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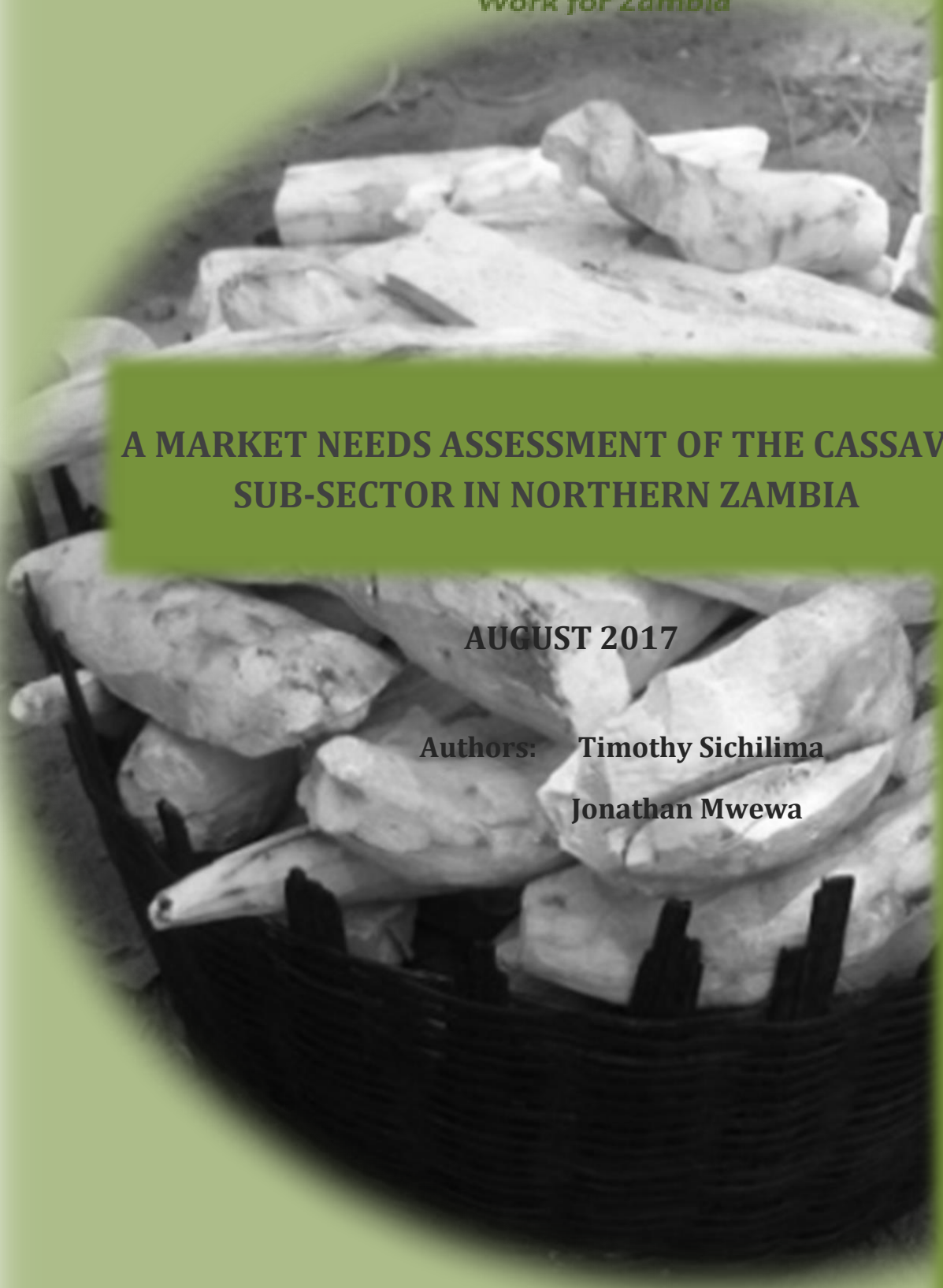

A MARKET NEEDS ASSESSMENT OF THE CASSAVA SUB-SECTOR IN NORTHERN ZAMBIA

AUGUST 2017

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MUSIKA DEVELOPMENT INITIATIVES

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 supported by Musika was interviewed. **However, the name of the firm and other details that may identify it have been withheld in this report 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.

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Acknowledgements

The authors wish to thank the management team of the MPF[1](Musika partnering firm) for the support provided during the implementation of the baseline survey. We would also like to acknowledge the help rendered by MPFs 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 commodity markets in selected districts in Luapula 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

Grown almost exclusively by low-income smallholder farmers, cassava is one of the few staple crops that can be produced efficiently on a small scale, without recycled inputs and in marginal areas with poor soils and unpredictable rainfall (Food and Agricultural Organisation, 2013). However, its potential as a commercial crop has received far less attention in Zambia owing to the limited access to markets farmers are faced with. Only one-third of households in 2014/15 were engaged in cassava commercialisation (RALS, 2015) and according to FSRP and ACF (2010), growth prospects in smallholder cassava production remain limited if farmers access to commodity markets continues to be a challenge. In view of this, Musika provided a MPF with equipment and logistical support in 2016, to facilitate the development of an out-grower for cassava coupled with extension services to the smallholder farmers in Kawambwa and Mansa. It is envisaged that this initiative will lead to a beneficial outcome for the MPF, and at the same time, will help provide assured cassava market to farmers. Following this, Musika conducted a survey in the targeted intervention areas to assess farmers' level of participation in the cassava markets and identify market needs in the cassava sub-sector. Below were the key findings:

- About 40% of the farmers had sold their cassava. Commercialization of the crop's root was dominant, second only to Maize.

- In terms of key commodity buyers, it was found that the majority of the farmers had sold their cassava to traders and the MPF was the second largest buyer. It bought a third of the cassava sold to various markets.

- On average, farmers had generated ZMW2,615 from cassava sales annually. The farmers had on average sold 1.8 metric tons of cassava, regardless of the cassava form. It was further revealed that the dominant source of revenue for the farmers was crop production followed by off-farm income. The major contributor to the crop income was maize, which made up 60% of the income, followed by cassava which contributed a third of the total crop income.

