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Impact of Sustainability Standards on *Jatropha* Production in Tanzania: An Economic Land Evaluation Approach

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Abstract

Biofuel feedstocks like *Jatropha curcas* have received a lot of attention in Tanzania in recent years. They are known for their potential to enhance rural energy supply but also as possible cash crops. With regard to exports, however, compliance with a number of sustainability standards is expected to get increasingly important.

This paper aims at (a) assessing the physical and economic land suitability of *jatropha* at different production sites; (b) identifying key indicators to analyse sustainability of the considered land use systems (c) expanding the analysis by including additional costs and benefits related to compliance with sustainability standards of the certification programme ISCC. The data derives from a survey of 320 smallholders in the village of Kinole (Morogoro district) as well as from a large-scale plantation in Kilosa.

Our calculations reveal that the ferral soil, which is the dominant soil in the Kinole region, is “moderately suitable” both for *jatropha* and banana (base-line). Given the very low rating of key indicators like cation exchange capacity, pH and base saturation, we recommend to couple the production of the feedstock with good management practices and to aim at a medium level of production intensity. This would be in line with the ISCC sustainability criteria and would require relatively low costs while simultaneously increasing the yields. However, certification costs may be considerable making it unlikely that smallholders will be able to participate without assistance from outside (*e.g.* through out-grower schemes). Further, even without certification, yields would have to increase substantially to reach the break-even point where exporting the feedstock out of the village gets viable.

In contrast, the monoculture system is expected to provide higher yields. All key indicators are in a good range and production of *jatropha* is sustainable even on a high input level as long as the detracted nutrients are replenished and the organic matter content is maintained. Compliance with the social criteria is related to higher costs for *e.g.* better safety practices and conducting a social impact assessment, but they are still within reason. Also here, the certification procedure itself is expected to be one of the major cost factors.

Keywords: Biofuels, certification, cost, *Jatropha*, land evaluation, sustainability