Towards climate smart livestock systems in Tanzania: assessing opportunities to meet the triple win


References:

Introduction & Study Objective

- Climate change is expected to have significant negative impact on livestock production systems especially in sub-Saharan Africa (SSA).
- In SSA livestock play an important role in the livelihoods of many rural communities.
-Furthermore, livestock systems in this region are characterised by poor performance, resulting in low herd productivity and high emissions intensity.
- The reasons of this are mainly associated with poor feed quality, which in turn determines low digestibility, and poor animal health. These problems can be tackled by improving forage quality and by using low inputs breeding strategies.
- This paper quantifies the potential synergies and trade-offs of adopting improved feeding practices and livestock breeds in Lushoto, Tanzania.

Methodology

- The study draws on CCAFS IMPACTLITE household surveys, stakeholder feedback, livestock and economic modeling tools.
- We use RUMINANT model (Herrero, 1997) to assess sustainable intensification alternatives to the current base system (local cattle and grazing of maize residues), such as:
  - Improved Napier grass + maize bran + concentrates;
  - Improved Napier grass + more maize bran + more protein concentrates;
  - Improved cattle + improved Napier grass + more maize bran + more protein concentrates.
- We use the Trade-Off Analysis Model for Multi-Dimensional Impact Assessment (TOA-MD) (Antle, 2011) to compare sustainable intensification scenarios at the household level.
- Incremental and ‘Systemic’ scenarios were designed following the classification of Vermeulen et al. (2013).

Results

Table 1. Simulated impact of adoption on net farm returns and per capita income for the wet and dry season and per scenario.

Discussion, conclusions & implications

- The results of the Trade-Off Analysis Model for Multi-Dimensional Impact Assessment (TOA-MD) suggest that adoption rates are higher for the improved feeding and improved feeding plus improved breeds compared to the baseline scenario; however, adoption rates are very low during the dry season compared to the wet season.
- At the simulated adoption rates, both scenarios: improved feeding and improved feeding with improved cattle breeds have positive impacts on per capita income and contributes to overall poverty reduction.
- The simulations with RUMINANT model showed increased milk production and a marginal decrease in CO2 emissions intensity.
- Based on the results, the paper concludes that it makes economic sense to introduce improved feeding strategies and/or change cattle breeds during the wet season but not in the dry season.
- The study further concludes that much of the increase in per capita income and reduction in poverty emerges from improved feeding.
- These findings imply targeted dissemination of improved feeds and the need to educate farmers on the proper timing of feeding in order to maximize benefits together with the fact that farmers could benefit more from simply changing animal diets without necessarily changing the breeds.
- This is a preliminary rapid analysis to assess the impacts of the scenarios, but further analysis is required to assess the economic and environmental impacts.

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