Economic analysis of different processing methods for small-scale coconut oil production in the Philippines

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Introduction

• Due to an increasing demand for kerosene, LPG, charcoal and fuelwood, prices are rising
• Coconut oil could be a locally produced and economically competitive alternative fuel for plant oil stoves
• Different small scale methods for coconut oil production are to be evaluated

Material & Methods

• Investigation in three wet coconut oil processing methods:
  - Traditional Kitchen Method (TKM)
  - Modified Kitchen Method (MKM)
  - Virgin Oil Method (VOM)
• Investigation in dry coconut oil processing with three expeller presses:
  - "Montforts DD 85 G" (DMO; left)
  - "Simplextractor" (DSI; middle)
  - "Strähle SK 60/2" (DST; right)

• Calculation of
  - Investment costs for coconut oil production centre
  - Unit costs
  - Payback period
  - Net present value (NPV)

Results

<table>
<thead>
<tr>
<th>Method</th>
<th>Investment* (1,000 PHP)</th>
<th>NPV** (1,000 PHP)</th>
<th>Payback period (a)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TKM</td>
<td>112</td>
<td>-471</td>
<td>-</td>
</tr>
<tr>
<td>MKM</td>
<td>112</td>
<td>-279</td>
<td>-</td>
</tr>
<tr>
<td>VOM</td>
<td>109</td>
<td>-195</td>
<td>-</td>
</tr>
<tr>
<td>DMO</td>
<td>1,369</td>
<td>560</td>
<td>6</td>
</tr>
<tr>
<td>DSI</td>
<td>937</td>
<td>2,411</td>
<td>2</td>
</tr>
<tr>
<td>DST</td>
<td>1,381</td>
<td>-1,614</td>
<td>-</td>
</tr>
</tbody>
</table>

* 1 € = 65 PHP (10/2005)
** project life 10 a; interest rate 7 %

Conclusion

• Unit costs for the wet methods are significantly higher than the corresponding costs when using the expeller presses
• Crude coconut oil processed with expeller presses can be competitive with cooking fuels used at present as e.g. kerosene
• The Philippine made Simplextractor proved to be the most profitable solution with the biggest capacity and the lowest production costs
• Raw material prices have a substantial influence on the result and price variation is big

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