

Optimization of jatropha bio-diesel production and energy ratio calculations using life cycle approach-an indian case study

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Abstract:

The goal of this study is to investigate the possibilities of producing biodiesel from crude Jatropha Curcas oil (CJCO) produced in Coimbatore district located in Western Ghats region of South India. The factors affecting the biodiesel yield are optimized for minimum input and maximum yield. A bench scale model to produce biodiesel from CJCO is developed for farm level application. As a secondary goal, the energy ratio calculations are also considered in this study by full energy chain analysis and a detailed life cycle inventory starting from the nursery stage to biodiesel synthesis. In addition, utilization in a diesel engine is also done in this study.

Life cycle inventory analysis is performed at various Jatropha Methyl ester production starting from agricultural stage followed by oil extraction stage and biodiesel production stage to calculate the energy ratio of biodiesel production.