- Farmers' access and use of mechanisation was low. Only 7% had used mechanization in their fields and there was also limited investment in modern farming implements such as ploughs, rippers or harrows. For instance, only 1.3% of the farmers had any of the aforementioned farming implements.

- About half of the farmers in the sample accessed technical information. And for the farmers who had accessed technical information, 65% felt that they had excellent understanding. It was also noted that the majority of the farmers who had accessed technical information had contact with extension agents more than three times.

- The most common way in which farmers received the technical information was through group meetings and the public extension staff had dominated technical information delivery.

- The commonly used seed variety by farmers was the traditional seed recycled from own production while the improved seed was mostly purchased or given to farmers by NGOs. About 28% of the farmers had used improved seed, and the most popularly used improved seed was Mweru. The prominence of traditional seed signals low investment levels in improved seed by the farmers.

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Abbreviations and Acronyms

AATF	African Agricultural Technology Foundation
ACF	The Agricultural Consultative Forum
ACP	Agricultural Commodities Program
CAMAP	Cassava Mechanisation and Agro Processing Project
FSRP	Food Security Research Project
HH	Household
KG	Kilogram
NGO	Non-Governmental Organisation
RALS	Rural Agricultural Livelihood Survey
ZMW	Zambian Kwacha

1.0 Introduction

1.1 Background

In Zambia, cassava is the second main staple food crop produced and it is an important crop for food security. Grown almost exclusively by low-income smallholder farmers, cassava is one of the few staple crops that can be produced efficiently on a small scale, without recycled inputs and in marginal areas with poor soils and unpredictable rainfall (Food and Agricultural Organisation, 2013). In addition, it is a viable commercial cash crop which can play a role in poverty reduction through income generation for the rural poor (Dorosh *et al*., 2007). For instance, it is used as a famine reserve crop, cash crop for urban consumption, industrial raw material, and earner of foreign exchange (Dixon *et al*., 2003). Furthermore, cassava's well-known drought tolerance has likewise contributed to steady production gains over time and has attracted interest as a drought-mitigation crop (Haggblade & Nyembe, 2008). However, its potential as a commercial crop has received far less attention in Zambia owing to thin Cassava markets.

In the 2014/15 season for instance, Mansa district had 8688 hectares of cassava planted and production stood at 130,320 metric tons; the 2015/16 season had minimal deviation from this scenario. However, only one-third of households in 2014/15 were engaged in cassava commercialisation (RALS, 2015). And according to FSRP and ACF (2010), growth prospects in smallholder cassava production remain limited if farmers' access to commodity markets continues to be a challenge. This is so because once households assure their food security, they will only increase cassava production if a commercial market for the crop exists. Thus high consumption levels coupled with increased participation of traders in the cassava markets has the potential of stimulating increased production amongst smallholder farmers. This underscores the need to facilitate the development of cassava markets.

In view of this, Musika provided a MPF with equipment and logistical support in 2016, to facilitate the development of an out-grower for cassava coupled with extension services to the smallholder farmers in Kawambwa and Mansa. It is envisaged that this initiative will lead to a beneficial outcome for the MPF, and at the same time, will help ensure that smallholder farmers, especially women, have an assured market for their cassava. This will in turn lead to

increased cassava production and improved incomes amongst the smallholder farmers in the targeted intervention areas.

Following this, Musika conducted a survey in the targeted intervention area to assess farmers' level of participation in the cassava markets and identify market needs in the cassava sub-sector. It is imperative that an assessment of the cassava market is done as this will help guide the development of initiatives.

1.2 Objectives

The main aim of the study was to assess the level of farmer participation and derive market needs and opportunities in in the cassava sub-sector in the targeted intervention areas. The specific objectives were as follows:

i. Determine farmers' access to agronomic technical information the main providers of the information.

ii. Establish farmers' level of investment in improved seed.

iii. Establish the current production and productivity levels of cassava amongst farmers.

iv. Establish the major challenges faced by smallholder cassava farmers with regards to cassava production and marketing.

1.3 Sampling, Data Sources and Analysis

The assessment was conducted in two districts of Luapula Province in 2017. A total of 157 farmers were purposively selected in the targeted areas, from farmers who grew and sold cassava to the MPF in the past at least once. The survey used electronic questionnaires to collect the data and they were administered by enumerators to the selected farmers. Other than the primary data, the Rural Agricultural Livelihood Survey 2015 (RALS 2015) data was used in generating generalized statistics. The analysis made use of Excel, SPSS and Stata software and involved showcasing distributional graphs, means and counts around variables of interest.

2.0 Key Findings

2.1 Demographic Characteristics

The average age of the farmers was found to be 48 years across the sample and there was no major difference between the average age of the male and female farmers. In addition, it was also found that farmers have been involved in cassava production for about 18 years, indicating that they have a wealth of past experiences regarding farming practices involved in its production.

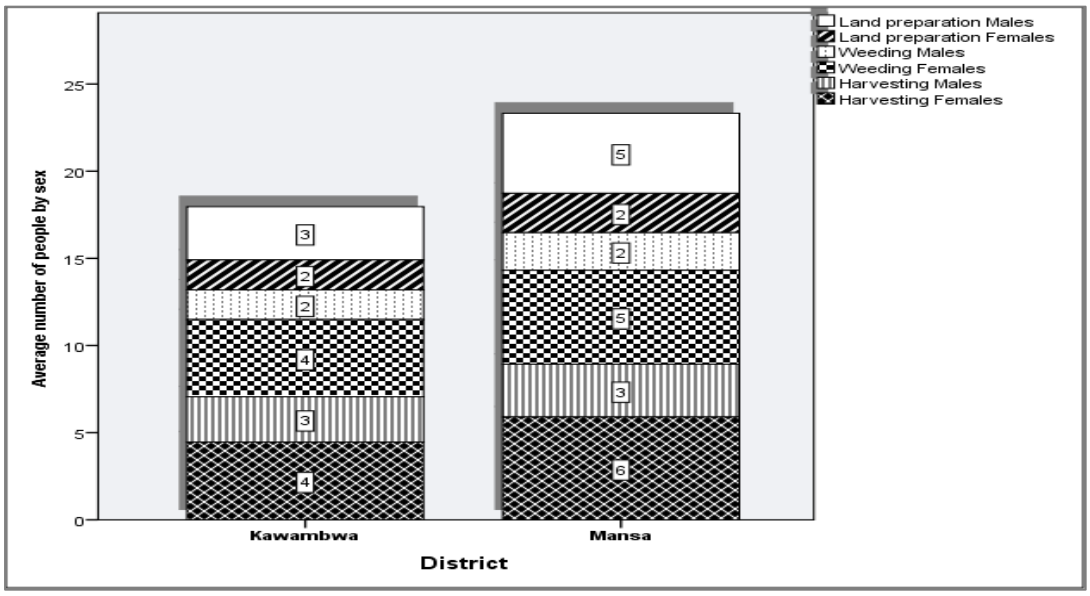
As for education attainment, the majority of the farmers had attained primary education only. The level of education attainment affects the way farmers receive and assimilate both agronomic and marketing information, therefore technology and extension services should be provided in a way that takes into consideration the farmers level of education.

