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Economic Analysis of Different Processing Methods for Small-scale Coconut Oil Production in the Philippines

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Abstract

Due to a fast growing Philippine population, the demand for household fuel is increasing. Local coconut oil production on small-scale level may offer an economically feasible alternative. The objective of the present study was to analyse whether coconut oil produced on household level can be competitive with current kerosene prices.

Three small-scale (wet) oil processing methods (**i**) traditional kitchen method, (**ii**) modified kitchen method and (**iii**) virgin oil method as well as three medium-scale oil presses (**i**) Strähle SK 60/2, (**ii**) Montforts Komet DD 85 G and (**iii**) Philippine Simplextractor were evaluated by calculating unit costs, net present values (NPV) and periods of amortisation. Possible revenues from by-products were considered in the calculations.

Among the wet methods the traditional kitchen method had the lowest net oil yield (471 a^{-1}) and the highest unit costs ($1,253 \text{ PhP l}^{-1}$). The best performance attained the virgin oil method reaching a net oil yield of 4971 a^{-1} along with unit costs of 83 PhP l^{-1} . All NPVs were negative.

Copra produced from fresh nuts which is used in the expellers turned out to be the best solution since costs can be reduced by selling by-products. Highest unit costs amounted to 44 PhP l^{-1} in case of the Strähle expeller (capacity: $16,000 \text{ l a}^{-1}$). Lowest unit costs occurred with 24 PhP l^{-1} using the Simplextractor (capacity: $43,700 \text{ l a}^{-1}$). The latter was identified as the most profitable investment. The assumed setup generated a NPV of $2,411,437 \text{ PhP}$ and resulted in a period of amortisation of two years.

The wet methods were not economically feasible with the assumed setup. By contrast, the establishment of processing centres using the Simplextractor can be recommended. The obtained oil can be a competitive household fuel as long as its unit cost is lower than the kerosene price in Leyte which was 36 PhP l^{-1} in November 2005.

Keywords: Coconut, cooking fuel, oil production, plant oil, small scale