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Press Release:

Title

Assessing the Cost of Production Structures in Kenya Dairy Systems Study: Summary

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Key Messages

Background

Dairy is an important industry in Kenya contributing about 14% of the agriculture GDP and 4% of the National GDP. It supports more than one million smallholders and plays a critical role in food and nutrition security through milk consumption and increased household incomes.

The sector is regarded as a success case in Kenya due to the following factors: First, the sector supports a large proportion of small holders since about 80% of milk is produced by smallholders. Secondly, it is commercially-oriented creating employment both in the formal and informal milk chains through linkages; and finally, it has potential for more growth both domestically and regionally due to the high milk consumption levels in Kenya and unmet demand in the region. Thus, the sub-sector has the potential of playing an important role in improving the livelihoods of small-scale farmers. However, realization of the sector's potential has continuously been faced by many challenges as documented in several papers and reports. Some identified farm-level challenges include high cost of production, declining land sizes, consumer concerns about milk quality and safety, lack of good quality animal breeds, and poor husbandry and farming practices, among others.

Study Rationale and Objectives

An important challenge is the high cost of production and dairy producers have been raising concerns about it. Previous studies on cost of milk production were carried in 2003 and 2011. It is important to periodically track costs of production since they have implications on producer returns, poverty reduction goals and investment decisions. Despite this need, recent information on cost of production is not available. In addition, it is important to also understand how production costs vary by production structures and also analyse potential effects of price and productivity changes on economic performance, which has not been done by previous studies.

Considering these needs and in order to identify policy actions, Tegemeo Institute in collaboration with the Kenya Dairy Board undertook a study to assess the cost of milk production and profitability in Kenya and identify policy intervention areas. The study was undertaken following the "typical" farm approach, which is a relatively new methodology developed by international livestock and crop networks to assess cost of production. The study was undertaken in 20 Counties important in milk production in the country (see annex). For each county, the location that was the most important in terms milk production in that county was identified and data collected there. Data was collected for the year 2014 capturing

costs and returns for the three production systems: zero-grazing (most intensive), semi-zero grazing and open-grazing (least intensive).

Results

Cost and returns per litre of milk produced

- Cost of production and returns vary by production system and by County
- Costs per unit of output increases with production intensity, and consequently, returns reduce with intensity
    - Without accounting for the cost of own factors of production, farmers practicing zero grazing were spending highest to produce a litre of milk, at an average of Ksh 19/litre, while the semi-zero grazers spent Ksh 17.2 and the open grazers Ksh 10. Consequently, gross margins (i.e. returns without accounting for the cost of own factors of production such as family labour) were highest for open grazers at Ksh 22.8 and lowest for zero grazers at Ksh 12.4 per litre. Thus, farmers in all studied area were making positive gross margins.
    - However, when fixed costs and own factors of production (such as own labour and own pasture) were put into consideration, zero-grazers barely break even, making a small loss of Ksh 0.6 per litre of milk produced. Semi-zero grazers made an average profit of Ksh 5.6 per litre, and open-grazers made Ksh 7.9 on average. This shows the importance of own factors of productions to smallholders.
    - When other revenues in the farm such as livestock sales and sale of manure are accounted for, the net profits are positive for all production systems.

Important cost components

- The most important factors to cost of production are feed concentrates for the zero-grazers, forming 42% of direct variable costs. Hired labour was the most important cost component for the other production systems accounting for 31% for semi-zero grazers and 37% for open-grazers.
- When all cost components are put into consideration (including own factors of production), family labour was the biggest component of cost across the three production systems.

Returns per cow as a proxy for efficiency

- Despite the zero-grazing system performing poorly in-terms of returns per litre, it is the most efficient system, giving an average gross margin of slightly above KSh 41,000 per cow per year, closely followed by the semi-grazing system.
- This lead in efficiency is lost however when own factors of production are considered, with the semi-zero grazing system now returning the highest per cow per year followed by open grazers.

