

# **GRAINS SUB SECTOR ANALYSIS**

## **REPORT**

**Beans, Groundnuts, Sorghum and Upland Rice**

**Submitted to**  
**FIT (U) Ltd**  
**P.O. Box 24060**  
**Balintuma Road, Kampala**

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**By**  
**Shoreline Service Limited**  
**Level 3 Kisozi House**  
**Kisozi Close (Off Kyagwe Road )**  
**P.O. Box 9075**  
**Kampala**  
**Tel. 041 256 237829**

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## Abbreviations and Acronyms

ADP	-	Agricultural Development Project
CSO		Civil Society Organisation
FCR	-	Feed Conversion Ratio
FAO	-	Food and Agricultural Organization
GDP	-	Gross Domestic Product
IDP	-	Internally Displaced Persons
PEAP	-	Poverty Eradication Action Plan
PMA	-	Plan for Modernization of Agriculture
POs		Partner Organisations.
SOCADIDO	-	Soroti Catholic Diocese Integrated Development Organisation
UBO	-	Uganda Bureau of Statistics
UNADA		Uganda National Agro – Input Dealers Association.

## **1.0 INTRODUCTION**

### **1.1 The State of the Agricultural Sector in Uganda**

Agriculture is the mainstay of the Ugandan economy, and employs the majority – over 80 percent – of the population. At the rural household level the proportion of the population directly involved in agricultural activities is even higher with crop production accounting for more than 70 percent of the total employment within the sector itself. In general the agricultural sector accounts for more than 40% of the total Gross Domestic product (GDP), and it serves as an important provider of inputs for the other production activities, including in particular, the manufacturing sector, which is heavily tied to agricultural sector development. Since 85% of Uganda's population lives in rural areas and depend almost entirely on agriculture for their livelihood, the sector serves as a basic source and provider of food self-sufficiency and security for majority of the population. Agricultural output at the moment is estimated to come from nearly 3 million smallholder farmers who use the basic technology of the common hoe for cultivation. Arable land for carrying out agricultural activity is fairly distributed throughout the country, with an average landholding of about 3.0 hectares per farmer. However, large differences in rural population densities across the country have tended to dictate the intensity with which communities have to engage in more organized agricultural activities across the population.

### **1.2 Policy Framework**

Sustainable agricultural development i.e. crop and livestock development, to improve food security and rural incomes, is one of the development challenges of Uganda today, and the Government of Uganda is addressing this through its Poverty Eradication Action Plan (PEAP). The PEAP, prepared in 1997, provides the basis for promotion of private sector oriented development activities. The main policy challenge to date remains the deepening and sustaining of policy - reforms already implemented. This includes the commercialization of subsistence agriculture whilst ensuring food security is given utmost priority. It is critical government implements agricultural sector investment plans which are realistic affordable sustainable and as efficient as possible.

In 2001, the Government of Uganda launched a new and innovative programme for agricultural service delivery - the National Agricultural Advisory Services (NAADS) Programme - to help the 80% of the population which is involved in subsistence agriculture. To endorse the Government's commitment to improving the livelihoods of the rural population, the NAADS programme was passed by law through its Act of 2001. It is a 25 year phased programme which is not only spearheading agricultural development in Uganda but is also providing the blueprint for private sector delivery of agricultural advisory services in Africa as a whole.

The NAADS vision is "A decentralized, farmer-owned and private sector serviced extension delivery system contributing to the realization of the agricultural sector development objectively". The NAADS shall exist to increase farmer access to information, knowledge and technology for profitable agricultural production".

One of its key guiding principles is the empowerment of farmers as key stakeholders in the agricultural sector. NAADS helps farmers to have access to and control over structures and processes that transform their natural resource assets into outcomes that they desire. More specifically, NAADS: enables farmers to organise and create institutions through which they can act collectively and get their voices heard in / control the decision-making processes builds up farmer capacity to demand for both research and productivity-enhancing agricultural advisory services and technologies enables farmers to access information and resources to influence policies that affect them and thus have control over the provision of agricultural services builds up farmer capacity to monitor and evaluate the programme in general and service provision in particular

### **Extension Services**

Extension services have greatly deteriorated in the country. Farmers hardly receive guidance and advice. As a result, most farmers have not changed their farming method and have consistently obtained low yields. Apart from the extension services, other provisions such as training, research and related infrastructures are also quite limited.

### **Input supply**

Generally, current productivity amongst farmers is very low. This low productivity in Uganda can be linked to a virtual absence of inputs such as fertilizers and pesticides. A critical issue that is connected with the low level of input usage is the lack of an efficient distribution network. Most of the agricultural inputs are provided by market based stockiest who are outlets for distributors of large international agricultural chemical manufactures. The price charged for each unit of agricultural chemicals takes into account the marketing costs and margins thus making them too expensive for the smallholder farmers to buy as individuals.

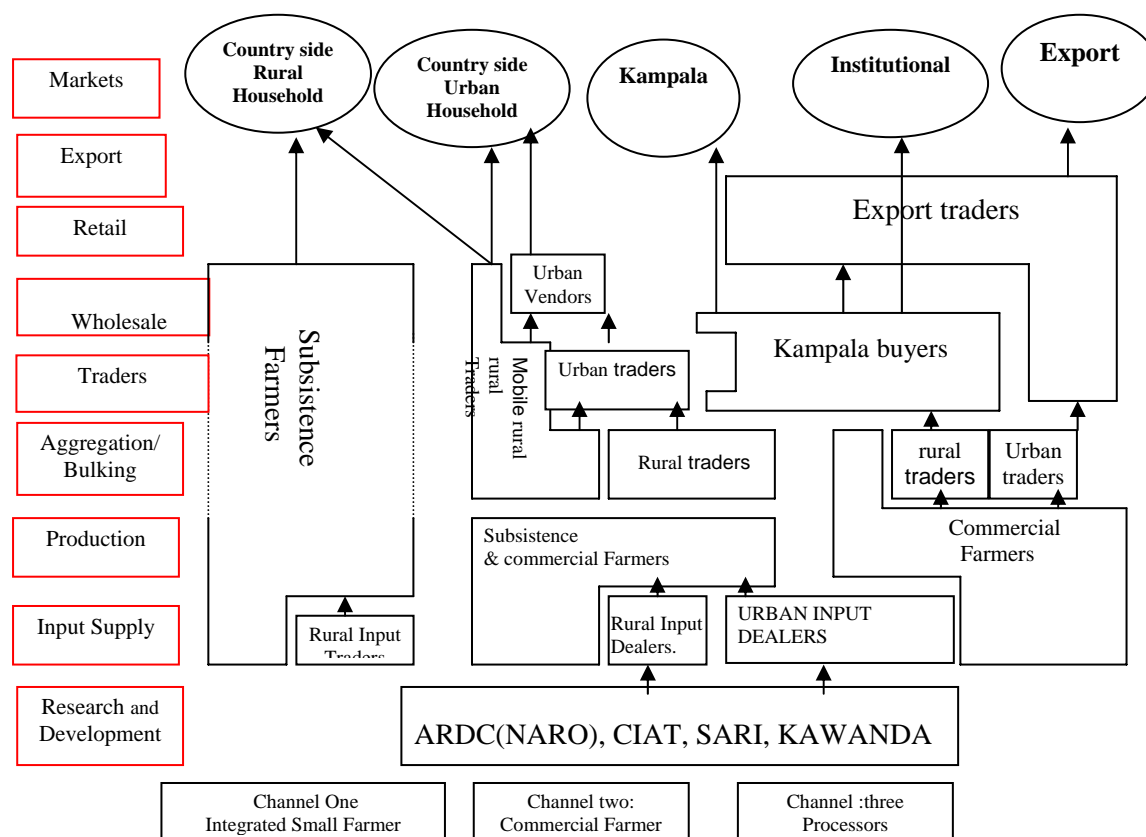
### **Regulation on agricultural inputs**

