

The Status of Smallholder Dairy Markets and Farmers' Perceptions of Formal Markets in Western Province



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Foreword

This report was generated to serve as a reference document for Musika and its implementing partners. Musika Development Initiatives (Musika) is a non-profit company that works to stimulate private sector investments in rural agricultural markets. It achieves this by helping businesses to develop mutually beneficial and transparent commercial relationships with smallholders that integrate the provision of information and technology adoption, and provide confidence and long term incentives for smallholders to invest in their farming business. It provides its corporate clients with high quality, commercially focused technical advice, business model support and where relevant, smart subsidies to bring down some of the initial risks in doing business with the smallholder market. Musika also supports innovative market-based solutions to environmental issues and strives to ensure women are key participants in improved agricultural markets. Musika acknowledges and appreciates the financial support from the Swedish Embassy in Lusaka.

Statement of Confidentiality and Disclaimer

This report has been modified to make it suitable for public circulation. As part of the information generation process, an agribusiness firm implementing an intervention supported by Musika was interviewed. **However, the name of the firm and other details that may identify it have been withheld in order to protect the company's identity and information.** The firm is therefore referred to as Musika Partner Firm (MPF) through-out the report. For queries and comments, contact the Research Manager, 6, Tukuluho Road, Long acres, Lusaka: +260 211 253 989; fax +260 211 255 502.

Disclaimer: The views and information expressed in this report are those of the authors. Whilst due diligence was employed in preparing this document, Musika accepts no liability or responsibility for any loss or damage of whatsoever kind, which any persons or institutions may suffer as a result of any action or decision taken on the basis of information contained herein.

Acknowledgements

The authors wish to thank the management team of the MPF¹ for the support provided during the implementation of the survey. We would also like to acknowledge the help rendered by MPF's extension team in locating farmers. Special gratitude is extended to the farmers for the time they spent participating in the interviews. The information they provided was essential for understanding the status of the smallholder dairy markets and farmers' perception of formal dairy markets in the selected districts of Western Zambia. Many thanks also go to the Musika staff and enumerators who undertook the fieldwork. It is hoped by the authors that the findings compiled in this report will help support and guide implementation efforts.

¹ Name of company changed to protect the company's identity and information.

Executive Summary

The cattle industry is a key component in the Zambian livestock sector which has the potential of contributing to poverty reduction and economic growth. However, the sector is fraught with low productivity levels, low participation rates in dairy markets by smallholder farmers and few agribusiness players that provide an off-take market. Currently, only 15% of the dairy potential is tapped, making the country a net importer of milk (ACF, 2012). While this presents an opportunity for relevant stakeholders to encourage the consumption and production of milk, the high transactional costs in the rural dairy markets have been a key challenge in realising the sector's potential (Lubangu *et al.*, 2012).

It is against this background that Musika supported a dairy processing firm, herein referred to as MPF, with storage equipment and logistical support so as to enhance its capacity to provide extension services and a milk market for rural farmers. It was hypothesized that this intervention would lead to increased participation in markets by farmers, improved farmer productivity and ultimately improved income from dairy production. Following the implementation of the intervention, Musika undertook a study in order to understand the status of smallholder dairy markets and farmers' perception of the formal dairy market in Western province. The key findings are highlighted below:

- ✓ The study revealed that about 40% of the farmers had experienced a decrease in distance covered to sell their milk. It is imperative that markets are brought closer to farmers as transportation costs significantly contribute to the overall transactional costs which can eventually affect farmers' net profits.
- ✓ It was further found that 65% of the farmers felt that they had excellent understanding of the milk quality requirements of the buyers. This could be as a result of extension efforts by the milk buyers i.e. MPF. This further illustrates the pivotal role extension plays in aiding transactions.
- ✓ It was further observed that 91% of the farmers felt that access to assured markets had improved their knowledge on herd health practices and diseases. This could be a key factor in improving the productivity of the dairy farmers.

- ✓ The study found that 76% of the farmers had indicated an increase in expenditure on veterinary drugs and services. This implies that farmers were increasingly investing in the health of their herd which is critical for maintaining and realising improved herd health by the smallholder farmers. The average expenditure was found to be ZMW579.
- ✓ The research further revealed that the mortality and calving rate was 4% and 22% respectively. These statistics represented an improvement from the preceding farming season.
- ✓ The study noted that 61% of the milk produced by the farmers was sold. This represented a 68% increase in the amount of milk produced and 66% surge in the amount of milk sold compared to the 2014/15 agricultural season. This signifies the role that dairy markets play in incentivizing smallholder farmers in the production and commercialisation of milk.
- ✓ Farmers were also asked about the major benefit they derived from participating in the dairy markets, and it was revealed that 69% of the farmers had observed an increase in revenues as a result of participating in the dairy markets. Thus dairy markets have a potential role to play in enhancing the livelihoods of the rural smallholder farmers.

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Abbreviations and Acronyms

| | |
|------|---------------------------------------|
| ACF | The Agricultural Consultative Forum |
| AHS | Annual Household Survey |
| FGDs | Focus Group Discussions |
| MAL | Ministry of Agriculture and Livestock |
| MCC | Milk Collection Centre |
| RALS | Rural Agricultural Livelihood Survey |
| ZMW | Zambian Kwacha |

1.0 Introduction

1.1 Background

The cattle industry is a key component in the Zambian livestock sector which has the potential of contributing to poverty reduction and economic growth. However, the sector is fraught with low productivity levels, low participation rates in dairy markets by smallholder farmers and limited access to formal off-take markets. Currently, only 15% of the dairy potential is tapped, making the country a net importer of milk and milk products by 2.5-3 million kgs annually. Furthermore; the national milk consumption level is low at 19.5 litres per annum against a recommended global average of 200 litres per annum (ACF, 2012). While this presents an opportunity for relevant stakeholders to encourage the consumption and production of milk, the high transactional costs in the rural dairy markets have posed a key challenge in realising the potential of the sub-sector (Lubangu *et al.*, 2012).

