

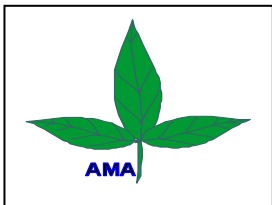


# **NATIONAL AGRICULTURAL ADVISORY SERVICES (NAADS)**

**FINAL REPORT ON MARKET STUDIES AND VALUE CHAIN  
ANALYSIS OF FIVE (5) SELECTED ENTERPRISES UNDER THE ATAAS  
PROJECT IN UGANDA**

**SUBMITTED**

**BY**



**AGRIBUSINESS MANAGEMENT ASSOCIATES (U) LTD**  
*Providers of Expertise in Agribusiness Development, P.O Box 21348 Kampala,*  
*Tel: +256-0414-231312*  
*Fax: 0414-346766, E-mail: [ama@ama-uganda.com](mailto:ama@ama-uganda.com), [www.ama-uganda.com](http://www.ama-uganda.com)*

**DECEMBER, 2013**

## TABLE OF CONTENTS

|   |    |
|---|----|
| TABLE OF CONTENTS .....                                       | 2  |
| EXECUTIVE SUMMARY .....                                       | 6  |
| 1.3 Specific objectives.....                                  | 17 |
| 1.4 Justification .....                                       | 18 |
| 1.5 Study outputs / deliverables.....                         | 18 |
| 2.0 STUDY METHODOLOGY .....                                   | 19 |
| 2.1 Document review.....                                      | 19 |
| 2.2 Study design .....  | 19 |
| 2.3 Target population.....                                    | 19 |
| 2.4 Sampling and household selection.....                     | 20 |
| 2.5 Data collection methods .....                             | 22 |
| 2.5.1 Review of documents .....                               | 22 |
| 2.5.2 Individual interviews / surveys of key informants ..... | 23 |
| 2.5.3 Focus group discussions.....                            | 23 |
| 2.5.4 Household survey.....                                   | 23 |
| 2.5.5 Personal Observations .....                             | 23 |
| 2.5.6 Instrumentation .....                                   | 23 |
| 2.5.7 Pre-testing.....  | 24 |
| 2.5.8 Quality assurance .....                                 | 24 |
| 2.6 Data analysis and interpretation      24                  |    |
| 2.7 Analysis of qualitative data .....                        | 25 |
| 2.8 Analysis of quantitative data .....                       | 25 |
| 3.0 STUDY FINDINGS AND DISCUSSIONS .....                      | 26 |
| 3.1 Dairy enterprise .....                                    | 26 |
| 3.1.1 Social-economic and demographic characteristics.....    | 26 |
| 3.1.2 Production .....  | 27 |
| 3.1.2.1 Land access and availability .....                    | 27 |
| 3.1.2.2 Methods of dairy cattle keeping.....                  | 27 |
| 3.1.2.3 Milk Production Estimates.....                        | 28 |
| 3.1.3 Processing .....  | 30 |
| 3.1.3.1 Percentage farmers processing milk .....              | 30 |
| 3.1.3.2 Products processed.....                               | 32 |
| 3.1.3.3 Percentage milk processed.....                        | 32 |
| 3.1.4 Marketing .....   | 33 |
| 3.1.4.1 Buyers of milk .....                                  | 33 |
| 3.1.4.2 Marketing level.....                                  | 34 |
| 3.1.4.3 Marketing costs.....                                  | 34 |
| 3.1.5 Value chain mapping.....                                | 36 |

|         |   |    |
|---------|---|----|
| 3.1.6   | Constraints and proposed interventions .....                        | 38 |
| 3.1.6.1 | Constraints .....   | 38 |
| 3.1.6.2 | Proposed interventions.....   | 38 |
| 3.2     | Goats enterprise .....  | 39 |
| 3.2.1   | Socio-economic and demographic characteristics.....                 | 39 |
| 3.2.2   | Production .....  | 41 |
| 3.2.2.1 | Average number of goats kept .....                                  | 41 |
| 3.2.2.2 | Land access and availability .....                                  | 42 |
| 3.2.2.3 | Methods of goat rearing .....                                       | 42 |
| 3.2.2.4 | Proportion of goats' farmers belonging to farmer associations ..... | 43 |
| 3.2.2.5 | National Estimated yield.....                                       | 43 |
| 3.3     | Processing .....  | 44 |
| 3.3.1   | Maketing .....  | 44 |
| 3.3.2   | Buyers of goats.....  | 44 |
| 3.3.2   | Means of transport .....  | 45 |
| 3.3.4   | Distance travelled to the market.....                               | 45 |
| 3.3.5   | Value chain mapping.....  | 47 |
| 3.3.6   | Constraints and proposed interventions .....                        | 48 |
| 3.3.6.1 | Constraints .....   | 48 |
| 3.3.6.2 | Proposed interventions.....   | 49 |
| 3.4     | Bananas Enterprises .....   | 50 |
| 3.4.1   | Social-Economic and demographic characteristics .....               | 50 |
| 3.4.2   | Production .....  | 51 |
| 3.4.2.1 | Land access and availability .....                                  | 51 |
| 3.4.2.2 | Major crops grown and sources of planting material .....            | 52 |
| 3.4.2.3 | Estimated banana yields.....  | 53 |
| 3.4.2.4 | Estimated national total production .....                           | 54 |
| 3.4.2.5 | Farmer associations.....  | 55 |
| 3.4.2.6 | Storage Methods .....   | 55 |
| 3.4.2.7 | Banana Spoilage .....   | 56 |
| 3.4.2.8 | Banana processing .....   | 57 |
| 3.4.3   | Banana Marketing .....  | 58 |
| 3.4.3.1 | Buyers of Bananas .....   | 58 |
| 3.4.3.2 | Marketing level .....   | 59 |
| 3.4.3.3 | Means of transport .....  | 61 |
| 3.4.3.4 | Marketing costs.....  | 62 |
| 3.4.4   | Banana Value Chain Mapping .....                                    | 63 |
| 3.5     | Maize enterprises.....  | 66 |
| 3.5.1   | Social-Economic and demographic characteristics .....               | 66 |

|         |  |    |
|---------|--|----|
| 3.5.2   | Maize Production .....   | 67 |
| 3.5.2.1 | Land access and availability .....                             | 67 |
| 3.5.2.2 | Methods of maize production and equipments used .....          | 68 |
| 3.5.2.3 | Estimated Yield Crop yield.....                                | 69 |
| 3.5.2.4 | Total national yield production .....                          | 69 |
| 3.5.2.5 | Farmer organizations .....                                     | 70 |
| 3.5.3   | Postharvest handling and processing.....                       | 71 |
| 3.5.4   | Marketing maize Enterprise .....                               | 71 |
| 3.5.4.1 | Maize buyers.....  | 71 |
| 3.5.4.2 | Marketing level .....  | 72 |
| 3.5.4.3 | Means of transport .....                                       | 73 |
| 3.5.5   | Maize Value chain mapping.....                                 | 74 |
| 3.5.6   | Maize value chain constraints and proposed interventions ..... | 76 |
| 3.5.6.1 | Maize value chain constraints .....                            | 76 |
| 3.5.6.2 | Proposed interventions.....                                    | 77 |
| 3.6     | Beans enterprise.....  | 78 |
| 3.6.1   | Social-Economic and demographic characteristics .....          | 78 |
| 3.6.2   | Production .....   | 79 |
| 3.6.2.1 | Land accessibility and availability .....                      | 79 |
| 3.6.2.2 | Tools and equipments used.....                                 | 80 |
| 3.6.2.3 | Estimated Bean production yields .....                         | 81 |
| 3.6.2.4 | National production yields .....                               | 82 |
| 3.6.2.5 | Farmer organizations .....                                     | 83 |
| 3.6.3   | Post-harvest handling and processing .....                     | 83 |
| 3.6.3.1 | Storage Methods .....  | 83 |
| 3.6.3.2 | Storage capacity .....   | 84 |
| 3.6.4   | Beans Marketing .....  | 85 |
| 3.6.4.1 | Beans buyers .....   | 85 |
| 3.6.4.2 | Level of marketing.....  | 85 |
| 3.6.5   | Beans Value Chain Mapping.....                                 | 86 |
| 3.6.6   | Bean Value Chain constraints and proposed interventions .....  | 89 |
| 3.6.6.1 | Beans value chain constraints .....                            | 89 |
| 3.6.6.2 | Beans proposed Interventions .....                             | 90 |
| 4.0     | CONCLUSIONS AND RECOMMENDATIONS .....                          | 91 |
| 4.1     | Conclusions .....  | 91 |
| 4.1.1   | Dairy .....  | 91 |
| 4.1.2   | Goats Enterprise .....   | 91 |
| 4.1.3   | Bananas Enterprises .....                                      | 91 |
| 4.1.4   | Maize Enterprise .....   | 92 |

|       |                                   |    |
|-------|-----------------------------------|----|
| 4.1.5 | Beans Enterprise .....            | 92 |
| 4.2   | Recommendations .....             | 92 |
| 4.2.1 | Dairy Enterprise .....            | 92 |
| 4.2.2 | Goats Enterprise .....            | 93 |
| 4.2.3 | Banana Enterprise .....           | 93 |
| 4.2.4 | Maize and Beans Enterprises ..... | 94 |
| ANNEX | .....                             | 95 |

## **LIST OF ACRONOMYS**

---



---

|           |   |
|-----------|---|
| aBi Trust | Agribusiness Initiative   |
| ACSS      | Agriculture Consultation Sector structuring project                               |
| AMA       | Agribusiness Management Associates  |
| ASERECA   | Association for Strengthening Agricultural Research in Eastern and Central Africa |
| ATAAS     | Agricultural Technology and Agribusiness Advisory Services                        |
| AI        | Artificial Insemination   |
| DSIP      | Development Strategy and Investment Plan  |
| EADD      | East Africa Dairy Development Project   |
| FAO       | Food and Agriculture Organization   |
| FGD       | Focus Group Discussions   |
| DANIDA    | Danish International Development agency   |
| DDA       | Dairy Development Authority   |
| IITA      | International Institute of Tropical Agriculture                                   |
| MAAIF     | Ministry of Agriculture Animal Industry and Fisheries                             |
| MPED      | Ministry of Finance Planning and Economic Development                             |
| NAADS     | National Agricultural Advisory Services   |
| NARO      | National Agricultural Research Organization                                       |
| NDP       | National Development Plan   |
| Non-ATAAS | None Agricultural Technology and Agribusiness Advisory Services                   |
| SACCO     | Savings and Credit Cooperative Organizations                                      |
| SNV       | Schweizerische Eidgenossenschaft  |
| UBOS      | Uganda Bureau of Statistics   |
| UEPB      | Uganda Export Promotions Board  |
| UKaid     | United Kingdom Aid  |
| UNAFFE    | Uganda National Farmers Federation  |
| UNBS      | Uganda National Bureau of Standards   |
| WWS       | World Wide Sires  |

## LIST OF TABLES

---

|   |    |
|---|----|
| LIST OF TABLES.....   | 7  |
| Table 2.1: Value chain actors to be consulted .....                                     | 19 |
| Table 2.2: Selected districts, sub/counties .....                                       | 21 |
| Table 3.1: Social-economical and demographic characteristics among dairy farmers .....  | 26 |
| Table 3.2: Average land accessible and owned by farmers in the study area .....         | 27 |
| Table 3.3: National milk production estimate.....                                       | 30 |
| Table 3.4: Dairy value chain actors and their roles .....                               | 36 |
| Table 3.5: Social-economic and demographic characteristic among goat farmers .....      | 40 |
| Table 3.6: Number of goats kept by household members.....                               | 41 |
| Table 3.7: Number of livestock (000) by type and year 2008-2010 .....                   | 44 |
| Table 3.8: Goats value chain actors and their roles .....                               | 47 |
| Table 3.9: Social-economic and demographic characteristics among banana producers ..... | 50 |
| Table 3.10:Land access and owned under banana production systems .....                  | 52 |
| Table 3.11:Major crops grown in the study area .....                                    | 52 |

## LIST OF FIGURES

|   |    |
|---|----|
| LIST OF FIGURES .....   | 8  |
| Figure 2.1: Conceptual framework of value chains assessment .....   | 20 |
| Figure 3.1: Percentage households using different methods to look after dairy animals .....               | 28 |
| Figure 3.2: Number of milked cows per region .....  | 28 |
| Figure 3.3: Annual national milk production estimate; 1990-2010 .....                                     | 29 |
| Table 3.3: National milk production estimate .....  | 30 |
| Figure 3.4: Percentage of farmers processing milk .....   | 30 |
| Figure 3.5: Products processed .....  | 32 |
| Figure 3.6: Percentage of milk processed in 2012 .....  | 33 |
| Figure 3.7: Milk buyers .....   | 33 |
| Figure 3.8: Marketing level .....   | 34 |
| Figure 3.9: Marketing costs .....   | 35 |
| Figure 3.10: Dairy value chain mapping .....  | 37 |
| Figure 3.11: Percentage contribution to household monthly expenditure by goats' enterprise .....          | 41 |
| Figure 3.12: Land owned and used for goat rearing .....   | 42 |
| Figure 3.13: Percentage of households using different methods of goat rearing .....                       | 42 |
| Figure 3.14: The proportion of farmers that belong to farmer associations for growing goats .....         | 43 |
| Figure 3.15: Buyers of goats .....  | 44 |
| Figure 3.16: Transport means .....  | 45 |
| Figure 3.17: Distance travelled to market .....   | 46 |
| Figure 3.18: Goats value chain mapping .....  | 48 |
| Figure 3.19: Percentage contribution to household monthly expenditure by banana enterprise .....          | 51 |
| Figure 3.20: Source of banana planting material .....   | 53 |
| Figure 3.21: Estimated annual banana yield .....  | 54 |
| Figure 3.22: Estimated total banana production .....  | 54 |
| Figure 3.23: Percentage of farmers that belong to farmer associations growing bananas .....               | 55 |
| Figure 3.24: Storage methods .....  | 56 |
| Figure 3.25: Respondents experiencing spoilage .....  | 56 |
| Figure 3.28: Buyers of bananas .....  | 59 |
| Figure 3.29: Level of marketing .....   | 59 |
| Figure 3.30: Estimated banana tonnage supplied to major kampala markets monthly .....                     | 60 |
| Figure 3.31: A trader selling fresh banana at Kalerwe market and packed banana for export to Europe ..... | 61 |
| Figure 3.32: Estimate banana volume (metric tons) exported monthly .....                                  | 61 |
| Figure 3.33: Transport means .....  | 62 |
| Figure 3.34: Marketing costs .....  | 62 |
| Figure 3.35: Banana value chain mapping .....   | 64 |



|   |    |
|---|----|
| Figure 3.36: Percentage contribution to household monthly expenditure by maize enterprise ..... | 67 |
| Figure 3.37: Major sources of maize seed by the farmers .....                                   | 68 |
| Figure 3.38: Estimated maize yield of the commonly grown variety .....                          | 69 |
| Figure 3.39: Total annual maize production in Uganda.....                                       | 70 |
| Figure 3.40: Proportion of maize farmers belonging to associations.....                         | 70 |
| Figure 3.41: Percentage households storing using different methods.....                         | 71 |
| Figure 3.42: Maize buyers .....   | 72 |
| Figure 3.43: Level of marketing .....   | 73 |
| Figure 3.44: Transport means .....  | 73 |
| Figure 3.45: Maize value chain mapping.....   | 75 |
| Figure 3.46: Proportion of farmers' expenditure from sell of beans.....                         | 79 |
| Figure 3.47: Equipment's used in beans production.....  | 80 |
| Figure 3.48: Source of beans seed used in planting.....   | 81 |
| Figure 3.49: Bean yield per acre.....   | 82 |
| Figure 3.50: National beans production figures.....   | 82 |
| Figure 3.51: Proportion of farmers that belong to farmers' associations .....                   | 83 |
| Figure 3.52: Storage method.....  | 84 |
| Figure 3.54: Beans buyers .....   | 85 |
| Figure 3.55: Level of marketing .....   | 86 |
| Figure 3.56: Beans value chain mapping.....   | 88 |

## EXECUTIVE SUMMARY

---

The report provides information generated from the value chain and marketing analysis of five selected enterprises that was carried out in 10 districts of the country. These enterprises included the following; Dairy, Goats, Bananas, Maize and Beans. The overall objective of the study was to provide information to farmers, policy makers and other value chain stakeholders on the available market opportunities. Specifically the objectives were; to establish strategies and interventions for the development of suitable and viable value chains leading to increased and sustainable production of good quality products for each enterprise and increased incomes for farmers and to generate information that will enable farmers and agribusiness investors increase their current market share and also penetrate new markets that are currently constrained by production and marketing factors.

Both qualitative and quantitative research designs were used to collect data from the value chain actors. Household survey, focus group discussions and key informant interviews were conducted to gather all relevant data. The findings of the study revealed wide interrelationships that exist among the value chain actors and supporters of the respective enterprises. Key constraints were identified that require intervention for example under banana public intervention in research to develop resistant banana varieties to banana bacterial wilt was identified among others. Generally, investment in rural infrastructure to provide an enabling environment for production and marketing of the enterprise products were identified. Due to climatic change, investments in interventions that can support production under different weather conditions were also identified as key public investment area. Formation of strong farmer associations that are able to organize and create linkages with buyers was noted and this would also shorten the marketing chains and thus allows the remaining chain actors for higher returns on their investment.

The following constraints were identified for each of the enterprises and suggested recommendations made;

### **Dairy Enterprises**

#### **Production**

- While total milk production per annum over the years have increased, the productivity per animal is still low
- The low genetic potential of the indigenous cattle breeds and generally poor nutrition. Prevalence of pests and diseases especially those caused by ticks. The current drugs on the market are ineffective
- The rural infrastructure is still poor especially the community road networks, rural electrification that are important to support smooth running of the milk cooling centers.
- There are few farmer associations in existence and they are weak
- The veterinary services are not normally received by farmers appropriately and timely. Thus making acquisition of such services to be very expensive
- The farmers lack credit and usually the bureaucracy in the present financial institutions is very much. Many of the financial products on the market do not match with the farmers' needs and circumstances under which they operate.

- During dry seasons farmers suffer looking for water points for their animals, the government should consider further investment in the valley dam rehabilitation and construction of new ones
- Hygiene practices at the farm still requires improvement this leads to high percentage of milk losses through spoilage

### **Marketing**

- Milk production in the country is affected by seasonal fluctuations and because of poor collection and distribution infrastructure leads to oversupply in one part of the country and deficit in the other part of the country.
- Price fluctuations throughout the year due to seasonality and poor distribution network and required infrastructure
- Milk losses as high as 11% are estimated to be lost during transportation
- Farmers are not organized into strong farmer associations that can be used to help in production and marketing at the different levels of value chain
- The majority of farmers does not sell under contract and thus more often than not leaves them more vulnerable to price fluctuations and failure of payment by some buyers.
- The cost of electricity is high and coverage in rural areas is low

### **Goats Enterprises**

#### **Production**

- Low genetic variability among the goat breeds kept by majority of farmers
- Poor management by the farmers especially at controlling diseases like the intestinal related sicknesses and tuberculosis
- Reduced land area for open grazing of goats
- Increased cases of theft of the goats

#### **Marketing**

- Lack of organized marketing system by the goat farmers, their associations are very weak and most times non functional

### **Bananas Enterprises**

#### **Production**

- Most of the farmers at production level are faced with the devastating banana bacterial wilt, which threatens the complete destruction of the banana production
- Poor rural road infrastructure that makes them impassable during the wet season and thus prices go dramatically low.
- During bumper harvest, farmers lose much of their produce because there is no infrastructure that promotes banana postharvest handling and processing. Which means that, all cannot be consumed fresh at that time of the bumper harvest and thus wasted
- Banana producers associations are less organized into strong cooperatives that would be the vehicle for supporting input procurement, government lobbying for communal infrastructure and organized marketing system

- Banana production requires an effective and efficient agro-input distribution system that supports and promotes easy access to inputs by the farmers. At the moment such system is lacking and farmers are vulnerable to counterfeit products that are on the market.
- The farmers lack credit and usually the bureaucracy in the present financial institutions is very much. Many of the financial products on the market do not much with the farmers' needs and circumstances under which they operate.

#### **Post-harvest handling**

- There is less postharvest handling and processing of bananas. Some of the products that are processed from bananas include; banana juice, banana flour, banana crisps, solar dried crisps.
- There is still a need to standardize the banana processed products and ensure that, such products meet the set standards so as to protect the consumers.
- Bananas are highly perishable, if not timely distributed to market places high losses are suffered

#### **Marketing**

- The marketing of banana is still less structured and the majority of farmer associations do not bulk and sell together
- Production and sell under contract would be feasible once farmers are organized in production and thus marketing will also be organized.

#### **Maize Enterprise**

##### **Production**

- Maize growers are faced with a challenge of not accessing enough genuine certified seed and as such end up planting counterfeit and or home saved seed. This lowers the yields and thus making maize production less attractive.
- Farmers do not have access to other agro-inputs like fertilizers, pesticides that are required to optimally produce maize. They are very expensive, not readily available and most times they are not genuine products. All these compounded lowers maize production.
- Climate change and weather conditions affect maize production, all the maize farmers depend on rainfall for maize production, due to climatic and weather changes, farmers remain vulnerable and suffer losses.
- Maize growers across the study districts were found to have farmer associations, however more support is required to make them stronger and work as a business entity.
- Agro-input distribution system is still weak; it requires support to ensure that farmers are able to access affordable genuine inputs at the right time.
- The farmers lack credit and usually the bureaucracy in the present financial institutions is very much. Many of the financial products on the market do not much with the farmers' needs and circumstances under which they operate.

##### **Post-harvest handling**

- It was observed that majority of farmers sell their maize produce before it is fully dry and thus subsequently affect the maize quality. This leads to maize kernel losing color and sometimes molding. .
- Farmers lose money once their maize remains wet and middlemen simply buy at very low prices. This practice however, has high reaching implications to the maize grain industry.

Uganda is well known for very poor maize grains, which ultimately affect all chain actors all the value chain.

- Maize is mainly processed into maize flour, the byproducts are used to make animal feeds

### **Marketing**

- Selling of poor maize grain is hindering the development of the grain trade in the country.
- Lack of a strong grain platform onto which they can meet buyers and negotiate better prices for their produce.
- WRS is still very expensive for the growers and as such very many farmers do not utilize the facilities established
- Lack of crop finance and those that exist the interest rates are very high
- Farmers do not use contract farming, produce without exactly knowing who to buy and the likely price.

### **Beans Enterprise**

#### **Production**

- Bean growers are faced with a challenge of not accessing enough genuine certified seed and as such end up planting counterfeit and or home saved seed. This lowers the yields and thus making bean production less attractive.
- Farmers do not have access to other agro-inputs like fertilizers, pesticides that are required to optimally produce beans. They are very expensive, not readily available and most times they are not genuine products.
- Climate change and weather conditions affect bean production, all the bean farmers depend on rainfall for production, due to climatic and weather changes, farmers remain vulnerable and suffer losses.
- Beans enterprise growers across the study districts were found to have farmer associations, however more support is required to make them stronger and work as a business entity.
- Agro-input distribution system is still weak; it requires support to ensure that farmers are able to access affordable genuine inputs at the right time.
- The farmers lack credit and usually the bureaucracy in the present financial institutions is very much. Many of the financial products on the market do not much with the farmers' needs and circumstances under which they operate.

#### **Post-harvest handling**

- Beans require proper drying after harvest; this protects the crop from molding and pest infestation. .

### **Marketing**

- Beans are widely marketed all most found on every one's menu. The demand for beans is growing. In order to ensure that, all actors benefit from their participation efforts should be put to ensure that marketing system are well streamlined.
- Producers should be given a platform onto which they can meet buyers and negotiate better prices for their produce.

- Product consolidation still is very important; however the existing Warehouse Receipt System (WRS) have not worked very well because of the added costs for storing maize grains in the stores verses the ultimate prices offered at the time of selling.
- Establishment of crop finance that would support provision of funds to producers before they can sell their produce would help in streamlining the marketing system
- Production and sell under contract would be feasible once farmers are organized in production and thus marketing will also be organized.

## **Recommendations**

### **Dairy Enterprise**

The following are recommendations for the dairy enterprise value chain;

- (i) The farmers should be proactive in selection of the animal breeds that have a history of high milk production
- (ii) Increase funding to government institutions that are mandated to carry out research on livestock.
- (iii) Support the development of a strong agro-veterinary input distribution system and provision of veterinary services to farmers of dairy cattle and goats
- (iv) Should strengthen farmer associations and build capacity of the input dealers, enhance inspection to reduce supply of fake products on the market. Support systems that would guarantee to farmers where to procure genuine drugs and other products
- (v) Improve collaboration through establishment of stakeholders' platform to address issues concerning service provision in the industry
- (vi) Provide the training of farmers and groups to improve productivity. Government stock farms should be used for demonstrations and open such facilities to farmers to learn.
- (vii) Should organize platforms for the value chain actors to discuss required specifications
- (viii) Support organized farm production through contractual arrangements, training in animal breed specifications
- (ix) Support standards development for the final products and extension systems to increase productivity

### **Goats Enterprise**

The following are recommendations for the goat's value chain;

- (i) Goat's farmers should be proactive in selection of better goat's breeds that are fast growing and have a high carcass quality and weight.
- (ii) Government should increase level of funding to public institutions that are mandated to carry out research on livestock. The institutions should emphasize research on key issues affecting goat production like types of breeds, disease and pest resistance to current drugs
- (iii) Support the development of a strong agro-veterinary input distribution system and provision of veterinary services to farmers of dairy cattle and goats

- (iv) Should strengthen the associations and build capacity of the input dealers, enhance inspection to reduce supply of fake products on the market. Support systems that would guarantee to farmers where to procure genuine drugs and other products
- (v) Improve collaboration through establishment of Goat stakeholders' platform to address issues concerning service provision in the goat industry
- (vi) Provide the training of farmers and associations to improve goat productivity and marketing. Government stock farms should be used for demonstrations and open such facilities to farmers to learn.

### **Banana Enterprise**

The following are recommendations for the banana value chain;

- (i) Increase research and extension efforts on the eradication of the banana bacterial wilt that is threatening to wipe out banana production in the country.
- (ii) Create and or strengthen existing banana stakeholders' platform to ensure that all actors and supporters in the value chain are included.
- (iii) Increase agricultural extension, training, establishment of demonstration gardens on how to improve and maintain high banana production
- (iv) Develop and promote better methods of banana postharvest handling and processing. This will assist to add value to the product. Also the banana peelings should be researched on to either turn them into organic manure or animal feed products. This will ultimately increase the value farmers derive from the banana fruit.
- (v) While at the moment, small quantities of solar dried banana chips are exported, efforts to expand this niche market mainly for organic products should be pursued by the private sector with support from NGOs and government institutions concerned with market development for the country's products.
- (vi) Strengthen farmer associations to spearheading marketing negotiations and linkages for its members.
- (vii) Increase accessibility and affordability of the agro-inputs, tools and equipments that are required by the different value chain actors.

### **Maize and Beans Enterprises**

The following are the recommendations for both maize and beans enterprises;

- (i) The government and other public institutions should endeavor to streamline the distribution and marketing of agro-inputs. Efforts should be made to have genuine inputs available to farmers at the right time.
- (ii) Support efforts to train through demonstration at production level, other methods of training programs for the different chain actors along the value chain should be considered
- (iii) Strengthening farmer institutions to work together to bulk produce and carry out group marketing

- (iv) Agricultural financing requires a major review to address the current bottlenecks such as high interest rates, inappropriate loan products so that new and or improved products are offered to the value chain actors
- (v) Policies to regulate marketing of semi dried maize and bean grains as this downgrades the Ugandan grains and thus reduces the profits for each actor and the country's reputation is lowered



### **1.1 Study overview**

In line with the Government of Uganda's National Development Plan, the National Agricultural Advisory Services (NAADS) contributes to the national goal of causing agricultural transformation by supporting identification of agricultural commodities and farming activities (enterprises) that allow optimal exploitation of existing and potential market opportunities. This combined with better farmer access to productivity enhancing agricultural technologies; knowledge and advice should result into higher farm productivity and profitability. The resulting higher farm incomes increase the ability of rural farm households to access food through the market and to invest in agricultural production.

The NAADS program uses enterprise development and promotion approach that is meant to cause increase in productivity and profitability of agricultural production. Under this approach, availability of credible market information forms the basis for farmers to demand for advisory services and technology, and to invest in farming enterprises in order to exploit the market opportunity.

NAADS is implementing the Agricultural Technology and Agribusiness Advisory Services (ATAAS) project. A major component of the project is supporting agribusiness services and market linkages. The market linkage function will be conducted through provision of timely market information to farmers and private sector entrepreneurs. Coupled with this is the need for NAADS program to carry out comprehensive studies to analyze existing value chains so as to ascertain market opportunities and to address constraints hampering the commercialization of selected national priority enterprises. The information from the studies will be useful in guiding the enterprise development process in the different production zones. Policy makers and program managers will also use this information for policy formulation and program management.

### **1.2 Purpose of the study**

The overall objective of this assignment is to provide information to farmers and agribusiness investors, policy makers and stakeholders on the available market opportunities, key value chain actors; key constraints in value chains and possible solutions to the constraints with a view of increasing the overall quantities of commodities marketed on local, regional and international markets.

### **1.3 Specific objectives**

The specific objectives of the assignment were;

- (i) To establish strategies and interventions for the development of suitable and viable value chains leading to increased and sustainable production of good quality products for each enterprise and increased incomes for farmers

- (ii) To generate information that will enable farmers and agribusiness investors increase their current market share and also penetrate new markets that are currently constrained by production and marketing factors.

#### **1.4 Justification**

Uganda's population growth rate is estimated to be 3.2% per annum (UBOS, 2012), with an average total fertility rate of 6.2 children per woman, yet agricultural production and productivity does not match the fast growth rate. This is partially attributable to the majority of farmers who cannot afford to use high productivity enhancement technologies. Such technologies are generally perceived to be expensive and less accessible by the majority of farmers. Farmers are rational in making decisions and as such, they decide what to purchase as inputs based on the market requirements and the likely advantage of using such technologies. Understanding the market and farmers producing for particular markets is a key in gaining their support in investment in high productivity enhancing technologies. Information on the value chain actors, the existing linkages, strength and weaknesses will provide a great opportunity for improving the production through marketing of the selected enterprises. It is therefore against this background that Agribusiness Management Associates Ltd was contracted by NAADS to carry out Market and Value chain analysis of the five selected enterprises.

#### **1.5 Study outputs / deliverables**

The following outputs / deliverables were to be produced;

- (i) Inception report
- (ii) Survey instruments
- (iii) Detailed sampling plan
- (iv) Draft report
- (v) Final report

## 2.0

## STUDY METHODOLOGY

### 2.1 Document review

Existing literature from NAADS Secretariat was reviewed and this included the following; Fact sheets on the target enterprises published by NAADS Project Implementation manual for the Agricultural Technology and Agribusiness Advisory Services. Other documents that were reviewed included; Maize production in Uganda, Banana production manual for Uganda, Gross margin analysis of maize-based intercropping system and Uganda staple Foods Value Chain Analysis among others.

