Factors Affecting the Adoption of Forage Technologies under Smallholder Dairy Production Systems in Tanzania

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Introduction

- 70% of the world’s bovines belong to LDCs, but they only produce 29% of the global meat and 23% of the global milk output (Jahnke et al. 1988).

- Current demand for dairy products in Africa largely outweigh their production (Smith 2015; Lukuyu et al. 2009).

- A comparative study showed a 4.0% demand growth rate against a 3.1% production growth rate of dairy products in SSA between 1990 and 2004 (Ndambi et al. 2007),

  ➢ While, at the same period, Africa’s dairy imports grew at a rate of 2.1% per annum.

- Numbers demonstrate that SSA’s dairy production potential is yet to be reached.

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Problem statement

- For over 40 years, researchers have tested and introduced improved forage varieties (IFVs) aiming at improving cattle’s productivity in SSA.
- However, its adoption by smallholder livestock farmers has proven to be unsatisfactory.
- Despite heavy sensitization on IFVs in East Africa only 10% of smallholder farmers had taken them up by 2005 (Franzel and Wambugu 2007).

One question remains:

- Why are smallholder dairy farmers in SSA and Tanzania in particular not adopting IFVs to improve performance of their dairy cows?
Purpose and objectives of study

- This study aimed at identifying opportunities and constraints for the adoption of IFVs in smallholder dairy production systems in SSA with a special focus on Lushoto, Tanzania.

Specifically, it examines:

- the institutional, socio-economic, policy, cultural, local gender rules and dimensions in place and,

- how these all influence the wider adoption and diffusion process of IFVs in SSA with a special focus on Lushoto.
Location of Lushoto

Tanga district, Tanzania

Lushoto in Tanga district
General background of Lushoto

- Temp. ranges between 18-23°C,
- Annual precip. ranges between 600 to 2000mm.
- In 1998 population exceeded 400,000 pers. and was still growing at a rate of between 2.2 and 2.8% per annum, and presently has 50 and 250 persons/km².
- Characterized by steep slopes and protected forests, there is a stiff competition for arable land in the district.
- Agriculture is dominated by smallholders (about 90%), owning extremely small farm sizes, and who operate on very low budgets.
- More than 80 % of the people in Lushoto are living below the poverty line with less than US$2 per day.

(Jambiya 1998; Sijmons et al. 2013)
Methodology

- Empirical data for this study is based on **semi-structure qualitative interviews** and the application of a **Qualitative Assessment tool for Forage Technology (QATo-FT)** in a one day multi-stakeholder learning workshop.

- Secondary data was obtained from a comprehensive literature study, aimed at examining issues of general livestock production and forage adoption across the entire SSA region.

### Scales of coverage of QATo-FT

![Scales of coverage of QATo-FT diagram](image)

### Thematic categories of QATo-FT

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Object of Adoption (IFVs)</td>
</tr>
<tr>
<td>B</td>
<td>Farm and household characteristics/constraints</td>
</tr>
<tr>
<td>C</td>
<td>Capacity of implementing institution</td>
</tr>
<tr>
<td>D</td>
<td>Attributes of dissemination strategy</td>
</tr>
<tr>
<td>E</td>
<td>Political/Institutional framework at village Level</td>
</tr>
<tr>
<td>F</td>
<td>Political/Institutional framework at regional Level</td>
</tr>
<tr>
<td>G</td>
<td>FT products and inputs market conditions</td>
</tr>
<tr>
<td>H</td>
<td>Perception of community towards IFVs</td>
</tr>
<tr>
<td>I</td>
<td>Knowledge of IFVs role on climate change and other ecological benefits</td>
</tr>
</tbody>
</table>

(adapted from Corbeels et al. 2012).
Findings: interviews and farm visits

Main triggers to actual adoption of IFVs at farm/household level

- Shortage of feed for cows especially during the dry seasons,
- soil conservation problems,
- However, expected economic advantages were not as dominant in the farmers’ responses.

Main reasons for sustaining actual adoption IFVs at farm/household level

- Chances of a year round availability of fodder, under IFVs,
- increased fodder demand (due to higher livestock numbers),
- accumulated benefits (e.g. increased animal numbers and forage yields),
- However, soil conservation issues were mentioned less often, in contrast to their dominance as triggering factors.
Findings: interviews and farm visits

Main hindering factors to actual adoption at farm/household level

- general lack of knowledge on the stabilizing effect of forage production on milk yields,
- the low value of labour in the dry season resulting in farmers engaging in labour intensive, long-distance cut-and-carry feeding, as well as
- limited access to existing dairy markets creating a bottleneck between producers and consumers.
Out of the 9 assessed thematic categories of QATo-FT and their influence on adoption potential, at least 4 categories in each of the two villages assessed, achieved an RT score of over 80%, though there appears to be variations in the types and scores achieved across the villages (e.g. Mbuzii and Ubiri), the general overall adoption potential (OP) of IFVs for Lushoto area is rated high.
Findings: QATo-FT assessment

Relative adoption potential

Thematic positive influence on adoption potential:

✓ receptive nature of the community towards the technology,

✓ expectations of improved forages on ecological benefits,

✓ products and input market conditions around livestock production and improved forages,

Thematic negative influence on adoption potential:

✓ the political and institutional framework at regional level,

✓ products and input markets conditions,

✓ farm/household characteristics.
Recommendations towards upscaling IFVs in Lushoto

⇒ **Knowledge awareness** and **exchange** on the benefits of IFVs, proper management, conservation and optimal utilization in livestock is needed, using participatory approaches.

⇒ Local and regional administration could assist in **strengthening partnerships** between involved stakeholders such as farmers, NGOs, service providers, extension officers and other networks beyond the existing innovation platforms.

⇒ **Increasing** the **value of labour** through off-farm income possibilities could make IFV a necessary, labour-saving activity.

⇒ Creating **better access to existing markets** could generate an incentive for planting IFVs, hence supporting a higher milk production.
Conclusion

- The aforementioned actions hold the key to motivate small-scale dairy farmers’ uptake of productive farm actions such as improved forage technologies.

- As a result, the performance of existing heads of cattle would improve, milk yields would increase and farmers’ income levels could be enhanced, helping to reduce poverty in the region.

Asante sana!
INNOVATION TIMELINE FOR FORAGE TECHNOLOGIES
Mbuuzi & Ubiri Villages - Lushoto, Tanzania

2010
Collectors from villages

2011
Collectors Centres - e.g. UWALU

2012
Training Session by Taliri - animal health
- Forest extension
- Certicament sharing

2013
Mbuuzi = 21
Ubiri = 87

2014
Training of collectors - Taliri

2015
Echo - demo plots
Mbuuzi
Ubiri

2016
Forage sample collection in Mbuuzi
and Ubiri

- 1st Mic planted on parish
- 2nd Mic planted on parish
- 3rd Mic planted on parish
- 4th Mic planted on parish
- 5th Mic planted on parish

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