For example, while Western province has the second highest cattle population with an estimate of 711,070 heads, only a third of households produce milk (MAL, 2013 and RAL, 2015). Lubungu (2016) attributes this to the low cattle productivity, poor herd health and traditional practices. This does not only present a real threat to the viability of the dairy subsector in the province but also to the livelihoods of smallholder farmers who depend on it.

It is against this background that Musika supported a dairy processing firm, herein being referred to as MPF, in Western province with storage equipment and logistical support so as to enhance the firm's capacity to provide extension services and an assured dairy market for rural farmers. It was conceptualized that provision of such services by the private sector would lead to improved information delivery on herd health, improved knowledge base amongst the livestock farmers and increased confidence in investing in livestock related services. This in turn will result in increased calving rates, reduced mortality rates, increased milk transactions and incomes amongst the rural poor. Therefore, the initiative was anticipated to create mutually beneficial relationships between the private sector and the smallholder farmers.

In order to assess the status of the dairy smallholder farmers following the intervention and to understand the benefits of engaging in formal markets as perceived by farmers, a study was undertaken on dairy farmers under the intervention area of the MPF in Western Province. It is envisioned that the findings from this study will provide an opportunity for Musika to

document the trends in farmer livelihoods following the implementation of the intervention in the Western province.

1.2 Objectives

The main aim of the study was to assess the status of the dairy smallholder markets and farmers' perception of formal markets in Western province. Specifically, the study sought to:

- Examine the level of farmer incomes for households accessing formal dairy markets.
- Assess whether farmers' participation in formal markets has resulted in changes in their access to technical information.
- Assess whether working with the private dairy firms has resulted in differences in management practices.
- Establish the existing risks as well as opportunities for embedding other agricultural services that are currently lacking,

1.3 Sampling, Data sources and Analysis

The survey captured 120 rural agricultural households from Western Province of Zambia and it covered the 2015/16 agricultural and marketing season. Purposive sampling was used to select the sample from households that were engaged in the production of milk under the intervention area and it included farmers who sold their milk to the MPF as well as those who sold to other markets other than the MPF. The assessment captured smallholder households from four (4) districts. Quantitative data was collected using structured electronic questionnaires administered to the selected households. In addition, qualitative data was collected to gauge farmers' perception of change around certain variables. Further, two (2) Focus Group Discussions (FGDs) were held to clarify issues identified during the survey interviews. The analysis took a descriptive format in that it showcased distributional graphs, means and counts around variables of interest. This approach was convenient in highlighting farmers' perceived change their livelihood as a result of the Musika-supported dairy intervention. STATA and Excel software were used in the data analysis.

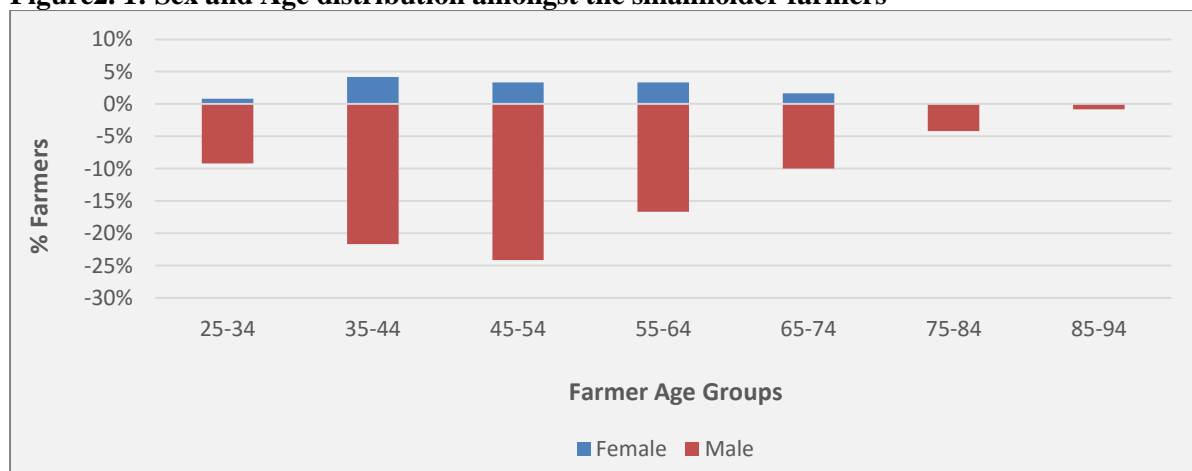
2.0 Key Findings

2.1 General household Characteristics

Farmer' age and gender distribution

Figure 2.1 shows the gender and age distribution of the livestock farmers. Female livestock farmers comprised 13% of the total sample and this suggests that male farmers dominate the dairy market. This implies that more efforts need to be directed towards attracting female farmers in the milk market. The study further revealed that the age distribution of the farmers was skewed between 35 and 64 years. The implication of this is that youths to a great extent are not involved in the milk markets as they represented less than 30% of the farmers participating in the milk markets. There is henceforth a need to stimulate the youth and women involvement in the dairy intervention to ensure inclusive economic impact.