2.2 Labour distribution and Cropping Choices

Labour distribution

Figure 2.1 highlights the labour distribution in relation to cassava production. Labour in cassava production is one of the critical factors which affects productivity as cassava production is labour intensive whilst the majority of farmers are resource constrained (Khonje *et al*., 2015).

Figure 2.1 Allocation of Labour in Cassava Production by Gender and district.

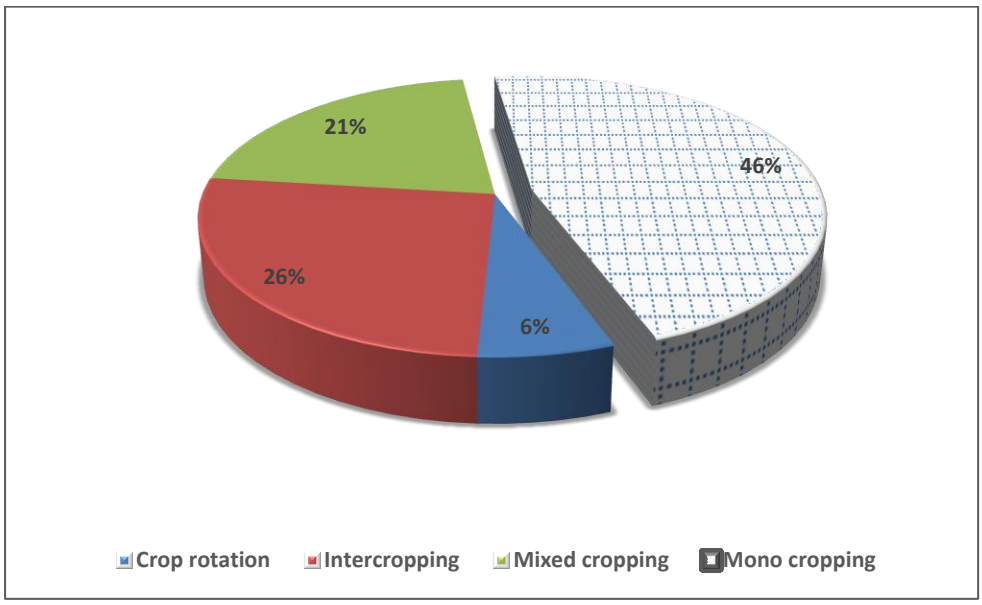


It was found that there was a steady increase in labour use from field preparation to harvesting. On average, six (6), seven (7) and eight (8) people were used in field preparation, weeding and harvesting cassava, respectively. It was observed that women were used much more in weeding and harvesting than in land preparation, but overall, women dominated the cassava production process. Furthermore, about 84% of the farmers had hired labour in the production process of their cassava and about ZMW340 was spent on hired labour.

Cropping Systems

Figure 2.2 depicts cropping systems used in cassava production. The majority of the farmers (46%) had used mono cropping in their Cassava production and this was followed by intercropping. This suggests that farmers prefer intensive farming systems, which might play a role in farmers' uptake of improved technologies such as use of herbicides and improved seed

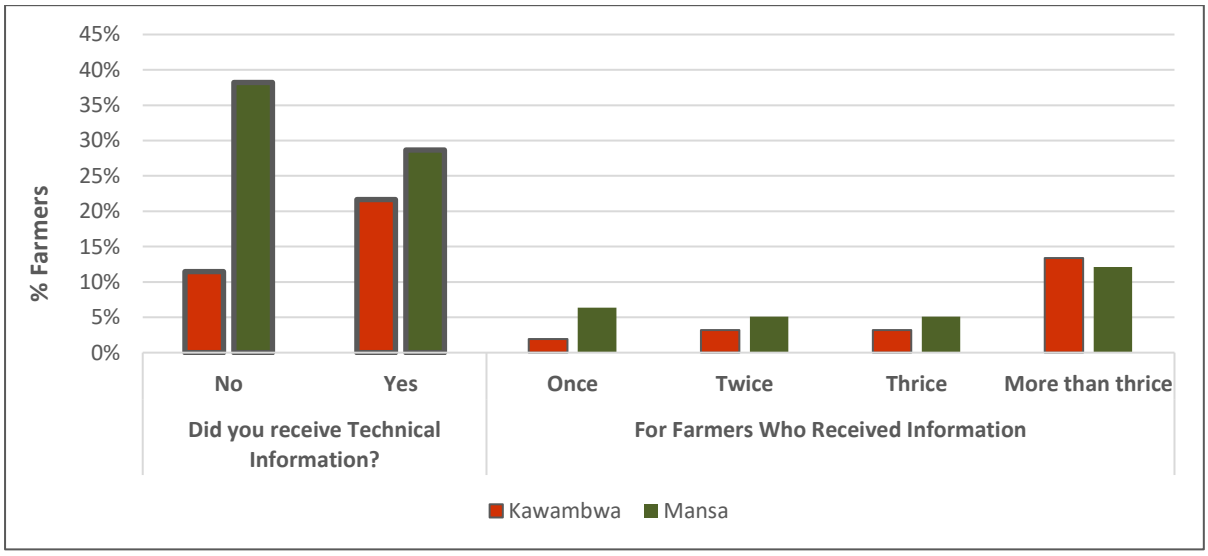
Figure 2.2 cropping method used to cultivate cassava