Following sector wide reforms which were introduced to streamline and simplify import procedures, all qualitative restrictions were eliminated including abolition of import licensing and replaced by tax Identification Numbers (TINs). Restrictions on agro – chemicals are however are still in force. Approval must be sought from the Agricultural Chemicals Control Board to import agro-chemicals. Importers of agricultural chemicals must apply to register and subsequently be certified by Agricultural Chemicals Control Board under the Agricultural Chemicals (Registration and control) Regulations 1993. Under the law, importers are required to have a license issued by authorized bodies before imports are permitted.

## **1.3 Terms of Reference**

The overall purpose of the study is to lead Cordaid Partner Organisations in clearly understanding the analytical picture of all the firms, channels, markets and activities vertically related to the grains sub Sector using a combination of both a rapid and in depth analysis. The study is expected to describe and analyze the structures of the sub sector in Uganda with a view of identifying the general marketing inefficiencies, constraints and opportunities, different relationships of the different actors (large and small), production, consumption and Uganda Industry profitability trends. From the assessment, the study is also expected to identify potential areas of interventions (in a specific chain) to enhance growth in large numbers of the participants. From the Study Partner Organisations (Pos) will better identify points of intervention along the Value Chains, and to choose appropriate partners at the different points of intervention.

## 2.0 GRAIN SUBSECTOR MAP



**Figure 2.1 Grain Subsector Map**

The grains sub sector maps consists of three product channels which are:

- Integrated small farmers
- Commercial farmers
- Processors
- Traders

### 2.1 Channel I Integrated small farmers

These comprise a myriad of small holder units producing food crops on a subsistence level. They are the backbone of agriculture production and constitute 90% of grain supply in the country. Small holder farmers are characterized as being undercapitalized with low levels of technology consisting of rudimentary tools such as hoes and pangas.

Under such conditions, production objectives are based on first meeting the household food requirements and selling surplus above household usually at low prices.

The Smallholder farming systems exhibit wide variability between regions and even within districts as shown in Table 2.1.

**Table 2.1 Crop farming systems in Uganda**

Characteristics/Region	Northern	Eastern	Central	Western
Size of Land Holding (Ha)	3.84	3.28	3.61	3.22
Size of Farm Family (Adult Equivalent (No)	5	6	5	6
Per Capita Land Holding (Ha/Person)	0.77	0.60	0.70	0.61
Ratio of Area Under Food Crops to Total Area	0.60	0.67	0.48	0.66
Ratio of Area Under Cash Crops to Area	0.18	0.20	0.27	0.38

Source MAAIF 2002

#### *Poor crop management practices*

There is a general neglect of some basic production management practices, which include timely land preparation and planting to enable a growing crop to utilize all the rain that is available in the season. Others include appropriate spacing and soil fertilization.

#### *Low fertility levels*

Soil fertility levels of majority of smallholder farms have been on a sharp decline, a result of soil erosion and depletion of essential nutrients due to over usage.

#### *High cost of inputs*

Inorganic fertilisers, which are the most handy soil amendment inputs are quite expensive, with costs at about Sh.50,000 per 50 kg bag. Considering that farmers may need between 4-5 bags an acre, the total cost becomes quite prohibitive.

#### *Lack of credit*

There are limited avenues for farmers to obtain production credit, even if they knew what to do. This clearly limits their output and income.

## **2.2 Channel II Processors Commercial Farmers**

Currently, Uganda does not engage in commercial agricultural farming, except in the case of sugar cane production, tea production and horticulture flower farming. For purposes of distinguishing between subsistence agriculture and intensive small scale market based agriculture, commercial agriculture, in Uganda's context refers to agriculture production that is strongly influenced by an element of monetary gain.

Commercial agricultures involve substantial investment in factor production including land, labour, inputs and marketing while the level of investment in subsistence agriculture is almost negligible. It is estimated that less than 10% of farmers in Uganda practice commercial agriculture.



## 2.3 Channel III Processors

Currently, no large-scale processors for grain exist. Processing is mainly done by town traders and wholesalers as a means of adding value to their produce before selling. The traders process the grain in a variety of way depending on the type. For instance rice is milled sorted, graded and packed, beans are dried, sorted and packed while groundnuts are processed into pastes and powder using either a manual mortar or motorized grinders. The processed products are normally sold at the point of processing which are normally at market places. It is important to note that the processed products are normally expensive and only ideal for busy town dwellers but not for the villagers who can produce their own. Hence the market for processed products is minimal in the rural areas and processing and value addition are not a priority. Less than 10% of the producers actually added value by shelling, making powder, etc

## 2.4 Channel IV Traders

Traders fall into two major categories; rural intermediaries involved in accumulating supplies from producers for re-sale to retailers mostly in urban markets and urban intermediaries involved in concentrating supplies from producers in the rural markets for final selling to consumers mostly in urban markets. Some trader's transactions are carried out with big players in the grain market involved in procurement for institutions e.g. and export to regional markets.

## 2.5 Grain Sub Sector Actors and Functions

### 2.5.1 Production Methods

Grain production in Uganda is dominated by small-scale subsistence farmers. These account for 95% of the production. The other 5% is by commercial farmers. Commercial production is limited mainly to Maize, Sorghum and Rice. The small scale subsistence farmers essentially cultivate small pieces of land 0.2-0.5ha, use the hand hoe as the basic technology, use home saved seed and have poor crop husbandry methods. Commercial farmers on the other hand cultivate 0.8-2.0ha, use improved seed, adhere to recommended crop husbandry practices, although fertiliser and herbicides are not often used.