### 2.2 Study design

The study was cross-sectional in nature and employed both descriptive (Qualitative) and Quantitative research designs. Both primary and secondary data sources were used to collect appropriate information as were required to meet the study objectives and related terms of reference.

### 2.3 Target population

The population of the study comprised of all the different actors in the selected value chains. The target population constituted primary actors that are directly involved in the value chains right from production to consumption. Other secondary actors who may not necessarily be part of the value chains but have the capacity to influence the actions of the primary actors were consulted. The study population covered all the regions namely Central, Western, South-Western, Eastern and Northern. In each region, a sample size of at least 30% of the total number of districts was chosen for the study based on the level of activity of the selected enterprises. The primary and secondary actors that were involved in the study are summarized in Table 2.1.

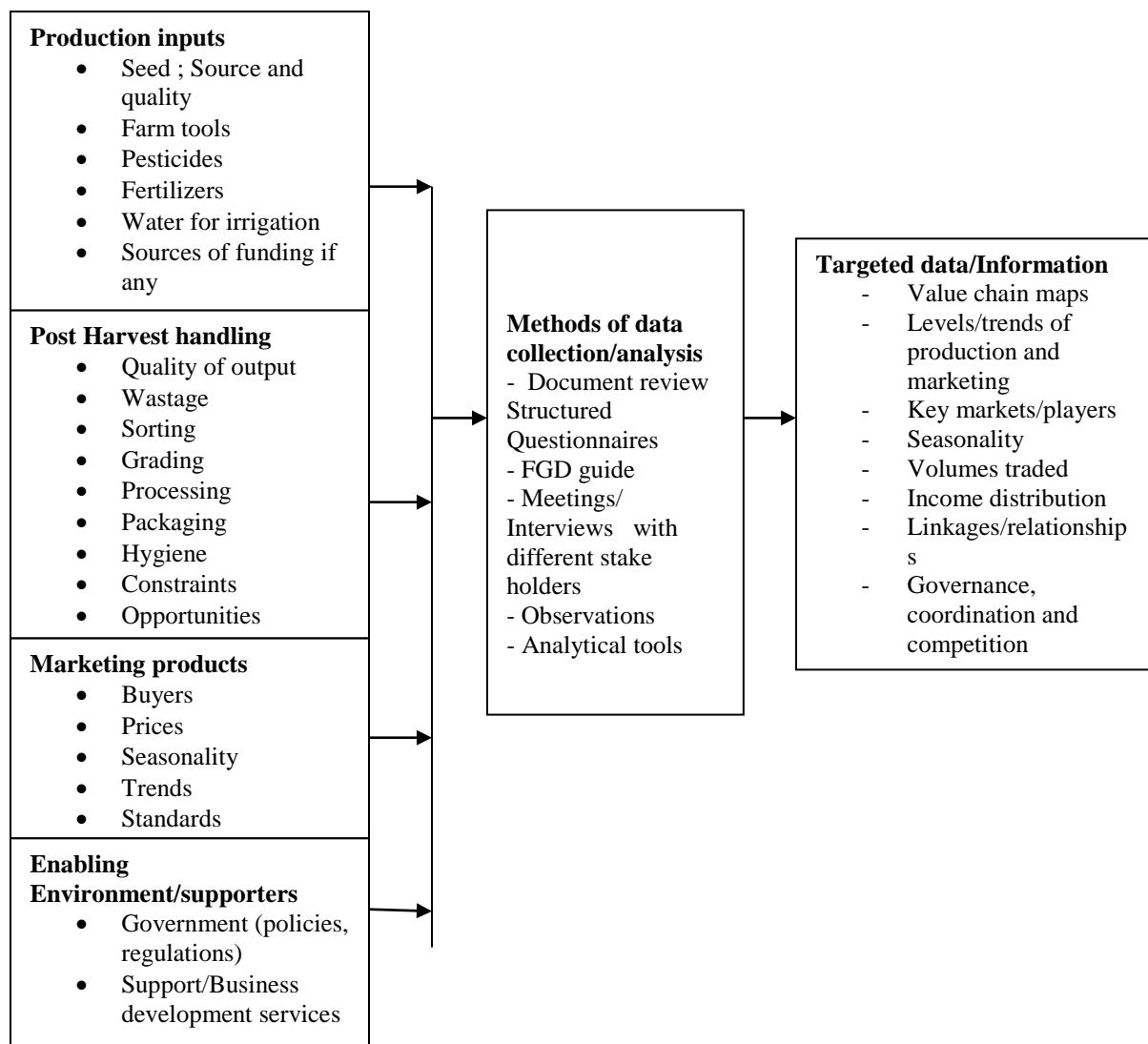
**Table 2.1: Value chain actors that were consulted**

|                                    |  |
|------------------------------------|--|
| Farmers groups                     | Farmer groups at national , district, sub-county and village levels, Individual farmers, Special farmer categories (large scale, women, youth)   |
| Government (Policy and regulation) | Districts Sectoral committees, UEPB, UBOS  |
|                                    | Special groups; District production officers, District commercial officers, NAADS Coordinators, Uganda National Farmers Federation (UNAFFE)  |
|                                    | Agriculture staff and Trade and industry   |
|                                    | Dairy Development Authority (DDA)  |
| Traders                            | Stall vendors, Retailers and Middlemen   |
| Consumers                          | Schools, hospitals, hotels, restaurants, exporters   |
| Service Providers                  | These will include Market Information Service, Transporters, Input dealers, Extension workers, Financial Service Providers like banks, SACCOs, Microfinance organizations, FIT (U) Ltd, general business service providers |
| Processors                         | All those that are involved in value addition  |
| NGOs                               | Organizations that are supporting/supported the value chains mainly through facilitation roles   |

## 2.4 Sampling and household selection

Different sampling and subject selection techniques were used in the selection of the households that were included in the study. The conceptual framework of the value chain assessment that was used is presented in Figure 2.1. The consultants identified major regions in the country and corresponding enterprises, based on the enterprises major districts known for producing specific enterprises were selected as indicated in Table 2.2. A total of 11 districts were selected from the different regions. For each district, the consultants purposively identified two (2) sub-counties, from which two (2) parishes were identified. A list of villages was drawn to develop the sampling frame. Two villages were randomly selected and from each village a list of households were drawn with assistance from local council 1. A total of nineteen (19) households were randomly selected and interviewed. The sample size therefore of 76 households per district and two (2) focus group discussions per district was used. However, special consideration was taken to include special categories of farmers like large scale farmers, women, and youth as the groups need unique intervention.

**Figure 2.1: Conceptual framework of value chains assessment**



In collecting more subjective qualitative information, non-probability sampling techniques were used to ensure that the relevant respondents intended to collect data from were interviewed. In this regard, key informants and participants in focus group discussions were purposively selected by the consultants with the help of key actors in the value chain. The sampling techniques used were more appropriate in selecting participants as one moved away from the on-farm activities towards more off-farm activities within the value chain.

**Table 2.2: Selected districts, sub/counties**

| District     | Sub/county   | Parishes                | Enterprise               |
|--------------|--------------|-------------------------|--------------------------|
| Shema        | Kyangyenyi   | Muzira<br>Kyangundu     | Dairy<br>Goats<br>Banana |
|              | Shuuku       | Kasyozi<br>Kishagya     |                          |
|              |              |                         |                          |
|              | Kigarama     | Kigarma<br>Bwayegamba   |                          |
|              | Masheruka    | Buringo<br>Kyabuharango |                          |
| Kamwenge     | Kamwenge T/C |                         | Maize<br>Beans           |
|              |              | Kitonzi<br>Rwemirama    |                          |
|              | Nkoma        | Mabale<br>Bisozi        |                          |
| Isingiro     | Ngarama      | Nsongezi                | Banana, Dairy, Goats     |
|              | Kabingo      | Kabingo                 |                          |
|              | Endinzi      | Gayaza                  |                          |
| Mbarara      | Kakiika      | Rwemigina               | Dairy<br>Goats<br>Banana |
|              | Bihaarwe     | Bihaarwe                |                          |
|              | Rugando      | Nyabikungu              |                          |
| Bukomansimbi | Kibinge,     | Mirambi<br>Kiryasaaka   | Banana                   |
|              | Kitenda      | Ndeeba<br>Mitigyeera    |                          |
| Kiboga       | Kibinga      | Degeya<br>Nkandwa       | Dairy<br>Maize           |
|              | Lwamata      | Kasegere<br>Kyekumbya   |                          |
| Nakasongola  | Lwabyata     | Kansiira<br>Namikka     | Beans<br>Dairy<br>Goats  |
|              | Nakitoma     | Bujjabe<br>Kigwera      |                          |

|             |             |                        |                |
|-------------|-------------|------------------------|----------------|
| Kiryandongo | Kiryandongo | Kyankende<br>Kikuube   | Maize<br>Beans |
|             | Mutunda     | Diima<br>Nyamaha       |                |
| Lira        | Agweng,     | Tee Oburu<br>Orit      | Maize<br>Beans |
|             | Agali       | Adyak<br>Okile         |                |
| Iganga      | Nawandala   | Namusisi<br>Nawangaiza | Maize<br>Beans |
|             | Makutut     | Makuutu<br>Kigulamo    |                |
| Kapchorwa   | Kapchesombe | Kapchesombe<br>Kaplak  | Maize<br>Beans |
|             |             |                        |                |

## 2.5 Data collection methods

Various methods of data collection were used among the different actors along the selected value chains. The rationale or a diversity of data collection methods were to cater for the uniqueness of the different actors as well as to triangulate the information as it were provided by different respondents and institutions. The data collection methods used included;

### 2.5.1 Review of documents

Various documents including existing studies and reports were reviewed and this process continued throughout the entire exercise.

Documents were reviewed and included the following among others;

- NAADS annual reports and previous studies
- Policy documents; IITA, NDP, DSIP
- Previous studies; USAID, DANIDA, SNV, UKaid, FAO, ASARECA, UBOS, MAAIF, DDA National dairy Strategy, MFPED and World Bank reports on Non-ATAAS activities on the selected value chains
- Statistical Abstracts
- Dairy Development in Uganda (FAO and DDA)
- MAAIF Statistical Abstracts
- Dairy Investment Opportunities in Uganda (SNV)
- Uganda Census of Agriculture 2008/2009

### **2.5.2 Individual interviews / surveys of key informants**

Individual interviews were conducted to solicit for information among actors and other key informants who were not directly actors but were supporting the respective value chains. Such interviews targeted researchers, policy makers and regulators, traders. It was critical that these individual interviews were conducted to unveil the potential interventions that do exist along the selected value chains. Key informants consulted aided the consulting team to undertake a mapping exercise to determine the roles as well as the inter-relationships among the various actors.

### **2.5.3 Focus group discussions**

Focus group discussions were conducted with different actors of the selected value chains to generate qualitative information that serves to identify the descriptive roles and interrelationships among the different actors in the value chain. The qualitative information helped in uncovering key issues in terms of constraints and opportunities that exist for the different actors along the value chain as well as points of intervention among the actors. Other social cultural, policy and gender-related issues that affect the actors along the value chains were considered. In order to generate precise and accurate information, members of the focus group discussions were purposively selected to include both men and women to generate well disaggregated gender data. Focus groups were moderated by members of the consulting team and notes were taken during the discussions.

### **2.5.4 Household survey**

Detailed household survey was carried out to solicit for quantitative and qualitative data about the value chains and its potential at farm level. The survey instrument was designed in such a way as to capture quantitative data on financial costs of the activities along the value chains. Under the household survey, information about general description of the key actors was sought and their potential to implement the identified interventions assessed.

### **2.5.5 Personal Observations**

During the entire exercise of data collection, all the research team members were keen to observe the performance of the enterprises, investment areas and where appropriate took some photographs.

### **2.5.6 Instrumentation**

Both quantitative and qualitative data collection tools were used to collect data from the different actors along the selected value chains right from production to consumption. Questionnaires, interview guides and observational checklists were used to gather quantitative and qualitative data respectively from the different actors. In all cases, the study tools were developed to gather information as it pertains to meet the objectives of the study. To ensure that accurate and precise information was collected, all study instruments were validated for content and reliability.

Content validity refers to how well an instrument includes a representative sample of questions that relate to the content domain being measured (Patten, 2004; Wallen & Fraenkel, 2001).

### **2.5.7 Pre-testing**

The developed tools were used to train research assistants and supervisors aimed at getting familiar with the tools and this was pre-tested in the field before data collection began.

### **2.5.8 Quality assurance**

#### ***Quality Assurance at data collection***

The quality of the collected data was guaranteed by selecting well-qualified research assistants, supervisors and key consultants. The research team underwent a training to familiarize with the tools, ethics and conduct of data collection. Adequate planning was done and the study team was divided into four sub-teams well facilitated to conduct the research. Each team had a team leader who was assisted by research supervisors to ensure that good quality data was collected. At the end of each day's work, questionnaires were reviewed by the research assistant together with supervisor to ensure completeness and correctness of the data collected.

#### ***Quality Assurance at data entry and analysis***

Statistical programmes like Database, EpiData, Stata and Excel were used to enter and subsequently analyse the data, respectively. Control checks were built within the entry screens to reject numerical data outside the range. In order to ensure data consistency, accuracy and completeness at the computer data capturing stage, data entry was carried out in enterprise batches and by district. The data entry management was fully supervised by the data analyst and well trained, experienced data entrants were used. The following were key activities carried out by the data entry team;

- Designed and tested the data entry screen in the database that allowed automatic range checks and internal consistency;
- Carried out visual checking of the field entry data for consistency, accuracy and completeness by data entry assistants
- Cleaned data to detect the missing and duplicated cases before merging of the data files;
- Analyzed data on a trial basis before the full-blown data entry exercise was done.

### **2.6 Data analysis and interpretation**

Data was analyzed and interpretation derived, this allowed consultants to write a report based on the findings. Interpreting scores from responses of the various stakeholders provided critical information that provided a base upon which future interventions were made.



## **2.7 Analysis of qualitative data**

Qualitative data was intended to gather information about the selected value chains in a more holistic approach as to identify the roles as well as the interrelationship among the various actors. Information from the focus group discussions and other open-ended questions in the interview guides were analyzed using content analysis to summarize the discussions. Qualitative data were analyzed and reported either as direct quotes or in descriptive statements. Descriptive statements assisted the research team to provide a more illustrative and realistic description of the selected value chains as perceived by the different actors. As data was analyzed and reported, emerging common themes and patterns in respondents' comments emerged and these helped in describing and interpreting information as it related to challenges and opportunities that existed along the value chains and the most feasible areas of intervention.

## **2.8 Analysis of quantitative data**

Quantitative data were cleaned, coded, entered and analyzed using the EpiData DataBase and Stata Statistical Package for analysis. Descriptive statistics were used in analyzing the quantitative data gathered during the study and assisted in generating possible trends of events as they occurred along the value chain.

Frequencies and percentages were used to describe various components of the value chain for the different actors while tabular and graphical forms were used to present the data in a concise manner to capture the inherent distribution.

### 3.0

## STUDY FINDINGS AND DISCUSSIONS

### 3.1 Dairy enterprise

#### 3.1.1 Social-economic and demographic characteristics

This sub-section reports on the findings on the general social-economic and demographic characteristics of the respondents for the dairy enterprise in the selected districts.

The social-economic and demographic characteristics of dairy farmers in the study districts are given in Table 3.1. Generally, 77.6% of all the respondents across the five selected districts interviewed were males. However, in the districts of Mbarara and Sheema, the proportion of female farmers interviewed was significantly higher than in the other three districts being, 44.8% and 36.4%, respectively. The high percentage of males interviewed reflect the cultural characteristics where most households are headed by men. The majority of the respondents attained primary and or secondary education level. This implies that, they can read and write, easily trainable and can adopt new technologies. Over 90% of the respondents interviewed derive their livelihood from farming.

**Table 3.1: Social-economical and demographic characteristics among dairy farmers**

| Variable              | Response       | Percentage response in the different districts under the survey |          |         |             |        | Overall sample |
|-----------------------|----------------|---|----------|---------|-------------|--------|----------------|
| Gender of respondent  |                | Bukoma nsimbi   | Isingiro | Mbarara | Nakasongola | Sheema |                |
|                       | Male           | 85.7  | 94.3     | 55.2    | 86.8        | 63.6   | 77.6           |
|                       | Female         | 14.3  | 5.7      | 44.8    | 13.2        | 36.4   | 22.4           |
| Education level       | None           | 4.8   | 31.4     | 6.9     | 5.3         | 9.1    | 12.2           |
|                       | Primary        | 47.6  | 40.0     | 31.0    | 36.8        | 51.5   | 41.0           |
|                       | Secondary      | 33.3  | 17.1     | 44.8    | 36.8        | 21.2   | 30.1           |
|                       | Tertiary       | 14.3  | 11.4     | 17.2    | 21.1        | 18.2   | 16.7           |
|                       |                |   |          |         |             |        |                |
| Main source of income | Farming        | 100   | 100      | 93.1    | 92.1        | 93.55  | 95.45          |
|                       | Trading        | 0   | 0        | 6.9     | 3.3         | 0      | 1.3            |
|                       | Government     | 0   | 0        | 0       | 4.63        | 6.45   | 3.35           |
| Average age           | Household head | 46  | 47       | 56      | 49          | 53     | 50             |

|                                       |                    |         |         |         |         |         |         |
|---------------------------------------|--------------------|---------|---------|---------|---------|---------|---------|
| Size of the Household                 | Less than 15 years | 4       | 5       | 3       | 4       | 2       | 4       |
|                                       | 16-35 Years        | 3       | 5       | 3       | 4       | 3       | 4       |
|                                       | 35-50 Years        | 2       | 3       | 2       | 2       | 1       | 2       |
|                                       | 50 and above       | 2       | 2       | 2       | 1       | 1       | 1       |
| Average monthly household expenditure |                    | 561,821 | 315,212 | 556,132 | 451,549 | 476,197 | 590,228 |

Source: Survey data

### 3.1.2 Production

#### 3.1.2.1 Land access and availability

Land access to crops, livestock and total area owned are presented in Table 3.2. On average, farmers in Isingiro, Mbarara and Nakasongola owned at least 30 acres. Over 60% of this land was reported accessible to livestock farming.

**Table 3.2: Average land accessible and owned by farmers in the study area**

|              | Land area access to crops (acres) | Land area access to livestock (acres) | Land owned (acres) |
|--------------|-----------------------------------|---------------------------------------|--------------------|
| Bukomansimbi | 5.79                              | 11.62                                 | 16.31              |
| Isingiro     | 9.72                              | 28.00                                 | 29.31              |
| Mbarara      | 10.97                             | 22.00                                 | 30.38              |
| Nakasongola  | 7.17                              | 27.00                                 | 34.58              |
| Sheema       | 6.67                              | 9.00                                  | 15.20              |

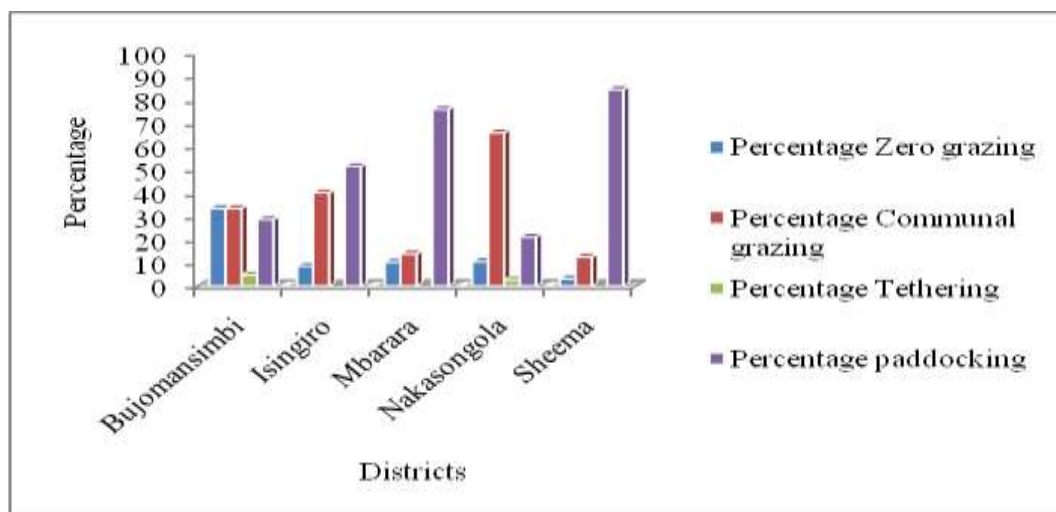
Source: Survey data

#### 3.1.2.2 Methods of dairy cattle keeping

Methods of dairy cattle keeping are presented in Figure 3.1, communal method of cattle grazing was pre-dominant in all the districts except Sheema. Nakasongola recorded the highest percentage of farmers (80%) who practice communal grazing. *“Nakasongola is generally a dry area and falls under the cattle corridor, has a number of ranches for beef production”* DNC Nakasongola. Percentage of farmers who practice paddocking were highest in Sheema and Mbarara districts with over 70% and the lowest was recorded in Nakasongola district 15%. It was observed and recorded that farmers who practice paddocking kept cross breed and exotic animals and were keen to control diseases. Milk production was higher under paddocking

compared to communal grazers. In addition farmers who practice paddocking were more organized into primary societies and sell their milk to collection centres. Communal grazers had low milk production and tended to supply other farmers and bicycle traders who supply neighbouring towns.

**Figure 3.1: Percentage households using different methods to look after dairy animals**

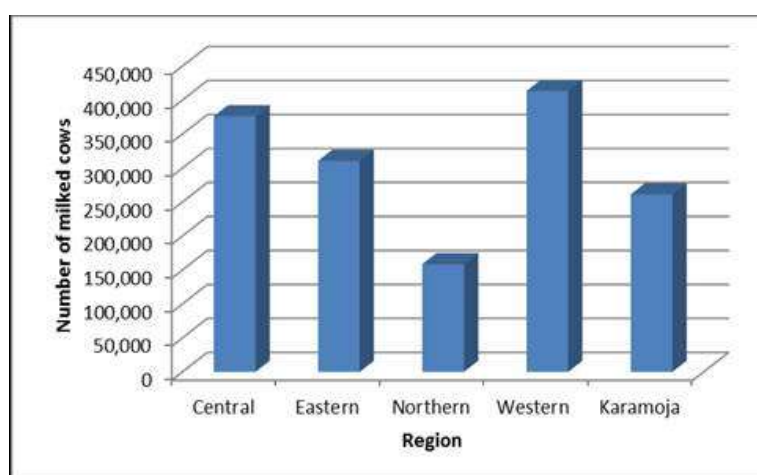


*Source: Survey data*

### 3.1.2.3 Milk Production Estimates

Total milk production by region in Uganda during 2010 is presented in Figure 3.2. Western region recorded the highest quantity of about 400,000 liters followed by central region with about 356,000 liters. The total milk production during 2010 was estimated to be 1,452,000 liters per day. This trend is likely to be on increase, it is estimated that milk production during 2012 was above 1,500,000 litres per day (MAAIF & DDA, 2010).

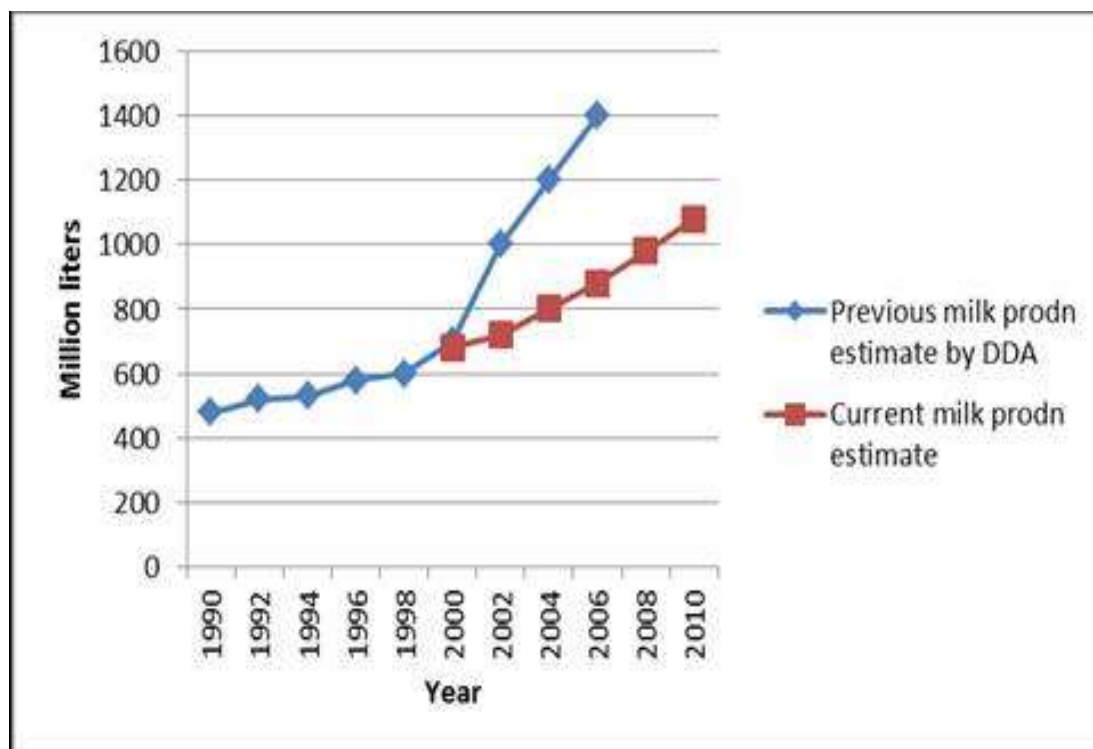
**Figure 3.2: Number of milked cows per region**



*Source: MAAIF, FAO and DDA 2010*

The annual milk production over a ten-year period is given below (Figure 3.3). It was estimated to have increased significantly from the year 2000 onwards reaching approximately 1,150,000 to 1,400,000 litres per day. The increase in milk production is attributed to general improvement in the herd size, improved animal breeds, veterinary services, provision of water and streamlining of marketing systems.

**Figure3.3: Annual national milk production estimate; 1990-2010**



*Source: MAAIF, FAO and DDA 2010*

The contribution of milk production by animal breed and region is given in table 3.3. The western region contributes the highest percentage of 33.7%, with indigenous animals still producing more milk than exotic and cross breeds put together. This could be due to the high numbers of indigenous animals kept compared to the exotic and cross breeds, since it is cheap to keep the local breeds.

**Table 3.3: National milk production estimate**

| Region       | 2010 annual milk production<br>(Million Liters) |                       | Total<br>(Million Liters) | Percent of<br>National Total |
|--------------|---|-----------------------|---------------------------|------------------------------|
|              | Exotics + Crosses                               | Indigenous            |                           |                              |
| Central      | 125.20  | 216.9                 | 341.89                    | 31.6                         |
| Eastern      | 54.88   | 140.96                | 195.84                    | 18.1                         |
| Northern     | 2.66  | 100.98                | 103.64                    | 9.6                          |
| Western      | 143.26  | 220.80                | 364.06                    | 33.7                         |
| Karamoja     | 0.82  | 74.46                 | 75.28                     | 7.0                          |
| <b>TOTAL</b> | <b>326.82 (30.2%)</b>                           | <b>753.88 (69.8%)</b> | <b>1,080.70</b>           | <b>100.0%</b>                |

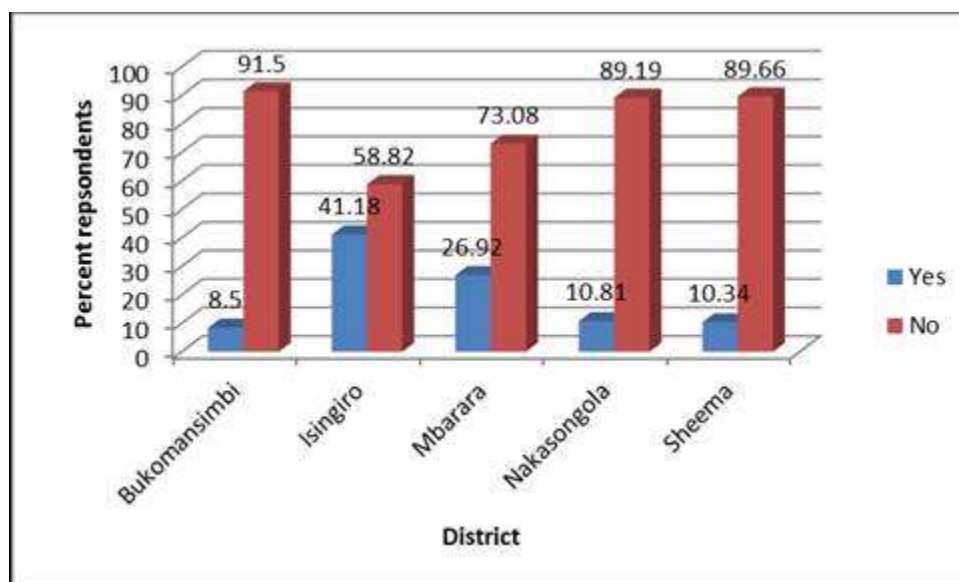
Source: MAAIF, FAO and DDA 2010

### 3.1.3 Processing

#### 3.1.3.1 Percentage farmers processing milk

The majority of dairy farmers do not process their milk at farm level apart from few farmers mainly from Isingiro and Mbarara (41.2% and 26.9%) respectively, Figure 3.4. The few farmers that process milk are mainly targeting ghee and yoghurt (Figure 3.5). This trend was attributed to the fact that the remaining districts farmers produce small volumes of milk and this can be related to Bukomansimbi where most farmers practice zero grazing.

**Figure 3.4: Percentage of farmers processing milk**



Source: Survey data

Milking processing plants available in Uganda and presented in Table 3.4. The total installed capacity is estimated to be 718,000 litres of milk processed per day and utilized capacity is 454,000 litres of milk per day representing approximately 63%. It was noted that, the estimated 1.05 billion litres of milk of the total annual production is marketed, while 30% is consumed at home sometimes due to oversupply resulting into forced consumption and much of the milk can get spoiled. The informal market represents approximately 90% of the total milk marketed and this is attributed to non compliance with quality standards that are demanded by the processing plants. The distribution system for the formal marketing still needs improvement, while the informal is more aggressive, sometimes door to door delivery is done and credit or monthly payment arrangements are made.