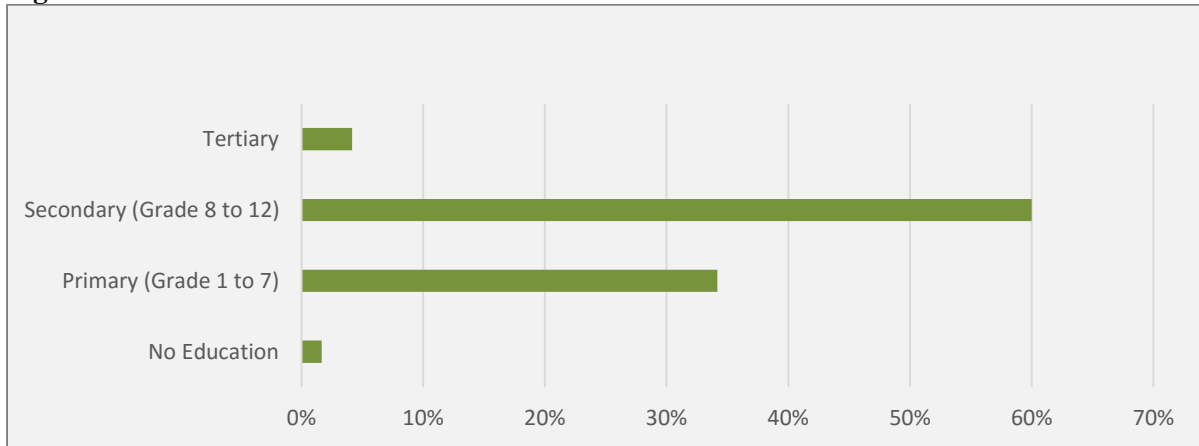
Figure2. 1: Sex and Age distribution amongst the smallholder farmers



Education level

Figure 2.2 shows the distribution of education level among smallholder farmers. It was found that the majority (60%) of the market participants had acquired secondary level education. This can have positive implications on farmer' ability to understand and adopt technical information. According to the Musika's Annual Report, 2015, the majority of smallholder farmers tend to have much lower levels of education attained. The level of education attainment should be taken into consideration in designing extension interventions as this could help farmers broaden their knowledge base of milk production and marketing.

Figure2. 2: Farmer education level



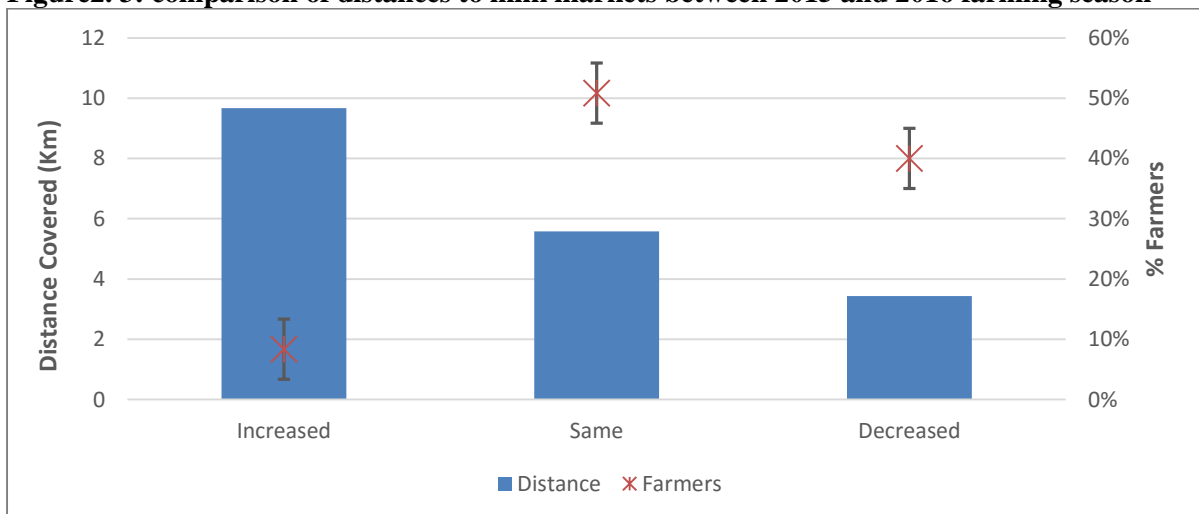
2.2 Changes in Distances Covered by Farmers to Access Dairy Markets

The study assessed how distances covered by farmers to access dairy markets in 2014/15 agricultural marketing season compared to the 2015/16 season. The findings are discussed below:

Comparison of distances to milk markets between 2015 and 2016 farming season

Figure 2.3 shows findings from a comparison of distances covered to get to a formal market and it was found that farmers were travelling shorter distances to access the formal market. For instance, 40% of the farmers had experienced a decrease in distance to the point of sale for their milk. The average distance for farmers who indicated a decrease in distance was about 3 kilometers. However, 8% of the farmers indicated an increase in the distance covered to the point of sale while 51% indicated that the distance remained the same.

Figure2. 3: comparison of distances to milk markets between 2015 and 2016 farming season



The average distance covered by farmers who experienced an increase in distance was 9 kilometers, which was thrice the distance covered by farmers who noted a decrease in distance.