The main constraints faced by farmers include the following:

- Poor post-harvest handling and lack of proper on-farm storage facilities. This leads to high losses and deterioration of grain quality.
- High collection costs at marketing level due to scattered production and low marketable volumes.
- Lack of market information by farmers which gives middlemen an opportunity to exploit farmers.
- The limited use of modern production techniques – improved inputs and technology, results in low yields thereby increasing production costs.
- Low acreage due to use of rudimentary tools

### 2.5.2 Grain Marketing in Uganda

Since the advent of liberalization, the marketing of agricultural produce in general and crops in particular is largely done individually by the farmers and mostly during the peak harvest seasons. Over supply in a given season causes the price to fall because limited storage and surplus produce on the market. Besides, the traders cannot wait because the costs involved (such as lodging and meals plus waiting time) are quite high. The lack of collective marketing initiatives and storage facilities as well as viable market outlets contributes to a glut immediately after the harvest. (Independent Consulting group)

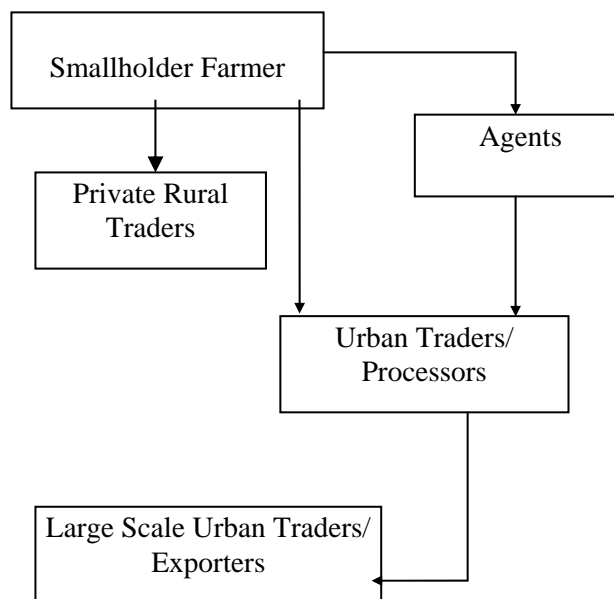
The main sources of market information on price and markets include friends, fellow farmers, local leaders and occasionally the radios. The chain between producers and consumers is long with minimal value addition ensured. In the case of grains, most of the smaller traders sell to urban traders/millers (who then sell to schools, hospitals and other institutions) and also to the larger urban buyers. The large produce buyers, mainly based in Kampala, in turn sell to the urban population and sometimes export to neighbouring countries such as Kenya and Rwanda.

In Uganda, the food markets can be characterized as being thin and volatile in terms of prices and trading volumes as well as the little liquidity. This absence of large well-developed marketing system explains the inadequacy of viable market outlets, high costs of transaction as well as minimal value addition. Besides, poor access to markets in terms of long distances, limited information flows and inadequate transportation means constrain efficient market exchanges.

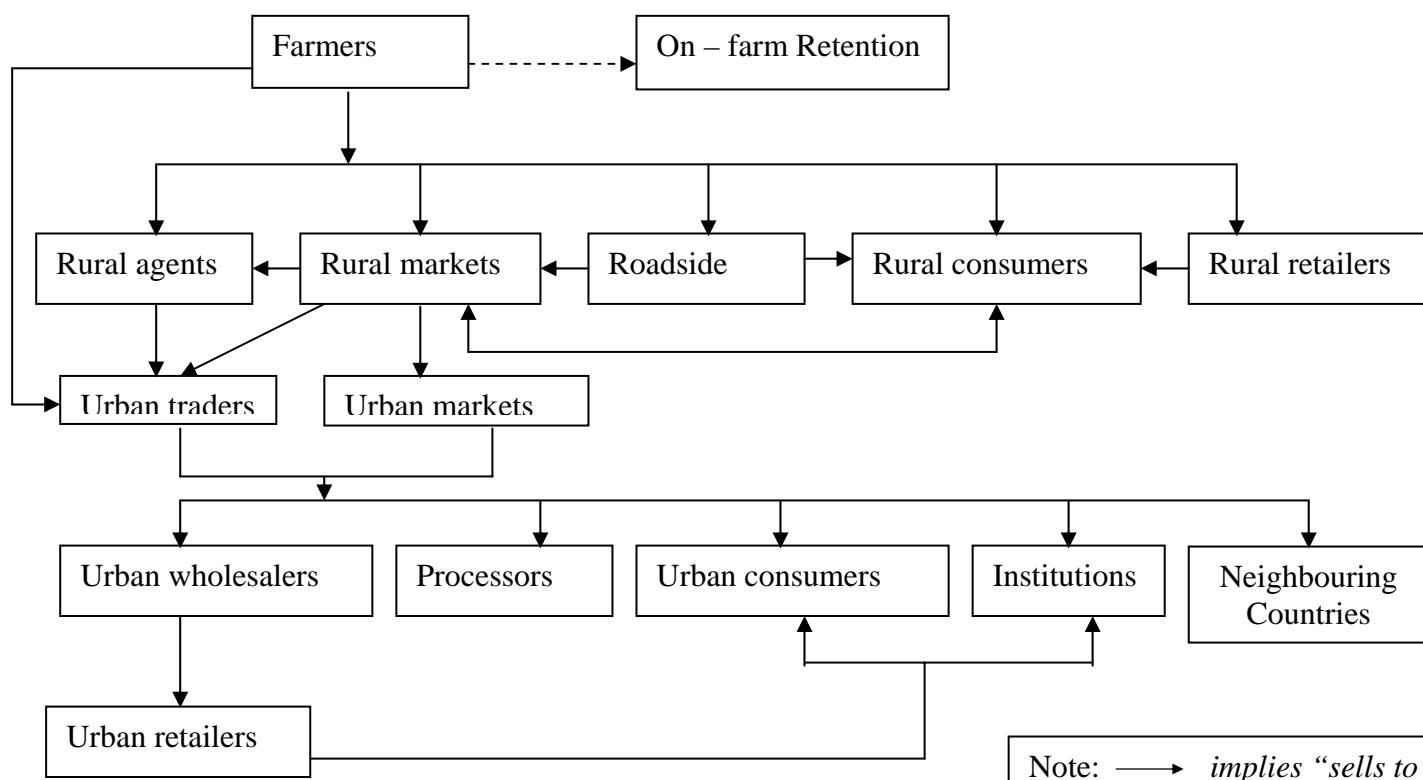
Several studies have shown that mobilising large volumes of produce was still a problem due to the following reasons:

- Failure by farmers to know what was required by the market as a result of the missing link between the buyer, extension worker and the farmer.
- Production at subsistence level, with farmers scattered in rural villages and without common storage facilities.
- Farmers are not organized, lacked leadership and therefore could not pool produce together for price negotiation and selling in bulk.
- Buyers lacked finance to procure big volumes even if there was a readily available market.
- Poor post-harvest practices and poor storage facilities that lead to high crop losses (25-40%) and overall poor crop quality.
- Equipment and machinery for processing (like dryers, hullers, pre-cleaners that could process sizeable quantity of produce) are either lacking or quite expensive.
- Lack of affordable credit for crop finance, confusion and lack of knowledge on how to access whatever funds are available.

The marketing of agricultural produce takes place either on the farm, at the buyer's store, or in the rural market. Crop marketing in Uganda can be categorized into three main stages namely the primary, secondary and tertiary. The **primary stage** involves private rural traders, farmer groups, primary co-operative societies and grassroots NGOs as the main players. The **secondary stage** has district urban traders, wholesalers and processors, while the **tertiary stage** includes large-scale urban traders and exporters (Figure 2.2).

**Figure 2.2 Grain Marketing Chain**

Marketing structure: The supply chain starts with the producers and ends with the consumers (usually urban dwellers, institutions, deficit producers, displaced persons, neighbouring countries, and even animals). Though the chain differs from region to region and even within regions, the grain supply chain can be generalized as diagrammatically presented in Figure 2.3 below. The key participants include the farmers (both small-scale/subsistence and medium-scale/commercial), rural traders/agents, urban traders, wholesalers and retailers, institutions, urban dwellers, and consumers in neighbouring/regional countries. ( Independent Consulting group)

**Figure 2.3 Marketing System of grain**

- (a) **The primary stage** of the supply chain consists of farmers, rural traders, rural agents and retailers, and the rural population. Given their proximity to the farmers and access to post-harvest facilities (including storage), this line of middlemen is often chosen by urban traders to act as their agents. These agents traverse villages on bicycles and pick-ups procuring potato at the farm gate, road side and rural markets. The main feature at this stage is that, while the number of agents in the villages during the peak harvest periods is relatively high, they collude and fix purchase prices from farmers and use their market clout to subdue the farmer's bargaining power. This leaves the farmers with no option but to sale their produce at a price largely determined by the agents. Nonetheless, the smallholder farmers generally perceive this channel as the most reliable for disposing of their crop. Smallholder farmers attribute this to a lack of mutual trust that generally precludes bulking and collective marketing.
- (b) **The secondary stage** of the supply chain encompasses urban traders based in major trading centres and at district headquarters. The number of traders/dealers reduces as one moves up from the sub-county to the district level. This is attributed to the large capital requirement for district-based trading. The main activity of the urban traders is to assemble the commodity in rented or own stores, ready for selling to large-scale traders, institutions and processors.
- (c) **The tertiary stage** of the supply chain consists of large-scale traders based mainly in cities. The number of large-scale traders is relatively small due to high working capital and storage requirements. These large-scale traders usually work directly with urban traders who often act as their agents. They normally also supply to national institutions, shops, supermarkets and markets.

**Table 2.2 Enterprise Profitability for Selected Crops at farm level**

(Net Profits are in Uganda Shillings per Hectare)

<i>Crop</i>	Subsistence/ Traditional		<i>Low input technology</i>		High input Technology	
	Ouput: input ratio	Net Profit	Ouput/ input ratio	Net Profit	Ouput: input ratio	Net Profit
Passion fruit	2.62	464,000	---	---	3.49	1,471,000
Banana	1.41	87,000	1.80	222,000	2.05	460,000
Maize	0.97	-6,500	1.25	75,250	1.31	131,500
Finger millet	2.14	346,250	---	---	---	---
<b>Sorghum</b>	<b>1.60</b>	<b>174,900</b>	---	---	---	---
Wheat	1.32	87,000	---	---	1.58	276,500
<b>Beans</b>	<b>1.07</b>	<b>10,750</b>	<b>1.12</b>	<b>36,000</b>	<b>1.19</b>	<b>70,750</b>
<b>Groundnuts (shelled)</b>	<b>1.25</b>	<b>80,750</b>	<b>1.40</b>	<b>184,250</b>	<b>1.48</b>	<b>261,000</b>
Sunflower	1.12	23,150	---	---	1.26	82,500
Sweet potatoes	1.31	94,750	---	---	1.80	426,500

*Source: Agricultural Policy Secretariat, IDEA project and field interview*

### 3.0 INDIVIDUAL GRAIN ASSESSMENT - BEANS

#### 3.1 The Bean Balance Sheet

The beans balance sheets covering the period 1995 – 2005 is summarized in Table 3.4. From the table, it is clear that Uganda is a surplus producer of beans. This shows that export potentials are real and can be exploited by improving quality and supplying the quality required by the export markets at all levels in the supply chains, reliability of the data notwithstanding.

#### 3.2 Production Characteristics of beans

Beans is an important legume grown in virtually all parts of Uganda. Beans are a major source of protein. The crop also provides farm households and produce buyers with incomes and is therefore important from both the food security and income-generation points of view.

In terms of varieties available, there are several varieties within the country. Most of these have now degenerated into what is commonly referred to as “local” varieties. The most common varieties grown and their key characteristics are given in Table 3.1

Table 3.1 Common Bean Varieties Grown in Uganda

Varieties	Major characteristics					Seed source	Market opportunities	Remarks
	Colour	Growth Period (months)	Yield (mt/ha)	Rainfall	% of area planted			
A: Bush type K131 K132  Local	Brown Brown  Various	3 3.5  3-4	0.8 0.75  0.4-0.5	Moderate Moderate  Moderate	2 7  85	NARO   Local sources	Local   Local	Very susceptible to root rot Susceptible to root rot
B: Climbing Ngwinurare Vunikingi Gisenyi	Speckled in various Shades of colours	4 4 4	1.5 -1.8	Moderate Moderate Moderate	6%	NARO Kisoro	Local	More tolerant to root rot

Source: MAAIF 2004

##### 3.2.1 Production Trends

Data obtained from the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) shows that bean production levels for Uganda since 1995 are as shown in Table 3.2. It should be noted that the production levels of particular regions are highly variable, the figure given in the table are national average.