2.3 Farmer Access to Information on Cassava production

Figure shows farmers' access to technical information. Access to agronomic information is key in enhancing farmers' capacity to take up improved farming practices. This is because access to information is likely to increase their knowledge of improved technologies. The study found that 50.3% of the farmers had accessed technical information and that the majority of the farmers who had accessed technical information had contact with extension agents more than three times, see figure 2.3

Figure 2 3 Farmer Access to Technical Information on Cassava Production



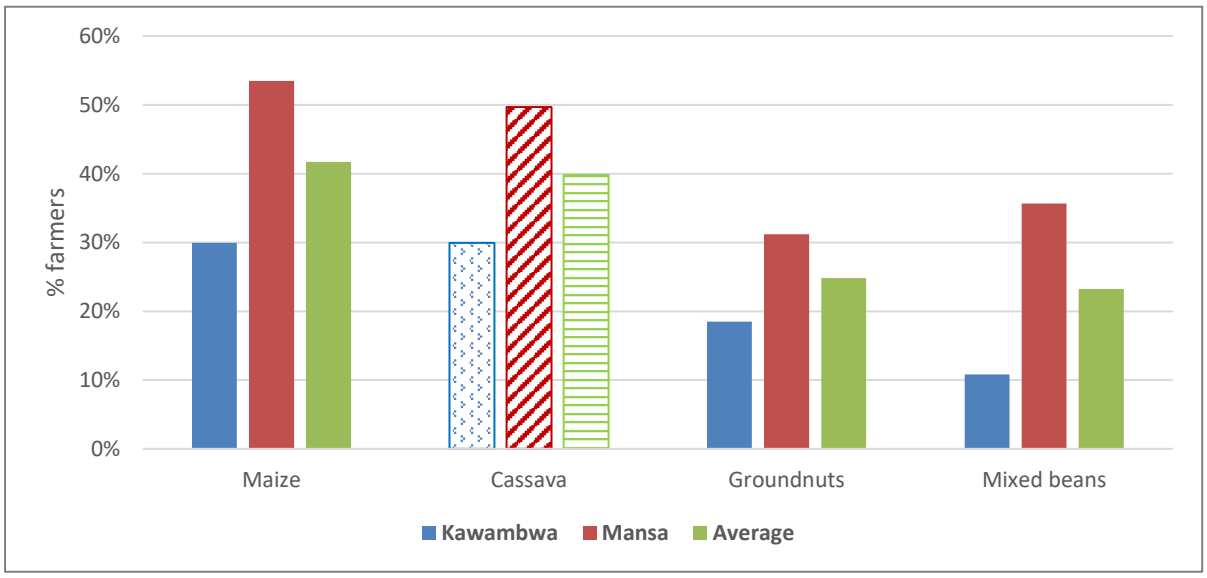
In terms of the level of understanding of the technical information provided, 65% of the farmers felt that they had excellent understanding of the information while only 2% had poor understanding of the information. In addition, the study explored the common ways in which information is disseminated to the smallholder farmers and it was found that the most common way in which farmers received the technical information was through group meetings. Group meetings, as a mode of information delivery was followed by field days and thirdly through demo-plots. It was noted that the public extension staff dominated technical information delivery, however, the MPF was also engaged in delivering technical information to the farmer on a one to one basis only, while the public extension officers had different platforms in disseminating the technical information.

2.4 Cassava Commercialization, Use of Technology and Sources of Seed

Cassava Commercialization

Easy access to commodity markets is key in incentivizing farmers to reinvest in their own production. The average distance between the point of access to commodity markets and the homestead was found to be about 6km. Furthermore, about 40% of the farmers had sold their cassava with commercialization of the root crop second only to Maize, see figure 2.4. It was also observed that commercialization was more prominent in Mansa than in Kawambwa and this could be attributed to the relatively better infrastructure that Mansa has compared to Kawambwa, which could favour commodity trade.

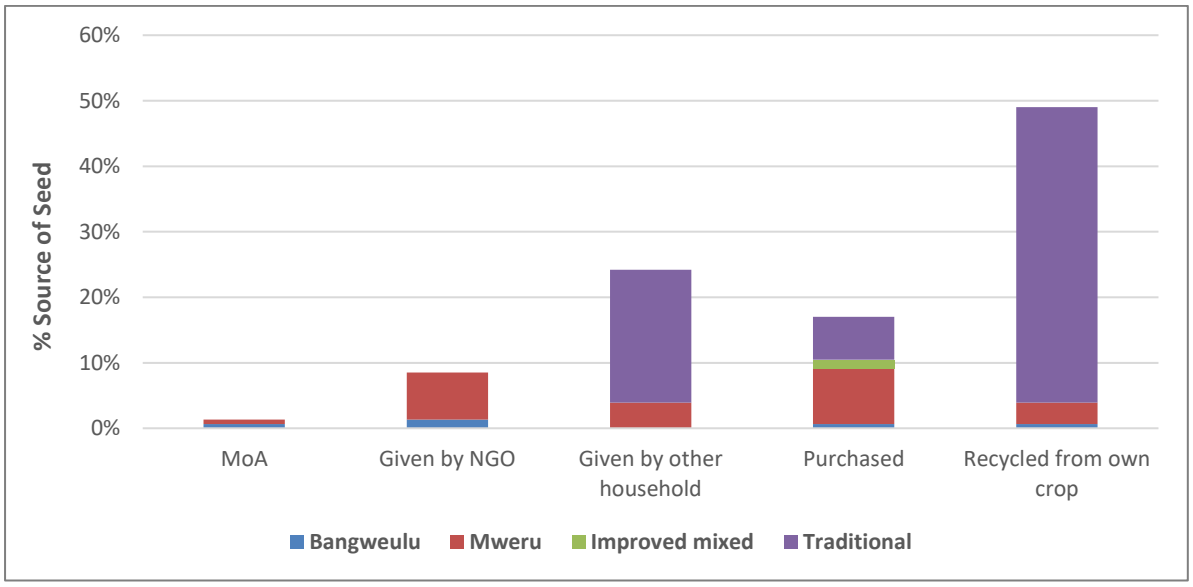
Figure 2 4 Farmer Access to Markets by District



Sources of Cassava seed

Whilst the traditional seed was largely recycled from own production, the improved seed was mostly purchased or given by an NGO, see figure 2.5. It was observed that 28% of the farmers had used improved seed and the most popularly used improved seed was Mweru. Nevertheless, the prominence of traditional seed signals low investment levels in improved seed by the farmers. Thus deliberate efforts will need to be made to ensure the uptake of improved seed as it can positively impact production.