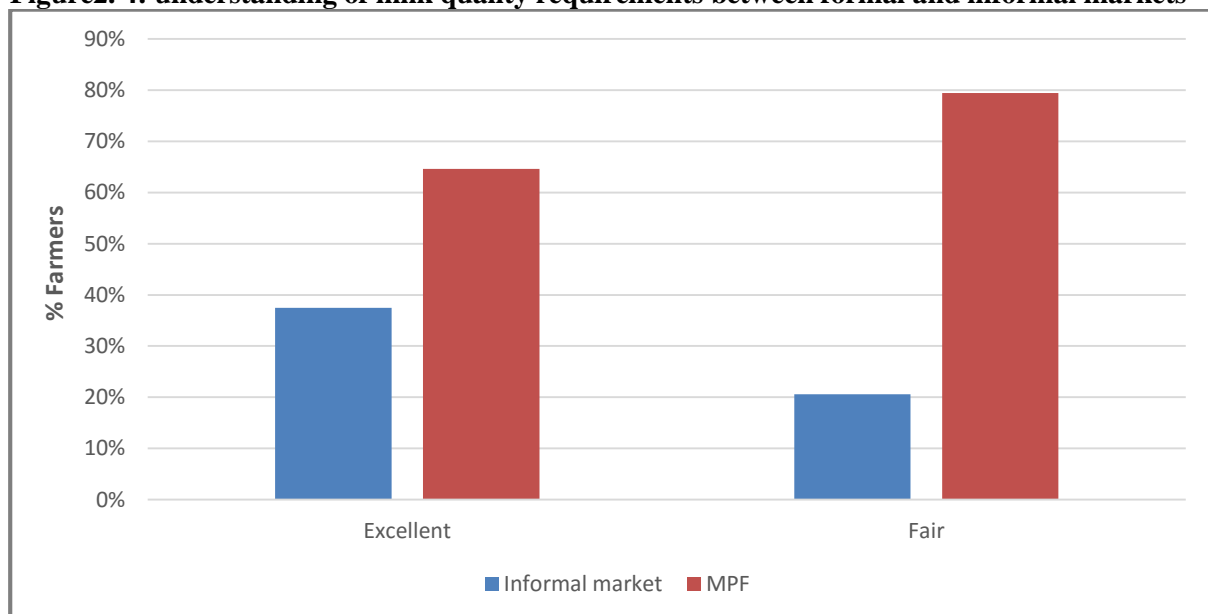
Nevertheless, the reason for the increase in distance can be as a result of a change in the type of market for their milk. Farmers originally sold their milk to neighbors within their communities or would simply sell at a market stall. However, the introduction of the Milk Collection Centers (MCC) at designated sites implied that farmers felt that they had to travel relatively longer distances than before. While this gave them an assured market, there is need to set up more sales points in their communities in order to cut down on distances travelled to deliver milk as transportation costs has a bearing on both net revenues realized from transactions and market participation.

2.3 Access to Livestock Markets and Extension Provision

Understanding of milk quality requirements between formal and informal markets

Figure 2.4 shows a comparison of buyer milk quality requirements understanding between those who sold milk to MPF/MCC and those who sold to informal markets. A higher proportion (65%) of the smallholder livestock farmers who felt that they had an excellent understanding of the milk quality requirements of the buyers had sold their milk to MPF. On the other hand, only 35% of those who sold to informal markets felt that they had excellent understanding of the milk quality requirements of the buyers. This could be as a result of extension efforts by the milk buyer i.e. MPF. Ultimately, this illustrates the pivotal role extension plays in aiding transactions.

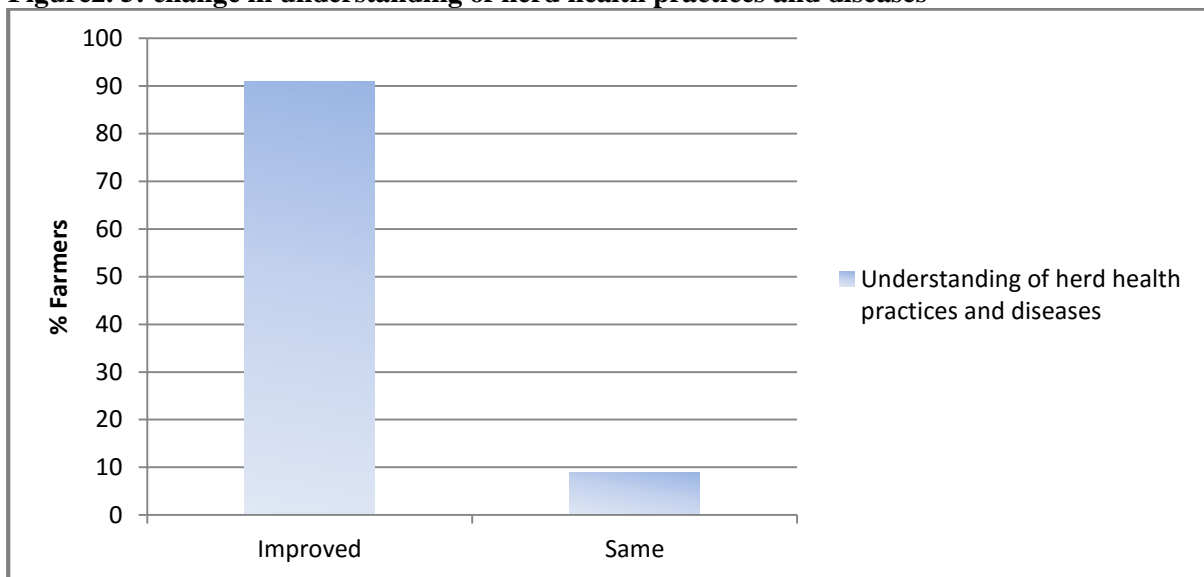
Figure 2. 4: understanding of milk quality requirements between formal and informal markets



Farmer Perceptions of their Change in Understanding of Herd Health Practices and Diseases

Figure 2.5 shows change in farmer's understanding of herd health practices and diseases. It was observed that 91% of the farmers felt that access to assured markets had improved their knowledge on herd health practices and diseases. Only 9% of the respondents felt that their knowledge levels did not change. The implication of this is that farmers do not only have access to markets but also technical information, which is critical in realizing improved productivity amongst the smallholder livestock farmers. Improvements in knowledge, attitudes and practices amongst livestock farmers can have significant impact on reducing herd diseases and subsequently increasing milk production. Lindah (2015) denotes the importance of enhancing the efficiency of extension in order for farmers to improve their understanding of herd health practices and diseases.