Table 3.2 Bean Production in Uganda for Selected Years

Year	Area ha	Output mt	Yield mt/ha
1995	600,000	390,000	0.65
1996	615,000	234,000	0.38
1997	630,000	221,000	0.35
1998	645,000	387,100	0.60
1999	669,000	401,100	0.60
2000	699,000	420,100	0.60
2001	727,000	434,600	0.60
2002	745,000	443,300	0.60
Average	666,250	366,400	0.55

Source: MAAIF Agricultural Production Series

On average nearly 370,000 mt of beans are produced annually in Uganda. Based on the field surveys, in the South West, beans are grown both in the first and the second rain season with the main growing season being the first rains. The first season is between March and June while the second season is between August and December.

The production of beans involves: land clearing to remove bushes and tall grass. This is done by slashing, cutting and burning. Farm activities that follow include: 1<sup>st</sup> and 2<sup>nd</sup> ploughing, 1<sup>st</sup> weeding which takes place after 3 weeks, 2<sup>nd</sup> weeding depending on the weed intensity and harvest when the crop is mature. About 100 kg of beans are planted per hectare yielding 1,000 kg per hectare. After harvest the beans are transported to the farmer's home and put in a crib for storage and drying. A crib is a storage facility with a raised floor, grass thatched roof and well ventilated walls made of reeds. The beans are kept in the crib for 1 week after which they are removed and spread on the ground for primary processing. This involves threshing with sticks to separate the beans from the pods. Winnowing starts when the farmer is satisfied that all beans have been removed from the pods. Winnowing is carried out using local baskets to remove the chaff from the beans. Once the beans have been properly cleaned, they are bagged in 100 kg polythene bags. The beans are stored in the farmer's house since majority of the farmers (90%) can not afford to construct stores. However a small minority (10%) with assistance of development partners have constructed storage facilities. According to the field survey results, 90% of the beans in the South West are grown by women.

In recognition of the importance of curbing post harvest losses due to poor storage, ADP is providing assistance to farmers in setting up storage facilities in terms of technical support and construction materials including: iron sheets, cement, doors, nails, timber and paint. The strategy being implemented is to construct 2 stores per parish. So far five parishes have been covered including: Kibera, Nyaibanda, Kirongo, Kyamtasa and Rwankora. The support is to be extended to five other parishes in the coming year (2007).

### 3.2.2 Cost of Production

Average national costs of production/investment per hectare for major and potential food crops is summarized in Table 3.3 below. Costs are indicated by technology/production practices as applicable, but generalized for the country. In this analysis, “subsistence/traditional” refers to use of home-saved seeds/planting materials with poor crop husbandry practices, while “low input technology” refers to use of improved planting materials (usually purchased) and adherence to recommended crop husbandry practices (including spacing, plant population and timely field operations). “High input technology” encompasses all aspects of the low input technology plus the application of fertilizers and pest management.

Compared to other grain and food crops commonly grown in Uganda, beans rank as one of the lowest input production crop summarized in Table 3.3.

**Table 3.3. Cost of Production/Investment for Selected Crops**

(Costs are given in Uganda Shillings per Hectare by Production Practices/Technology)

Crop	Subsistence/ Traditional	Low input technology	High input Technology
Arabica coffee	337,500	---	610,000
Passion fruit	286,000	---	591,500
Banana	213,000	278,000	440,000
Maize	194,000	299,750	431,000
Finger millet	303,750	---	---
Sorghum	290,100	---	---
Wheat	273,000	---	473,500
<b>Beans</b>	<b>146,750</b>	<b>296,500</b>	<b>366,750</b>
Groundnuts	319,250	455,750	539,000
Sunflower	186,850	---	317,500
Cassava	396,500	---	735,750
Sweet potatoes	305,250	---	533,500
Irish potatoes	386,000	---	860,500

Source: Agricultural Policy Secretariat, IDEA project, field interview

**Table 3.4 Beans Supply-Demand Gap (Mt): 1997 – 2005 (Projection)**

Year	Supply – Demand		
	Supply (S)	Demand (D)	Gap (S-D)
1997	346,800	320,099	26,701
1998	354,450	330,377	23,973
1999	350,200	348,446	1,754
2000	368,050	369,175	-1,125
2001	383,350	356,315	27,035
2002	412,250	396,645	15,605
2003	425,000	407,215	17,785
2004	437,750	423,302	14,448
2005	450,500	439,716	10,874

Source: Agricultural Policy Secretariat, IDEA project, field interview

Generally, therefore Uganda realizes a surplus for beans. It is, however, worth pointing out that the production estimates provided by MAAIF are generally considered as being higher than what is on the ground. It is therefore likely that in some years the surplus has not been as high.

In the South West, ADP is undertaking intervention in the beans sub sector which they have identified as having potential to generate socio economic benefits that would positively impact the welfare of rural households. The areas covered include Kyenjojo, Fort portal Kamwenge and Ibanda. The implementation of the interventions involves zoning of districts into bean producing areas. The principal objective of promoting bean production is to secure food security and enhance income through increased yields.

According to the survey results, the average farm size is 10 acres. It was further revealed that out of the 10 acres, 1.1 acres is used for crop production. It is estimated that the 1000 kgs of beans are produced on one hectare acre of land in the South West,. The cost of production on one acre of land is given in table 3.5 below.

**Table 3.5 Production cost of beans per acre, 200**

Activity	Cost
Land Clearing	80,000
1 <sup>st</sup> ploughing	120,000
2 <sup>nd</sup> ploughing	150,000
Seed 40 kg	60,000
1 <sup>st</sup> weeding	30,000
2 <sup>nd</sup> weeding	20,000
Planting	50,000
Harvesting	20,000
Loading to homes	15,000
Processing	10,000
Sorting & Grading	10,000
Bags	9,000
Pesticides	1,000
Storage	30,000
<b>Total</b>	<b>605,000</b>

Source: Independent consulting group

### **3.3 Production Constraints**

- The high cost of inputs and improved technologies have meant that farmers have continued to practice subsistence production which limits production capacity. This means farmers can not produce sufficient quantities of produce to meet household needs and a marketable surplus.
- Extension services are limited in their out reach due to the shortage of qualified professionals to train and guide farmers in improved production methods. As a result, most farmers have not changed their farming methods and continue to realize low yields.
- Soils in many parts of Uganda especially in the South West have undergone degradation due to over use. Continuous farming on the soils without replenishing of nutrients has led to depletion of essential nutrients and low fertility of the soils.