**Table 3.4: Milk Processing Plants and mini Dairies in Uganda**

| No | Name of Company                         | Location    | Installed capacity (Litres/per day) | Capacity utilized (Litres/per day) | Product range  |
|----|---|-------------|-------------------------------------|------------------------------------|--|
| 1  | SAMEER Agricultural and Livestock Ltd   | Kampala     | 500,000                             | 375,000                            | Pasteurized milk, UHT, yogurt, butter, ghee, Powder milk |
| 2  | Jesa Farm Dairy                         | Busunju     | 40,000                              | 30,000                             | Pasteurized milk, UHT, yogurt, butter, ghee, cream       |
| 3  | White Nile Dairies                      | Jinja       | 6,000                               | 3,000                              | Pasteurized milk, yoghurt, ghee, cream                   |
| 4  | G.B.K. Dairy products (U) Ltd           | Mbarara     | 96,000                              | 20,000                             | UHT, ghee, Pasteurized milk                              |
| 5  | Shumuk Dairy products (U) Ltd           | Mbarara     | 40,000                              | 3,000                              | Pasteurized milk, butter, yoghurt, ghee, cream           |
| 6  | Birunga Dairy                           | Kisoro      | 15,000                              | 8,000                              | UHT  |
| 7  | MADDO Dairies Ltd                       | Masaka      | 2,000                               | 800                                | Pasteurized milk, yogurt                                 |
| 8  | Paramount Dairies Ltd                   | Mbarara     | 2,000                               | 2,000                              | Cheese   |
| 9  | NIRMA Dairy & Foods Ltd                 | Entebbe     | 5,000                               | 2,200                              | Pasteurized milk, yogurt, cheese                         |
| 10 | Tooro dairy cooperative society Limited | Fort Portal | 4,000                               | 2,000                              | Pasteurized milk, yoghurt                                |
| 11 | Mama Omulungi dairy                     | Busabala    | 8,000                               | 8,000                              | Pasterurized milk  |
|    | Total                                   |             | 718,000                             | 454,000                            |  |

*Source: National Dairy Strategy (2011-2015)*

### 3.1.3.2 Products processed

As indicated in Figure 3.5, most farmers' process milk into ghee since it requires traditional methods and equipment compared to yoghurt. In addition, ghee is used as a homemade product and can easily be marketed in the nearby locations compared to yoghurt. Ghee is sold by road side markets, retail shops groceries. The market for ghee is still very small compared to that of yogurt.

**Figure 3.5: Products processed**



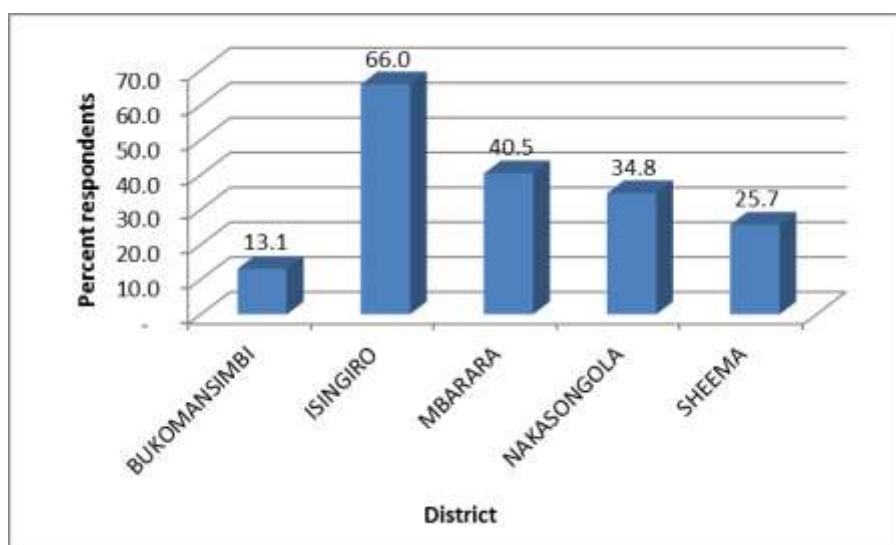
*Source: Survey data*

### 3.1.3.3 Percentage milk processed

Based on Figure 3.6, Isingiro and Mbarara command the highest percentages processed (66% and 40.5%) respectively. This was attributed to the volumes produced by individual farmers within the survey districts. Districts in south western region of Uganda are the major producers of milk in the country (MAAIF, Livestock Census, 2008).



**Figure 3.6: Percentage of milk processed in 2012**



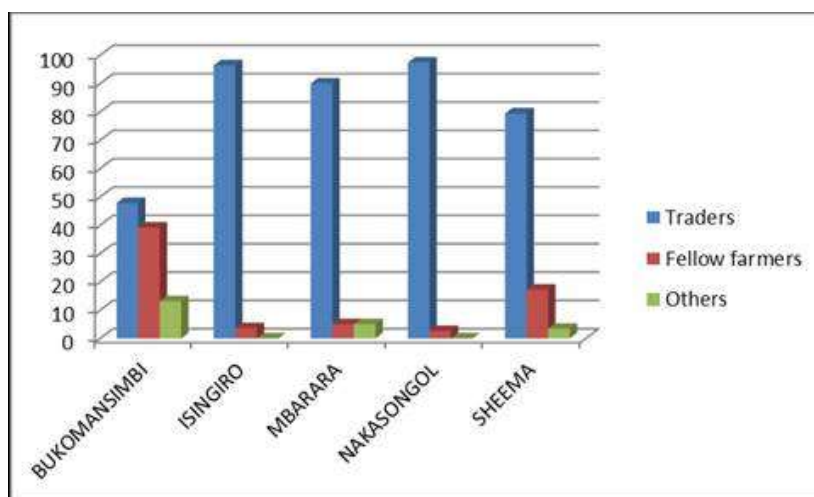
*Source: Survey data*

### **3.1.4 Marketing**

#### **3.1.4.1 Buyers of milk**

In all the study districts, traders and fellow farmers dominate the biggest percentage of milk buyers (Figure 3.7). In Bukomansimbi district, the percentage of traders and fellow farmers were almost the same, this could be attributed to the fact low milk volumes are produced in this area attracting fellow farmers to buy and sell to the market or processors. In the remaining districts, there were high volumes of milk produced by individual farmers who sell directly to traders who later sell to milk processors. Other buyers in this case reflected people within the villages who buy small quantities at farm gate as the dairy farmers prepare to sell to traders.

**Figure 3.7: Milk buyers**

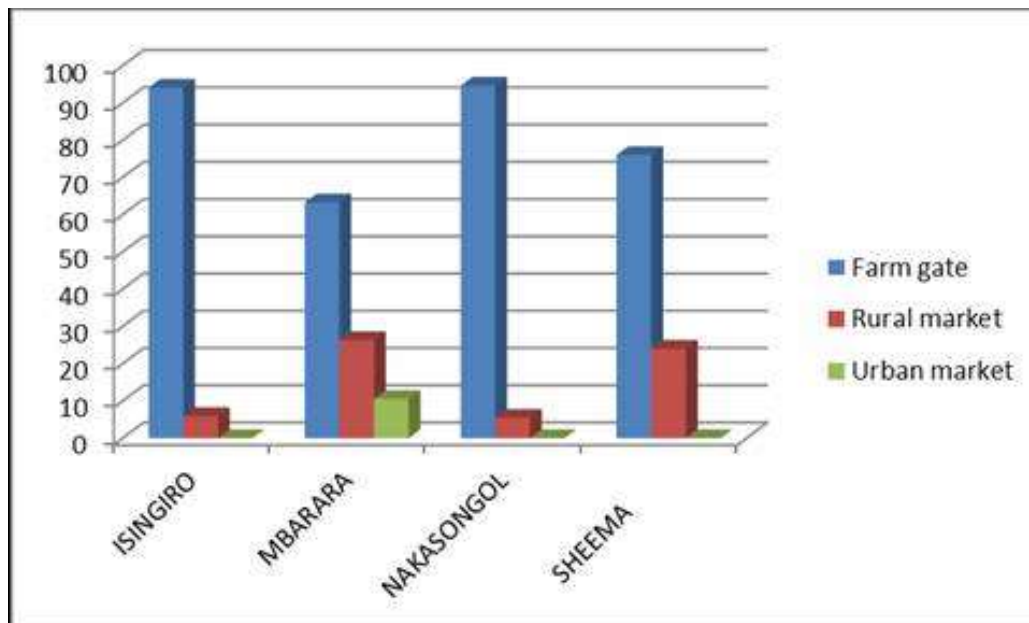


*Source: Survey data*

#### 3.1.4.2 Marketing level

In all the study areas, most of the farmers sell their milk at farm gate level (Figure 3.8). This is attributed to farmers with small herds (5 – 20) animals compared to those with big herds (30-100) animals as discussed during the focus groups. The small dairy farmers sell milk to traders who are actually agents of processors that own milk cooling or processing plants within the districts or delivered to Kampala for further processing. It is estimated that approximately 70% of the total daily milk production is marketed and 90% of the marketed is through informal marketing arrangement (National Dairy Strategy, 2012). Farmers are still faced with a challenge of improving milk hygiene and meeting the quality standards demanded by the processors. This will increase the milk marketed through the processing plants.

**Figure 3.8: Marketing level**

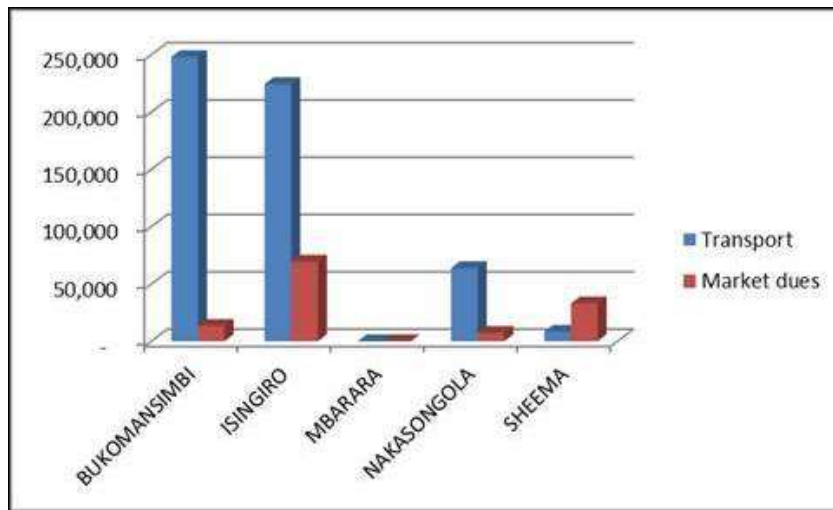


*Source: Survey data*

#### 3.1.4.3 Marketing costs

For the big farmers who deliver their milk to cooling or processing plants, transport remains the biggest marketing cost followed by market dues (Figure 3.9). High transport costs are as a result of poor rural roads in most dairy study districts especially during the wet seasons. During the focus group discussions, farmers kept complaining of the poor state of roads and requested the traders or processors to increase on the number of milk collection or cooling centers to reduce transport cost and wastage of milk as some goes bad after hours of travel.

**Figure 3.9: Marketing costs**



*Source: Survey data*

### **Dairy Exports:**

The results indicate that Uganda's dairy exports are concentrated majorly on one product (i.e. UHT milk and cream). The results also indicate that the bulk of Uganda's milk and cream exports are growing in promising markets within the region. Thus, the Kenyan market that imports 80% of Uganda's milk and cream is growing at a rate of 43 % per annum, and Uganda's market share in the Kenyan market is growing impressively at 17 % per annum. However, Uganda's market share is also growing in stagnating markets (DRC and Sudan). But such growth is pretty insignificant since the declining and stagnating markets only account for a minor proportion of Uganda's milk and cream exports (3.7%) (FAO Dairy Development Project, 2011).

### 3.1.5 Value chain mapping

The Dairy value chain actors and their respective roles within the chain is presented in Table 3.5.

**Table 3.5: Dairy value chain actors and their roles**

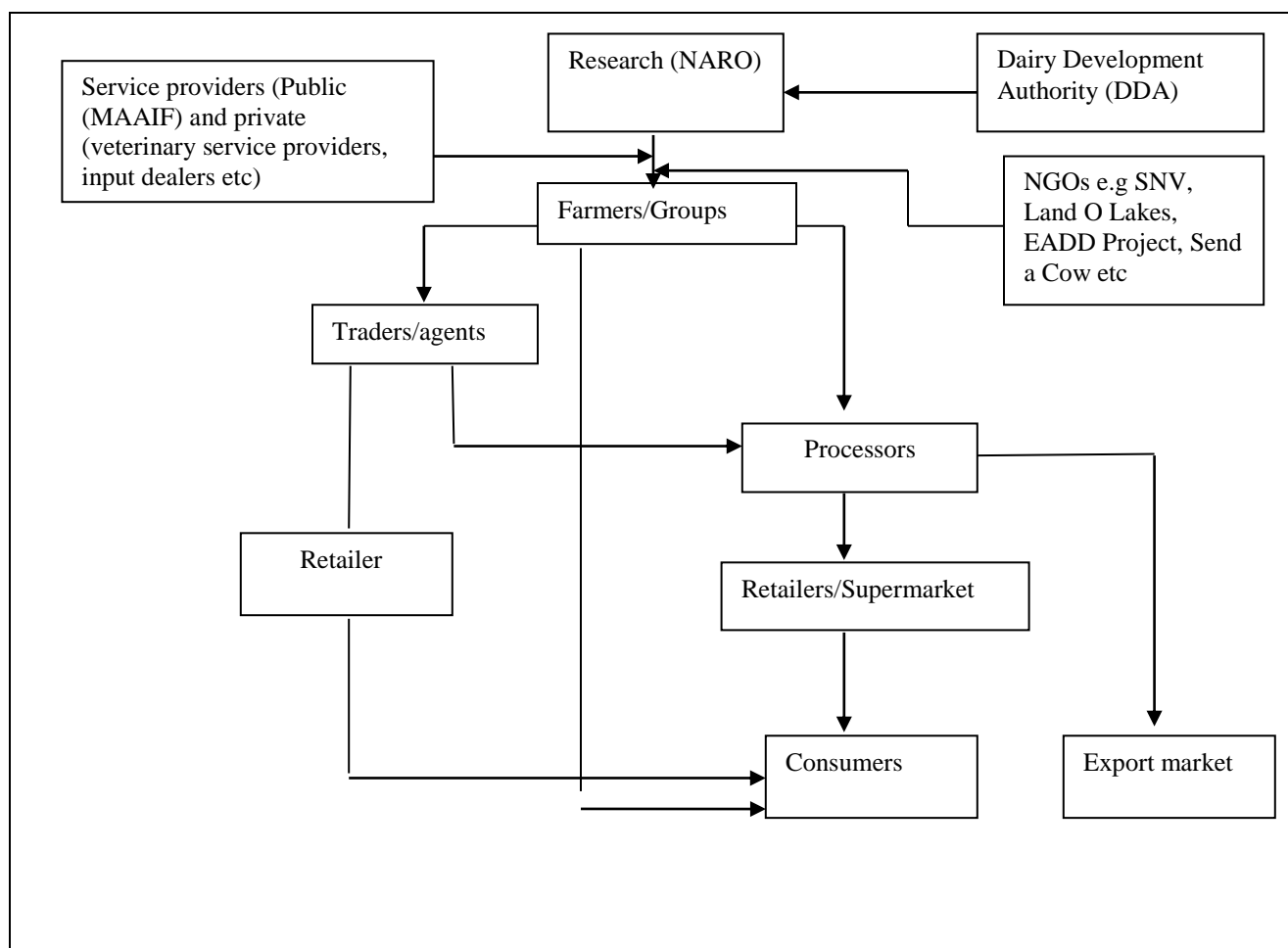
| Actor                                | Role played  |
|--------------------------------------|--|
| Researchers (NARO)                   | The researchers are responsible for research and development of dairy breeds that will subsequently be reared for milk production, in case of private sector involvement at this level, supervision and guidance of NARO and MAAIF are highly required   |
| Dairy Development Authority (DDA)    | Dairy development, policy formulation and regulatory services (Registering and licensing milk processors, and traders, advise government on milk standards together with UNBS, control and regulation of dairy related input and export activities in conformity with External Trade Act), registration of dairy farmers, processors and actors engaged in the industry, support research efforts to improving dairy breed stock and development of new technologies, training |
| NGOs e.g SNV, EADD, Land O'Lakes etc | Capacity building and infrastructure development formulation of the dairy master plans, cold chain and input supply development  |
| MAAIF and Agriculture extension      | The ministry provides technical extension services in addition to the development and implementation of agricultural policies  |
| Private service providers            |  |
| Veterinary services' providers       | Supply vet services mainly drugs, artificial insemination (AI) to both small and large farmers   |
| Financial institutions               | They provide credit and financial services to the actors especially farmers and traders in response to increased demand, these services are provided mainly by SACCOs, Micro-finance institutions and Banks  |
| Farmers                              | Farmers are both producers and consumers of the dairy products; they either sell at farm gate or transport the milk collection centers   |
| Traders/ Buyers/Agents               | Traders know all farmers' locations, upon identifying farmers; the traders negotiate prices and marketing arrangements on behalf of the large buyers who are either processors or large fresh milk operators   |
| Processors                           | They operate on both small and large scale size; the small scale are found in most of the urban areas while large scale processors are located in big towns. Their main activities include value addition (processing, packaging) and distribution. Hotels, restaurants and take-away (fast-food outlets) are their main business outlets.   |
| Retailers                            | Retailers range from supermarkets to village roadside sellers. In urban areas, market retailers buy a wide range of products from pasteurized milk, fresh milk, yoghurt and cheese   |
| Supermarkets                         | This is another group of buyers that is interested in particular specifications; they usually arrange the buying under contracts   |

|           |  |
|-----------|--|
|           | which have to be fulfilled by both the buyer and seller  |
| Exporters | These are actually buyers that track milk and milk products for export destinations like Kenya. They usually operate on large tonnage level to get advantages of scale because of long distances to the importing countries. |
| Consumers | These are the final actors in the dairy value chain that buy and consume milk and its products at both local consumption (boiling) and industrial processing levels.   |

*Source: Survey data*

The value chain actors and support of Dairy value chain and their linkages are presented in Figure 3.10.

**Figure 3.10: Dairy value chain mapping**



*Source: Survey data*

### **3.1.6 Constraints and proposed interventions**

#### **3.1.6.1 Constraints**

##### **(i) Production stage**

- Low milk production per cow
- High cost of inputs like drugs
- Inadequate extension services
- Lack of water during dry seasons
- Presence of fake drugs on the market
- High disease incidences especially those caused by ticks
- Poor quality pastures due to lack proper management systems
- Poor road networks which restrict movement of service providers especially veterinary doctors

##### **(ii) Processing**

- Farmers delivering adulterated milk especially after addition of water
- Farmers delivering milk from animals under treatment indicating high level of drugs
- Few Collection centers in rural areas making it hard for farmers to walk long distances
- Poor hygiene environment at farm level

##### **(iii) Marketing**

- Price fluctuation throughout the year
- Poor quality of much of the milk leading to failure to meet minimum standard for the processors
- Spoilage of milk during transportation
- Traders fail to pay for milk delivered to the collection centers
- Poor road networks in the rural areas
- Limited market due to inadequacy of milk value addition products

#### **3.1.6.2 Proposed interventions**

##### **(i) Production**

- Government should provide water reservoirs to match the increasing number of animals and changes in weather conditions
- MAAIF together with UNBS should sensitize farmers on the use of recommended drugs while at the same time intensify the supervision work on present drug shops in the production areas
- Processors should increase collection centers
- Government policy should emphasize AI sources to improve the low genetic potential of indigenous cattle breeds
- Farmers should be trained in the proper and modern dairy management systems that emphasize use of good pastures to reduce land degradation
- Government should improve the road infrastructure to easy movement of dairy products in the production areas.

**(ii) Processing**

- Farmers need more training on the proper administration of drugs and the recommended resting period
- Traders and processors construct more collection centers
- Train farmers on home processed products and avail them under cooperatives cottage equipment

**(iii) Marketing**

- Farmers should form or strengthen their cooperatives in order to have contracts with milk traders and processors
- Government should improve the road networks to improve transporting milk from rural areas
- Increase on the extension services to improve hygiene, quality and provision of market information services

## **3.2 Goats enterprise**

### **3.2.1 Socio-economic and demographic characteristics**

The social-economic and demographic characteristic of farmers rearing goats are given in Table 3.6. Overall 71.3% of all farmers interviewed were males, proportionately higher female numbers were interviewed in Mbarara and Sheema districts. The high percentage of men underscores the cultural aspect of men being the head of the households thus being the one to be interviewed. The majority of farmers interviewed knew how to write and read, having attained either primary or secondary level of education. The average household monthly expenditure across all the districts was about 660,000 shillings and over 60% of the respondents indicated that over 50% of the total household expenditure was contributed from sale of goats (Figure 3.11)

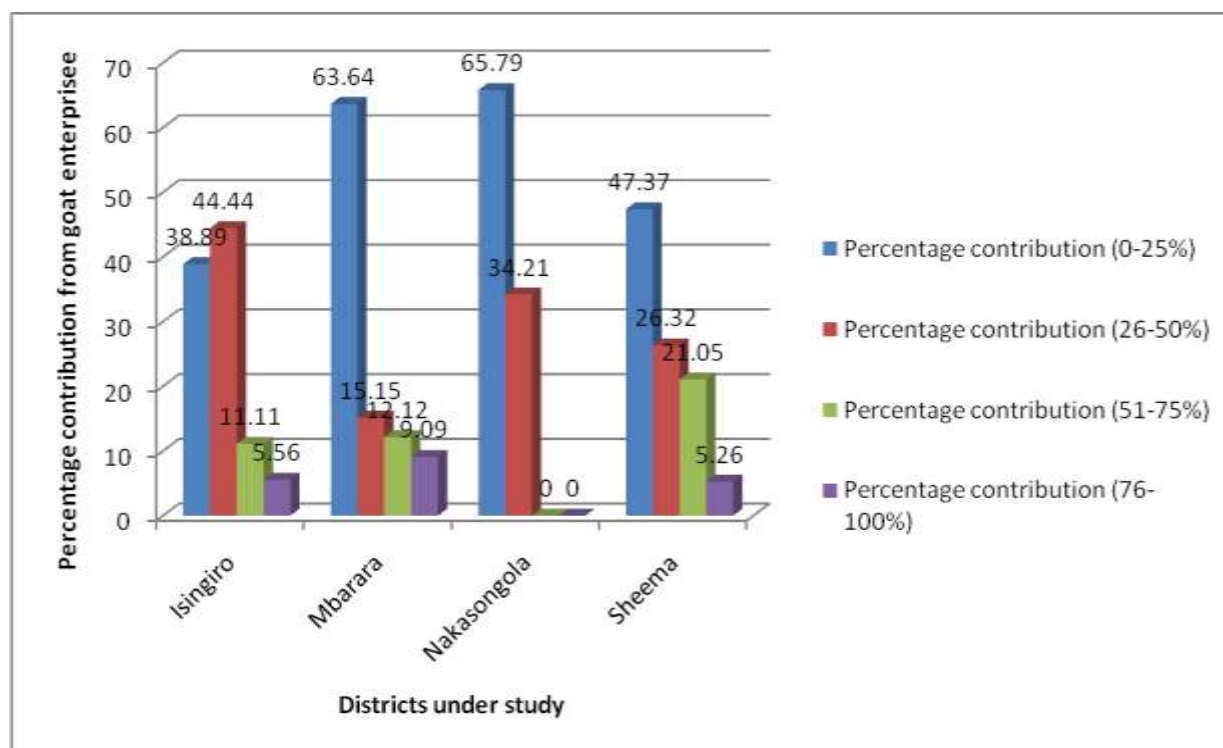
**Table 3.6: Social-economic and demographic characteristic among goat farmers**

| Variable                              | Response           | Percentage response in the different districts under survey |         |             |         | Overall sample |
|---------------------------------------|--------------------|---|---------|-------------|---------|----------------|
|                                       |                    | Isingiro  | Mbarara | Nakasongola | Sheema  |                |
| Gender of respondent                  | Male               | 88.2  | 50      | 84.2        | 68.4    | 71.3           |
|                                       | Female             | 11.8  | 50      | 15.8        | 31.6    | 28.7           |
| Education level                       | None               | 11.1  | 18.2    | 5.3         | 5.0     | 10.1           |
|                                       | Primary            | 55.6  | 42.4    | 39.5        | 55.0    | 45.9           |
|                                       | Secondary          | 27.8  | 27.3    | 36.8        | 15.0    | 28.4           |
|                                       | Tertiary           | 5.6   | 12.1    | 18.4        | 25.0    | 15.6           |
| Main source of income                 | Farming            | 100.0   | 97.1    | 100.0       | 95.0    | 98.2           |
|                                       | Trading            | 0.0   | 0.0     | 0.0         | 0.0     | 0.0            |
|                                       | Government         | 0.0   | 2.9     | 0.0         | 5.0     | 0.0            |
| Average age                           | Household head     | 39.0  | 48.0    | 49.0        | 54.0    | 48.0           |
| Household size                        | Less than 15 years | 4   | 1       | 2           | 1       | 2              |
|                                       | 16-35 years        | 3   | 3       | 2           | 1       | 2              |
|                                       | 35-50 years        | 5   | 2       | 2           | 1       | 3              |
|                                       | 50 years and above | 2   | 3       | 2           | 1       | 2              |
| Average monthly household expenditure |                    | 846,394   | 553,829 | 661,667     | 575,417 | 659,327        |

*Source: Survey data*



**Figure 3.11: Percentage contribution to household monthly expenditure by goats' enterprise**



*Source: Survey data*

## 3.2.2 Production

### 3.2.2.1 Average number of goats kept

The average number of goats kept by farmers by breed in the different districts sampled is presented in Table 3.7. Generally goat breeds recorded were local and cross breed types. No pure exotic goats were found in the study areas. Overall, the average number of goats kept by a farmer in the sampled districts was 28 goats.

**Table 3.7: Number of goats kept by household members**

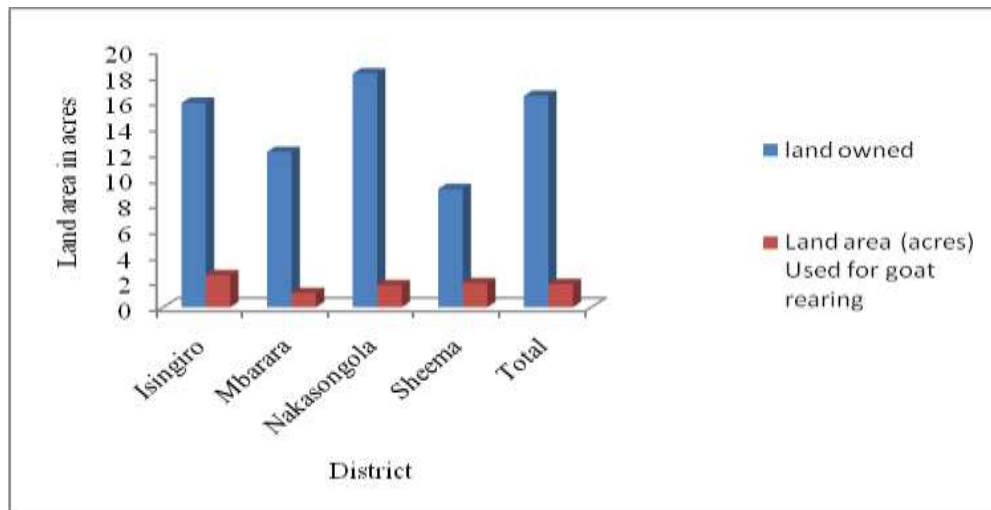
|             | No. Local | No. Cross breed | Total number |
|-------------|-----------|-----------------|--------------|
| Isingiro    | 19        | 16              | 35           |
| Mbarara     | 11        | 15              | 26           |
| Nakasongola | 17        | 5               | 22           |
| Sheema      | 14        | 16              | 30           |
| Overall     | 15        | 13              | 28           |

*Source: Survey data*

### 3.2.2.2 Land access and availability

Total land area owned and used for goat rearing in the study area is presented in Figure 3.12. The average land area owned varied between 10 acres in Sheema district to 18.4 acres in Nakasongola district. The total land area devoted to goat rearing across all the study districts was less than 5 acres.

**Figure 3.12: Land owned and used for goat rearing**

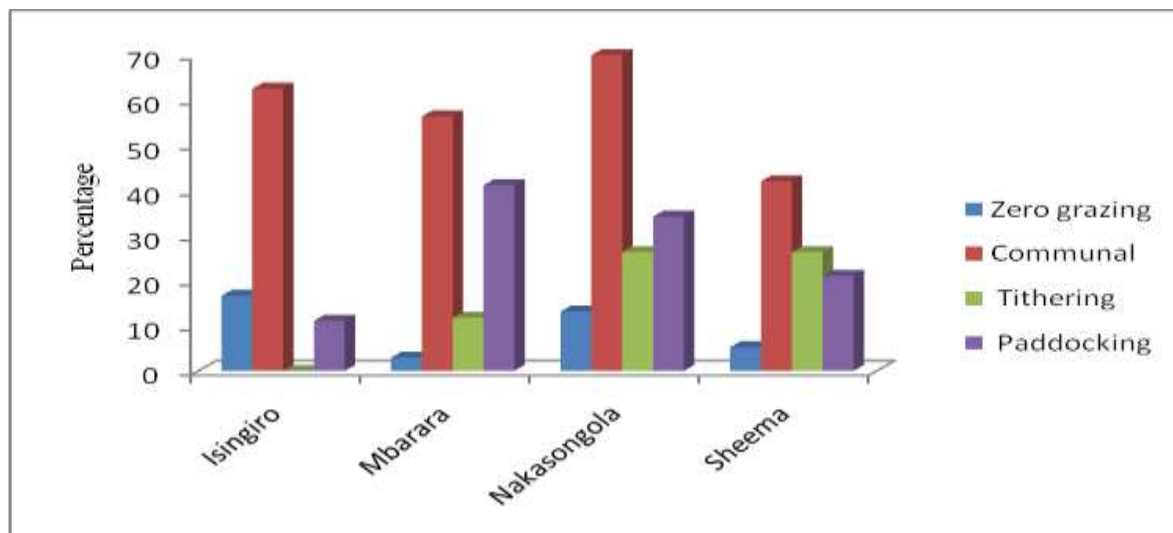


Source: Survey data

### 3.2.2.3 Methods of goat rearing

Methods of goat rearing under the different study districts are presented in Figure 3.13. Communal grazing was the pre-dominant method of goat grazing across all the districts sampled. Nakasongola district recorded the highest number (70%) of all respondents, followed by Isingiro, Mbarara and Sheema district. Goat tethering method was more in Nakasongola and Sheema.