Figure 2. 5: change in understanding of herd health practices and diseases

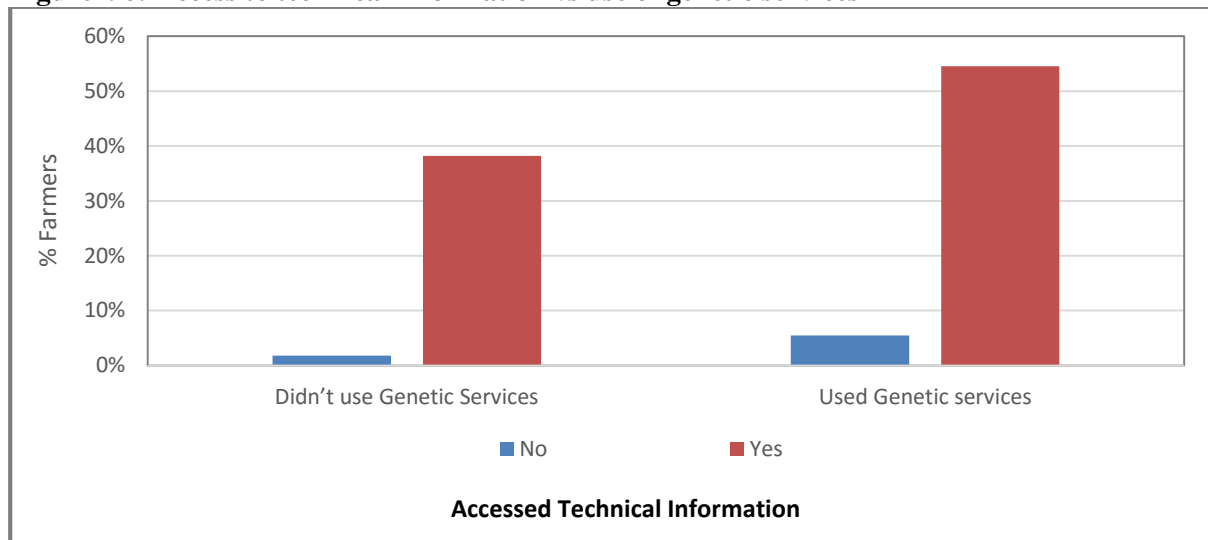


Use of genetic services

Figure 2.6 shows access to technical information against use of genetic services. Generally, it was observed that farmers who had received technical information had used genetic services more than those who had not received technical information by a notable margin. Of the farmers who received technical information, 55% used genetic services. On the other hand, only 38% of the farmers who did not receive technical information used genetic services. This

suggests that information provision could play a role in facilitating the adoption of improved animal husbandry practices.

Figure 2. 6: Access to technical information vs use of genetic services



2.4 Farmers' Engagement in Veterinary Drugs and Services

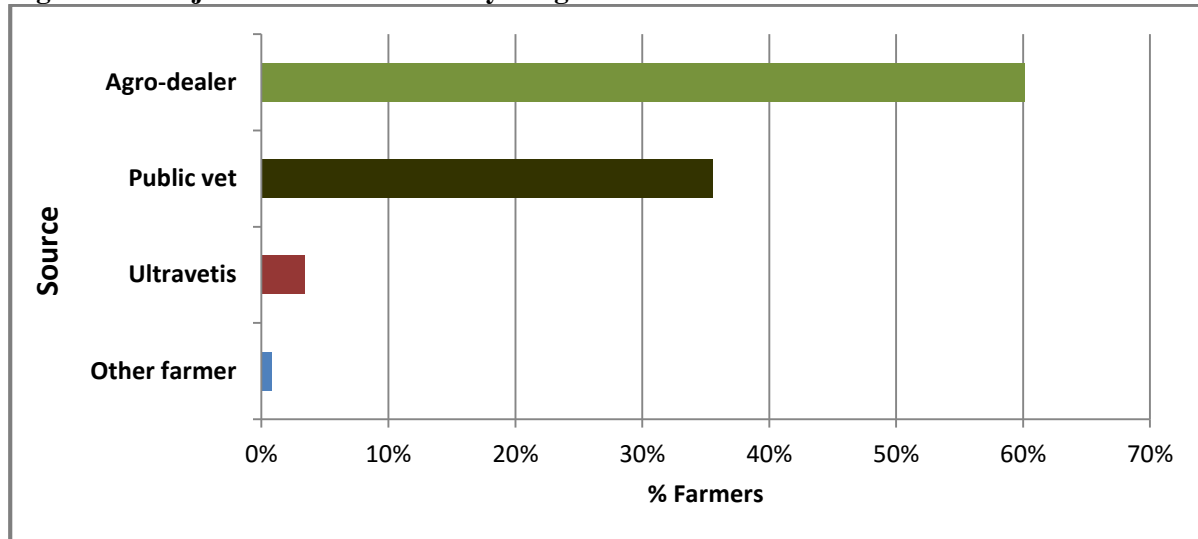
Investment in veterinary drugs and services

Although there was a marginal increase in the number of farmers who used veterinary drugs and services between 2016 and 2015, 76% of the farmers had indicated an increase in expenditure on veterinary drugs and services. This implies that farmers had increased their investment in the health of their cattle, which is important for maintaining and improving the herd health and productivity. The average expenditure on veterinary drugs and services was found to be ZMW579.

Source of drugs and services

Figure 2.7 shows major sources of drugs and services. It was learnt from the study that majority of the farmers accessed their veterinary drugs and services from agro-dealers. Thus the private sector can play an important role in easing farmers' accessibility to drugs and services. There is therefore a need to augment such commercial linkages between the private sector and the farmers.