- Lack of market information on prices, markets, input supply stockist has constrained farmers from achieving market oriented production.
- The failure of banks to advance credit to agriculture production owing to the perceived high risk has limited the financial resources farmers need to obtain inputs to improve production.
- Price fluctuations caused by seasonal gluts and scarcity have the potential of jeopardizing preparation of realistic business plans for commercial production.
- Significant losses due to poor post harvest handling and storage facilities have forced farmers to sell their produce quickly irrespective of the price. This has resulted in dumping of produce on the market causing drastic price depression. Post harvest losses can be substantially reduced with improved storage and processing methods.
- Incidences of pest and diseases and the lack of prevention and control measures has in some cases caused devastation of crops making the food security situation worse.
- Changing weather patterns have made planting seasons unpredictable. This has made it difficult for farmers to plan their operations.
- High cost of production as exhibited by expensive farm inputs such as implements, seeds, fertilizers and pesticides, and high cost of farm labour

### **3.4 Storage and quality control**

Stores are hired from municipal market at an annual cost of Sh. 500,000 per annum for permanent structures and Sh. 160,000 for structures with iron sheets only. About 200 bags (20 tons) of grain can be held in them. Some traders have made an attempt to use wooden crates as pallets on which to stack the beans while others have the grain stacked in bags on the floor.

Traders were quite knowledgeable about quality requirements. They only receive dry products when they have been tested. The test is crude and involves biting the grain to feel the texture, checking appearance for wrinkles and the sound they make when dropped in a bag.

Storage dust was generally applied on beans that exceeded 2-3 months in the store. Traders coming from the South West charged about 5,000/= per 100kg bag of beans. These are normally packed to a weight of about 150kg per bag. A minimum of 30 bags is loaded by Kampala bound traders. Beans are delivered to Owino market in Kampala without any prior arrangement and in most cases are sold out within 3 days to bean store traders in the market. About Shs. 4,000 – 5,000 can be made on each bag sold but when the returns are unattractive, these traders resort to trading in town in the South West.

### **3.5 Marketing**

Despite the relatively low production levels of beans in the South West, most households divide their produce in the following proportions: 50% is marketed, 25% is

reserved as seed and 25% consumed in the home. Prices are generally volatile; they fall drastically at harvest to between shs 250 – 300 per kg in the months of July – August and rise sharply to between shs 450 – 500 per kg in the months of April and May. The period of high prices coincides with the major beans planting period, when most households that have not reserved seed, repurchase beans as seed for planting.

The marketing of beans in the South West is categorized into three broad stages including primary marketing, secondary marketing and tertiary marketing.

The marketing of beans takes place either on the farm or in the rural market where the beans are taken by the farmers. Bean marketing in the South West can be categorized into three main stages namely the primary, secondary and tertiary. The primary stage involves private rural traders, farmer groups and grassroots NGOs as the main players. The secondary stage has district urban traders, wholesalers while the tertiary stage includes large-scale urban traders and exporters

### **3.5.1 Primary Marketing**

This constitutes the marketing of beans that occurs at farm gate, at rural intermediary stores or the local market. In this market farmers sell beans to local aggregators, who after accumulation of 5 – 20 bags transport them to rural towns. Because of competition from beans coming from other producers during harvest season the margins are very low between shs 1,000 – 2,000 per a 100 kg bag. However some farmers choose to speculate to maximize profit by holding stock until prices reach their peak. Peak prices range between shs 100 – 150/= per kg. In order to earn quick cash, most farmers take their produce to the market rather than waiting for middlemen to come buy at the farm. At the markets, the produce is bought by middlemen who act as brokers and agents for big urban buyers. Aggregating is done at this stage when produce is stocked up in hired stores which are located near the markets.

Most aggregators deal in a mix of grains including maize and millet. They make their purchases mostly soon after harvests when prices are at their lowest (July/August and December/January) and on average make margins of between Sh. 20 – 30 per kg. They employ two pronged strategy in maximizing returns from the bean trade. Firstly, they undertake high volume low margin sales during harvest season when the bean stocks are in plenty. Secondly, during off season they return to buy the remaining stock kept by price speculators. From this, they are able to make high margins due to high demand as a result of scarcity situation. The off-season lasts from April to June. The aggregators sell beans according to specific preferences in terms of variety, colour of cooking characteristics, for instance, single colour beans are preferred by the Kampala and Institutional market, while mixed colour beans are preferred by customers in up country towns like Kabale, Kjenjojo, Iganga, Kumi and Soroti.

### **3.5.2 Secondary Markets**

This involves the movement of beans from the primary markets mentioned above (usually at the parish/ sub-county level) to urban centers in the major up country towns like Mbale, Jinja, Mbarara, and Fort portal. Secondary marketing usually involves middlemen and agents of large urban buyers. The middlemen buy beans from the following suppliers: farmers, local village markets and from village stores or grannies. Prices are settled after a bargaining process which at times involves discounts for bulk purchases. The price negotiations and discounts place the farmers in a disadvantaged

position since they tend to erode their already thin margins. Middlemen act as secondary aggregators since they undertake bulking of beans from several rural suppliers. The buyer agents are the urban intermediaries who advise the big market buyer based in Kampala on the prices, quantities and other factors related to the beans market in the up country town. The big buyer makes a decision to buy or not to buy based on the information received from the agent. The agents normally carry out the actual buying but on some occasions the big buyers may get involved if they feel uneasy about leaving the buying to the agent.

In the East, the middlemen form the linkage between the farmers and the retailers especially if there is a bumper harvest. Common means of transport used by middlemen is bicycle, though there is a minority who use pickup trucks for distribution of produce. In times of drought however, when the beans are scarce, the activities of the middlemen disappear and retailers are forced to mobilize resources to obtain fresh supplies from distant suppliers. The traders usually hire a procuring agent to buy stocks from areas as far as Mbarara, Kiboga and Masaka where beans are kept and preserved in big warehouses by big traders. On average it costs a retailer Ushs 70,000 to transport 100kg bag from Mbarara. The retail price of a kilo beans varies between Ushs 900 when in abundance and Ushs 1,200 when in scarcity.

### **3.5.3 Tertiary Markets**

Relatively big buyers operating out of Kampala go to up country towns such as Masaka Fort portal, Mbale, Kumi and Soroti where they procure beans from stores of aggregators there or through agents, some advance money to these aggregators/agents who then purchase beans for them from farmers and other aggregators. These types of traders combine resources to hire a truck and on some good transactions, can make as much as Sh.5,000 profit on each bag sold in Kampala (Ushs 50 per kg). Over all however, they make margins of about shs 2,000 – 3,000 per 100kg bag (Ushs. 20-30 per kg). These traders have stores in the major up country towns such as Mbarara and Ntungamo, Kabale, Mbale and Jinja

The big buyers play two distinct roles in the market. Firstly they act as distributors to the retailers in the big towns. Secondly many of them operate retail outlets and constitute the final link in the marketing chain.

