Opportunities of smallholder Aren (Arenga pinnata) and Candlenut (Aleurites moluccana) for biofuel supply in Indonesia

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Background
Aren (Arenga pinnata) and candlenut (Aleurites moluccana) are commonly found in agroforestry system in Indonesia. Aren juice can be processed into ethanol; while methyl-ester of candlenut oil has similar properties with biodiesel. However, its potentials are under development.

The use of biofuel is expected to increase: government mandatory on biofuel, subsidy for biofuel transportation and supplying global demand.

Thus, we evaluated aren and candlenut opportunities for biofuel supply in Indonesia.

Data collection and analysis
Data used in this study was compilation of survey conducted in North Sumatra in 2008 for Aren and South Sulawesi in 2012 for candlenut. We evaluated smallholder aren and candlenut system to analyze its productivity for biofuel production. The evaluation includes labor engagement and financial return as represented by equivalent annual annuity (EAA). The estimation of financial return using the following indicators: exchange rate to USD at IDR 9700, discount rate at 8%.

Aren (Arenga pinnata) tree is commonly found in smallholder systems with high precipitation level. Tree domestication level of aren in Batang Toru can be identified as: wild, enriched and planted. Currently, farmers tap aren juice for sugar and alcoholic beverage. They also collect its thatches (jiuk) and fruits (kolang-kaling).

Candlenut (Aleurites moluccana) tree was popular in rehabilitation trees program of many places in Indonesia in the 1980-ies. Fruits and timber are its common products. Now, less farmers manage and plant candlenut due to low income from selling its fruits. Tree domestication level of candlenut in South Sulawesi is medium, however now its domestication is neglected.

What are the opportunities for developing the potentials?

Potentials productivity of aren and candlenut are still low for supplying biofuels, thus improvements need to be focused on:
(a) tree productivity in producing raw materials;
(b) garden management system through labor efficiency;
(c) raw material processing via appropriate technology innovations;
(d) enhancement in scale of activities to strengthen farmers’ bargaining power in the supply of production.

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