Figure 2. 7: major sources of veterinary drugs and services

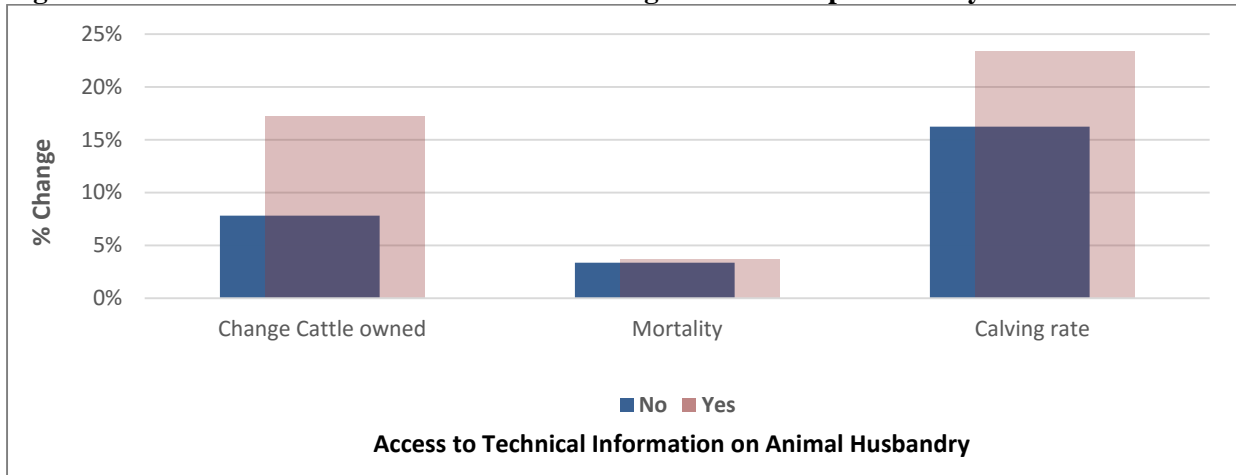


2.5 Access to Dairy Markets and Change in Productivity

Access to Technical Information Vs change in livestock productivity

Figure 2.8 shows the level of livestock productivity among farmers accessing technical information. Farmers had, on average, grown their cattle herd by 16% over the past year and this growth was supported by a relatively high calving rate against a low mortality rate. This improvement in herd productivity could be because of the enhanced investment in herd health and the general improvement in animal husbandry practices, as a result of the improved knowledge base of the farmers. For example, notable differences in calving rate and in general improvement of herd owned was observed between farmers who accessed technical information and those who did not. Nevertheless, whilst the mortality rate found in this study was better than the national average of 5%, the calving rate was found to be below the national average of 50% (World Bank, 2011). This calls for extension services which addresses, among other things, the need for farmers to invest and take up improved livestock practices.

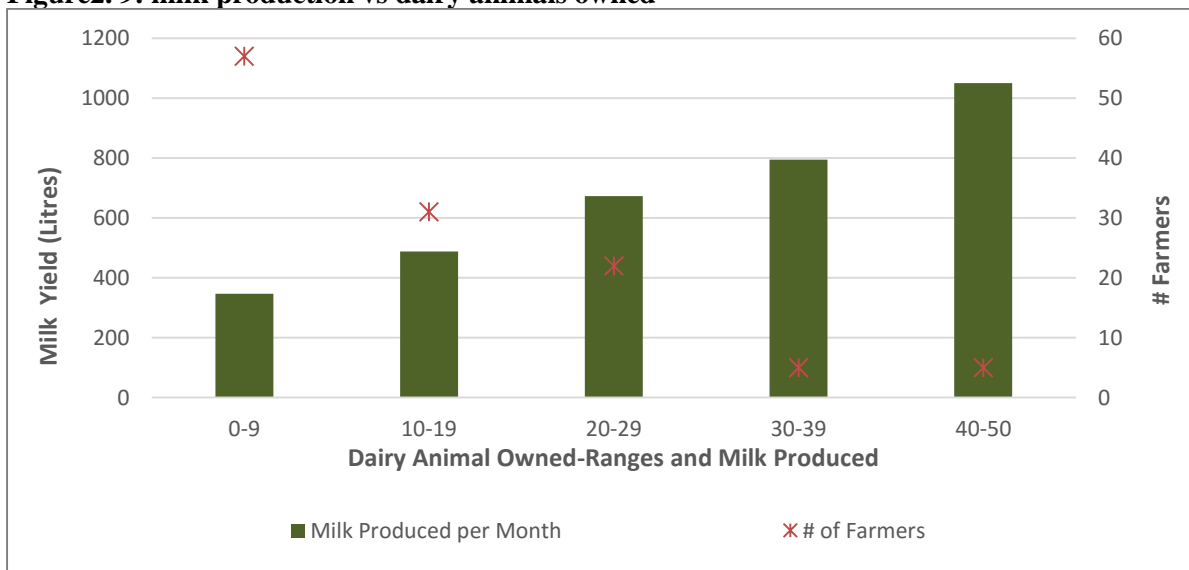
Figure2. 8: Access to technical information vs change in livestock productivity



Milk production vs number of dairy animals owned

Farmers owned approximately 10 milking animals on average and the animal-ownership distribution was skewed between 0 and 19 milking animals, see figure 2.9. The average amount of milk produced per farmer was 491 liters per month and the average yield per milking animal per month was found to be 64litres. This was slightly above the national average for traditional farmers, which was estimated at 60 liters per month (World Bank, 2011). Nevertheless, milk production corresponded to the number of milking animals owned, and this suggests that increases in milk production might be related to the number of animals owned as opposed to actual increases in productivity per animal.