**Figure 3.13: Percentage of households using different methods of goat rearing**

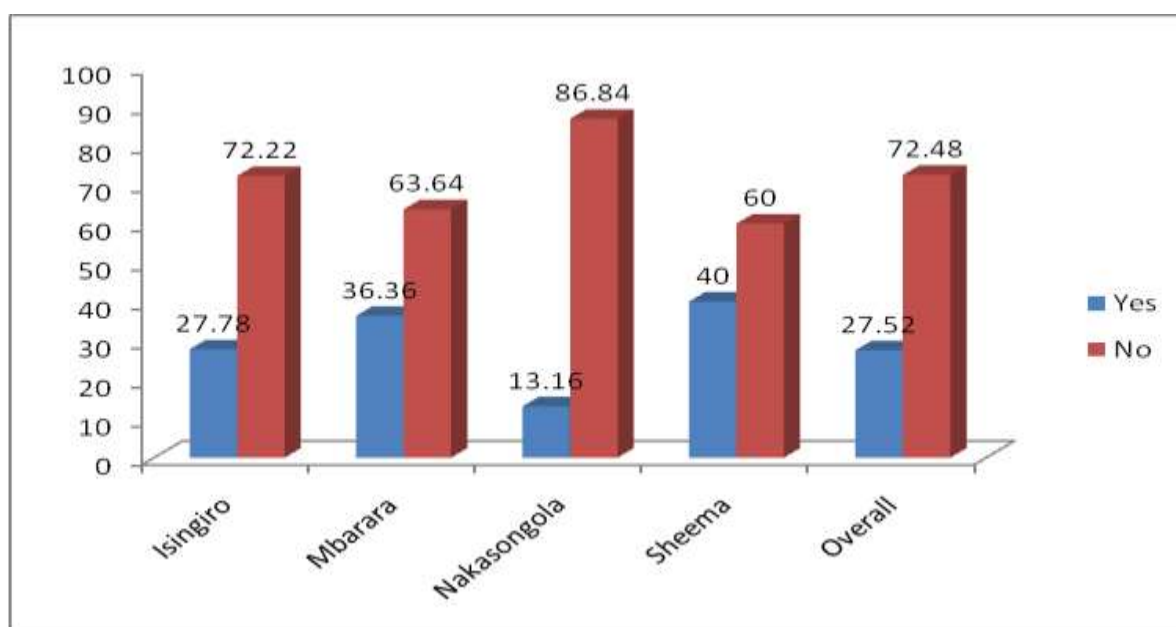


Source: Survey data

#### 3.2.2.4 Proportion of goats' farmers belonging to farmer associations

The proportions of farmers that belong to farmer association promoting goat rearing among other enterprises are presented in Figure 3.14. Overall, 72.48% of all respondents indicated that they do not belong to any farmer organization based on goat enterprise. However, in Mbarara district (36.4%) and Sheema district (40%) of the respondents reported belonging to farmer organizations that promotes goat rearing. Nakasongola district (13.2%) recorded the lowest number of farmers who belong to farmer associations.

**Figure 3.14: The proportion of farmers that belong to farmer associations for rearing goats**



*Source: Survey data*

#### 3.2.2.5 National Estimated yield

Estimated number of livestock in Uganda between 2008-2010 is given in Table 3.8. During the year (2010) total goat population was estimated to be 13,208,000 million goats (MAAIF Statistical Abstract, 2011). The goat population was estimated to be growing at an average rate of 3% annually (Table 3.8).

**Table 3.8: Number of livestock (000) by type and year 2008-2010**

| Animal type | Year   |        |        |
|-------------|--------|--------|--------|
|             | 2008   | 2009   | 2010   |
| Cattle      | 11,409 | 11,751 | 12,104 |
| Sheep       | 3,413  | 3,516  | 3,621  |
| Goat        | 12,450 | 12,823 | 13,208 |
| Pigs        | 3,184  | 3,280  | 3,378  |
| Chicken     | 37,444 | 38,557 | 39,714 |

*Source: MAAIF Statistical Abstract 2011*

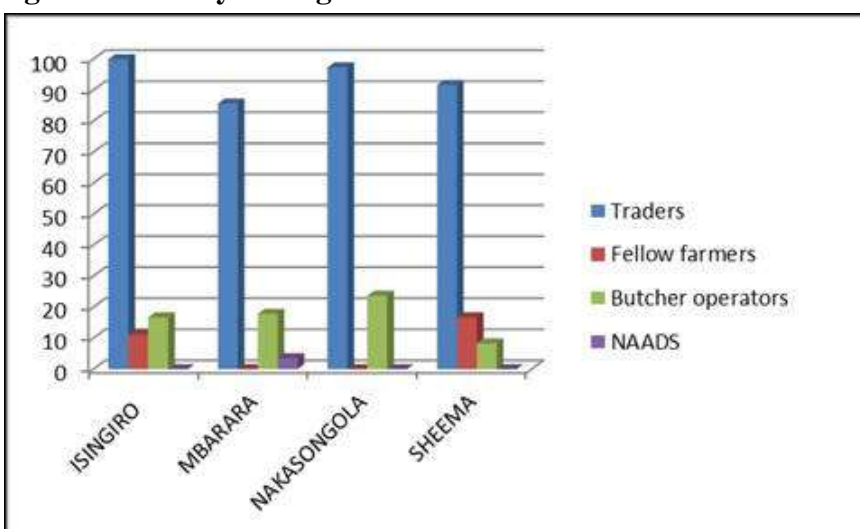
### 3.3 Processing

There was no post-harvest handling and processing activity of any kind at farmer level that was identified in all the survey districts, this was attributed to fact that goats are mainly kept for meat and they are traded, taken for slaughter and this makes it difficult to have any activity at farm level. Some of the respondents who kept goats for milk indicated that the volumes are negligible to attract any processing activity and usually the milk is consumed at home mainly by children. Based on Key informant discussions, there are some traders who add value to goat meat by mincing but this is at very small level.

### Marketing

#### 3.3.2 Buyers of goats

Traders and butcher operators are the main buyers of goats from the farmers (Figure 3.15). This is attributed to the fact that farmers travel to weekly markets to sell their produce including goats and in exchange buy home requirements. Traders take large number of goats targeting urban markets compared to butcher operators who individually buy one or two goats to slaughter targeting a small number of buyers who are mostly members of the community living in that location or village.

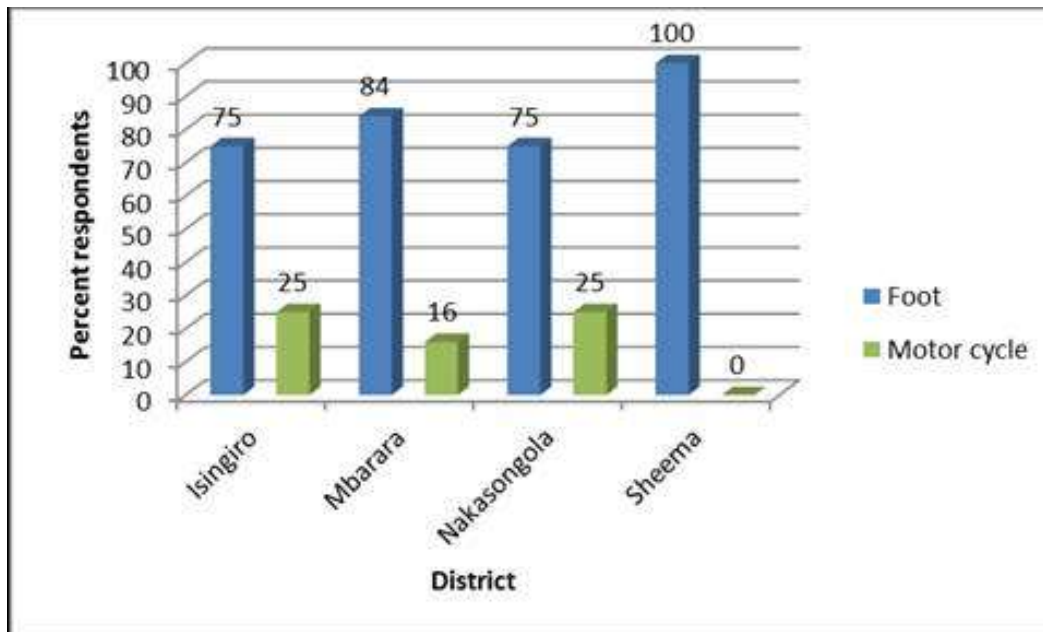
**Figure 3.15: Buyers of goats**

*Source: Survey data*

### 3.3.1 Means of transport

In all study districts, farmers move either on foot or use motor cycles when going to the market to sell their goats (Figure 3.16). The highest percentage of respondents move on foot and this was attributed to the fact that small farmers usually sell their goats at the nearest rural markets which are usually organized on a weekly basis. Farmers in turn buy home requirements like sugar, tea, salt and also attend entertainment activities during the week.

**Figure 3.16: Transport means**

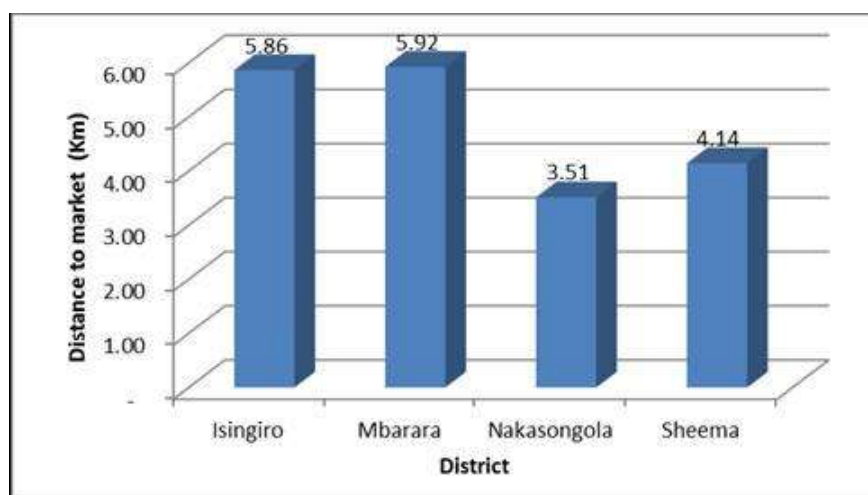


*Source: Survey data*

### 3.3.4 Distance travelled to the market

Farmers travel distances of 3.5 km to 6 km to the market (Figure 3.17) to sell their goats at the market usually organized at a weekly basis. These are short distances since most markets are at rural or at parish level and farmers have few goats to sell otherwise farmers with large farms sell goats at farm gate since traders consider economies of scale to collect many goats thus organizing their own transport.

**Figure 3.17: Distance travelled to market**



*Source: Survey data*

### 3.3.5 Value chain mapping

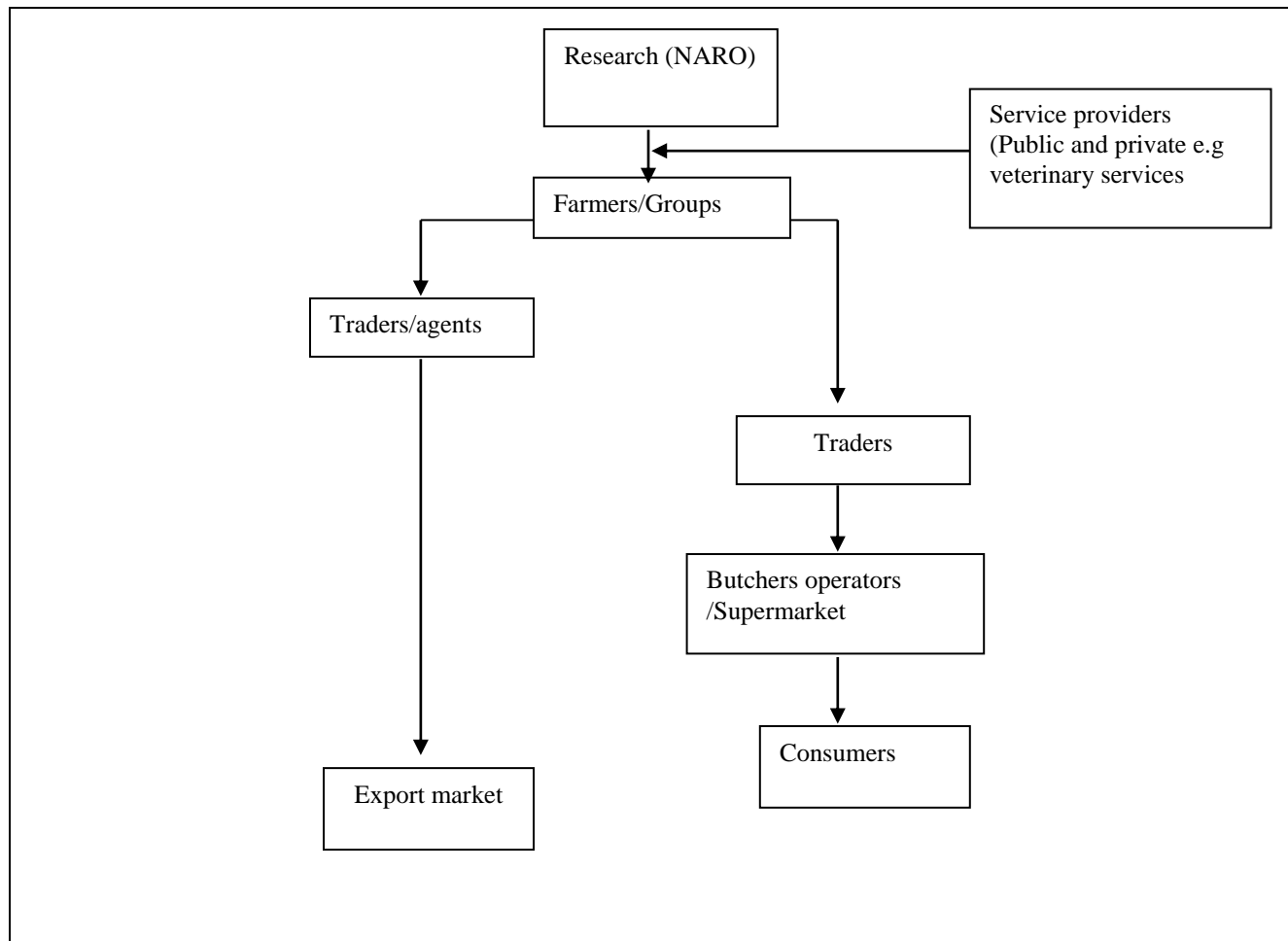
The goat value chain actors, supporters and their roles within the chain are given in Table 3.9. The interrelationships and linkages that exist among them are illustrated in Figure 3.18.

**Table 3.9: Goats value chain actors and their roles**

| Actor                           | Role played   |
|---------------------------------|---|
| Researchers (NARO)              | The researchers are responsible for improving low genetic potential of indigenous goat breeds that will subsequently be reared for both milk and meat production, in case of private sector involvement, supervision and guidance of NARO and MAAIF are highly required |
| MAAIF and Agriculture extension | The ministry provides technical extension services in addition to the development and implementation of agricultural policies   |
| Private service providers       |   |
| Veterinary services' providers  | Supply vet services mainly drugs to both small and large farmers  |
| Financial institutions          | They provide credit and financial services to the actors especially farmers and traders in response to increased demand, these services are provided mainly by SACCOs, Micro-finance institutions and Banks   |
| Farmers                         | Farmers are both producers and consumers of goats; they either sell at farm gate or transport the goats marketing centers   |
| Traders/ Buyers/Agents          | Traders know all farmers' locations, upon identifying farmers; the traders negotiate prices and marketing arrangements on behalf of the large buyers who are either big traders at slaughter houses or butcher operators  |
| Retailers                       | Retailers are mainly butcher operators having roadside businesses. In urban areas, market retailers buy a big number of goats and later resale or maintain their butcher operations   |
| Exporters                       | These are actually buyers that track goats to export destinations like South Sudan, DRC and Kenya. They usually operate on large tonnage level to get advantages of scale because of long distances to the importing countries.   |
| Consumers                       | These are the final actors in the goat value chain that buy meat for household consumption or businesses that offer services dealing in foods   |

*Source: Survey data*

**Figure 3.18: Goats value chain mapping**



Source: Survey data

### **3.3.6 Constraints and proposed interventions**

#### **3.3.6.1 Constraints**

##### **(i) Production stage**

- Low genetic potential of indigenous goat breeds
- Presence of fake drugs on the market
- High disease incidences especially those caused by ticks
- Poor quality pastures due to lack proper management systems
- Poor roads which restrict movement of service providers
- Theft of goats during the festival seasons of the year

##### **(ii) Marketing**

- Price fluctuation throughout the year



- Traders fail to pay for goats delivered to the markets
- Poor roads in the rural areas leading to high transportation cost and reducing profit to farmers

### **3.3.6.2 Proposed interventions**

#### **(i) Production**

- MAAIF together with UNBS should sensitize farmers on the use of recommended drugs while at the same time intensify the supervision work on present drug shops in the production areas
- Farmers should be trained in the proper and modern dairy management systems that emphasize use of good pastures to reduce land degradation
- Government should improve the road infrastructure to easy movement of goats in the production areas.

#### **(ii) Marketing**

- Farmers should form or strengthen their groups or cooperatives in order to have strong contracts with goats' traders
- Government should improve the roads in the rural areas especially by upgrading them to first class marram.

### 3.4 Bananas Enterprises

#### 3.4.1 Social-Economic and demographic characteristics

The social-economic and demographic characteristics among banana growers in the study areas are presented in Table 3.10. Generally there were more male farmers interviewed than females with numbers of female farmers in Bukomansimbi, Mbarara and Sheema ranging between 29% in Mbarara to 44% in Bukomansimbi districts. This could have been contributed by the fact that, majority of the respondents were household heads and by culture households are headed by males. At least 50% of all the respondents attained primary level education and knew how to read and write. This is an indication that this percentage of farmers can keep records on their own and easily trainable in new banana production technologies. The major source of income remained farming representing 90.1% overall in all the study districts. Overall the average age of the household head across the study districts was 49 years. This shows that, the leadership in a household is still energetic and can ably engage in banana production commercially. The average number of household size ranged between seven, eleven and thirteen for Mbarara, Isingiro and Bukomansimbi respectively.

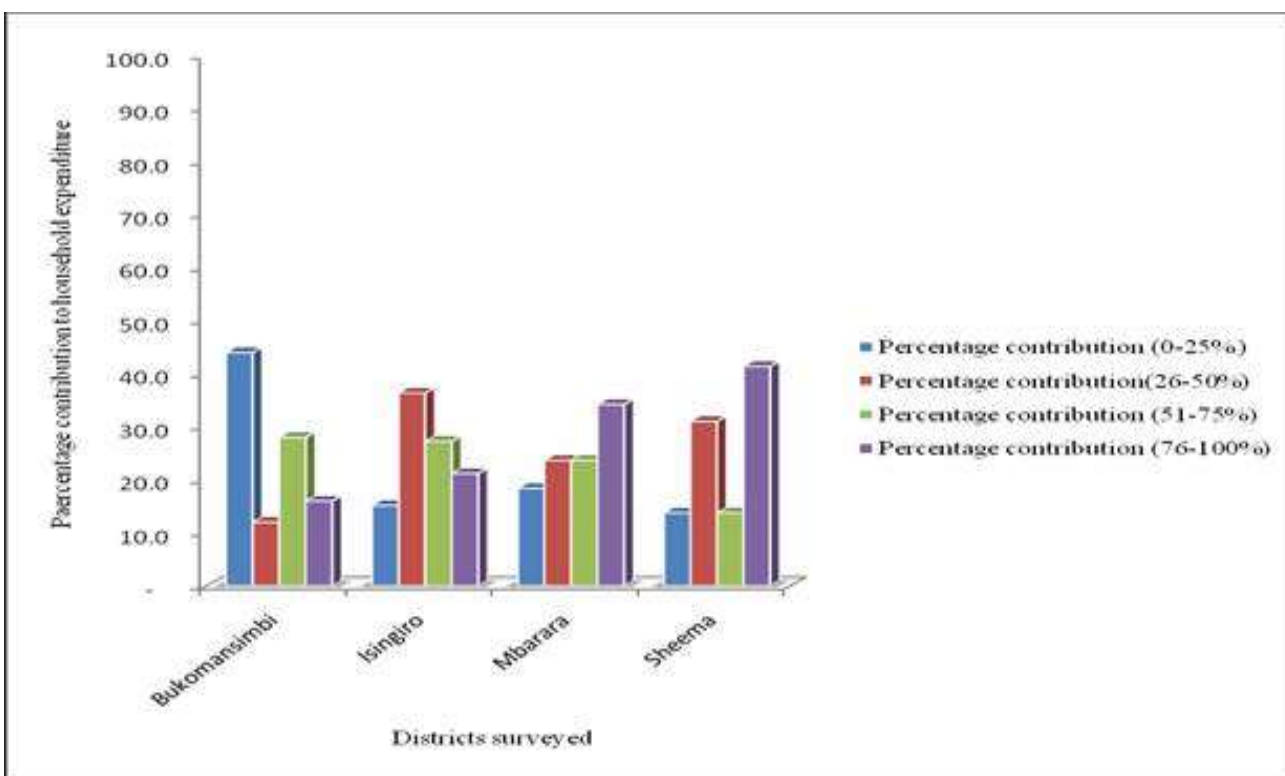
**Table 3.10: Social-economic and demographic characteristics among banana producers**

| Variable              | Response           | Percentage response in the different districts under survey |          |         |        | Overall sample |
|-----------------------|--------------------|---|----------|---------|--------|----------------|
|                       |                    | Bukomansimbi  | Isingiro | Mbarara | Sheema |                |
| Gender of respondent  | Male               | 56.0  | 87.9     | 71.1    | 63.3   | 70.6           |
|                       | Female             | 44.0  | 12.1     | 29.0    | 36.7   | 29.4           |
| Education level       | None               | 8.0   | 3.0      | 13.5    | 13.3   | 9.6            |
|                       | Primary            | 40.0  | 45.5     | 51.4    | 70.0   | 52.0           |
|                       | Secondary          | 28.0  | 33.3     | 27.0    | 10.0   | 24.8           |
|                       | Tertiary           | 24.0  | 18.2     | 8.1     | 6.7    | 13.6           |
| Main source of income | Farming            | 92.0  | 78.8     | 89.5    | 100.0  | 90.1           |
|                       | Trading            | 0.0   | 3.0      | 5.3     | 0.0    | 2.1            |
|                       | Government         | 8.0   | 18.2     | 5.3     | 0.0    | 7.8            |
| Average age           | Household head     | 49.3  | 48.4     | 45.2    | 53.0   | 48.7           |
| Household size        | Less than 15 years | 4   | 5        | 3       | 2      | 4              |
|                       | 16-35 years        | 3   | 4        | 2       | 3      | 3              |
|                       | 35-50 years        | 2   | 2        | 1       | 1      | 2              |
|                       | 50 years and above | 2   | 2        | 1       | 1      | 2              |

*Source: Survey data*

Bukomansimbi recorded the lowest (25%) income contribution of banana to monthly expenditure compared to Isingiro with 50% while in Mbarara and Sheema the income contribution of banana was above 50% (Figure 3.19).

**Figure 3.19: Percentage contribution to household monthly expenditure by banana enterprise**



Source: Survey data

## 3.4.2 Production

### 3.4.2.1 Land access and availability

The total land area accessible, and under banana production in the respective districts is presented in Table 3.11. The percentage of land area under banana production to land accessed was lowest in Mbarara district (27.5%) compared to Isingiro, Bukomansimbi and Sheema were 85%, 54% and 48% respectively. This means that there is still room for farmers to expand their banana plantations in Mbarara if need arises. This would help to increase banana production in the country.

**Table 3.11: Land access and owned under banana production systems**

|              | Land area (Acres) |            |                         |
|--------------|-------------------|------------|-------------------------|
|              | Land access       | Land owned | Under banana production |
| Bukomansimbi | 8.2               | 7.2        | 4.45                    |
| Isingiro     | 5.4               | 5.2        | 4.59                    |
| Mbarara      | 8.4               | 6.9        | 2.31                    |
| Sheema       | 9.6               | 6.0        | 4.97                    |
| Overall      | 10.4              | 10.1       | 4.10                    |

*Source: Survey data*

### 3.4.2.2 Major crops grown and sources of planting material

Other crops grown in addition to bananas are presented in Table 3.12. In the study districts, banana recorded the highest percentage as number one major crop with percentages ranging between 60%-93%, this is in line with what was reported by Bagambe (1998). Bagamba (1998) reported that 75% of the households in banana growing districts grow bananas. Bananas generally perform well in high rainfall areas which are also conducive for the other crops like beans, maize, ground nuts, carrots and coffee.

**Table 3.12: Major crops grown in the study area**

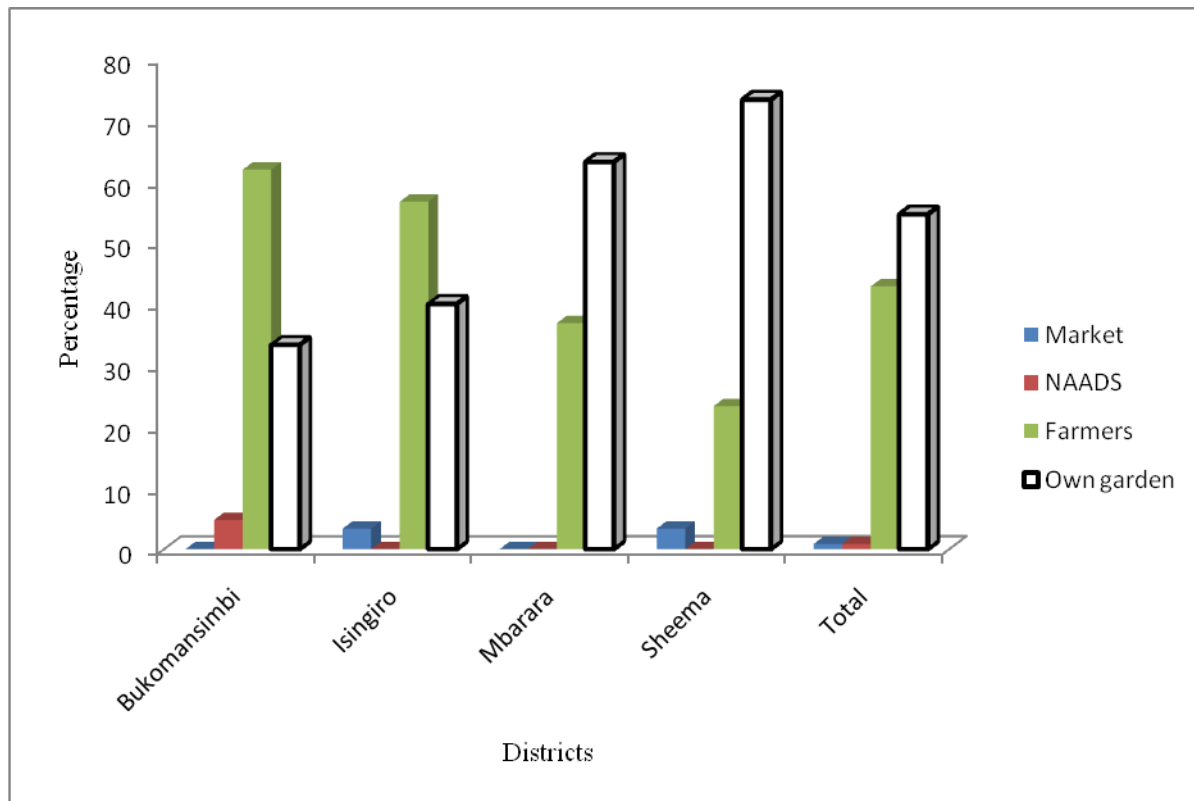
|                       | Percentage households growing different crops in different districts |          |         |        |         |
|-----------------------|--|----------|---------|--------|---------|
|                       | Bukomansimbi   | Isingiro | Mbarara | Sheema | Overall |
| Banana                | 60   | 75       | 73.68   | 93.11  | 75.81   |
| Beans, Maize, G. Guts | 20   | 18.75    | 21.05   | 6.9    | 16.94   |
| Carrots               | 0  | 0        | 2.63    | 0      | 0.81    |
| Coffee                | 20   | 6.25     | 2.63    | 0      | 6.45    |

*Source: Survey data*

### Major source of planting materials

Sources of banana planting materials are presented in Figure 3.20. The two major sources of banana planting materials recorded included; own farmer's garden and neighboring farmers. This practice is not recommended because of the high risk of pests and disease transmission. One of such notorious diseases is the banana bacterial wilt, which can easily wipe out the entire banana garden. Use of treated suckers and or tissue culture plantlets is being promoted by NAADS with emphasis on affordable prices.

**Figure 3.20: Source of banana planting material**

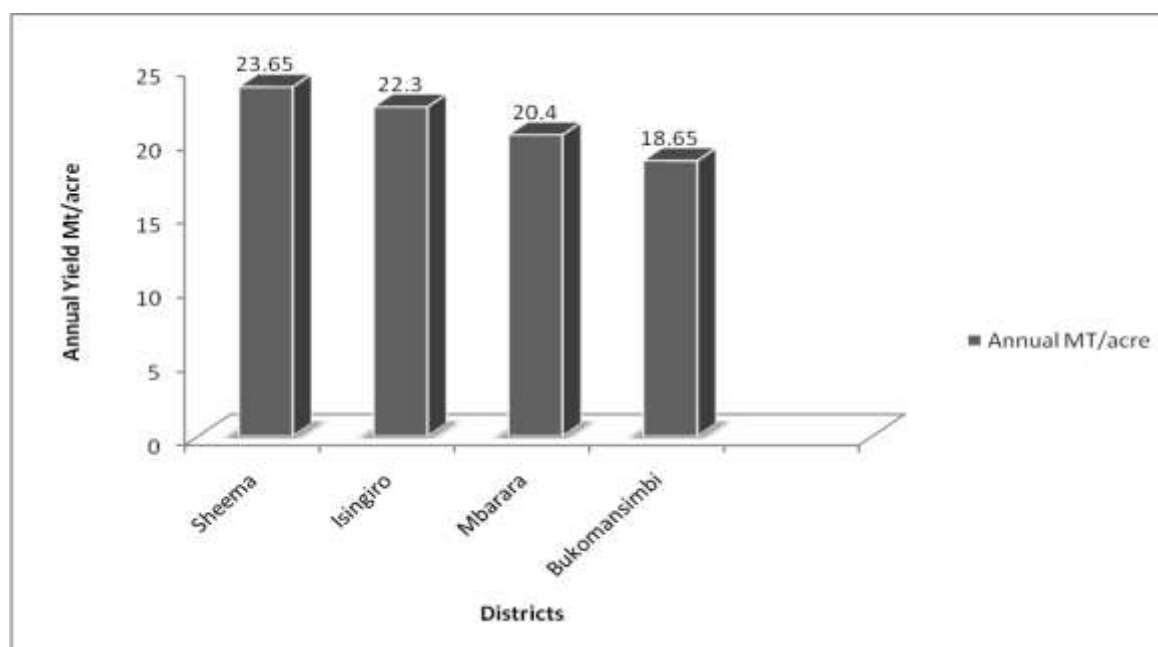


Source: Survey data

### 3.4.2.3 Estimated banana yields

Annual banana yield in the study districts is given in Figure 3.21. It was noted during focus group discussions and household interviews, that under good field management of bananas, proportionately more banana mats in a garden can have two cycles of production annually. The yield estimations varied between 18.65 MT to 23.65 MT in Bukomansimbi and Sheema districts, respectively. Bukomansimbi recorded the lowest yield, while Sheema recorded the highest yield. This could be contributed to the field management practices and the soil fertility, weather conditions of the districts. These yield figures are very high as opposed to what is commonly reported varying between 4.0-8 MT/acre per cycle. The yield estimations were made on the East African Highland bananas (EAHB).

