Unraveling the *Jatropha* biodiesel system

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Jatropha curcas L. currently attracts a lot of attention as a bio-diesel crop all over the world. As a toxic crop, which is said to grow on marginal lands unsuitable for any food production, *J. curcas* is believed to put no pressure on food security. Furthermore it is claimed to grow on dry and poor lands, needs low management input, improves soil structure and fertility and controls and prevents soil erosion.

However, in our recent literature reviews we show that most of these claims rest on narrow scientific basis. The main knowledge gaps are situated in the cultivation part (e.g. growth and yield response to input) of the *Jatropha* bio-diesel system. Furthermore, there is little insight in the environmental and economic performance and global suitability of this alternative energy system.

Through a joint effort of our research group we contribute to scientific knowledge on both the level of the crop itself as on the level of the whole bio-diesel production system. In the poster we present approaches and results of different research topics we are taking up:

- Water use efficiency and water stress strategies
- Root structure and soil erosion control potential
- Global land suitability analysis
- Socio-economic impact assessment
- Land use impact assessment
- Life cycle assessment (energy and greenhouse gas balance)

The overall aim of this research project is to make a 3D-sustainability evaluation (environmental, social and economic) of the *Jatropha* bio-diesel system.

Keywords: *Jatropha curcas* L., biofuel, environmental impact, sustainability, root structure, water use, land use, socio-economy, land suitability