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Bio-diesel production from *Jatropha curcas* L.: energy balance, global warming potential and land use impact

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The pantropic oil-bearing woody plant *Jatropha curcas* L. (JCL) recently received much attention from bioenergy project developers. The crop is traditionally used for medicinal purposes, but is also useful as living fence and for the control of soil erosion. As a pioneer species well adapted to semi-arid climates, JCL is promising to simultaneously combat desertification, produce bio-diesel and enhance socio-economic development in degraded rural areas in the South. As such, bio-diesel production and use from JCL is believed to have a positive environmental and socio-economic impact, although no quantitative studies are available to confirm this. Therefore the authors started a VLIR-UOS funded research which is focusing on the Life Cycle Assessment of bio-diesel production from JCL in developing countries. The main purpose is to make a generic study contributing to the promotion of more sustainably produced bio-diesel from *Jatropha*. The research will investigate three different JCL production systems (small-scale agroforestry production using living fences, community woodlots and industrial plantations) using 2 reference systems (fossil diesel and palm oil based bio-diesel). The functional unit where all outputs and inputs will be related to is '100km driven with a 4×4 pick up'. Energy balance, impact on global warming (CO₂ equivalent) and land use impact are the selected impact categories which are believed to be highly relevant for the bio-diesel product and function. The LCA will be strengthened by a socio-economic impact study of the JCL bio-diesel system in rural areas. At the conference a general overview of the life cycle of JCL will be given, and some preliminary outlooks on its potential environmental impact will given.