**Figure 3.21: Estimated annual banana yield**

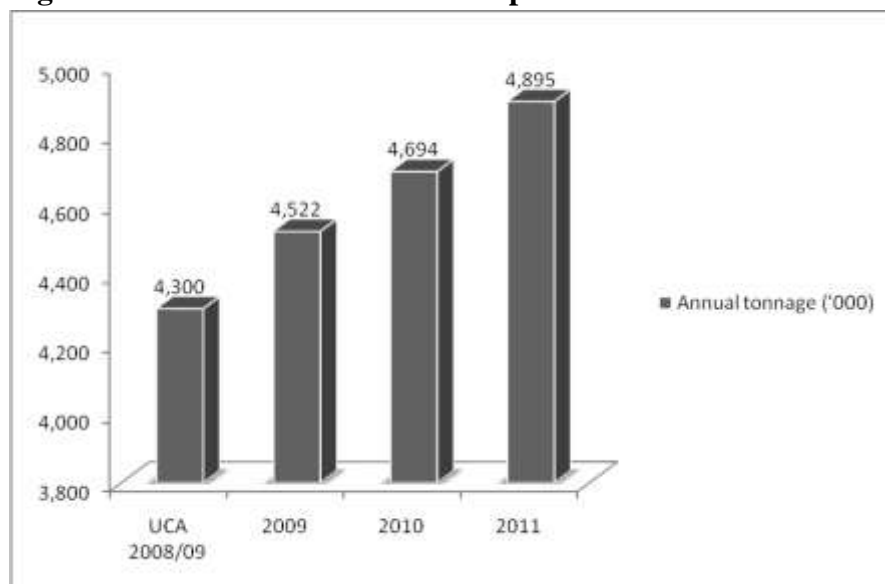


**Source: Survey data**

#### **3.4.2.4 Estimated national total production**

The estimated national banana production in the country is given in Figure 3.22. The estimated total banana production gradually increased since 2008/09 from 4,300,000 metric tons to 4,895,000 metric tons in 2011. The growth was estimated to grow by approximately 5% annually.

**Figure 3.22: Estimated total banana production**

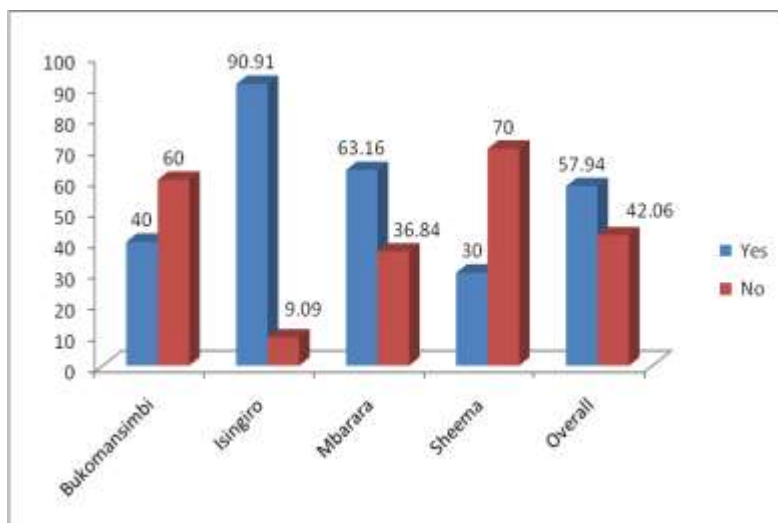


**Source: MAAIF UCA & UBOS 2008**

### 3.4.2.5 Farmer associations

The proportions of farmers that belong to farmer association are indicated in Figure 2.23. Isingiro district recorded the highest number of farmers growing bananas belonging to farmer associations. This was followed by Mbarara, Bukomansimbi and Sheema districts respectively. This could be attributed to the efforts of programs that have been working in these areas promoting production for markets like UNDP Millennium Villages in Isingiro and encouraged farmers to associate for ease of marketing their bananas. Farmer organizations support farmers in marketing of their produce and this tend to minimize the power of the middlemen and as such help to improve the prices received by the growers.

**Figure 2.23: Percentage of farmers that belong to farmer associations growing bananas**



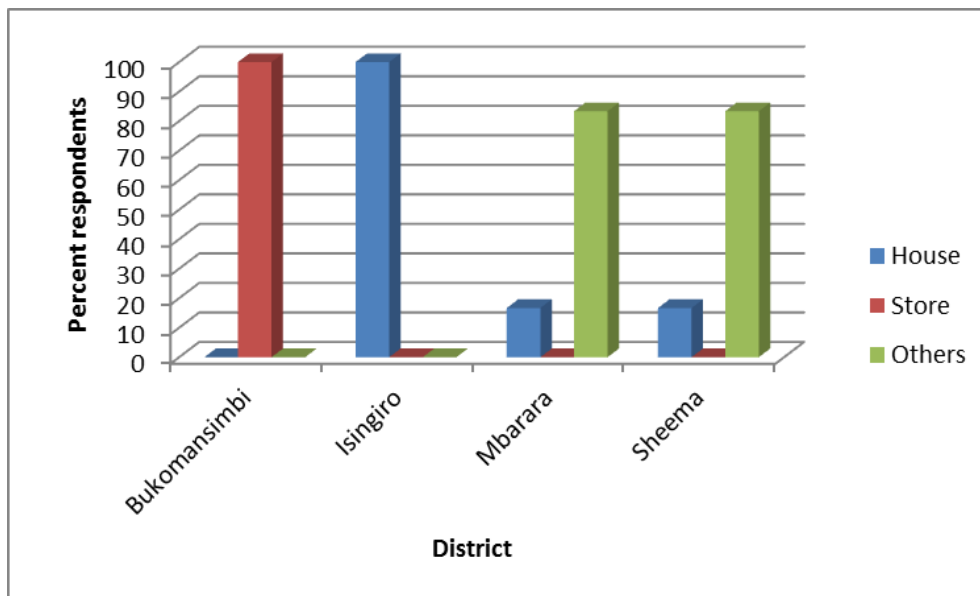
*Source: Survey data*

## Banana Postharvest handling and Processing

### 3.4.2.6 Storage Methods

Figure 3.24 shows that in Bukomansimbi and Isingiro, all respondents store their bananas in the house compared to Mbarara and Sheema where farmers store their bananas in both the stores and other facilities like heaping, shades and collection centers. The stores identified in the banana growing districts were simple structures constructed to offer temporary storage but not modern facilities.

**Figure 3.24: Storage methods**

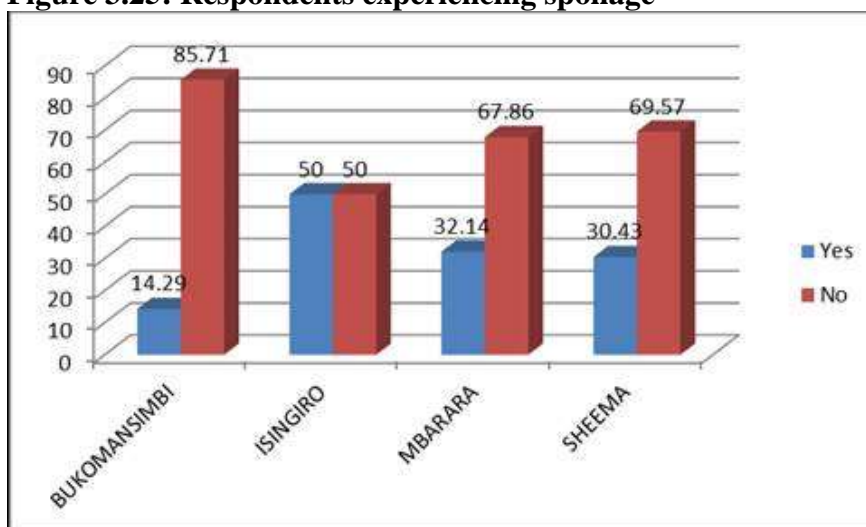


Source: Survey data

### 3.4.2.7 Banana Spoilage

Most farmers did not experience spoilage during storage or after harvest (Figure 3.25) apart from respondents from Isingiro districts where most farmers complained of very poor roads which are said to be the main causes of accidents in the area and thus leading to delays that resulting in high percentage of crop ripening. In addition, other issues attributed to spoilage were poor handling after harvesting due to the weight of the bunches, heaping especially at the time of consolidation, loading and unloading at several sub-stations before bananas are transported to the final markets.

**Figure 3.25: Respondents experiencing spoilage**



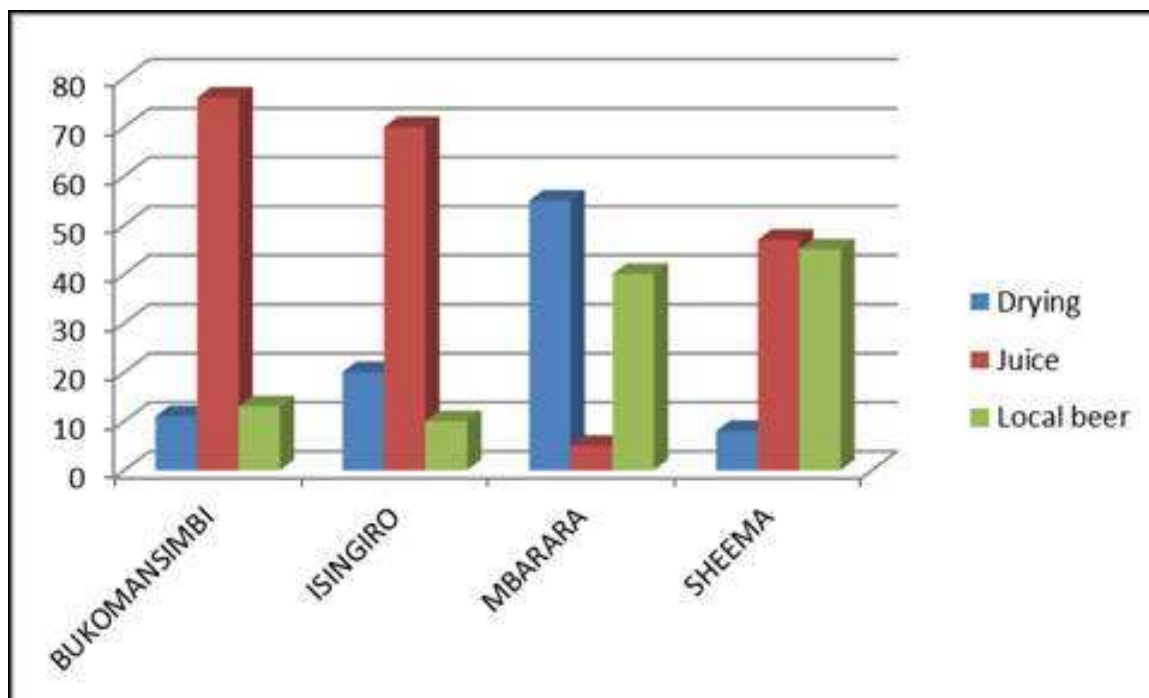
Source: Survey data



### 3.4.2.8 Banana processing

Banana processing has been a tradition for a long time mainly targeting making of juice and local beer, presently more processing activities have been adopted by the farmers and other actors along the value chain. Making of juice and local beer (Figure 3.26) remains the major activities but drying targeting export market and making of banana flour used for baking is on the rise. The Presidential Initiative on Banana Industrial Development (PIBID) is a pilot project undertaking research on banana value addition. A complete report on the progress will be available by July, 2014. Drying of bananas is targeting the export market especially for apple banana (Sukari ndizi) and Bogoya. There are companies like Fruits of the Nile with a factory at Njeru, Flona commodities (Kangulumira), SulmaFoods (Luwero), St Jude (Masaka) and others have developed a niche market for dried and is slowing growing. Key informant discussions revealed that the export market for dried bananas especially the organic is expanding while the fast foods are also interested in making fried gonja (Figure 3.26). Companies like Jakana Foods have invested in banana juice processing delivering well packed product to most of the supermarkets and groceries in Kampala. Afri Banana is currently carrying out trial shipment of vacuum sealed banana to the USA about 5 Mt per month. .

**Figure 3.26: Banana processing**



*Source: survey data*

**Figure 3.27: Solar dried banana crisps and Banana juice pack at Jakana fruit processing factory**



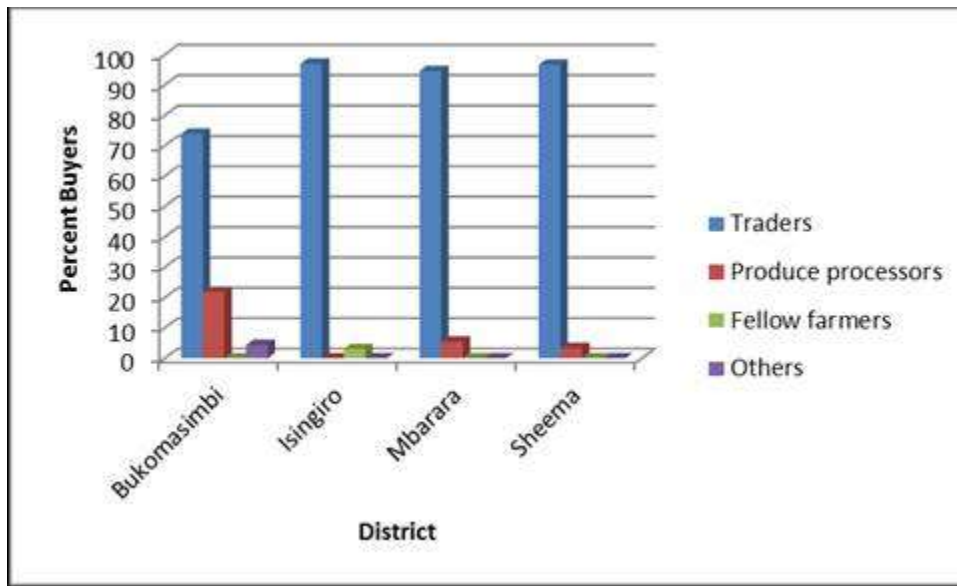
*Source: Survey data*

### **3.4.3 Banana Marketing**

#### **3.4.3.1 Buyers of Bananas**

Figure 3.28 shows that bananas are mainly bought by traders and produce processors from farmers. The biggest percentage of all respondents revealed that trader's buy more than 90% compared to the produce processors. This is attributed to the fact that traders visit individual farmers, agree on the price per bunch and later organize harvesting. Focus group discussions also revealed that apart from agreeing on the price per bunch, traders pay for the remaining costs like harvesting, loading and unloading at the consolidation centers and transport to the market. Produce processors for export market dry the products like organic apple bananas and bogoya being the major ones. Local brew, banana juice and banana wine are also processed from bananas. This category of produce processors is small but consistent and export of organic products is also expanding which may stimulate a clear market targeting production based on organic production practices.

**Figure 3.28: Buyers of bananas**

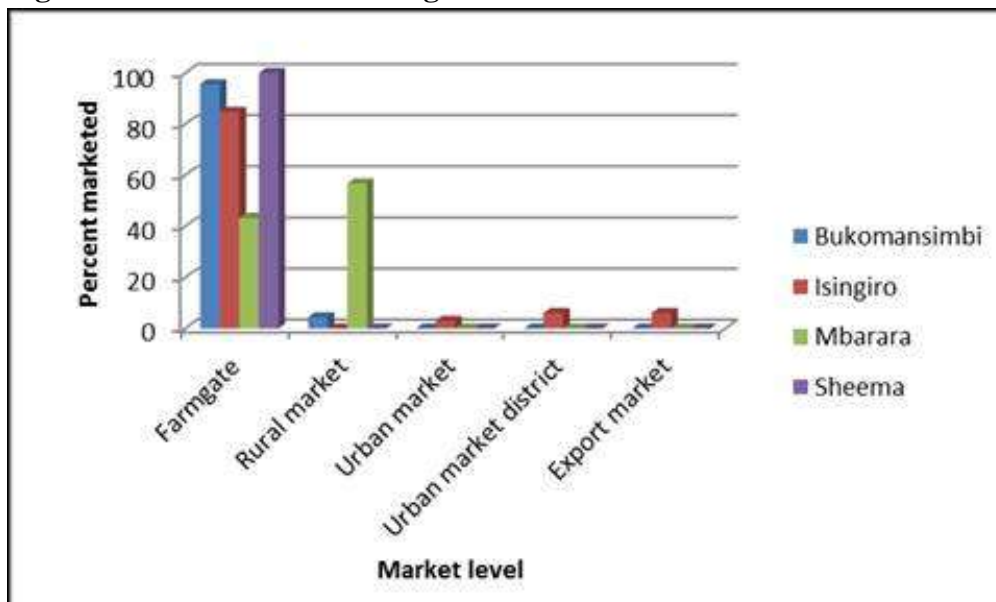


Source: Survey data

### 3.4.3.2 Marketing level

The marketing of bananas has got a number of traders within the chain from farmer level up to final consumer. The primary buyers table bananas from farmers and normally transport them on bicycles to collection centres at roadside markets. The majority of farmers sell their bananas at farm gate (Figure 3.29). The primary buyers supply high level markets at sub/county, district and urban centres, municipalities and Kampala city.

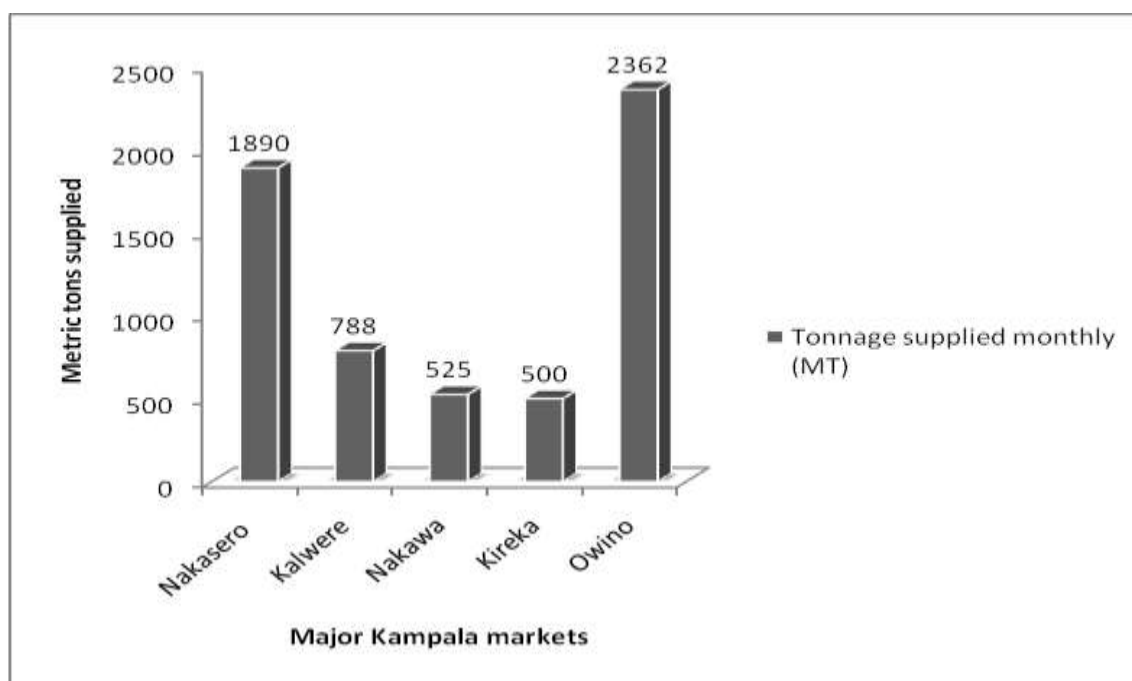
**Figure 3.29: Level of marketing**



Source: Survey data

“Over 70% of the bananas traded within the country target Kampala city market” Key Informant interview Commercial Officer Mbarara district. Figure 3.30 shows the estimated tonnage of bananas supplied to major markets in Kampala. Owino market recorded the highest tonnage of 2,362 tons supplied in a month, followed by Nakasero market, Kalerwe market, Nakawa and Kireka markets, respectively. These act as both retailers and wholesalers from which buyers are able to supply the neighboring small markets around Kampala. Figure 3.31 shows fresh banana being retailed at Kalwere market in Kampala and cartoon of bananas packed for export market

**Figure 3.30: Estimated banana tonnage supplied to major Kampala markets monthly**



Source: Survey data

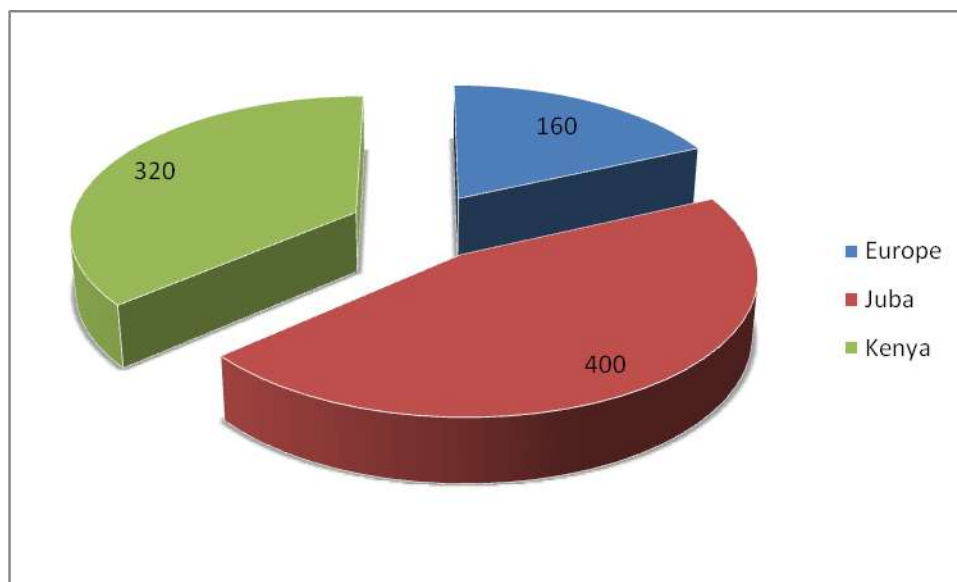
**Figure 3.31: A trader selling fresh banana at Kalerwe market and packed banana for export to Europe**



*Source: survey data*

Estimated fresh banana exports are indicated in Figure 3.32. Juba and Kenya markets monthly about 560 Mt are exported. Regional market is likely to slow down due to political instability within the region especially in DRC Congo and South Sudan.

**Figure 3.32: Estimate banana volume (metric tons) exported monthly**



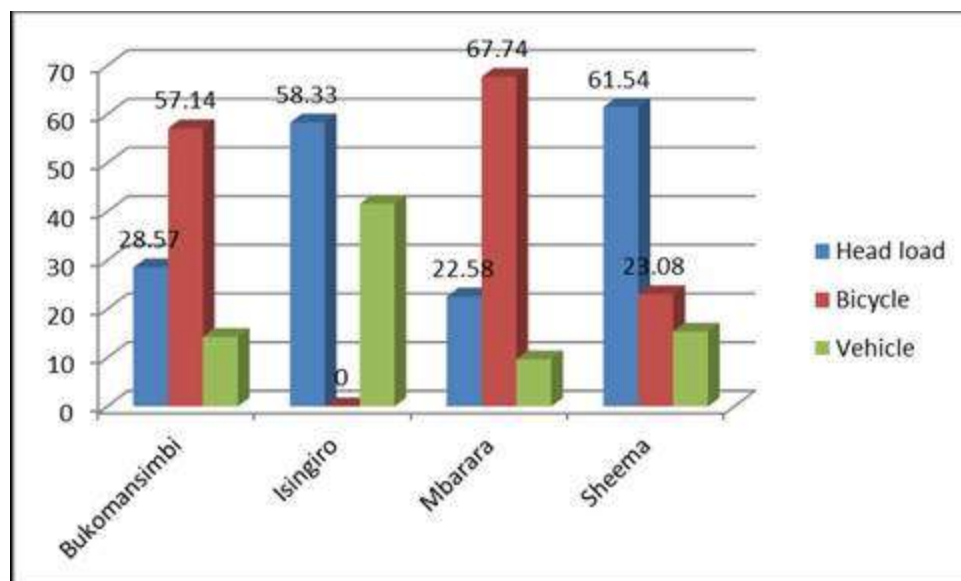
*Source: Survey data*

### **3.4.3.3 Means of transport**

Most farmers that sell bananas to the rural markets carry the bananas on head or use bicycles (Figure 3.33). This is attributed to the fact that the most common rural markets are located within the banana growing communities. Use of vehicles by farmers was reported to be common

in Isingiro mainly because of the bad roads which hinder the use of bicycles as a means of transport to the market.

**Figure 3.33: Transport means**

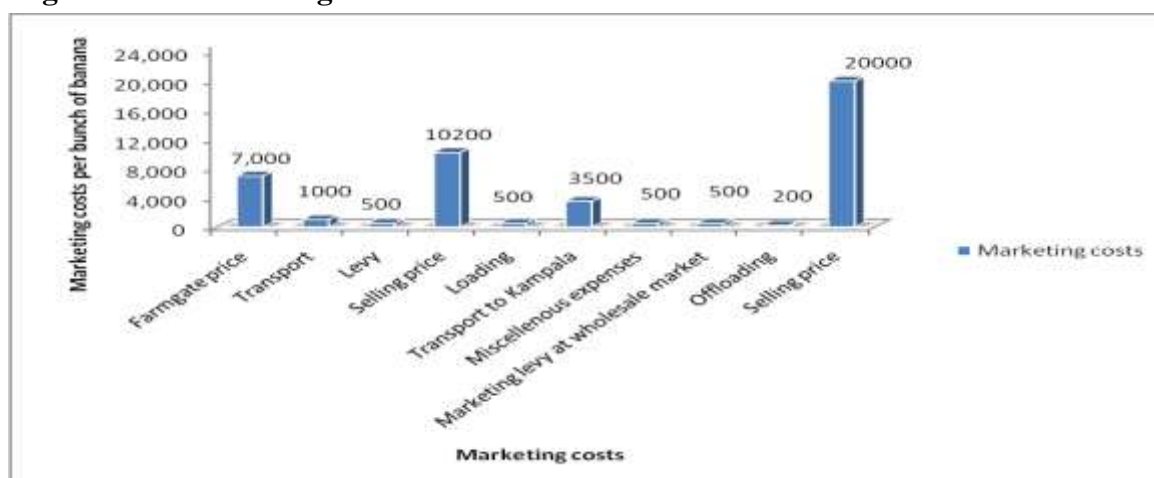


Source: Survey data

#### 3.4.3.4 Marketing costs

Marketing costs were attributed to the traders who are the major buyers of bananas in all the study districts. The biggest marketing costs were transport (Figure 3.34) in addition to loading and unloading. High transportation costs were attributed to poor roads from the rural growing areas while loading and unloading costs were attributed to consolidation as buyers collect bunches from different farmers before setting off for final markets. In addition more loading and unloading can be caused by vehicles breaking down due to poor roads.

**Figure 3.34: Marketing costs**



Source: Survey data



### 3.4.4 Banana Value Chain Mapping

The banana value chain is made up of a number of actors which include; Researchers, MAAIF, laboratory and nursery operators, input dealers, service providers (Private and Public), farmers, traders, restaurants, processors, exporters and consumers (Table 3.13).

