
<td>1.96</td>
</tr>
</tbody>
</table>

Change factors for nut production and harvest volume – 60% senile estate, 50 & 25 year replacement
Impact example

- At 20 years, it can produce:
  - ~ 20,000 x 1.5 = 30,000 nuts
  - ~ 1500 x 0.15 = 225 logs.
- At 40 years, it can produce
  - ~ 20,000 x 3.16 = 63,200 nuts
  - ~ 1500 x 0.03 = 45 logs.
Step 6: Planning the harvest

• With decision, a draft harvesting and renewal schedule can be developed and implemented.
Aim: Regular coconut log supply
Questions