### Table 1. Cost and Return Analysis of SCTNP in "Laguna" Tall and "MAWA" Hybrid Coconuts

<table>
<thead>
<tr>
<th>Coconut Populations</th>
<th>Year</th>
<th>Annual Yield per Tree</th>
<th>Total Income per Tree</th>
<th>Prod. Cost (P) per Tree</th>
<th>Total Cost per Tree (P)</th>
<th>Net Income/Tree (P)</th>
<th>Net Income/year (P)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laguna¹</td>
<td>1</td>
<td>-</td>
<td>524.00</td>
<td>-</td>
<td>1,310.00</td>
<td>153.56</td>
<td>385.25</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>6.18</td>
<td>396.00</td>
<td>1,168.81</td>
<td>50.60</td>
<td>464.81</td>
<td>437.37</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>3.34</td>
<td>418.00</td>
<td>1,115.50</td>
<td>4.81</td>
<td>540.80</td>
<td>498.61</td>
</tr>
<tr>
<td>Average</td>
<td></td>
<td>3.24</td>
<td>445.00</td>
<td>1,192.10</td>
<td>5.81</td>
<td>483.35</td>
<td>602.45</td>
</tr>
<tr>
<td>MAWA²</td>
<td>1</td>
<td>-</td>
<td>2135.00</td>
<td>-</td>
<td>421.28</td>
<td>153.56</td>
<td>269.65</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>3.79</td>
<td>294.60</td>
<td>310.70</td>
<td>9.06</td>
<td>275.84</td>
<td>249.30</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>6.00</td>
<td>334.50</td>
<td>346.32</td>
<td>7.81</td>
<td>323.00</td>
<td>313.30</td>
</tr>
<tr>
<td>Average</td>
<td></td>
<td>3.23</td>
<td>282.53</td>
<td>725.09</td>
<td>50.81</td>
<td>279.00</td>
<td>336.47</td>
</tr>
</tbody>
</table>

¹ aged 17 yrs. old, 100 trees/ha with average benefit-cost ration (BCR) = 1.35
² aged 10 yrs. old, 140 trees/ha with average benefit-cost ratio (BCR) = 1.47
³ in kilogram
⁴ in liter

### Table 2. Economic Analysis of Three Production Schemes in "Laguna" Tall

<table>
<thead>
<tr>
<th>Production Scheme</th>
<th>Annual Yield/Tree</th>
<th>Gross Income/Tree (P)</th>
<th>Production Cost/Tree</th>
<th>Total Cost/Tree (P)</th>
<th>Net Income/Tree (P)</th>
<th>Net Income/Year (P)</th>
<th>Benefit-Cost Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nut Production (NP)</td>
<td>17.02</td>
<td>77.82</td>
<td>6.06</td>
<td>12.02</td>
<td>18.08</td>
<td>50.56</td>
<td>5,054.67</td>
</tr>
<tr>
<td>Sap Production (SP)</td>
<td>-</td>
<td>508.70</td>
<td>1,471.75</td>
<td>385.25</td>
<td>538.81</td>
<td>933.24</td>
<td>93,324.0</td>
</tr>
<tr>
<td>SCTNP Production (SCTNP)</td>
<td>3.24</td>
<td>445.80</td>
<td>1,192.10</td>
<td>463.85</td>
<td>508.30</td>
<td>683.74</td>
<td>61,269.00</td>
</tr>
</tbody>
</table>

* based on three years production
** based on one year production

For Additional Information

Refer to:

- Highlights, 91. 1991. Published by the Phil. Council for Agri Forestry and National Resources Research and Development (PCA-RD), Department of Science and Technology (DOST), 159 p.

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Department of Agriculture
Philippine Coconut Authority
Research, Development & Extension Branch
Davao Research Center
Technology Description

Sequential Coconut Toddy and Nut Production (SCTNP) involves the tapping of the first half of the spadix for sap or “tuba” and allowing the remaining half to develop normally to produce either the 8-month “buko” nut or the matured 12-month nut. The technology was proven to be feasible and productive which can give higher net profit than nut production alone.

Procedure

1. Preparation of bamboo receptacle
   - Use matured bamboo with inside diameter of not less than 10 cm and with a node length of not less than 40 cm.
   - Cut the bamboo crosswise to separate each node making the top portion as base and the lower portion as its open end.
   - Peel off the bamboo epidermis to lighten its weight
   - Bore to small holes (8 cm distance) below the rim of its open end.
   - Insert two ends of abaca string to each hole and make knot bigger than the size of holes.

2. Preparation of palms for tapping
   - With a bolo, cut V-shaped notches onto the coconut trunk to serve as steps in climbing to the crown. Remove dried leaves, weakly attached seile leaves, stipules (“guinit”) and aborted spadices at the crown.

3. Tapping process and nut selection
   - Select younger but swollen spadix at the base which is usually next to the biggest closed spadix.
   - Carefully and slightly bend the selected spadix downward so as not to break the stem by tying its tip with abaca string downward to a petiole below.
   - Keep bending the spadix for 2 days until it droops.
   - With a sharp knife (“sanggot”), cut open the tip of the spadix when bending is half done.

   - When the sap starts to flow out, wrap the spadix with wetted banana leaves gathered in the morning and tie with young coconut leaflet to hold the wrapping.
   - Insert tip of freshly cut spadix into the open end of the bamboo receptacle and fasten the receptacle to the string tied at the base of the spadix.
   - Trim a thin slice from the opened end of the spadix morning and afternoon to keep the wound open until half of the spadix is reached.
   - When tapping reaches the middle of the spadix, which usually takes three weeks, remove the wrappings from the remaining half and allow it to open naturally to expose the buttons and develop into matured nuts.
   - Harvest matured nuts and process into copra.

Advantages of the Technology

1. Coconut farmers can immediately earn while the inflorescence is still close and female flowers are still developing.
2. From a single spadix, two products can be obtained, sap or “tuba” and nut/copra.
3. The dollar earning of the country will not be hampered as nuts/copra or oil can still be produced for local and export needs.
4. The technology could generate employment, additional laborers, e.g. tappers.
5. The farmers and tappers are assured of continued income.

Requirements for Profitable and Sustainable SCTNP Technology

1. Skilled labor for sap production (toddy tapping)
2. Suitable environment and proper nutrition of fully-bearing coconut palms
3. Market for toddy, nuts and copra
4. Adequate initial operating capital

Economic Returns

Based on three years production, the “Laguna” tall can produce an annual net income of PhP61,269.30 using the SCTNP scheme. While the “MAWA” hybrid, being younger than “LAG” tall earned an average annual net income of PhP5,487.80 (Table 1).

Comparing the SCTNP scheme with the traditional production scheme of nut production alone in “LAG” tall population, the former had a much higher net income of PhP61,269.00 as against PhP5,954.67 for the latter scheme (Table 2). The other hand, the sap production alone scheme produced the highest net income of PhP93,324.00 since the products of this scheme demand a higher price e.g. “tuba”, vinegar. However, it is not practical to indulge on this scheme alone during the productive years of coconut since the copra/oil production, which is the country’s number one dollar earner, will be hampered. Hence, SCTNP is still the most feasible and profitable production technology for coconut farmers.

Although the benefit-cost ratio in NP alone was the highest compared to SP and SCTNP, the net income of NP was very low, thus NP is still inferior over SP and SCTNP schemes.