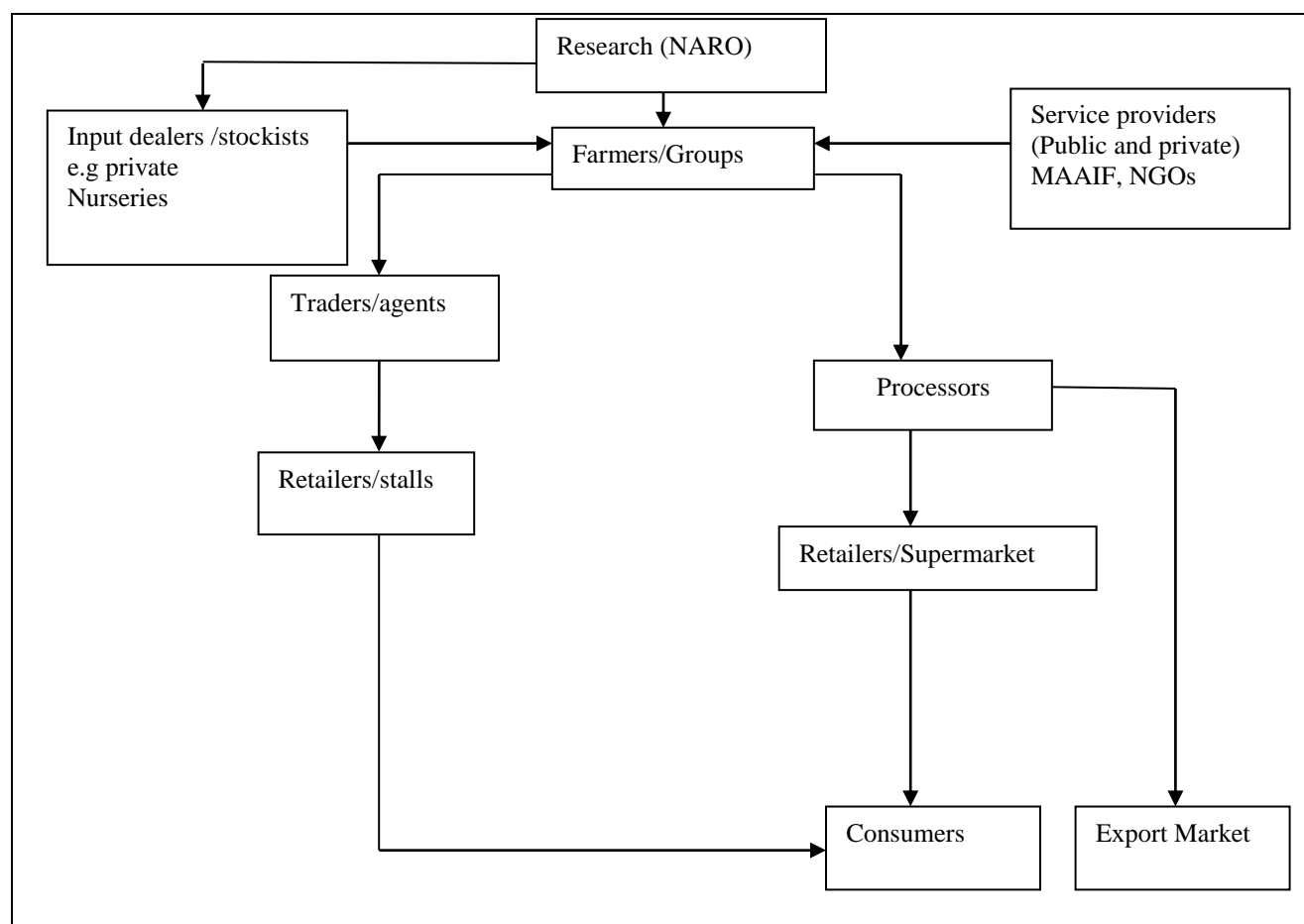
**Table 3.13: Banana value chain actors**

| Actor   | Role played  |
|---|--|
| Researchers                                       | The researchers are responsible for research and development of banana technologies to improve production, postharvest and marketing constraints. This is the mandate of National Banana Research Program (NBRP) under National Research Organization (NARO).  |
| MAAIF   | The ministry provides technical extension services in addition to the development and implementation of agricultural policies.   |
| Biotechnology laboratories and seedling nurseries | There are a few Biotechnology laboratories in the country that produce disease free banana seedlings. They supply young seedlings to nurseries that raise the seedlings to a stage that is suitable for planting by farmers.   |
| Input /dealers                                    | Supply agro-inputs mainly fertilizers, pesticides (herbicides, insecticides and fungicides), tools and implements.   |
| Service providers (Private sector and NGOs)       | They provide technical knowledge on agronomic practices, business and standards to actors within the chain for example SACCOs, Banks, and Trainers. In addition, NGOs provide development funds targeting key activities in the value chain  |
| Farmers   | Farmers are both producers and consumers of bananas; they either sell at farm gate/by the roadside or transport them to rural markets  |
| Village traders/ Buyers                           | Village traders know farmer localities, when bananas are ready to harvest and are usually in contact with transporters, wholesalers and buyers. Upon identifying farmers, the traders negotiate the buying price, organize transport for the produce to the consolidation markets within the sub-county. |
| Brokers/ Wholesalers                              | These are the contact for travelling traders in rural areas and the link for the end-users and retailers. Brokers do not invest any money, but thrive on a commission per bunch, which is negotiable and depends on the market forces. Brokers sell to retailers and whole sellers.                      |
| Retailers   | Banana retailers range from market vendors at whole sale markets to roadside sellers. In urban areas, market retailers buy 5-20 bunches of banana from wholesalers and sell either as banana fingers, clusters and bunches.  |
| Oriental Restaurants/hotels                       | This group of actors has of recent become interested in direct contracts with farmers and include; restaurants that always require consistent quality and volumes throughout the year.   |
| Supermarkets                                      | Small volumes of bananas are marketed through supermarkets, it is mainly the dessert bananas.  |

|            |  |
|------------|--|
| Processors | They operate on a small-scale to add value to bananas by solar drying of ripe sweet bananas, extraction of banana juice and making of banana flour, juice and chips, etc.      |
| Exporters  | Bananas are exported within the region mainly to South Sudan (Juba), Kenya (Nairobi) and international markets especially in Europe (United Kingdom, Netherlands and France ). |
| Consumers  | These are the final actors in the banana value chain that buy and eat the bananas and its products at both local consumption (boiling) and industrial processing levels.       |

The interrelationship and linkages among banana value chain actors and supporters are presented in Figure 3.35.

**Figure 3.35: Banana value chain mapping**



Source: Survey data



### **3.4.5 Banana Value Chain Constraints and proposed interventions**

#### **3.4.5.1 Banana Value chain constraints**

Having mapped out the value chains for bananas, the following constraints were identified along the chain;

##### **Production**

- Most of the farmers at production level are faced with the devastating banana bacterial wilt, which threatens to completely destroy banana production in the country.
- Poor rural roads making it impassable during the wet season and thus pushing prices down dramatically and making marketing difficulty.
- During bumper harvest, farmers lose much of their produce because there are no postharvest infrastructure to promote banana postharvest handling and processing. Promotion of value addition and providing an enabling environment that favors banana value addition is lacking. Farmers lose a lot during bumper harvests through ripening of bananas.
- The farmers are not well organized into farmer strong cooperatives that would be the vehicle for supporting collective input procurement and marketing, lobbying government for improved road infrastructure.
- Banana industry lacks an effective and efficient agro-input distribution system that supports and promotes easy access to inputs making farmers vulnerable to counterfeit products on the market.
- The farmers lack credit facilities that meet farmers' needs and circumstances under which they operate. Present financial institutions are very bureaucratic and lack products that fit for farmers

##### **Post-harvest handling and processing**

- There are no postharvest handling facilities at farmer level that lead into the processing stage
- The present technologies used by the farmers are rudimentary and need further improvement through research
- There is still a need to standardize the banana processed products to ensure that, such products meet the set standards so as to protect the consumers.

##### **Marketing**

- There are no marketing organizations in Bukomansimbi
- There are weak marketing farmer associations in Mbarara, Isingiro and Sheema districts
- There is no contract production targeting proper marketing in all study districts

### 3.5 Maize enterprise

#### 3.5.1 Social-Economic and demographic characteristics

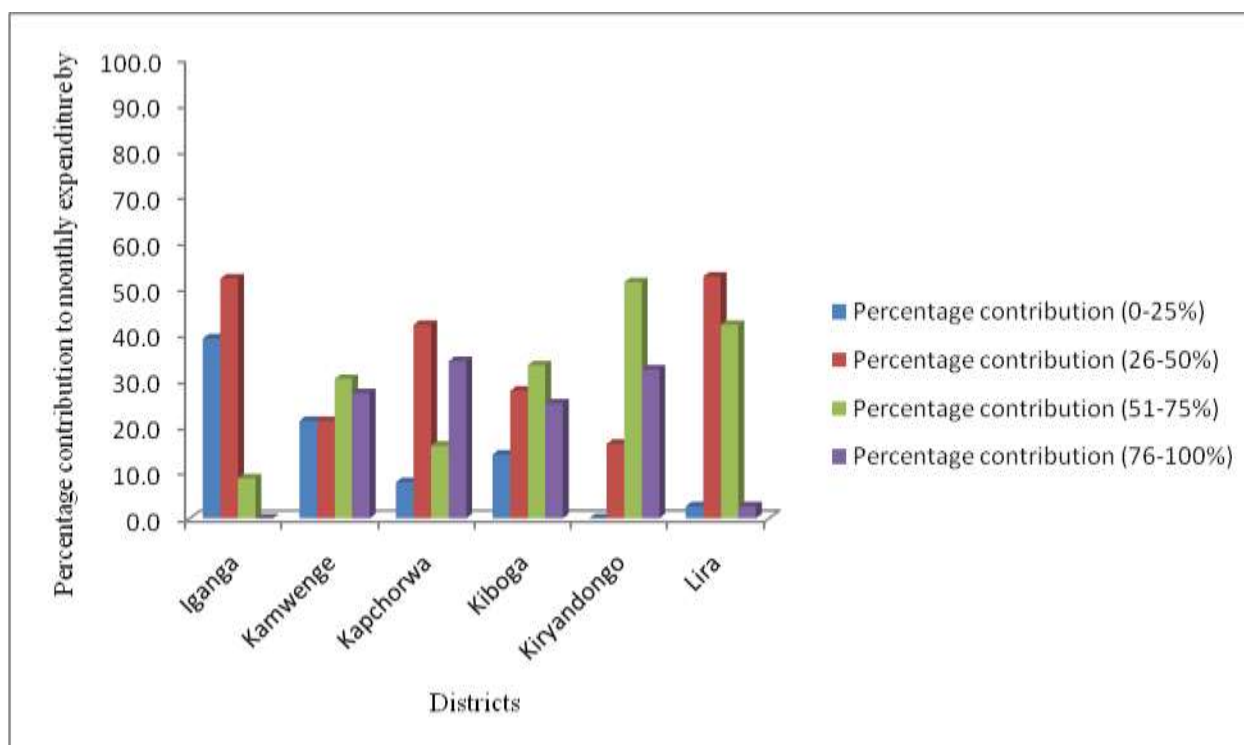
The social-economic and demographic characteristics among maize growers are given in Table 3.13. Overall 71% across the six districts that were sampled for maize production were male farmers. However, significantly higher percentage of female farmers was interviewed in Iganga and Kapchorwa districts being 42.5% and 47.4%, respectively. Over 50% of all the respondents attained primary level of education and can therefore read and write. The overall high percentage of males interviewed can be explained by the cultural settings which make male the head of family household. Over 95% of all the respondents derive their livelihood from farming as a major occupation. The overall monthly expenditure by household members was estimated to be 299,651 shillings, with Lira district representing the lowest amount of 151,263 shillings, while Kapchorwa district recorded the highest amount of 422,105 shillings spent monthly. The majority of farmers reported that their monthly expenditure based on income from maize enterprise contributed between 26-50% (Figure 3.36).

**Table 3.14: Social-economic and demographic characteristics among maize producers**

| Variable                      | Response           | Percentage response in the different districts under the survey |          |           |         |             |         | Overall sample |
|-------------------------------|--------------------|---|----------|-----------|---------|-------------|---------|----------------|
|                               |                    | Iganga  | Kamwenge | Kapchorwa | Kiboga  | Kiryandongo | Lira    |                |
| Gender of respondent          | Male               | 57.5  | 87.88    | 52.63     | 73.68   | 77.78       | 78.95   | 70.85          |
|                               | Female             | 42.5  | 12.12    | 47.37     | 26.32   | 22.22       | 21.05   | 29.15          |
| Education level               | None               | 7.5   | 9.1      | 2.6       | 15.8    | 2.6         | 10.5    | 8.0            |
|                               | Primary            | 65.0  | 66.7     | 31.6      | 55.3    | 68.4        | 60.5    | 57.8           |
|                               | Secondary          | 25.0  | 18.2     | 50.0      | 29.0    | 21.1        | 21.1    | 27.6           |
|                               | Tertiary           | 2.5   | 6.1      | 15.8      | 0.0     | 7.9         | 7.9     | 6.7            |
| Main source of income         | Farming            | 97.5  | 100      | 89.19     | 100     | 86.84       | 94.7    | 94.64          |
|                               | Trading            | 2.5   | 0        | 8.11      | 0       | 8.16        | 0       | 4.02           |
|                               | Government         | 0   | 0        | 2.7       | 0       | 0           | 2.63    | 0.89           |
| Average age                   | Household head     | 42.6  | 41.1     | 37.6      | 37.8    | 40.5        | 38.5    | 39.7           |
| Size of the Household         | Less than 15 years | 5   | 3        | 3         | 2       | 2           | 2       | 2              |
|                               | 16-35 Years        | 3   | 2        | 2         | 2       | 2           | 2       | 2              |
|                               | 35-50 Years        | 2   | 1        | 1         | 1       | 2           | 1       | 1              |
|                               | 50 and above       | 2   | 1        | 1         | 1       | 1           | 1       | 1              |
| Average household expenditure |                    | 297,479   | 298,992  | 422,105   | 321,872 | 307,880     | 151,263 | 299,651        |

*Source: Survey data*

**Figure 3.36: Percentage contribution to household monthly expenditure by maize enterprise**



Source: Survey data

### 3.5.2 Production

#### 3.5.2.1 Land access and availability

Total land accessible, available and utilized to produce maize in the six selected districts for maize value chain analysis are presented in Table 3.14. On average farmers in the study area during last season cultivated land area varying from 1.2 acres in Lira district to 2.2 acres in Kamwenge on average. The relatively lower percentage of land area under maize to the total land available presents an opportunity to increase on maize production acreages. The farmers interviewed indicated that, they had a long time experience in maize production, which varied between 7.4 years in Lira district to 17.1 years in Kamwenge.

**Table 3.14: Land access to maize growers and average land area under maize**

| District    | Land area (acres)  |            |                             | No. of years in maize production |
|-------------|--------------------|------------|-----------------------------|----------------------------------|
|             | Land accessibility | Land owned | Land under maize production |                                  |
| Iganga      | 6.4                | 5.8        | 1.4                         | 15.1                             |
| Kamwenge    | 6.9                | 5.2        | 2.2                         | 17.1                             |
| Kapchorwa   | 3.9                | 3.2        | 1.5                         | 16.7                             |
| Kiboga      | 9.5                | 11.5       | 1.9                         | 8.2                              |
| Kiryandongo | 8.4                | 10.8       | 1.5                         | 12.1                             |
| Lira        | 5.1                | 3.7        | 1.2                         | 7.4                              |

Source: Survey data

### 3.5.2.2 Methods of maize production and equipments used

The types of equipments and tools used in maize production across the study area are presented in Table 3.15. The use of a hand hoe was found to be the predominant tool that farmers in the study districts use to cultivate maize. The technology remains a constraint to efficient maize production, it has been proved to be costly and labour intensive. The overall percentage was 84.8%, while within districts the proportion of farmers varied from 52.5% in Kapchorwa to 100% in Kiboga. Other tools and equipment's used by the farmers were; Oxen ploughs which were reported in all the districts with exception of Kiboga district. Kapchorwa district recorded the highest percentage of farmers using oxen ploughs (39.5%) followed by Iganga district (20%).

**Table 3.15: Types of equipments used by farmers in maize production**

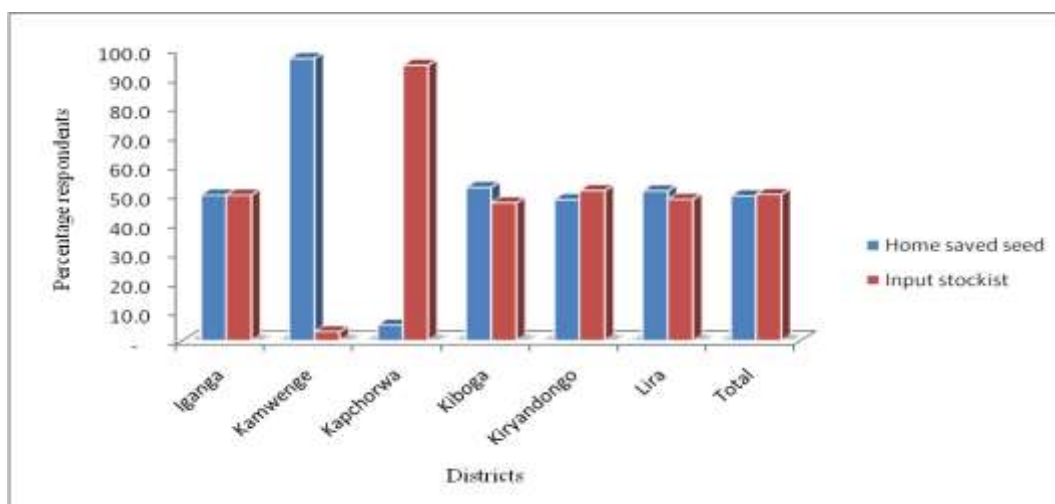
| Tools and equipment | Percentage of household respondents using different types of tools in maize production in the different districts |          |           |        |             |       |       |
|---------------------|---|----------|-----------|--------|-------------|-------|-------|
|                     | Iganga  | Kamwenge | Kapchorwa | Kiboga | Kiryandongo | Lira  | Total |
| Hand hoe            | 75  | 90.60    | 52.53     | 100    | 89.47       | 94.74 | 84.82 |
| Tractor             | 5   | 4.60     | 8.00      | 0      | 0           | 2.63  | 1.34  |
| Oxen                | 20  | 4.80     | 39.47     | 0      | 10.53       | 2.63  | 13.84 |
| Overall             | 100   | 100      | 100       | 100    | 100         | 100   | 100   |

Source: Survey data

### Sources of maize seed

Sources of maize seed for farmers within the study districts are presented in Figure 3.37. In four out of the six districts that were sampled, almost similar proportions of farmers reported using home saved seed and certified seed at proportionately in equal numbers. However, Kamwenge district recorded over 90% farmers using home saved seed; while in Kapchorwa district over 90% use certified maize seed.

**Figure 3.37: Major sources of maize seed by the farmers**

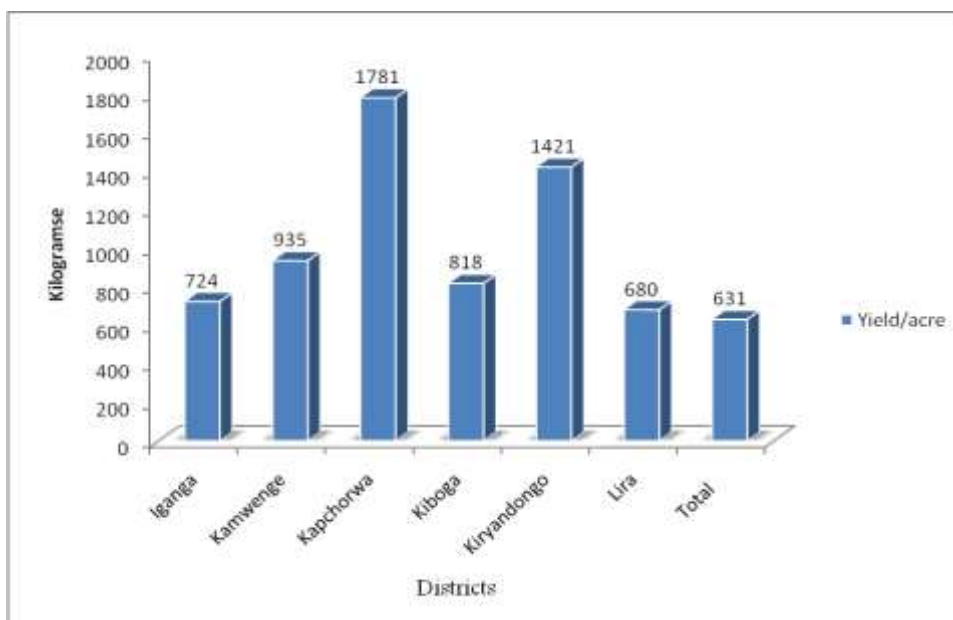


*Source: Survey data*

### 3.5.2.3 Estimated Crop yield

Maize yield estimations for the different districts are presented in Figure 3.38. Maize yields varied between 680 kg per acre in Lira to 1,781 kg per acre in Kapchorwa. Kapchorwa district is well known for growing high altitude maize varieties and has only one season. The yields are generally higher in Kapchorwa than the rest of the districts. The maize yields recorded are below the potential yield of 2800kg/acre (Okoboi, G., 2010). This means that there is still room for improvement especially in utilizing certified seed, use of fertilizers, pesticides and timely planting.

**Figure 3.38: Estimated maize yield of the commonly grown variety**

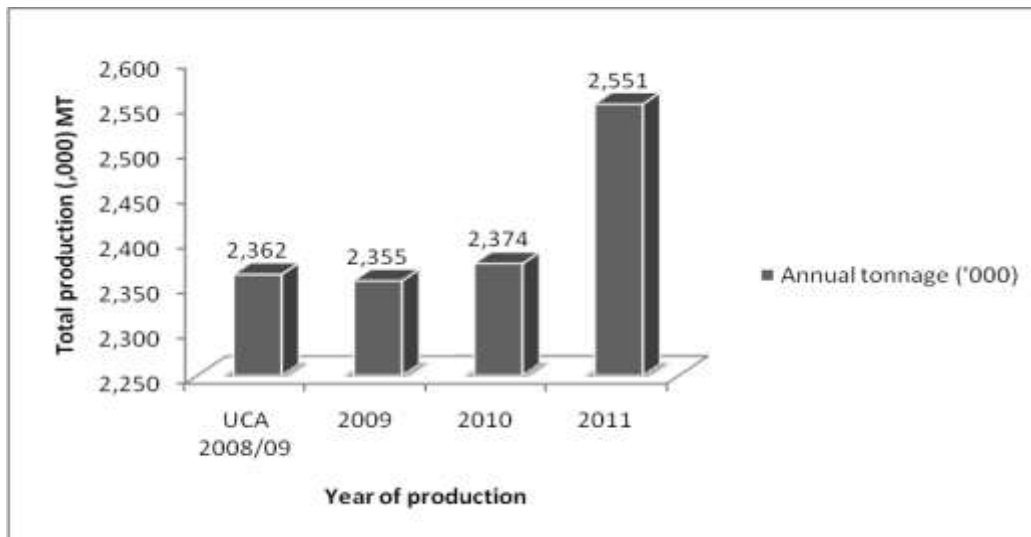


*Source: Survey data*

### 3.5.2.4 Total national yield production

The total maize production is estimated to range between 2,362,000 Mt to 2,551,000 Mt as provided by MAAIF and UBOS (Figure 3.39). It is also estimated that high losses up to 30% are contributed to poor postharvest handling. Between 15-20% is estimated to be traded outside the country mainly to South Sudan and Kenya.

**Figure 3.39: Total annual maize production in Uganda**

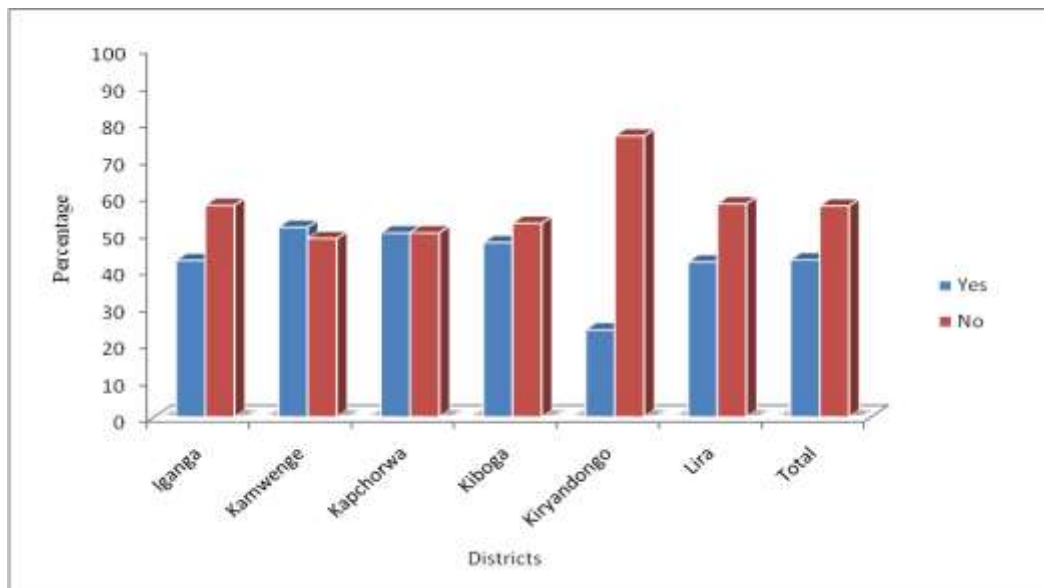


*Source: UBOS/MAAIF 2011*

### 3.5.2.5 Farmer organizations

The proportion of farmers growing maize and belonging to various farmer organizations is presented in Figure 3.40. Farmers that belong to associations varied between 25% in Kiryandongo district to 52% in Kamwenge district. Farmers who work independently of the associations across all the districts remained high (60%) and the highest percentage of such farmers were recorded in Kiryandongo (78%). Farmers' failure to associate shows the inherent challenges like managing high input costs, quality and collective marketing of their output at competitive prices.

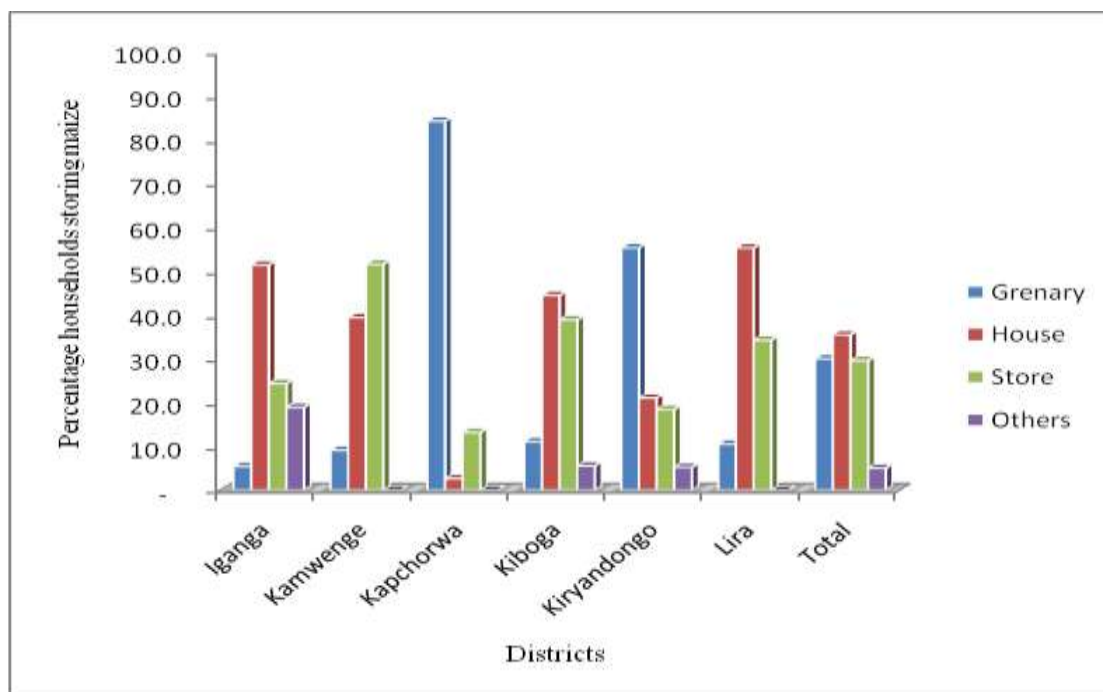
**Figure 3.40: Proportion of maize farmers belonging to associations**



### 3.5.3 Postharvest handling and processing

Farmers across the study districts revealed that after harvesting maize they store the grains in different storage facilities (Figure 3.41). The percentage of farmers who reported keeping their maize in granaries were highest in Kapchorwa district (84%) followed by Kiryandongo (55%), Kamwenge district recorded 51% respondents keeping maize in stores, followed by Kiboga (42%) and Lira (38%). In Iganga, Kamwenge, Kiboga and Lira reported over 35% across the districts having neither stores nor granaries and therefore keep maize grain in residential houses. This practice poses significant postharvest handling challenges like destruction by vermin, mix with other food crops and thus lowers the quality.

**Figure 3.41: Percentage households storage methods**



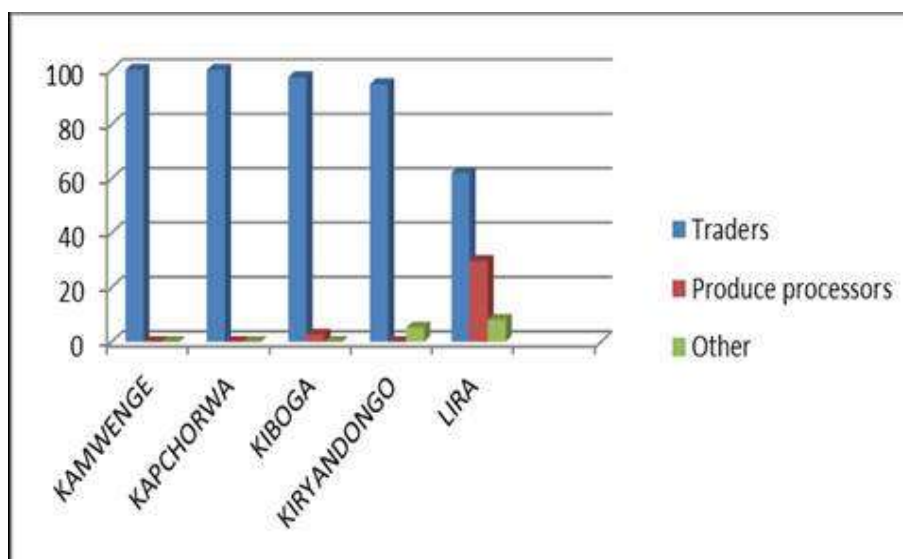
### 3.5.4 Marketing

#### 3.5.4.1 Maize buyers

Figure 3.42 indicate that traders are the main buyers of maize in all study districts in addition to produce processors in Lira. This is common since all buyers of maize are branded traders though some of them may be processors. Other buyers of maize include schools, hospitals and prisons as discussed during focus group interviews.

Key informant discussions with Agrtrade revealed that estimated total maize production in the country is about 2,300,000 million tons. About 15-25% of the total is lost due to poor postharvest handling and storage, about 20% losses is exported while 60% is traded internally. It is estimated that about 150,000-200,000 metric tons are always available for trading as surplus in a year. There is need to have a grain trade policy that will guide in making laws and regulations that would govern grain trade and thus control grain quality. A concept paper has been developed and writing of the trade policy is in progress.

**Figure 3.42: Maize buyers**



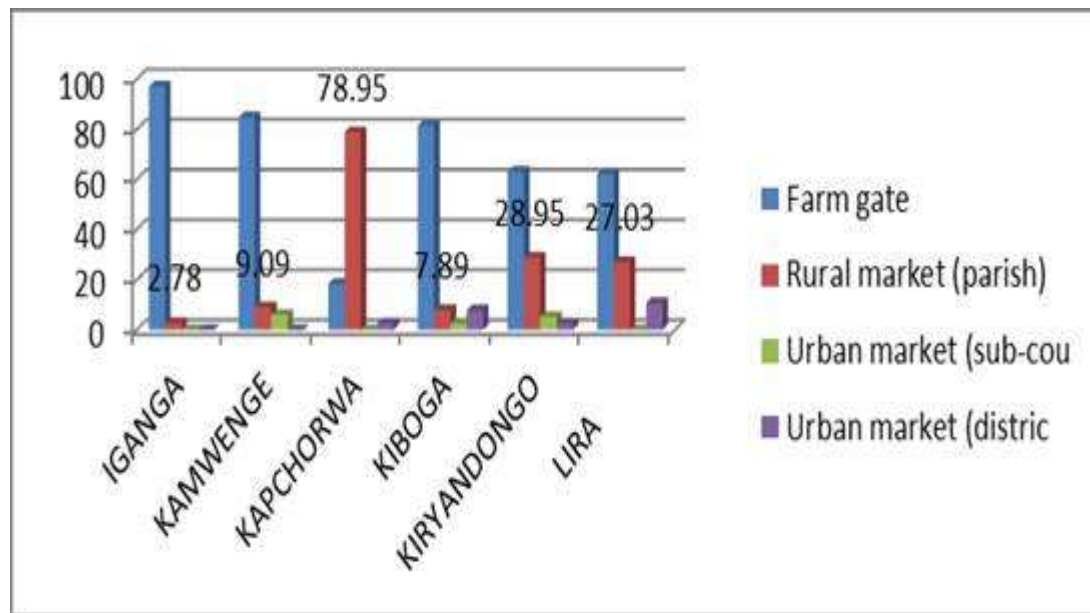
*Source: survey data*

### 3.5.4.2 Marketing level

The level of marketing in most of the study districts is at farm gate apart from Kapchorwa which is rural market (Figure 3.43). This can be explained since Kapchorwa farmer group through Kapchorwa Commercial Farmers Association (KACOFA) has built a big ware house which is used to consolidate produce before marketing targeting big traders and processors. Kiryandongo and Lira also have traders targeting big buyers from South Sudan especially from Juba have been of recent forced to consolidate the maize into big ware houses to meet the demands of the buyers.