## **3.6 Profitability**

Though farmers are usually interested in cash income accruing from sales of crop, it is important to analyse crop profitability from two points; viz output :input ratio and net profits. The output: input ratio shows the relationship between the unit price received by the farmer and the unit cost of production. A ratio of more than 1.00 shows an enterprise is profitable. An enterprise with a higher ratio than the other is said to be more profitable.

Net profits on the other hand refer to the difference between the gross income (including valuation of crop consumed by the household) and the total cost (including valuation of family labour). If the difference is positive, an enterprise is said to be profitable.

Table 3.6 shkgs output: input ratios and net profits for the nine staple crops studied. From the table, it may be observed that the adoption of improved technologies greatly improves enterprise profitability.

**Table 3.6 Enterprise Profitability for Selected Common Crops**

(Net Profits are in Uganda Shillings per Hectare)

Crop	Subsistence/Traditional		Low input technology		High input Technology	
	Ouput:input ratio	Net Profit	Ouput:input ratio	Net Profit	Ouput:input ratio	Net Profit
Arabica coffee	1.59	222,500	---	---	1.87	530,000
Passion fruit	2.62	464,000	---	---	3.49	1,471,000
Banana	87,000	1.80	2.05	222,000	460,000	
Maize	0.97	-6,500	1.25	75,250	131	131,500
Finger millet	2.14	346,250	---	---	---	---
Sorghum	1.60	174,900	---	---	---	---
Wheat	1.32	87,000	---	---	1.58	276,500
<b>Beans</b>	<b>1.07</b>	<b>10,750</b>	<b>1.12</b>	<b>36,000</b>	<b>1.19</b>	<b>70,750</b>
Groundnuts (shelled)	1.25	80,750	1.40	184,250	1.48	261,000
Sunflower	1.12	23,150	---	---	1.26	82,500
Cassava (fresh)	1.26	103,500	---	---	1.56	414,250
Sweet potatoes	1.31	94,750	---	---	1.80	426,500
Irish potatoes	1.17	64,000	---	---	1.45	389,500

*Source: Agricultural Policy Secretariat, IDEA project and field interview*

It would cost a producer shs 100 to market a kg beans in the urban markets in Kampala. This cost is largely due to transportation of beans from up country to Kampala. This cost is arrived at as follows:

It costs Ushs 5,000 to transport 100 kg bag of beans from Kabale to Kampala. Therefore 1 kg costs Ushs50. It cost Ushs 4,000 to distribute to retailers within Kampala. 1 kg therefore costs Ushs 40. Total cost of transportation is Ushs 90. It is estimated that rental charges paid by retailer for premises translated into 1 kg of beans is Ushs100. Total marketing costs are therefore  $90 + 100 = \text{Ushs}190$ .

Having bought the beans at Ushs 400 plus marketing costs, in order to make a reasonable profit of 20% the producer needs to sell a kilo of beans at Ushs 700. However, this is not possible because the current market rates range from harvest season of shs 300 to an off season price of shs 500. With higher volumes, the farmer would achieve higher returns owing to economies of scale but the smallholder nature of production and the lack of farmer associations are major constraining factors to volume sales. The middlemen who have the resources to accumulate stock are able to take advantage of economies of scale at the disadvantage of the producers.

## 4.0 INDIVIDUAL GRAIN ASSESSMENT - GROUNDNUTS

### 4.1 Production

Groundnut production is dominated by smallholder producers in North East Uganda where it is grown mostly as a cash crop. Insurgency in the North East, from rebels and cattle rustlers have caused massive displacement of populations that have been settled in camps set up by security agencies as a security measure to protect them from further attacks. The populations living in the camps are commonly referred to as Internally Displaced Persons (IDPS). Groundnuts growing has been identified as a good source of income for IDP's with 80% of the households growing it for cash. This places IDP's on the top of producers in terms of percentage of households growing groundnuts. Kumi district ranks second in the whole country in terms of the percentage of households growing groundnut with the value of 60.1% (UBOS, 2002). This figure is even likely to move upwards following the introduction and promotion of the new high-yielding groundnut varieties by an NGO Appropriate Technology (AT) Uganda in the same district. According to Tino *et al.*, (2004) the crop ranked first in the cash crop priorities among the beneficiaries of the groundnut multiplication project in Kumi district in 2004. Groundnut is grown both as a food and cash crop. Its importance as a cash crop has even increased with the introduction of new varieties since farmers have been getting good prices selling groundnut for seed to farmers who couldn't access it. Groundnut is grown mostly in pure stands adjacent to other crops.

#### (a) South Eastern Uganda

In the South East, production of groundnuts is being supported by ADP who are promoting groundnuts growing for its commercial value. The support is in form of technical support in proper agronomical practices such as timing of activities and provision of construction materials for storehouses.

The production of groundnuts involves: land clearing to remove bushes and tall grass. This is done by slashing, cutting and burning. Farm activities that follow include: 1<sup>st</sup> and 2<sup>nd</sup> ploughing, 1<sup>st</sup> weeding which takes place after 3 weeks, 2<sup>nd</sup> weeding depending on the weed intensity and harvest when the crop is mature. About 55 kg of beans are planted per hectare yielding 1,500 kg per hectare. After harvest the groundnuts are heaped in the field for 2 – 3 days for curing. The groundnuts are transported from the fields in baskets to the farmers home where they are spread on the ground to dry. Drying takes 1 week after which they are stored in the farmer's house with the shells still on. Once a market is identified, the farmer mobilizes family members or group members to assist with the shelling as this is a tedious activity.

#### (b) Eastern Uganda

In the Eastern region, groundnuts are grown at a subsistence level by smallholder farmers on average farm holdings of between ½ acre and 1 acre. There are two growing seasons in a year with the first one beginning in March and ending in May and the second one starting in July and ending in August. The production cycle takes 90 days from planting to harvest. About 80% of the produce is consumed domestically because of low levels of production resulting from subsistence scale of production.

In the East, Jiddecco is providing grassroots support that has proved instrumental in instilling good farming practices to several farmers under their programs. Jiddecco is training trainers in modern farming techniques such as the use of organic fertilizers to increase soil fertility, proper timing of farm activities, through regular workshops and seminars that are scheduled to coincide with the planting and harvesting calendar. The trainers in turn disseminate this information to other farmers residing within their demarcated areas of jurisdiction.