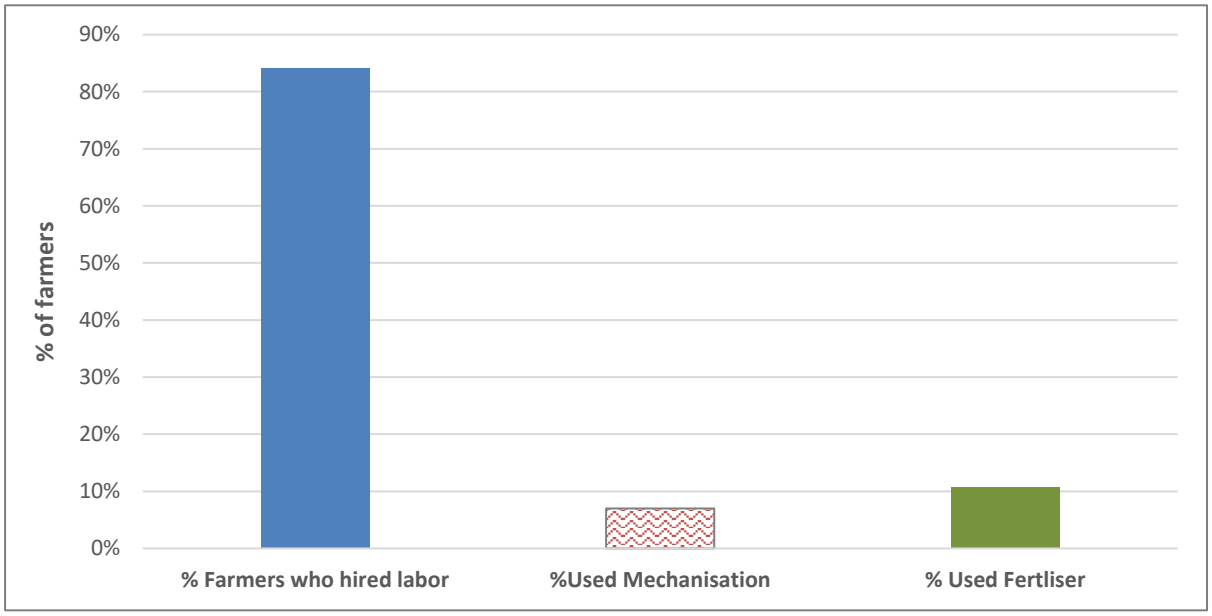
Figure 2.5 Source of Seed by variety



Use of Productivity-enhancing Technology

The study revealed that over four-fifth of the farmers had hired labour. This is indicative of the drudgery involved in cassava production. However, farmers' accessibility and use of mechanisation was low, see figure 2.6, and this was also coupled with low investment in modern farming implements such as ploughs, rippers or harrows. For instance, only 1.3% of the farmers had any of the aforementioned farming implements. Nevertheless, it was also found that about 11% of the farmers had used fertiliser in their fields. This further attests to the notion that farmers rarely use fertilizer in their cassava fields, although it remains unclear if it is due to financial constraints or merely seeing no need to apply fertiliser.

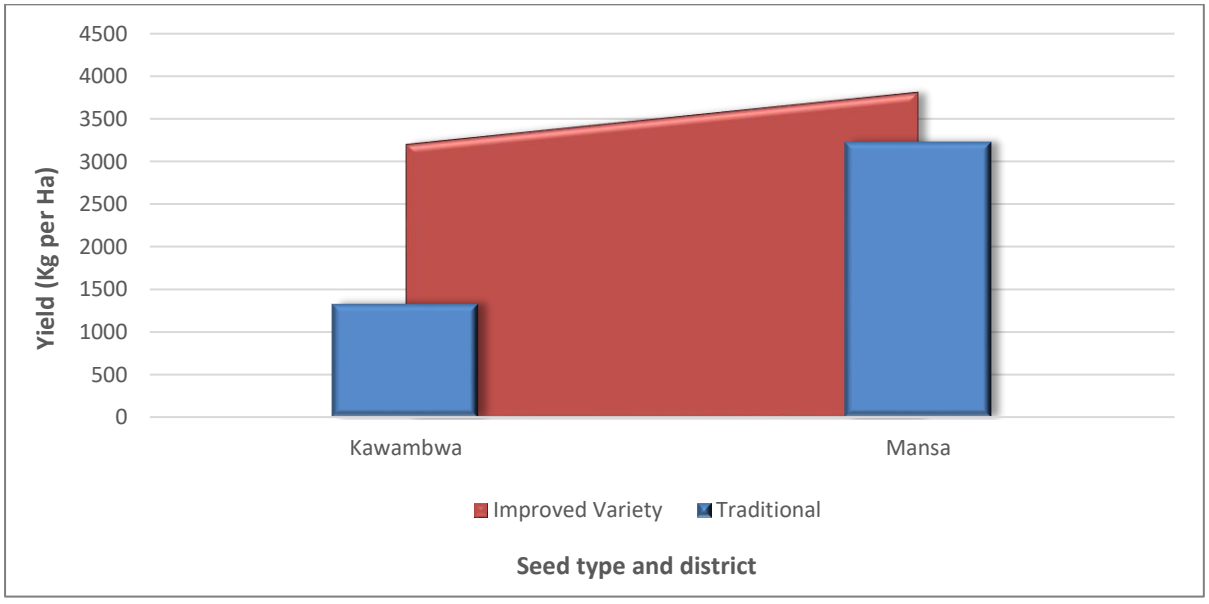
Figure 2.6 Farmers' Use of Technology



Improved Seed Use and Yield

One of the key factors which might help farmers in enhancing their yields would be the use of improved technologies. For instance, farmers who had used improved seed had, on average, surpassed yields of local variety by 54%, see figure 2.7. Thus improved seed needs to be encouraged if farmers are to obtain cassava surplus for them to commercialize.