**Figure 3.43: Level of marketing**

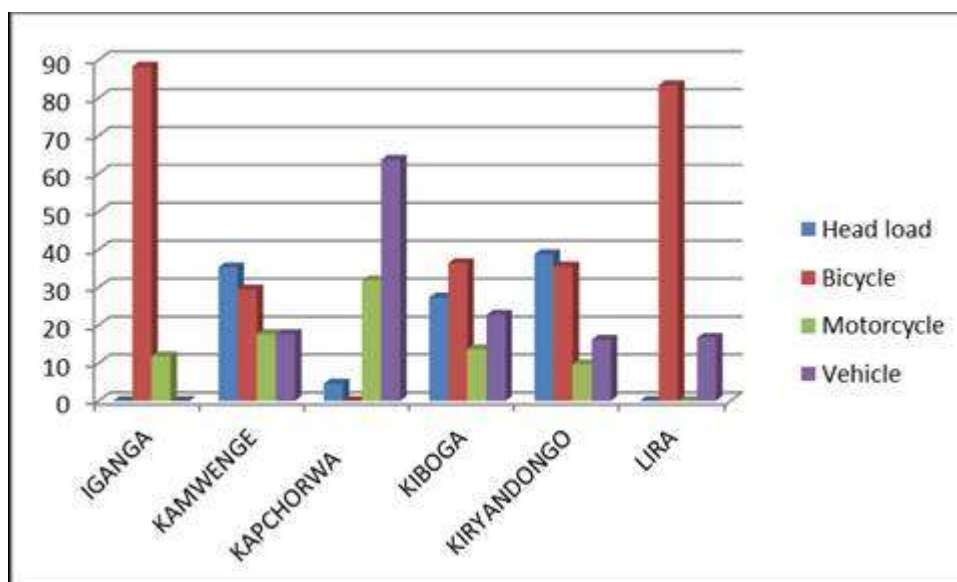


*Source: survey data*

### 3.5.4.3 Means of transport

Figure 3.44 shows that transport means for each district differs; Iganga and Lira are well known for the bicycles while Kapchorwa uses vehicles because of the land scape. In the remaining districts of Kiryandongo , Kiboga and Kamwenge, headload, bicycles, motor cycles and vehicles are equally used to transport maize.

**Figure 3.44: Transport means**



*Source: Survey data*

### 3.5.5 Maize Value chain mapping

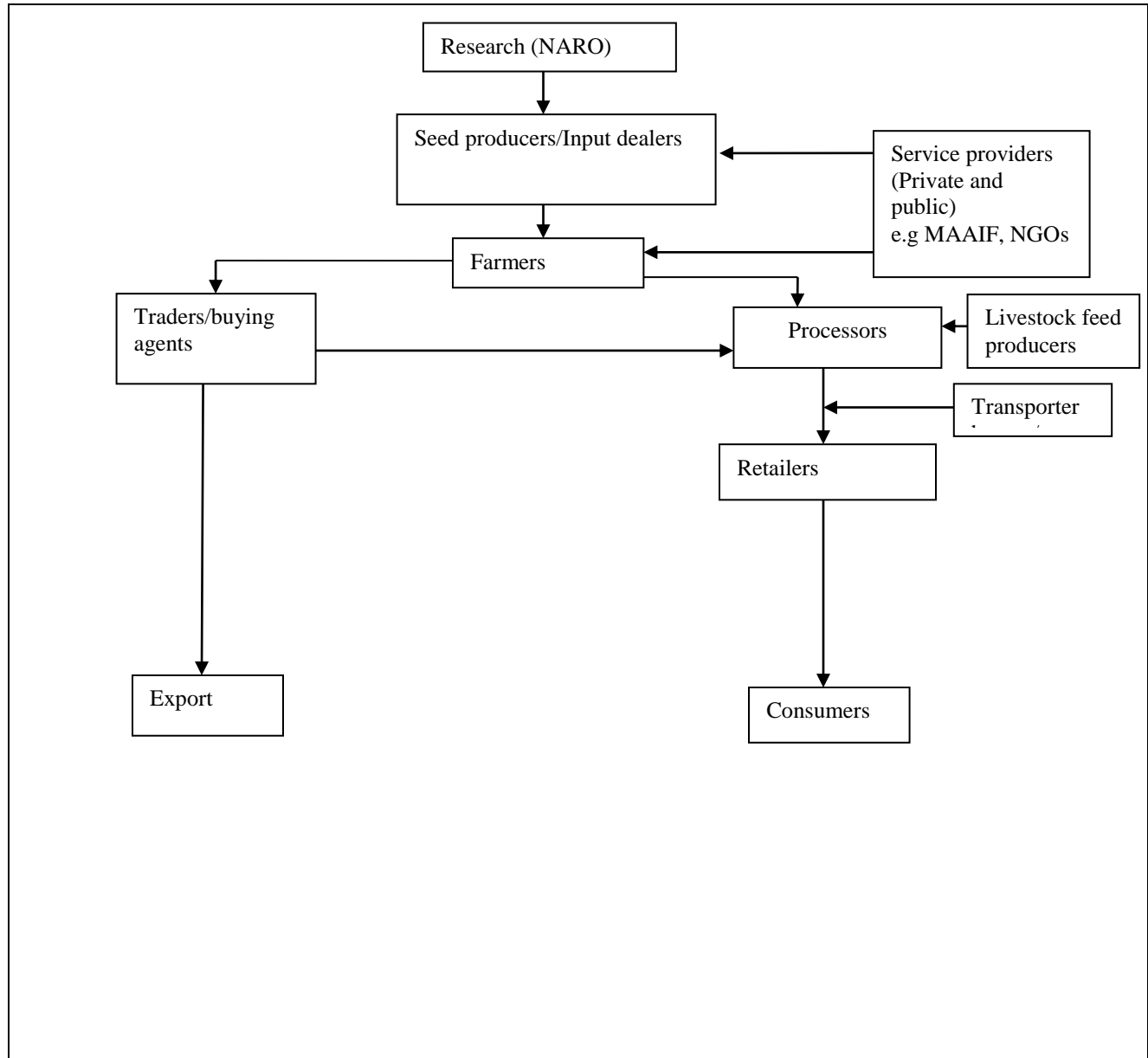
The maize value chain is made up of a number of actors which include; Researchers, MAAIF, input dealers, service providers (public and private and NGOs), farmers, traders, retailers, processors, Livestock feeds producers, exporters and consumers (Table 3.17).

**Table 3.17: Maize value chain actors**

| Actor  | Role played  |
|--|--|
| Researchers  | The researchers are responsible for research and development of maize technologies to improve production, postharvest and marketing constraints. This is the mandate of National Cereals Research Program (NCRP) under National Agricultural Crop Resources Research Institute (NACRII)    |
| Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) | The ministry provides technical extension services, development and implementation of agricultural policies, seed certification and inspection.  |
| Input /dealers   | Supply agro-inputs mainly fertilizers, pesticides (herbicides, insecticides and fungicides), tools and equipment.  |
| Service providers (Private sector and NGOs)                    | They provide technical knowledge on agronomic practices, business and standards to actors within the chain for example SACCOs, Banks, NGOs, Projects and Private Service Providers.  |
| Farmers  | Farmers are both producers and consumers of maize; they either sell at farm gate/ nearby markets or to traders from major markets like Kampala.  |
| Village traders/ Buyers  | Village traders know farmers locations, crop calendar, contacts of transporters, wholesalers and buyers. Upon identifying farmers ready to sell, the traders negotiate the price buy and transport maize to the consolidation centers within the production areas.                         |
| Brokers/ Wholesalers   | These are contact points for travelling traders in rural areas who link end-users and retailers. Brokers do not invest any money, but thrive on a commission per batch, which is negotiable; they also sell to retailers and whole sellers.  |
| Retailers  | Maize grain retailers range from market vendors at whole sale markets to small retailers at village level.   |
| Processors   | They operate both on small and large scale to add value to maize. It is estimated that over 120 mills are only located in Kampala Kisenyi area and there are several tens of such mills spread in the different districts. Dry milling is the major form of value addition done in Uganda. |
| Exporters  | Maize is exported within the region mainly to South Sudan (Juba), Kenya (Nairobi) and Rwanda, previously consignments were sent to Zambia and Malawi.  |
| Consumers  | These are the final actors in the maize value chain that buy and consume the maize flour. Others use maize bran as an ingredient of livestock feeds.   |

The diagrammatic presentation of the value chain actors of maize is presented as Figure 3.45.

**Figure 3.45: Maize value chain mapping**



Source: Survey data

### **3.5.6 Maize value chain constraints and proposed interventions**

#### **3.5.6.1 Maize value chain constraints**

During the study a number of maize value chain constraints were identified and they include the following;

##### **Production**

- Growers fail to access enough genuine certified seed and as a result plant counterfeit and or home saved seeds. This lowers the yields and thus making maize production less attractive.
- Farmers have poor access to other agro-inputs like fertilizers, pesticides that are required to optimally produce maize. In case of availability, they are very expensive and most times not genuine products, all these compounded lowers maize production.
- Prolonged wet and dry seasons (weather conditions) as a result of climatic change adversely affect maize production and post-harvest handling.
- Maize growers across the study districts belong to weak associations which do not contribute to improved production and marketing
- Agro-input distribution system is still weak making farmers unable to access affordable genuine inputs at the right time.
- Farmers lack supporting credit institutions that have financial products that meet their needs.

##### **Post-harvest handling and processing**

- Majority of farmers sell their maize with high moisture content above the recommended level (13%) which lead to change of colour and molding
- Maize shelling technology has remained expensive forcing farmers to use of sticks which lead to broken grains
- Farmers lack good storage facilities to take care of the bumper harvests
- There is mixed quality and introduction of other physical contaminants during drying
- There is limited processing for only flour and maize bran for livestock feeds

##### **Marketing**

- There are no platforms for producers to meet the buyers to discuss the development of the industry
- There is limited consolidation and storage before selling due to expensive Ware House services in the country
- Traders lack enough finance to buy maize after the harvesting time and in case the finances are available, they are offered at high interest rates

### **3.5.6.2 Proposed interventions**

#### **Production:**

The following are proposed interventions aimed at addressing production constraints that were identified;

- Increased funding and technical support to the seed production system. This would go to researchers, seed producers and national seed certification services
- Increase the distribution of agri-input stockists closer to farming communities to encourage and provide technical support to farmers. Stockists should be trained to train farmers in addition to selling seeds
- Support formation and strengthening farmer organizations to promote improved production and marketing
- Support increased access to financial services by designing financial products that fits well to the needs of the maize value chain actors especially farmers
- Strengthen the maize value chain platform to promote increased discussion of issues affecting the grain industry as a whole.
- Develop policies geared to construction of granaries and or stores for grains in rural areas. In addition, train farmers in managing such storage facilities and ensuring that grain quality remains very good.
- Establish and enforce by-laws that promote proper drying of maize to the recommended moisture content.

#### **Marketing**

- Efforts should be made to ensure that the maize grain marketing system is streamlined, by reducing to encourage farmers to bulk for collective marketing
- Promote market information system to ensure proper market information is accessible by producers and other value chain actors for making informed decisions
- Establish crop finance institutions that would support provision of funds to producers before they can sell their maize would help in streamlining the marketing system
- Production and sell under contract would be feasible once farmers are organized in production and thus marketing will also be organized.

### 3.6 Beans enterprise

#### 3.6.1 Social-Economic and Demographic characteristics

The social-economic and demographic characteristics of farmers growing beans are presented in Table 3.18. Overall, 62% of the respondents were male farmers, however proportionately higher percentages of female farmers were recorded in Iganga district (47%) and Kiboga district (63%). At least 52% of all the respondents had attained primary education level. Over 90% of all the respondents revealed that farming was the major source of household income and occupation. The monthly expenditure ranged between 188,671 shillings for farmers in Lira to 318,429 shillings for farmers in Kapchorwa.

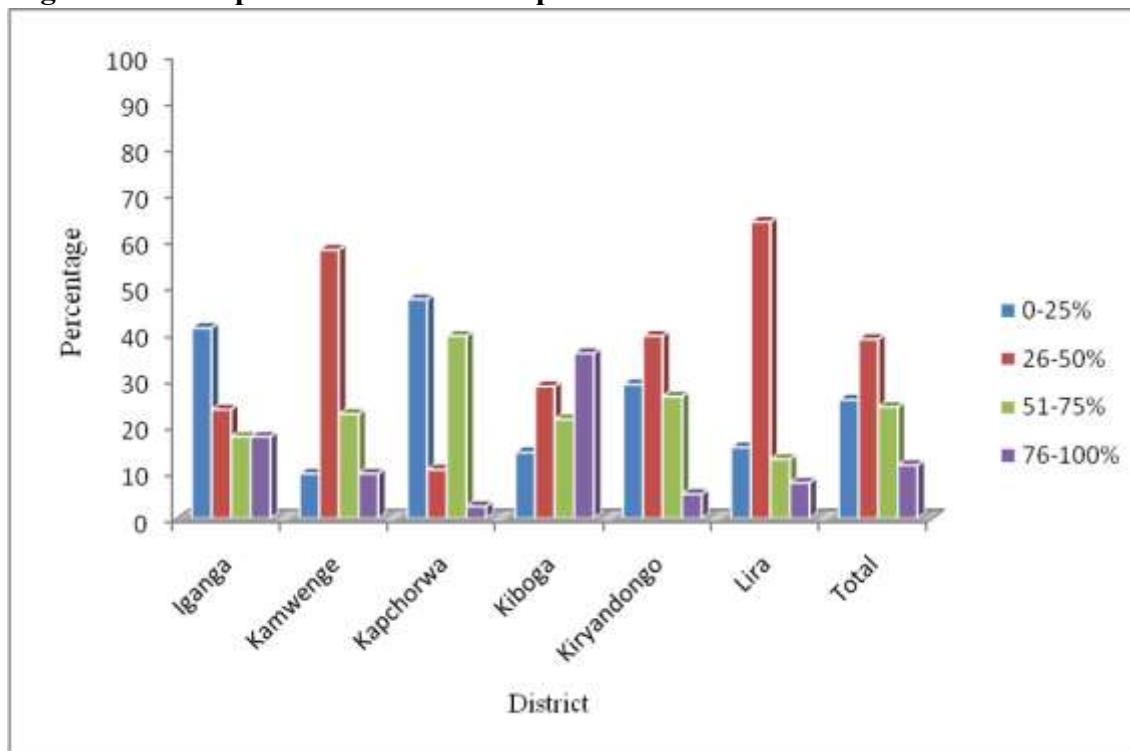
Sources of funding to household monthly expenditure in the study districts are indicated under Figure 3.46. Over 60% of the target districts, farmers reported that sell of beans contributed up to 25% of the total monthly expenditure.

**Table 3.18: Social-economic and demographic characteristics among beans farmers**

| Variable              | Response           | Percentage response in the different districts under the survey |          |           |         |             |         | Overall sample |
|-----------------------|--------------------|---|----------|-----------|---------|-------------|---------|----------------|
|                       |                    | Iganga  | Kamwenge | Kapchorwa | Kiboga  | Kiryandongo | Lira    |                |
| Gender of respondent  | Male               | 53  | 81       | 61        | 37      | 68          | 77      | 62             |
|                       | Female             | 47  | 19       | 39        | 63      | 32          | 23      | 38             |
| Education level       | None               | 19  | 19       | 3         | 8       | -           | 23      | 12             |
|                       | Primary            | 44  | 48       | 34        | 71      | 68          | 46      | 52             |
|                       | Secondary          | 37  | 29       | 39        | 21      | 21          | 21      | 28             |
|                       | Tertiary           | 0   | 4        | 24        | -       | 11          | 10      | 8              |
|                       |                    | 94  | 94       | 84        | 97      | 92          | 100     | 94             |
| Main source of income | Farming            | 94  | 94       | 84        | 97      | 92          | 100     | 94             |
|                       | Trading            | 0   | 3        | 0         | 3       | 0           | 0       | 1              |
|                       | Government         | 6   | 3        | 16        | 0       | 8           | 0       | 6              |
|                       |                    |   |          |           |         |             |         |                |
| Average age           | Household head     | 43  | 42.5     | 44.4      | 38.9    | 37.8        | 40      | 40.3           |
| Size of the Household | Less than 15 years | 5   | 4        | 2         | 4       | 3           | 4       | 4              |
|                       | 16-35 Years        | 3   | 2        | 2         | 2       | 2           | 3       | 2              |
|                       | 35-50 Years        | 2   | 2        | 1         | 1       | 1           | 2       | 1              |
|                       | 50 and above       | 1   | 1        | 1         | 1       | 1           | 1       | 1              |
| Monthly expenditure   |                    | 282,081   | 281,229  | 318,429   | 284,408 | 239,357     | 188,671 | 264,090        |

*Source: Survey data*

**Figure 3.46: Proportion of farmers' expenditure from sell of beans**



*Source: Survey data*

## 3.6.2 Production

Production dynamics reports on information on land access, availability and utilization for the Beans enterprise at household level are presented below;

### 3.6.2.1 Land accessibility and availability

On average across the study districts farmers had a total of 11.04 acres that were accessible and available for household use on the different enterprises. And about 1.3 acres of land was used for growing beans across the study districts. This however, varied within districts from 1.14 acres in Iganga district to 1.74 acres in Kamwenge district. There is gap for increased bean production through increased acreage. Farmers interviewed reported having been growing beans as an enterprise for the last 12 years (Table 3.19).

**Table 3.19: Land access, owned and under beans production in acres during last season**

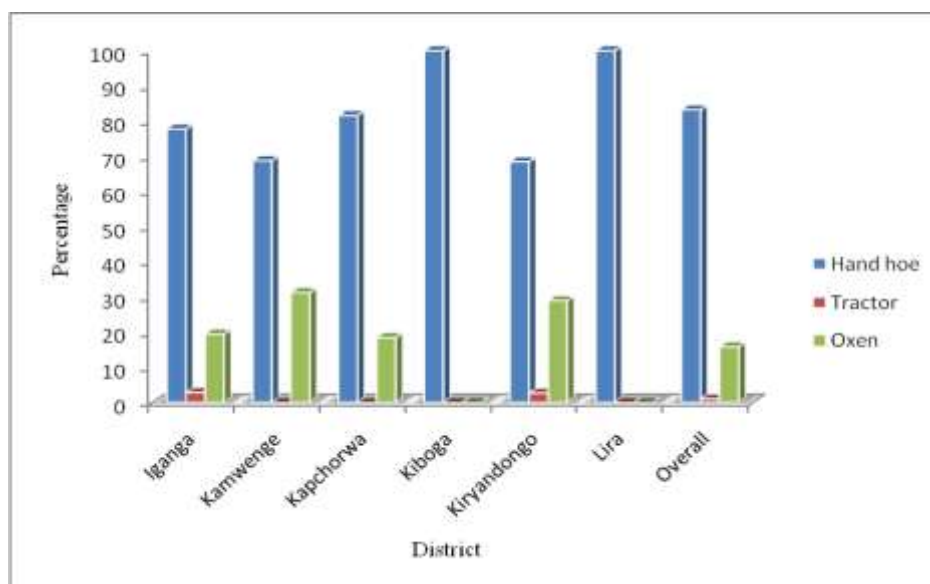
| District        | Land area in acres |            |                            |                        |
|-----------------|--------------------|------------|----------------------------|------------------------|
|                 | Land access        | Land owned | Land under bean production | Years in growing beans |
| Iganga          | 4.92               | 3.96       | 1.14                       | 13.8                   |
| Kamwenge        | 6.23               | 5.17       | 1.74                       | 18.2                   |
| Kapchorwa       | 4.14               | 3.66       | 1.17                       | 15.7                   |
| Kiboga          | 6.09               | 3.67       | 1.50                       | 10.4                   |
| Kiryandongo     | 10.72              | 9.20       | 1.18                       | 7.4                    |
| Lira            | 4.92               | 3.54       | 1.33                       | 8.1                    |
| Overall average | 6.17               | 4.87       | 1.33                       | 12.1                   |

**Source: Survey data**

### 3.6.2.2 Tools and equipments used

Tools and equipments used by farmers growing beans were mainly hand hoe representing over 80% of the respondents across the study districts (Figure 3.47). Oxen plough was reported mainly in the districts of Iganga, Kapchorwa, Kiryandongo and Lira. Tractor usage is still rare among farmers; this would help to improve the efficiency of land cultivation and other farm activities.

**Figure 3.47: Equipment's used in beans production**



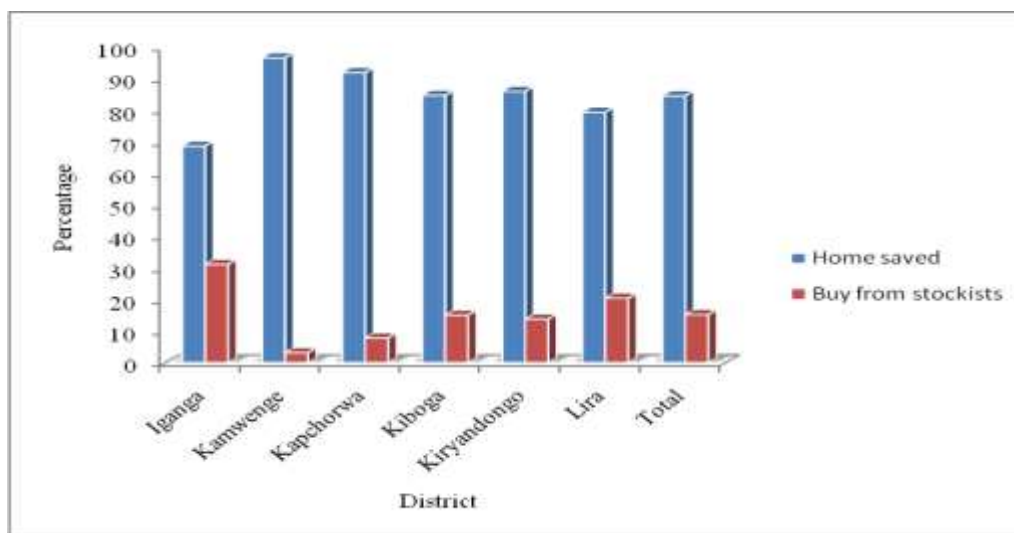
**Source: Survey data**



### (i) Sources of bean seed

Source of bean seed used by the farmers in the sampled districts is presented in Figure 3.48. Across all the study districts, farmers who reported using home saved seed was above 80%. While within districts, they varied between 70% in Iganga to 98% in Kamwenge. Use of home saved seed by farmers contributes significantly to yield reduction. During focus group discussions, farmers reported that, the certified seed sold by stockist is very expensive and most times quality parameters like the percentage germination is low thus leading to more losses on the side of the farmers. The input distribution network across the study districts is poor thus farmers move longer distances to reach to an input stockist. The prevalence of counterfeit seed on the market is another discouraging factor to farmers and there is no guarantee that seed.

**Figure 3.48: Source of beans seed used in planting**

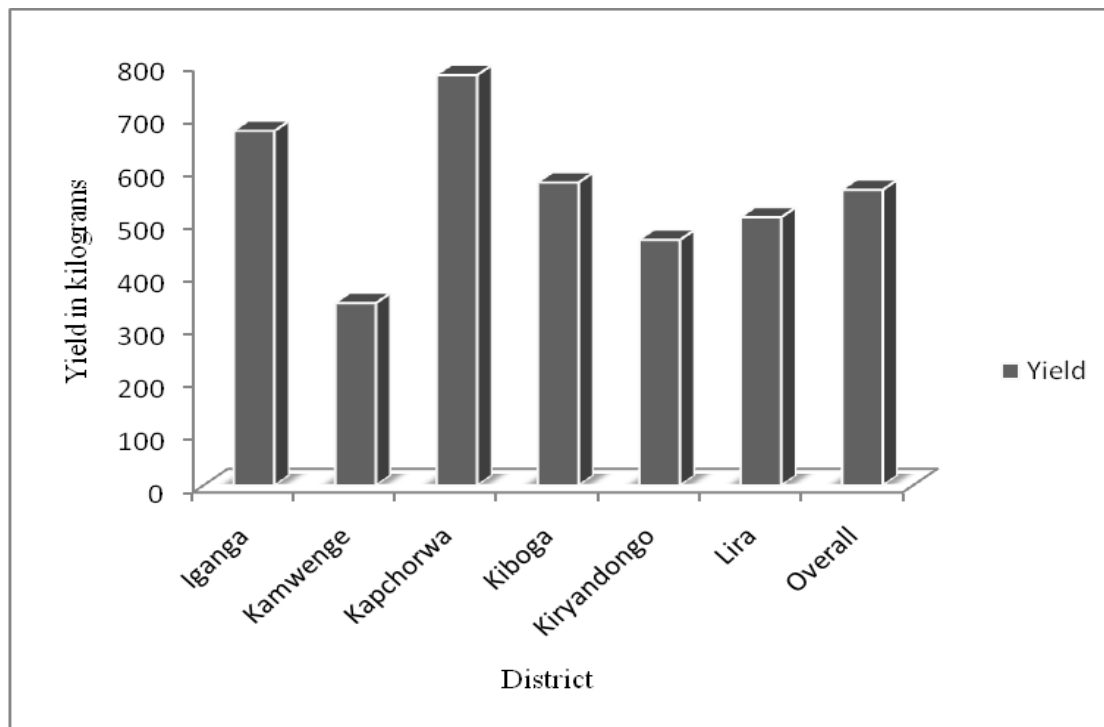


*Survey data*

### 3.6.2.3 Estimated Bean yields

Bean yield per acre in the study districts is presented in Figure 3.48. Beans yield varied between 346 kilograms per acre in Kamwenge district to 779 kilograms per acre in Kapchorwa district. Overall average across the study districts recorded a yield of 561 kilograms per acre. The reported yields are in line with secondary data (Uganda census Agriculture 2008). There is room for increasing yield, while holding key informant interview with the agricultural officer Lira, it was indicated yields up to 1000 kilograms per acre can be achieved through use of certified seed, planting on time and use of fertilizers and pesticides where necessary.

**Figure 3.49: Bean yield**

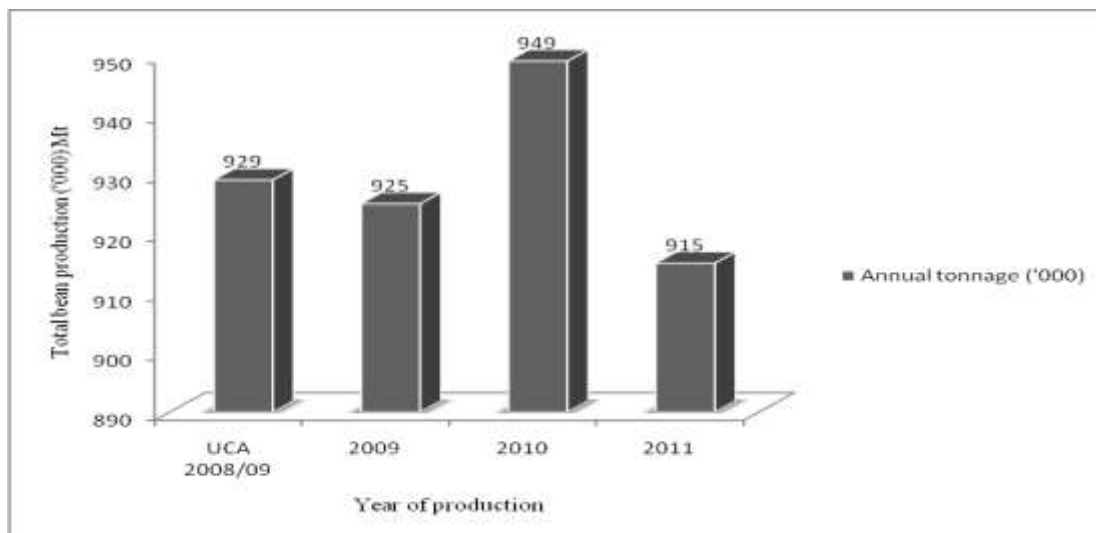


Source: survey data

#### 3.6.2.4 National Beans yields

The total production of beans in Uganda for the last four years is given in Figure 3.49. The total tonnage ranged between 915,000 metric tons to 949,000 metric tons. Like maize, beans still suffer losses especially during storage due to pests, vermin and physical contamination.

**Figure 3.50: National beans production figures**

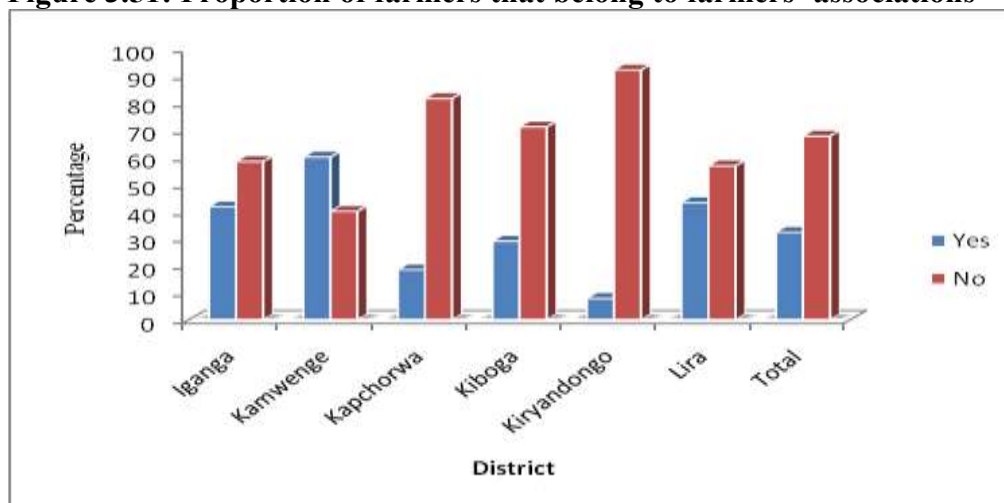


Source: UBOS and MAAIF

### 3.6.2.5 Farmer organizations

The proportions of farmers that grow beans and belong to farmers associations are presented in Figure 3.50. Overall, farmers that belonged to associations 30%, focus group discussion revealed that farmers belonging to associations were among those adopting the technologies and helped one another thus reaching yields higher than those working individually. Farmers from Kamwenge district recorded 60% belonging to farmer associations while the lowest percentage was recorded in Kiryandongo with less than 10%. Farmers working as a group are key to successful commercial farming and therefore, there is a need to support farmer associations based on a number of enterprises that farmers within the districts are engaged in.