Figure2. 9: milk production vs dairy animals owned

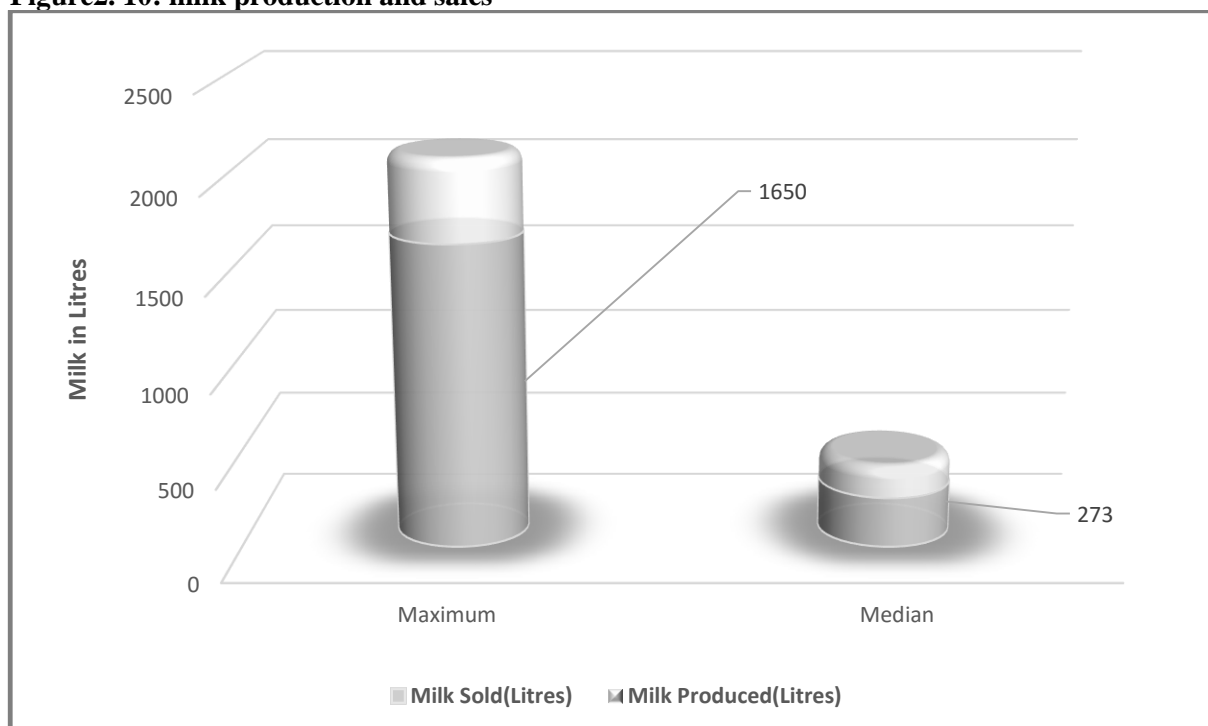


2.6 Access to Dairy Markets and Farmer Incomes

Milk production and sales

Figure 2.10 shows milk production and sales. On average, 273 liters of milk was sold by farmers per month². It was further found that 61% of the milk produced by the farmers was sold. Further, 68% and 66% of the farmers sampled had indicated a surge in the amount of milk produced and sold compared to 2015, respectively, implying that the farmers had experienced an increase in revenue from milk sales. This showcases the important role that milk markets play in improving farmers' revenue base.

Figure2. 10: milk production and sales

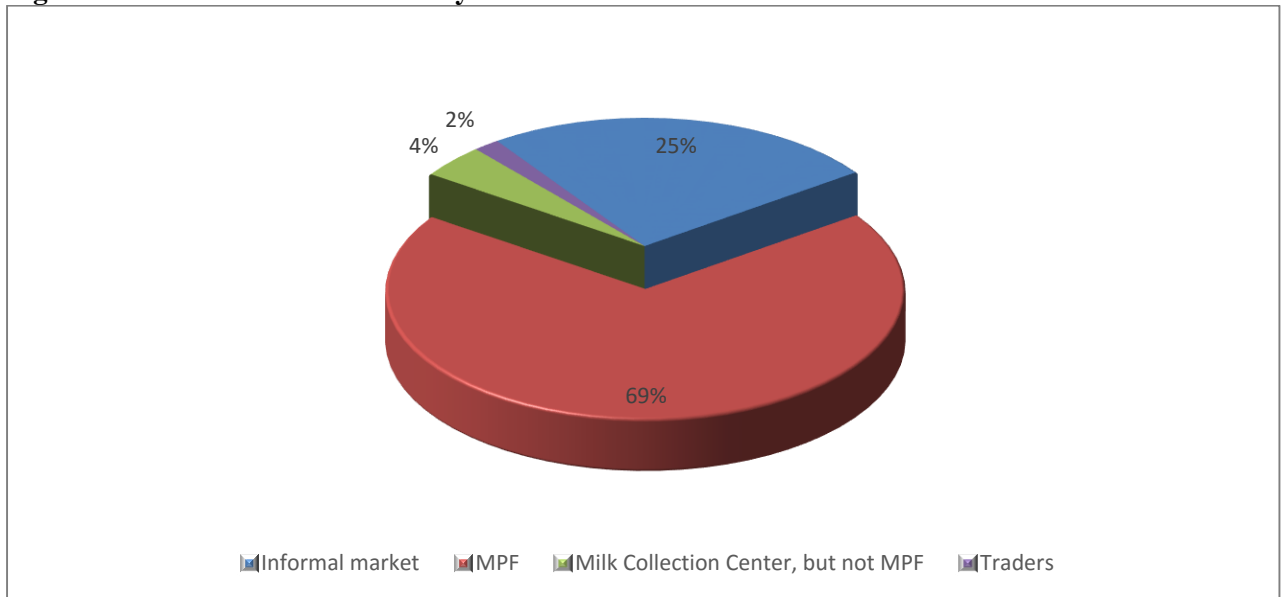


Distribution of milk buyers

It was noted that the major buyer of milk was the MPF, expectedly so due to the survey targeting, see figure 2.11. However, it was also noted that the informal sector still plays a key role in milk marketing as a quarter of the farmers sold their milk to the informal sector. There is thus need to continue efforts towards improving farmers' accessed to assured markets as this could result into more farmers participating in assured markets.