Figure 2.7 Seed Type vs Yield



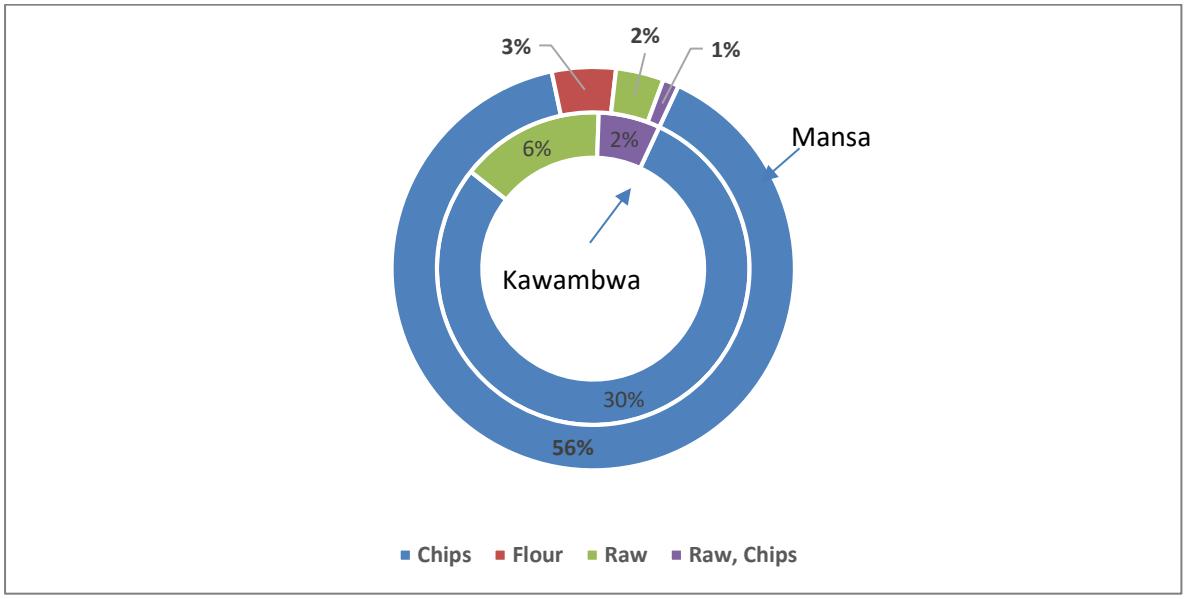
2.5 Cassava Sales and Income

Cassava has huge potential as an income-earning crop as well as an important source of carbohydrates after maize. Therefore, it can play a key role in reducing food insecurity amongst rural households. Its income generating potential can also contribute towards the country's economy as its use includes industrial application i.e. beer, high-quality starch, flour, animal feed, etc. Thus it has significant potential in generating commercial value for the businesses engaged in cassava processing while improving the lives of the smallholder farmers through market linkages.

Forms in which Cassava is Sold

The study found that the majority of the farmers had sold cassava in chip form, see figure 2.8. in addition, it was noted that only 3% of farmers had further processed the cassava into flour, and this was only observed in Mansa.

Figure 2.8 Forms in which the cassava is sold by district

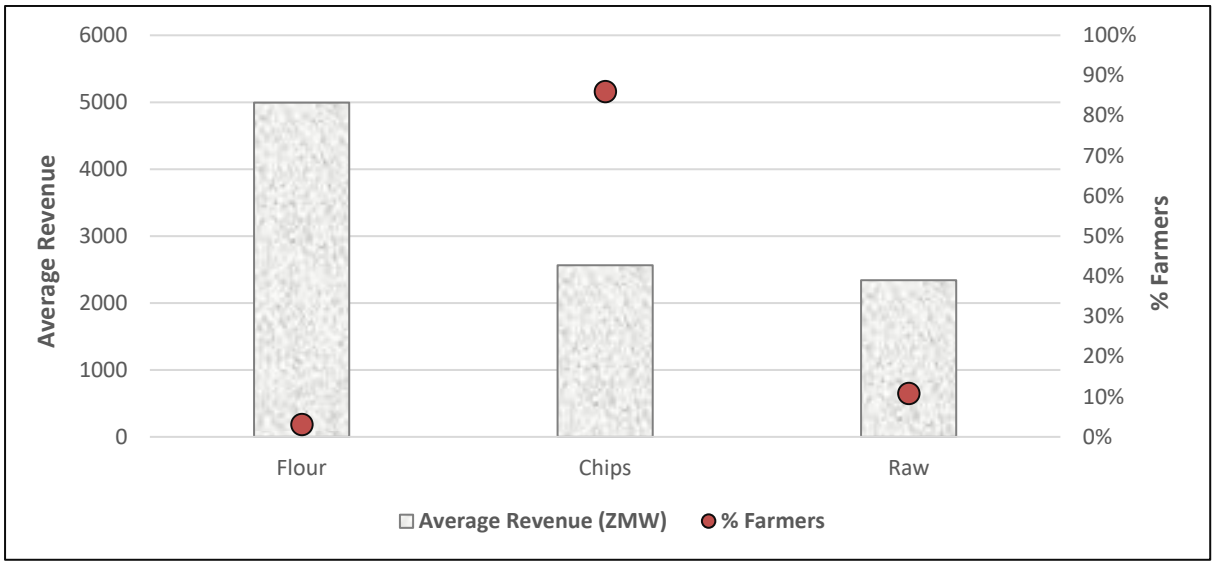


Revenue Generated from the Sale of the Various Forms of Cassava

The research also compared the revenues generated by different forms of cassava, see figure 2.9. Despite a small proportion of farmers processing the cassava into flour, cassava flour

generated the most revenue. On the other hand, raw cassava, generated the least revenue. The farmers had on average sold 1.8 metric tons of cassava, regardless of the form.

