Jatropha Production in Tanzania
Smallholders struggle to profit
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I. Introduction

- Jatropha curcas L. produces oil containing seeds suitable as a biofuel feedstock.
- Encouraged by local NGOs, international development organisations, private enterprises and the Tanzanian government, thousands of smallholder farmers have invested in Jatropha cultivation.
- Yet, its economic viability and competitiveness remain unclear.

II. Research questions

- What is the current knowledge on Jatropha cultivation in Tanzania?
- Is Jatropha cultivation economically viable for smallholder farmers?
- Is it economically competitive with alternative crops?

III. Methodology

- Qualitative and quantitative survey of Jatropha growing households in Western and Northern Tanzania (Mbanda and Arusha region).
- Calculations based on own empirical data and on different yield development scenarios.
- Financial cost-benefit analysis to calculate net present value (NPV) and internal rate of return (IRR).
- Comparison of Jatropha’s NPV with alternative crops.

IV. Findings

Knowledge on Jatropha cultivation

- Knowledge on best cultivation practice is very low among all stakeholders, this includes inter alia fertilisation, pruning, spacing, water requirements, pests and diseases.

Economic viability

- NPV and IRR are only positive for the medium and high yield scenarios (Table 1).

Table 1: NPV and IRR for different yield scenarios

<table>
<thead>
<tr>
<th>Western Tanzania</th>
<th>Northern Tanzania</th>
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<tbody>
<tr>
<td>Yield scenario (YMT t ha(^{-1}))</td>
<td>1.5</td>
</tr>
<tr>
<td>NPV (USD ha(^{-1}))</td>
<td>-249</td>
</tr>
<tr>
<td>IRR (%)</td>
<td>-6</td>
</tr>
</tbody>
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1) YMT = 10 t, not intercropped; 2) t x = 14 year, T = 10 years; 3) other parameters as in Table 1.

V. Conclusions

- Significant knowledge gaps on best management practice hamper efficient Jatropha seed production.
- Investment in Jatropha is only profitable if seed yields of at least 2-3 t ha\(^{-1}\) can be reached.
- Such high yields seem rather unlikely considering the poor development of seed yields observed so far.
- Similar results are reported for Kenya (GTZ 2009).
- Economic competitiveness is limited → most alternative crops yield higher profits.

VI. Recommendations

- Under current conditions, we cannot recommend smallholder farmers to invest in Jatropha as a field crop.
- To improve conditions substantial research on agronomy is needed.
- In a low-input system, Jatropha may prove profitable, e.g. when seeds are collected from hedges.