² The mean was 317 litres, the 273 litres was the median.

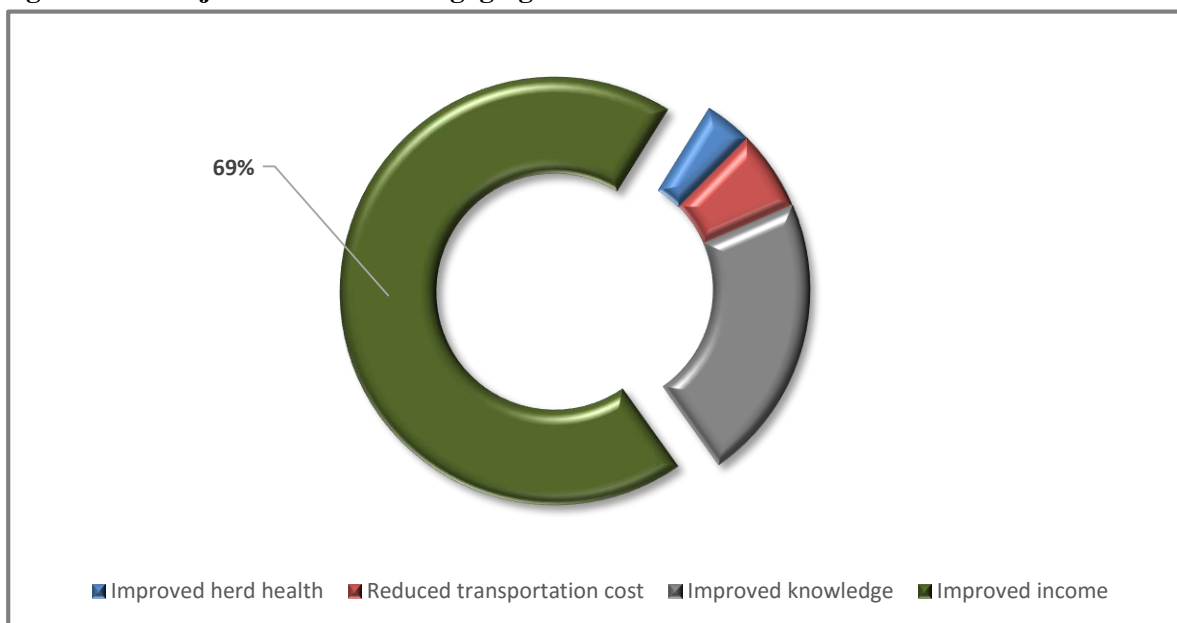
Figure2. 11: Distribution of milk buyers



Benefits derived from dairy market participation

Figure 2.12 shows livestock farmers' major benefits from dairy market participation. The study revealed that 69% of the farmers had indicated an increase in their income; This further collaborates with the findings from AHS (2016) where more than 50% of the farmers had registered improvements in their income levels.

Figure2. 12: Major benefits from engaging in the livestock markets



Farmer income

On average, farmers had generated ZMW 1,268 per month from milk sales, 66% of the farmers had indicated an increase in revenue from the previous season. On the other hand, most farmers had cultivated 2 crops, and ZMW3,054 was generated from crop sales. It was further revealed that 19% of the farmers had indicated an increase in their revenue from crops sales. It was also found that 63% of the farmers had also engaged in off-farm activities from which they had obtained an average of ZMW6,638 per year. These statistics suggest that the milk market play the most vital role in farmers' revenue generation as it surpasses income generation from other sources on an annual basis.

2.7 Opportunities

The intervention has enormous leeway to expand. Opening up new satellite milk collection centers can attract more farmers to the markets given that some farmers were still covering long distances of between 3 and 9 kilometers to access the milk market. Alternatively, engaging more transporters can facilitate milk market expansion in new or under-served areas.

Enhancing the provision of technical information through extension services has the potential of encouraging farmers to seek genetic services and can help improve milk yields. Thus extension needs to be strengthened in order for cattle productivity to increase within the farmers' current herd.

2.8 Risks

Long distances covered by some farmers to deliver their milk might be a disincentive for them to increase their production as transportation costs might have a significant bearing on their net revenues from milk, and this has an additional effect on farmers' capacity to preserve fresh milk up to the point of milk collection. If this is not addressed, it might result in farmers engaging less in milk markets, which will consequently make both the private sector and the farmers lose out on potential revenues.

3.0 Conclusion and Recommendations

Following Musika's support to a dairy processing firm in enhancing its capacity to provide a dairy market as well as extension support, a study was conducted in order to understand the status of smallholder dairy farmers and farmers' perception of the markets in the intervention areas.

The study showed that farmers engaging in the dairy markets had generated more income from milk sales than crop sales. It was further found that farmers that were accessing technical information were also experiencing high productivity levels. Therefore, milk production with the availability of markets has significant potential in generating incomes and contributing towards poverty reduction amongst the smallholder farmers.

A need exists for both the private sector and the Government to enhance their investments to support cattle production and marketing. And one way of doing this is could be through improving extension provision which could result in increased knowledge dissemination to the farmers. This is cardinal if the knowledge on herd health and practices is to be enhanced and sustained, which could consequently result in improved milk productivity.

Apart from extension provision, there is also need for the private sector working in collaboration with government to offer the animal health infrastructure i.e. spray race/dip tanks which could supplement the milk markets. This could be critical in safe guarding the productivity of the animals, and also the amount of milk sold by the smallholder farmers.

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