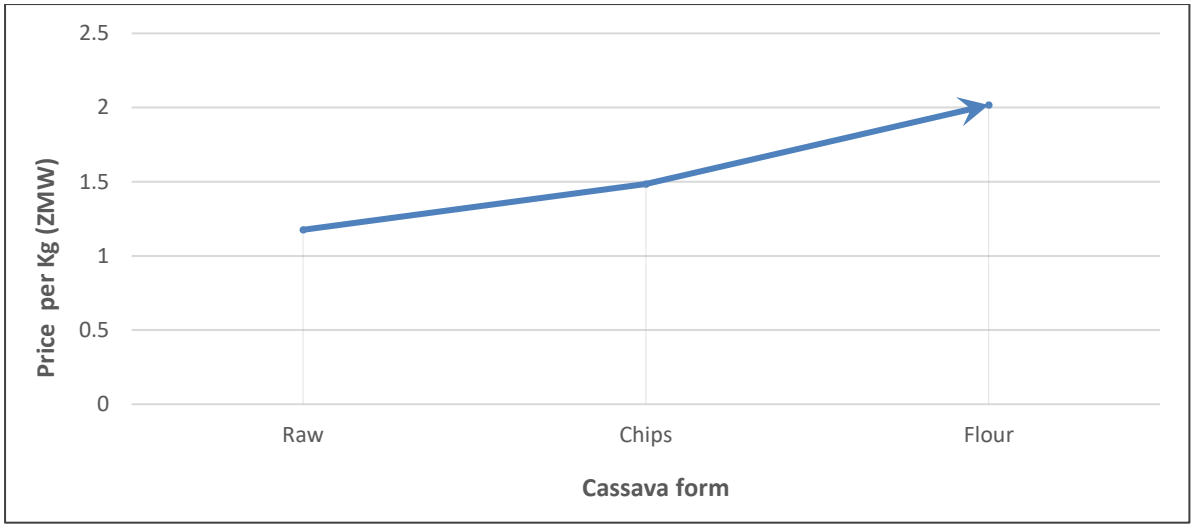
Figure 2.9 Average Revenue Per Cassava Form



Average Prices for the Different Forms of Cassava

A steady rising trend can be shown of the prices received from the raw cassava to the cassava flour, see figure 2.10. This suggests a need to encourage farmers to process their cassava as it can significantly improve their revenues. However, the majority (86%) had sold their cassava in chip form, and this was sold eight (8) times more than the raw cassava.

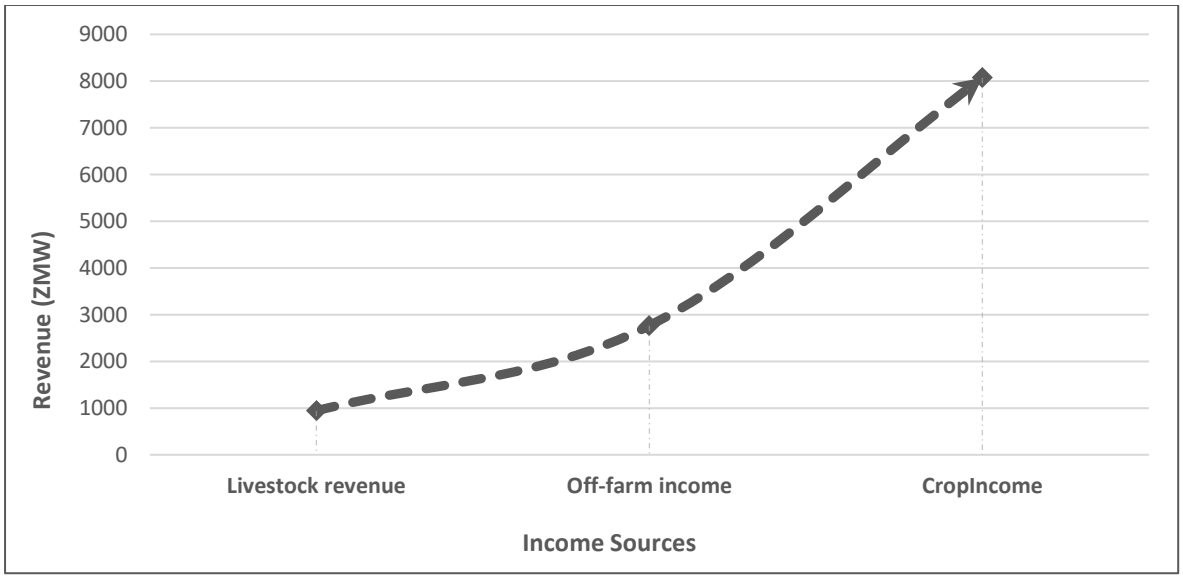
Figure 2. 10 Average Revenue Per Cassava Form



Sources of Income among Cassava producers

On average, farmers had generated ZMW2,615 from cassava sales. It was further revealed that the dominant source of revenue for the farmers was crop production, see figure 2.11. The major contributor to the crop income was maize, which made up 60% of the income followed by cassava, which contributed a third of the total crop income. Crop income, as a major contributor to household income was followed by off-farm income, and thirdly by livestock income which generated ZMW1,000 annually.