Effect of changes in productivity, prices and cost on returns

- Productivity and price changes have higher effect on returns compared to cost reduction: For instance, among farmers practising zero-grazing, a 20% increase in productivity would increase gross margins by 67%. On the other hand, a 10% increase in milk producer prices would increase gross margins by 34%, while a 10% reduction in cost of feeds would increase gross margins by 7%.

Policy Recommendations

- There is need to increase milk productivity/cow and efficiency
    - While more intensive production comes with higher cost/unit of output, it should also translate to higher productivity and efficiency, which is not being realized with most zero-grazers.

- The analysis shows that increased productivity would have the highest effect on farmer returns. Higher productivity and efficiency can be achieved through:
  - Adoption of improved breeds that are of higher productivity;
  - Improving the quality of feed concentrates. Kenya should therefore develop standards for feeds and ensure that manufactures follow them
  - Giving the right types of feed and pasture: Farmers should therefore be trained on good feeding practices, such as giving fodder crops that are of high nutrient-quantity and hence higher returns

- There is need to address the high cost of feed concentrates so as to increase farmer returns. This can be done through:
  - Ensuring that manufactured feeds are of high-quality. Improved quality would result in lower cost/unit of feed
  - Feed formulation at farm-level also has the potential to reduce the cost of feeds while ensuring quality. This will call for farmer training in feed formulation.
  - Lowering tax regimes: For instance exempting all raw materials used in the manufacture of feeds and the final products from VAT.

- There is need to address the high cost of labour in dairy farming. This can be achieved through:
  - Reducing the amount of time spent on collecting feeds: Dairy farmers spend a lot of time (labour cost) on collecting feeds in small quantities. A shift to feed collection in bulk and storing (for instance as silage) and own-feed formulation would result in overall reduction in labour cost.
  - Exploring small-scale mechanization: Currently, the dairy industry has low level of mechanization. There is an opportunity to increase mechanization for instance in milking and feed making, by adopting technologies as small-scale milking machines, chaff-cutters etc.

Annex

Table A1. Identified areas for study implementation

County	Sub-County	Division	Location	Production System	Scale
Taita Taveta	Taita	Wundanyi	Wundanyi	Zero	Small
Meru	Imenti North	Miringa Mieru West	Nthibiri	Zero	Small
Nyeri	Mukuruwe-Ini	Mukuruwe-Ini Central	Muhito	Zero	Small
Muranga	Kangema	Muguru	Muguru	Zero	Small
Embu	Embu North	Manyatta	Gandori East	Zero	Small
Kiambu	Githunguri	Githunguri	Githunguri	Zero	Medium
Nakuru	Bahati	Bahati	Kiamaina	Semi-Zero	Small
Kisii	Kitutu Chache South	Mosocho	Nyakoe	Semi-Zero	Small
Kakamega	Lurambi	Lurambi	Murumba	Semi-Zero	Small
Bomet	Bomet Central	Bomet Central	Ndaraweta	Semi-Zero	Small
Uasin Gishu	Ainabkoi	Ainabkoi	Ainabkoi	Semi-Zero	Small
Nyandarua	Olkalou	Kiambaga	Muhito	Semi-Zero	Medium
Bungoma	Kanduyi	Kanduyi	Township	Semi-Zero	Medium
Nandi	Chesumei	Kosirai	Mutwot	Semi-Zero	Medium
Trans Nzoia	Trans Nzoia East	Cherangany	Cherangany	Semi-Zero	Medium

Elgeyo Marakwet	Keiyo South	Metkei	Kamwosor	Semi-Zero	Medium
Machakos	Machakos	Central	Township	Semi-Zero	Medium
Migori	Suna West	Suba West	Suna South	Open	Medium
Baringo	Koibatek	Eldama Ravine	Ravine	Open	Medium
Narok	Transmara West	Kilgoris	Oloibor Soito	Open	Large

For further assistance, more information or if you would like to conduct interviews with any of the authors, presenters or Tegemeo Institute staff, please contact: Judy Kimani, 0720963348, jkimani@tegemeo.org.
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