**Figure 3.51: Proportion of farmers that belong to farmers' associations**



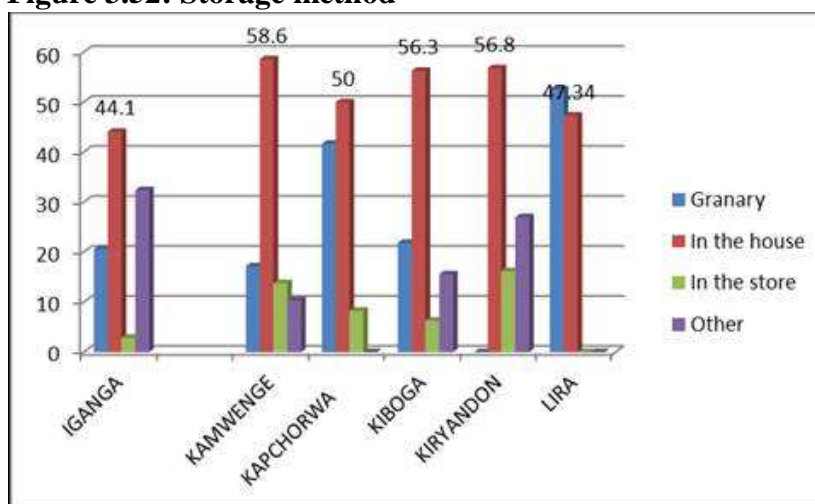
*Source: Survey data*

### 3.6.3 Post-harvest handling and processing

#### 3.6.3.1 Storage Methods

Storage of beans in all the study areas reflect family house as main store for the beans (Figure 3.51) in addition to use of the granary. In all the districts, it was evident that few farmers could afford to construct separate stores for the beans and other crops. This has an implication on the quality and spoilage suffered as a result of unwanted infections by post-harvest pests.

**Figure 3.52: Storage method**

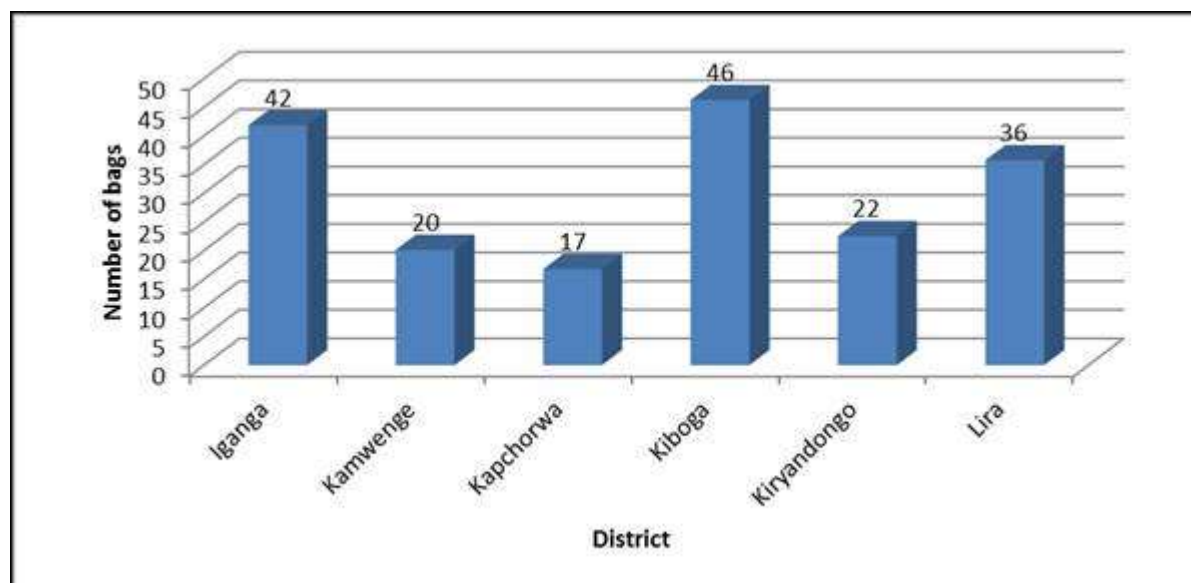


Source: Survey data

### Storage capacity

For the few farmers that could afford to construct separate stores, Kiboga, Iganga and Lira had the biggest storage capacity as indicated by Figure 3.52. Kapchorwa district which is well known for growing maize had respondents with an average capacity of 17 MT; this was attributed to the fact that most of the farmers do not keep their maize at home since the farmers' group has constructed a big ware house to consolidate the produce.

**Figure 3.53: Capacity of store**



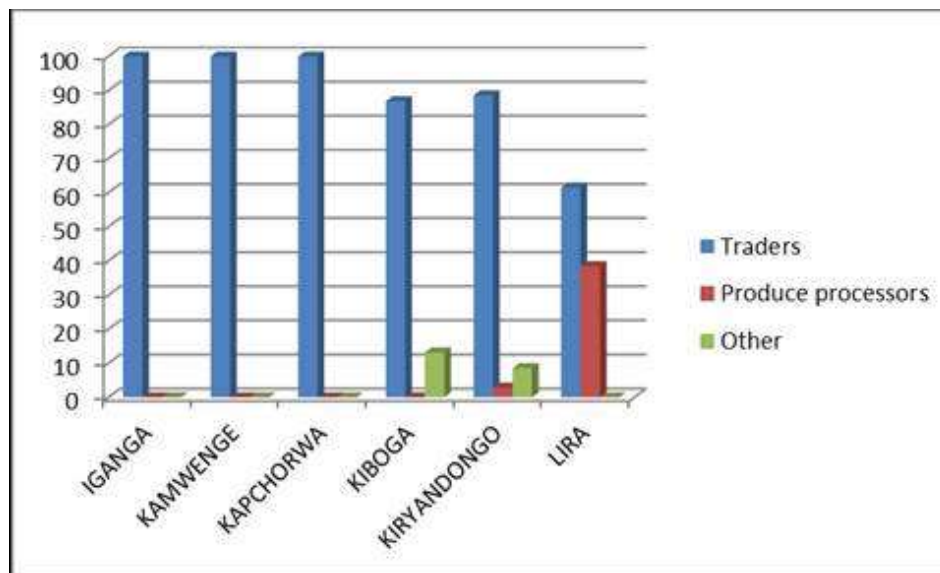
Source: Survey data

### 3.6.4 Marketing

#### 3.6.4.1 Beans buyers

Figure 3.53 shows that traders dominate the beans buyers in all the study areas, this is not different from maize since districts growing beans also grow maize. Apart from Lira where about 35% of the respondents revealed that they sell to produce processors, other buyers according to focus group discussions include schools, fellow farmers and prisons.

**Figure 3.54: Beans buyers**

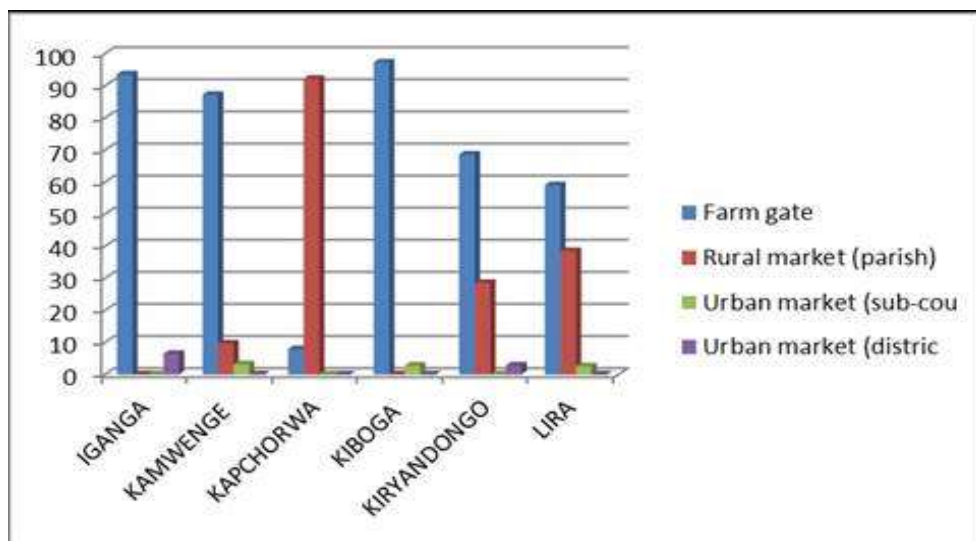


Source: Survey data

#### 3.6.4.2 Level of marketing

Most respondents revealed that they sell their beans at farm gate (Figure 3.55) apart from Kapchorwa which as earlier discussed on maize, the farmers' group has constructed a big warehouse that is used to consolidate beans before selling. These farmers sell to rural market (parish) i.e. the farmers' cooperative which is true for Kiryandongo and Lira.

**Figure 3.55: Level of marketing**



*Source: Survey data*

### 3.6.5 Beans Value chain Mapping

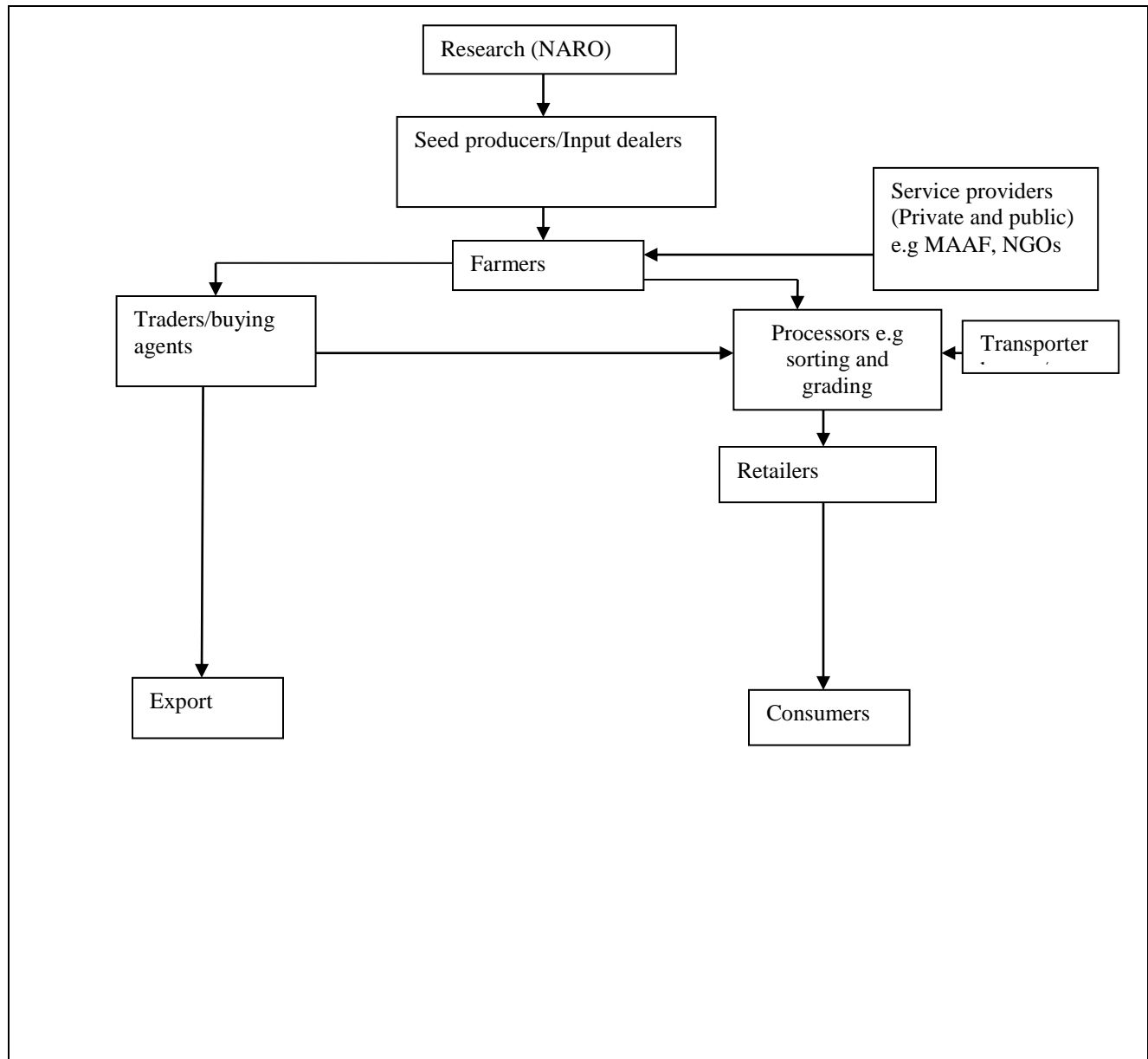
The beans value chain is made up of a number of actors, which include; Researchers, MAAIF, input dealers, service providers, farmers, traders, processors, exporters and consumers (Table 3.20)

**Table 3.20: Bean value chain actors**

| Actor                                       | Role played   |
|---|---|
| Researchers                                 | The researchers are responsible for research and development of beans technologies to improve production, postharvest and marketing constraints. This is the mandate of National Beans Research Program (NBRP) under National agricultural Crop Resources Research Institute (NaCRRI) |
| MAAIF                                       | The ministry provides technical extension services, development and implementation of agricultural policies, seed certification and inspection  |
| Input /dealers                              | Supply agro-inputs mainly fertilizers, pesticides (herbicides, insecticides and fungicides), tools and equipment.   |
| Service providers (Private sector and NGOs) | They provide technical knowledge on agronomic practices, business and finance to actors within the chain for example SACCOs, Banks, NGOs, Projects and Private Service Providers.   |
| Farmers                                     | Farmers are both producers and consumers of beans; they either sell at farm gate/ nearby markets or to traders from final markets like Kampala.   |
| Village traders/ Buyers                     | Village traders know the farmers locations, when crops are ready for harvesting, contacts of transporters, wholesalers and buyers.  |
| Brokers/ Wholesalers                        | These are the contacts for travelling traders in rural areas and link them to end-users and retailers. Brokers do not invest any money, but thrive on commission per batch which is negotiable depending on the market forces. Brokers sell to retailers and whole sellers.           |
| Retailers                                   | Beans retailers range from market vendors at whole sale markets to small retailers at Sub-County stores.  |
| Exporters                                   | Maize export within the region mainly to South Sudan (Juba), Kenya and DRC  |
| Consumers                                   | These are the final actors in the beans value chain that buy beans for home consumption   |

The diagrammatic presentation of the value chain actors of beans is presented as Figure3.56

**Figure 3.56: Beans value chain mapping**



Source: Survey data



### **3.6.6 Bean Value Chain constraints and proposed interventions**

#### **3.6.6.1 Beans value chain constraints**

The following were identified as constraints within Beans Value Chain;

##### **Production**

- Growers fail to access enough genuine certified seed and as such end up planting counterfeit and or home saved seed. This lowers the yields thus making bean production less attractive.
- High cost of other inputs like fertilizers, pesticides that are required for optimal bean production.
- Prolonged dry and wet seasons (Climate change) which lead to late planting
- Poor agronomic practices like broadcasting seeds during planting compared to the recommended practice of planting in lines
- Weak farmer associations that cannot exploit advantages of collective production and marketing
- Lack of credit institutions with financial products that meet farmers' conditions especially the high interest rates

##### **Post-harvest handling**

- Poor storage facilities remain a key constraint to the post-harvest and handling of beans leading to pests and diseases which reduce the actual volume of marketable yield
- High moisture content during storage leading to rotting of beans is brought about by lack of drying facilities at household level

##### **Marketing**

- Long marketing chain for beans reduces income received by the farmer
- There is a gap between producers and buyers and this gap is filled by middlemen due to product consolidation which remains important since most growers are small scale holders
- Lack of crop finance at the time of harvest forces farmers to sell their beans at low prices to meet domestic requirements, middlemen exploit farmers when it comes to advance payments before harvesting season starts
- Lack of trust between buyers and producers which has been developed overtime, this is as a result of middlemen trying to cheat farmers to take care of extra transport costs during continuous consolidation and bad roads

### **3.6.6.2 Beans proposed Interventions**

The following are proposed interventions to identified constraints along the beans value chain;

#### **Production and storage**

- Support streamlining the agro-input distribution system and making sure that the input stockists are nearer to the community. The stockists should be knowledgeable to provide any relevant information that farmers might need.
- Support training of farmers and carry out demonstrations to show to farmers the benefits of using agro-inputs
- To provide training and support in developing farmer associations so that, they can work together and take of synergies
- Provide financial services with appropriate financial products through creating linkages between value chain actors and financial service providers

#### **Marketing**

- Support to streamline the marketing system to minimize exploitation by middlemen
- Producers should be given a platform onto which they can meet buyers to negotiate better prices for their produce
- Establishment of crop finance that would support provision of funds to producers before they can sell their produce, this would help in streamlining the marketing system
- Collective production and marketing under contract would be feasible once farmers are organized in groups to market demands

## **4.1 Conclusions**

### **4.1.1 Dairy**

The dairy value chain mapping and analysis was conducted in five districts namely; Isingiro, Mbarara, Sheema, Nakasongola and Bukomansimbi. A number of value chain actors within the Dairy value chain were identified. Key constraints along the chain were identified and possible interventions suggested. It was found out that dairy production practices differed in the study areas, with Bukomansimbi production method being Zero grazing, while in Mbarara, Sheema and Isingiro, cattle was managed under the paddocks and have more improved cattle breeds. In Nakasongola, the majority of farmers practice communal grazing and the biggest proportion of their animals are for beef though they produce some milk. The trend however is changing and more farmers are adopting keeping of improved animal breeds starting with cross breeds.

### **4.1.2 Goats Enterprise**

Goat production as an independent enterprise is not well developed since farmer's keep goats together with other livestock like cattle. While farmers in Nakasongola, Mbarara and Isingiro have started to isolate and invest independently into goat rearing the investment levels and chain development is still very weak. The majority of farmers keep goats at a very low level of investment and a few farmers are now taking on the enterprise though graded as low input farmers.

While discussing with farmers, it was noted that, goat rearing is a profitable undertaking as usually the unit cost of production does not exceed 40,000 shillings per goat. The selling price of a goat was estimated to be above 60,000 shillings thus leaving a margin to attract future investment. Key constraints identified along the chain and proposed interventions suggested.

### **4.1.3 Bananas Enterprises**

Banana value chain study was conducted in four districts namely; Isingiro, Mbarara, Sheema, Bukomansimbi. Farmers mainly produce matooke (East African Highland bananas-EAHB) type for fresh consumption. It was estimated that high production levels, over 18 metric tons can be realized per year under good management. It was noted that, the reported figures are higher than what is reported, the consultants observed that figures reported mainly are per cycle, while it was confirmed that within a year a bigger proportion of the banana mats can complete two cycles and thus increases yields much higher. Other types of bananas include; Sukali Ndizi, Bogoya these are eaten as desserts and Gonja (Plantains) eaten as roasted or fried. The matooke value chain is still short mainly comprised of the growers, fruit buyers from the

villages, consolidators and traders who transport to urban areas and cities and eventually the final consumers. Constraints along the value chain were identified and intervention areas suggested.

#### **4.1.4 Maize Enterprise**

Maize enterprise value chain analysis was studied in six districts namely; Kamwenge, Kiboga, Iganga, Lira, Kiryandongo and Kapchorwa. Maize enterprise over the years has gained prominence as a major staple for the majority of Ugandans and within the region, source of animal feeds etc. The chain actors include the farmers, traders, processors and consumers. Maize production levels at household vary greatly and this affects the ultimate gross profit a farmer realizes. Production figures are still lower than the potential yield and this offers an opportunity to improve the practices and fill the gap. Constraints along the value chain were identified and possible intervention areas were proposed.

#### **4.1.5 Beans Enterprise**

Beans enterprise value chain analysis was studied in six districts namely; Kamwenge, Kiboga, Iganga, Lira, Kiryandongo and Kapchorwa. Beans enterprise over the years has gained prominence as a major staple for the majority of Ugandans and within the region, source of animal feeds etc. It is a major source of plant protein that is required in the human diet. Key constraints and proposed interventions for the different stage sin the chain were suggested. The chain actors include the farmers, traders, consumers.

### **4.2 Recommendations**

#### **4.2.1 Dairy Enterprise**

The following are recommendations for the dairy enterprise value chain;

- (x) The farmers should be proactive in selection of the animal breeds that have a history of high milk production
- (xi) Increase funding to government institutions that are mandated to carry out research on livestock.
- (xii) Support the development of a strong agro-veterinary input distribution system and provision of veterinary services to farmers of dairy cattle and goats
- (xiii) Should strengthen farmer associations and build capacity of the input dealers, enhance inspection to reduce supply of fake products on the market. Support systems that would guarantee to farmers where to procure genuine drugs and other products
- (xiv) Improve collaboration through establishment of stakeholders' platform to address issues concerning service provision in the industry
- (xv) Provide the training of farmers and groups to improve productivity. Government stock farms should be used for demonstrations and open such facilities to farmers to learn.
- (xvi) Should organize platforms for the value chain actors to discuss required specifications

- (xvii) Support organized farm production through contractual arrangements, training in animal breed specifications
- (xviii) Support standards development for the final products and extension systems to increase productivity

#### **4.2.2 Goats Enterprise**

The following are recommendations for the goat's value chain;

- (vii) Goat's farmers should be proactive in selection of better goat's breeds that are fast growing and have a high carcass quality and weight.
- (viii) Government should increase level of funding to public institutions that are mandated to carry out research on livestock. The institutions should emphasize research on key issues affecting goat production like types of breeds, disease and pest resistance to current drugs
- (ix) Support the development of a strong agro-veterinary input distribution system and provision of veterinary services to farmers of dairy cattle and goats
- (x) Should strengthen the associations and build capacity of the input dealers, enhance inspection to reduce supply of fake products on the market. Support systems that would guarantee to farmers where to procure genuine drugs and other products
- (xi) Improve collaboration through establishment of Goat stakeholders' platform to address issues concerning service provision in the goat industry
- (xii) Provide the training of farmers and associations to improve goat productivity and marketing. Government stock farms should be used for demonstrations and open such facilities to farmers to learn.

#### **4.2.3 Banana Enterprise**

The following are recommendations for the banana value chain;

- (viii) Increase research and extension efforts on the eradication of the banana bacterial wilt that is threatening to wipe out banana production in the country.
- (ix) Create and or strengthen existing banana stakeholders' platform to ensure that all actors and supporters in the value chain are included.
- (x) Increase agricultural extension, training, establishment of demonstration gardens on how to improve and maintain high banana production
- (xi) Develop and promote better methods of banana postharvest handling and processing. This will assist to add value to the product. Also the banana peelings should be researched on to either turn them into organic manure or animal feed products. This will ultimately increase the value farmers derive from the banana fruit.
- (xii) While at the moment, small quantities of solar dried banana chips are exported, efforts to expand this niche market mainly for organic products should be pursued by the private sector with support from NGOs and government institutions concerned with market development for the country's products.

- (xiii) Strengthen farmer associations to spearheading marketing negotiations and linkages for its members.
- (xiv) Increase accessibility and affordability of the agro-inputs, tools and equipment's that are required by the different value chain actors.

#### **4.2.4 Maize and Beans Enterprises**

The following are the recommendations for both maize and beans enterprises;

- (vi) The government and other public institutions should endeavor to streamline the distribution and marketing of agro-inputs. Efforts should be made to have genuine inputs available to farmers at the right time.
- (vii) Support efforts to train through demonstration at production level, other methods of training programs for the different chain actors along the value chain should be considered
- (viii) Strengthening farmer institutions to work together to bulk produce and carry out group marketing
- (ix) Agricultural financing requires a major review to address the current bottlenecks such as high interest rates, inappropriate loan products so that new and or improved products are offered to the value chain actors
- (x) Policies to regulate marketing of semi dried maize and bean grains as this downgrades the Ugandan grains and thus reduces the profits for each actor and the country's reputation is lowered

## ANNEXES

### Annex 1: Contacts of Key Informants

#### Maize and Beans Enterprises:

| Name of the organization   | Contact person         | Address   |
|--|------------------------|---|
| The Grain Council of Uganda                                      | Mr. Thembo M. Wilfred  | Plot 59 Bandali Rise, Bugolobi.<br><a href="tel:0705508548">Tel:0705508548</a> , 0782-748330  |
| APONYE (U) Ltd   | Baker Beehamya         | +256772432264   |
| AGTRADE (U) Ltd  | Henry Musisi           | +256772503707   |
| ASKAR GEN MERCHANDISE  | KellenKayonga          | +256772415138   |
| AFRO KAI Ltd   | Chris Kaijuka          | +256783657910   |
| CORONET Group  | Chris Baine            | +256772762869   |
| Audit Control & Expertise  | Stephen Kaye           | +256772521880   |
| Uganda Commodity Exchange  | Valery Alia            | +256772767108   |
| Uganda Seed Trade Association                                    | Mr. Ibyisintabyo Chris | 0701-601803, 0772-601803  |
| Kapchorwa Commercial Farmers Association (KACFA)                 | Mr. David Kiisa        | 077 2 512 729   |
| Pearl Seeds Ltd  | Mr. Richard Masagazi   | 0772-451871   |
| National Agricultural Crop Resources Research Institute (NACRRI) | Dr. Michael Ugen       | 0772-446739   |
|  | Dr. Godfrey Asea       | 0782-031285   |
| Agtrade (U) Ltd  | Mr. Henry Musisi       | Plot 19 Bukoto Street, 0702-503707, 0772-503707   |
| Maganjo Grain Millers  | Mr. Alex Ssejjemba     | 0703-543418, 0772-695713  |
|  | Mr. Kelly Wanda        | 0772-545563   |
| Sukura Agro-input Suppliers                                      | Mr. Godfrey Butooto    | 070 3 816 643   |
| Idha Tuje Agro-input Suppliers                                   | Mr. Richard Namwanza   | 077 2 948 304   |
| New Iganga Farm Supplies   | Mr. Nuur Kasiira       | 077 4 372 215   |
|  | Mr. Emmanuel Kisubi    | 077 9 564 449   |
|  | Mr. Musamir Mwanja     | 075 2 615 007   |
| Busega Maize Mill Ltd  | Mr. Fred Bisobye       | 077 4 006 354   |
|  | Mr. Tom Etuk           | 077 2 601 716   |
|  | Ms. Margaret Awor      | 077 7 037 126   |
| Kisenyi Millers Cooperative Society                              | Hajji Kaweesa          | 0772-988220   |
| Nakisenyi Adult Literacy Group (NLG) Ltd                         | Mr. Moses Balikowa     | 0782-455783   |
| Kiryandongo District Production Officer                          | Dr. Owing Lamo Chris   | 0759 644 942; 0701 730 146;<br><a href="mailto:owingchris@gmail.com">owingchris@gmail.com</a> |
| Nyamahasa Unit Area Cooperative Enterprise limited               | Mr. Adubanga Michael   | 0703 822670; 0782 749626  |
| CLUSA Uganda   | Mr. Kiiza Kizito       | 0776- 351 025   |

## Banana Enterprise

|   |                       |  |
|---|-----------------------|--|
| Horticulture Promotion Organization of Uganda | Ms. Hasifa            | 0774-709900, <a href="mailto:hpo.ug@fgraffit.net">hpo.ug@fgraffit.net</a>                              |
| Afri Banana Uganda Ltd                        | Ms. Harriet Nasozi    | 0703-864868, <a href="mailto:afribananaproducts@gmail.com">afribananaproducts@gmail.com</a>            |
| Jakana Foods Ltd                              | Mr. Dan Jakana        | +256-414567714, <a href="mailto:info@jakanafoods.com">info@jakanafoods.com</a>                         |
| Nami Farms Ltd                                | Magala Frank          | 0777913398, <a href="mailto:namifarms@yahoo.com">namifarms@yahoo.com</a>                               |
| Zijja Fruit and Veg Ltd                       | Joseph Ssemukulungwe  | 0772371704, <a href="mailto:zijjafruitsandvegpackers@yahoo.com">zijjafruitsandvegpackers@yahoo.com</a> |
| Flona commodities                             | Isiko                 | 0772409557, <a href="mailto:Flona_95@hotmail.com">Flona_95@hotmail.com</a>                             |
| Jacksons                                      | John Kavuma           | 752696825, <a href="mailto:Fauex2001@yahoo.com">Fauex2001@yahoo.com</a>                                |
| Sulma Foods Ltd                               | Abdulkarim. F. karama | 0772502350, <a href="mailto:sulma_foods@yahoo.com">sulma_foods@yahoo.com</a>                           |
| YTBM  | Yiga Thomas           | 0772459180, <a href="mailto:ytbm@ytbmafrofruits.com">ytbm@ytbmafrofruits.com</a>                       |
| Ever green fields Ltd                         | Mathew Ssebatta       | <a href="mailto:mathewssebata@yahoo.com">mathewssebata@yahoo.com</a>                                   |

## Dairy and Goats Enterprise

| Name of the organization             | Contact person          | Address   |
|--------------------------------------|-------------------------|---|
| Jesa Farm Dairy Ltd                  | Leonard Sebiokari       | 0752-773233, <a href="mailto:lsebikari@jesa.mulwanagroup.com">lsebikari@jesa.mulwanagroup.com</a> |
| Dairy Development Authority          | Dr. Stephen R. Baguma   | 0414-343901<br><a href="mailto:srbaguma@dda.or.ug">srbaguma@dda.or.ug</a>                         |
| Sameer Agriculture and Livestock ltd | Mr. Arijit Basu         | <a href="mailto:Arijit.basu@creambell.co.ug">Arijit.basu@creambell.co.ug</a>                      |
| White Nile Dairies                   | Mr. A.M Thowfeek        | Tel:+256-041-343635   |
| GBK Dairy products (U) Ltd           | Mr. Basuura Moses       | +256772364834 / +256-048-521527   |
| Paramount Dairies Ltd                | Ms. Liz Wanjiru         | +256-312-261380   |
| MADDO Dairies Ltd                    | Mr. Andrew Peter Tamale | +256-0772-605458  |



## **Annex 2: References**

- (i) Bagamba F., 2008. Market Access and Agricultural production. The case of banana production in Uganda
- (ii) Dairy Investment Opportunities in Uganda; Dairy Sector Analysis, 2008. SNV-Uganda
- (iii) Enterprise Budget survey: An Analysis of Crop and Livestock Enterprise, IFPRI, USSP Working paper No. 5, June 2010
- (iv) MAAIF Statistical Abstracts, 2011; Agricultural Planning Department
- (v) Market Assessment and Baseline study of staple foods in East Africa. USAID-COMPETE, 2010
- (vi) National Dairy Strategy 2011-2015 by MAAIF and DDA, 2012
- (vii) Review of Uganda's Dairy Industry. Dairy Development in Uganda, FAO and DDA, March 2011
- (viii) Statistical Abstracts 2012, Uganda Bureau of Statistics
- (ix) Summary report on Uganda Census of Agriculture 2008/2009, Uganda Bureau of Statistics