Figure 2.11 Average Revenue from Different Sources



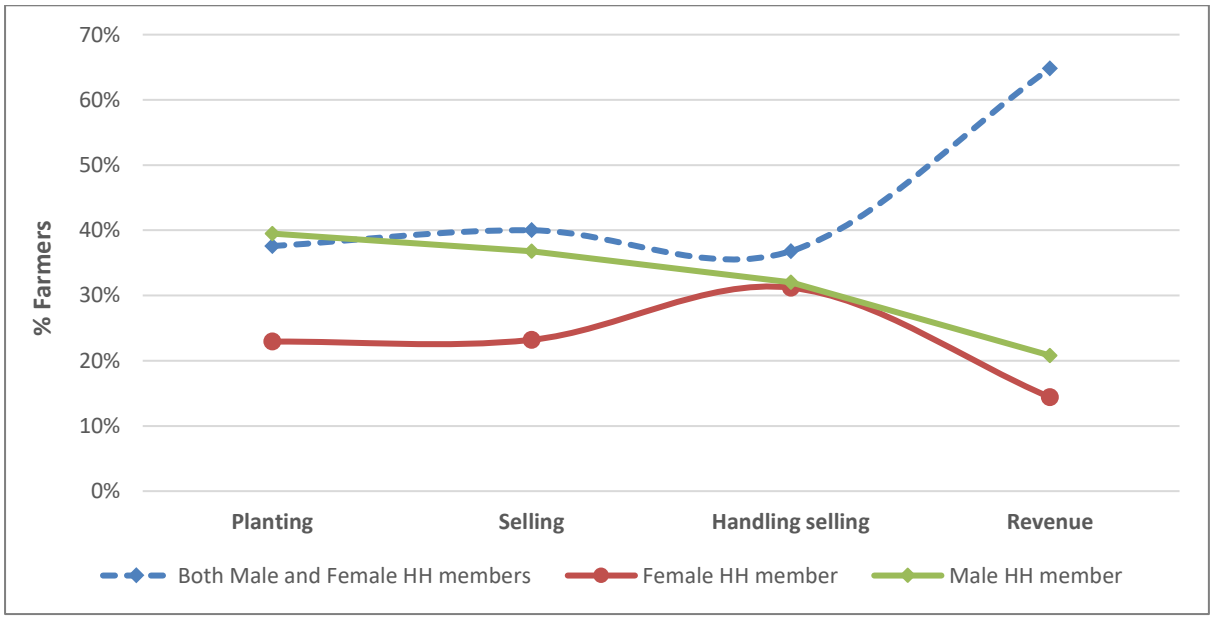
Marketing Channels

In terms of key commodity buyers, it was found that the majority of the farmers had sold their cassava to traders. The MPF was the second largest buyer, accounting for about a third of the cassava purchases to various markets. The study also looked at the provision of information regarding cassava-quality requirements by different market players. This is important as it can ease transactions between the suppliers and the buyers. It was observed that more than a third of farmers had received quality requirements from the major market players. The MPF had dominated provision of information provision at market level followed by the traders.

2.6 Gender and Decision Making on Cassava

The study explored the trend in decision-making by gender from planting, to use of revenue obtained from selling cassava, see figure 2.12. It was observed that men dominated decision-making in planting cassava, however, joint decision-making dominated from selling to revenue use. It was further noted that women's decision-making fell steeply in using revenue from cassava sales: this was despite equally getting involved in handling the selling as the men folk.

Figure 2.12 Decision-Making from Production to Revenue Use



2.7 Opportunities

Comparative advantage of the Region: Luapula is a renowned cassava producing region, and to a large extent, mainly due to the supportive agronomic zone. This has given Luapula a

comparative advantage in producing cassava. Moreover, cassava is a staple crop in Luapula, however, much of it is produced for home consumption rather than selling. About 27% of the farmers had produced cassava solely for commercial purposes while the rest was largely for home consumption.

Farmers were encouraged by the cassava market: Four-fifth of the farmers felt encouraged to invest more by the availability of a market that the MPF was providing. This offers a great opportunity to a number of farmers to provide offtake markets.

Mechanisation is needed: One of the key challenges farmers pointed out was labour constraints in their cassava production. From the study, it was learnt that the two key reasons as to why farmers had not used mechanisation in their cassava production was due to the lack of Mechanization Service Provider (MSP) in their area and that the service was being offered at an expensive rate. About two-thirds of the farmers had no service provider in their community. The small number of farmers who had used mechanization (7%) were under the Cassava Mechanisation and Agro Processing Project (CAMAP), a collaborative effort between the Government and the African Agricultural Technology Foundation, AATF. The project had a target to service 50 farmers in Mansa during the 2015/16 agricultural season but only managed 30 farmers as some of the implements the tractor was using broke down.

3.2. Risks

Low education levels: The majority of the farmers were relatively old coupled with low levels of education, which might reduce their probability of taking up improved technologies as older farmers are more likely to be conservative, less flexible and more sceptical about the benefits of new technologies. Continuous dissemination of agronomic information through demo-plots or field days should be considered.

Post-harvest losses: Whilst there is huge potential for farmers to increase their productivity, there is a risk that farmers might be incapacitated to contend with post-harvest loses which might result from poor storage. There is thus a need to promote and encourage the adoption of post-harvest technologies.

Attribution problem: Use of Government extension agents might result in the attribution going to Government as opposed to the efforts of the private entities driving the initiative. However, this hugely depends on how the public extension agents interact with the smallholder farmers; if no clear message is convened about the special collaboration between Government and the

MPF then farmers are likely to think that the cassava market is being enhanced by the Government alone, which might not entirely be true.

3.0 Conclusion and Recommendations

The study used a sample of 157 smallholder farmers to understand the status quo of private cassava-output markets in Luapula Province, with a focus on the MPFs catchment area.

A number of lessons can be drawn from this study: farmers have labour as one of the major constraint while access to mechanisation is significantly limited. Furthermore, the study found that the majority of the farmers were using traditional seed despite improved seed showing better yields that the indigenous seed. This can be attributed to limited access to information as only half of the farmers had access to agronomic information, which is very cardinal in ensuring an increase in knowledge and the eventual uptake of improved farming practices. The study also revealed that market access remains limited and that there was a need to improve market accessibility by the farmers.

There a need to increase access to affordable mechanisation services to farmers in order to reduce the time and costs of cassava production. It is also important to increase farmer accessibility to technical information, frequency of contact needs to be improved to increase the probability of farmers understanding the information. Other than that it has been shown that cassava has a huge potential as an income-earning crop as it was only second to maize in income generation. Therefore, improved market access needs to be enhanced so that more farmers can graduate from producing cassava for home consumption to having a surplus for selling, and this can be achieved by having more farmers accessing and using improved seed coupled with information.

There is also a need for the MPF to increase its extension personnel to replace the public extension officers. This would help in attributing the effect of the project. As things stand, attribution would be difficult as farmers might think the MPF is a Government intervention, depending on how information is disseminated by the public extension officers.

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