In the East, most farmers have two crops in a year, the first and second season crop. The production calendar for the whole region is more or less similar with only slight differences between locations. Generally, the first crop is grown between March and April to be harvested in July to August while the second crop is planted between August and September to be harvested between November and December. The national production for the first season is about double that in second season, although regional production may differ, with some areas producing more in the first season and others producing more in the second season. The eastern region produces more than double of what is produced in the second season in the first season. The average total area of land cultivated per household is about 4 acres. Of this the area planted to the new groundnut varieties ranges from 0.25 to 2 acres. The source of seed is mainly own seed saved from the previous crop, apart from for the new groundnut varieties whose seed is still rare. A few farmers who consume or sell all their produce from the previous season are also forced to purchase seed during planting. Land is prepared by hand hoes or by oxen while planting, weeding and harvesting is only by hand.

In the North East, SOCADIDO is actively involved in the boosting agricultural output at the household level as a basis of generating or enhancing household incomes while maintaining an adequate level of food security. SOCADIDO works with farmer groups through which support is channeled to individual farmers who have been identified by the groups. In total there are 480 groups from the whole of Teso region which constitutes the districts of Soroti, Katakwi, Kumi, Kaberamido, Amuria and Bukedea.

SOCADIDO is promoting groundnut growing as a cash crop based on its strong market and high market price factors, which have contributed to good returns per acre. The support is administered as a revolving scheme that involves loaning seed to farmer groups. The groups are responsible for distributing the seed among the members based on the requirements of each individual. After harvest a farmer is expected to give back an equivalent of what was given. The returned seed is made available to other farmers the following season.

The varieties distributed are Indiana, Serenut II and Serenut IV, which are bought from Serere Agricultural Research Institute (SAARI) where they are developed and multiplied. The development and release of new varieties is managed under NARO intervention programs that are designed to ensure that appropriate technologies are disseminated to farmers in a manner that is consistent with the objectives of the Plan for Modernization of Agriculture (PMA). The cost of new varieties at the research station is so high that it makes them to be both unprofitable to grow and unaffordable by farmer. A bag of Serenut I and II of 30 kg costs Ush 150,000. The new variety seed has the capacity to yield three times as much seed as planted under favourable conditions. Because of the high cost of seeds, Soccadido together with other stakeholders such as NAADs have

subsidized the cost of seed in order to promote the propagation of the new seed variety. SOCADIDO is fully subsidizing the cost seed at 100% and is making free offers to farmers. It is expected that seed subsidies will accelerate the adoption of groundnut growing as a basis of alleviating poverty. This seed is however provided on loan and a farmer is expected to pay it back after harvest before the next season.

In total, SOCADIDO is assisting over 16,000 households by providing implements such as ox ploughs, axes, ox ploughs, in addition to extension services and training in post harvest weed control, marketing, record keeping storage and preservation. Table 4.1 below gives the cost of inputs in Soroti district.

**Table 4.1 Groundnuts Production costs in Soroti, 2006**

Inputs	Price Ushs
Seed 30 kg	60,000
Ox plough	
i) From Saimmco	150,000
ii) Locally made	80,000
Hoe	3,500
Panga	2,500
Slasher	3,000
Axe	4,000

Source: Field Survey

Growing of groundnut is carried out in season I – from March to May and season II from September. The major season is season. Growing activities involve: Land clearing to remove bushes and grass, first and second ploughing with an ox plough. Weeding is done twice by hoe, application of pesticides is done twice by spraying immediately after weeding. Spraying is only done to Indiana and red beauty varieties. Spraying is not needed for the Serenut varieties because of their resistance to pests. This is one of the contributing factors to Serenut having been chosen as the most suitable groundnut variety for adoption in Soroti. Harvesting takes place 2½ months after planting. It is done either by uprooting by hand or digging by a hoe. After harvesting the produce is gathered from the field, heaped and transported to the farmer's home where it is spread on the ground for drying. It usually takes one week to dry the groundnut. Once the groundnuts are dried they are bagged and stored in the farmer's house for consumption and marketing. The bagged groundnuts are taken to the rural markets where they are sold by the farmers.

#### **4.1.1 Labour requirements**

There seems to be abundant labour for these activities, which is paid for at about US\$1,000 per day. Labour is also paid for in kind, especially harvesting which is paid with the produce being harvested. The most intensive groundnut production activity is harvesting which may require up to 20 man-days to complete one acre. Once harvesting is done, drying is done in the field or in the homesteads. Groundnut is then stored unshelled and sold as need arises or as market is found.

#### **4.2 Margins and cash flow projections for groundnuts**

The major factor that influences the farmer's decision to sell his/her produce is immediate need. Most farmers confess that they sell their produce because they have cash needs that must be attended to immediately

The farmers growing the improved varieties get much better returns compared to those growing the original varieties. In spite of the somewhat better prices on the open market for the red varieties, the production is low - especially due to rosette disease. As a result, the final margins are better for the tan types. Below is a summary of the gross margin analysis for Serenut II (tan).

**Table 4.2 Groundnuts production margins Analysis, Soroti**

Item	Unit price	Total cost
<b>Inputs</b>		
Land Rental (1 Acre)	25,000	25,000
Seeds 8 basins in shell) serenut 2	8,000	64,000
Bags 16	600	9600
<b>Labour</b>		
Ploughing 1st	15,000	15000
Ploughing 2nd	10,000	10,000
Planting	25,000	25,000
Weeding 1st	30,000	30,000
Weeding 2nd	25,000	25,000
Fertilizer application (optional)		
Spraying		
Harvesting	30,000	30,000
Plucking		26,500
Transport home		16,000
Drying		15000
Cleaning		5000
Bagging		3200
<b>Total costs</b>		<b>284,300</b>
<b>Revenue Return</b>		
Yield 1 acre = 16 bags (40kg each) )		
Farm-gate price per bag =U Shs. 30,000		
<b>Gross Revenue</b>		<b>480,000</b>
<b>Net Margin</b>		<b>195,700</b>

*Source: AT Uganda*

### 4.3 Production Constraints

The constraints encountered by farmers in the production of groundnuts include:

- 1) Lack of seed for improved varieties or expensive seed
- 2) Lack of rapid release of new varieties by the national research station
- 3) Rosette disease for the local varieties
- 4) Heavy rainfall at harvest leads to rotting
- 5) Some varieties are prone to sprouting
- 6) Heavy rains during drying is a problem
- 7) Limited or lack of stores.
- 8) Purchase of gunny bags for storage is expensive
- 9) Damage by pest such as monkeys, dogs and birds



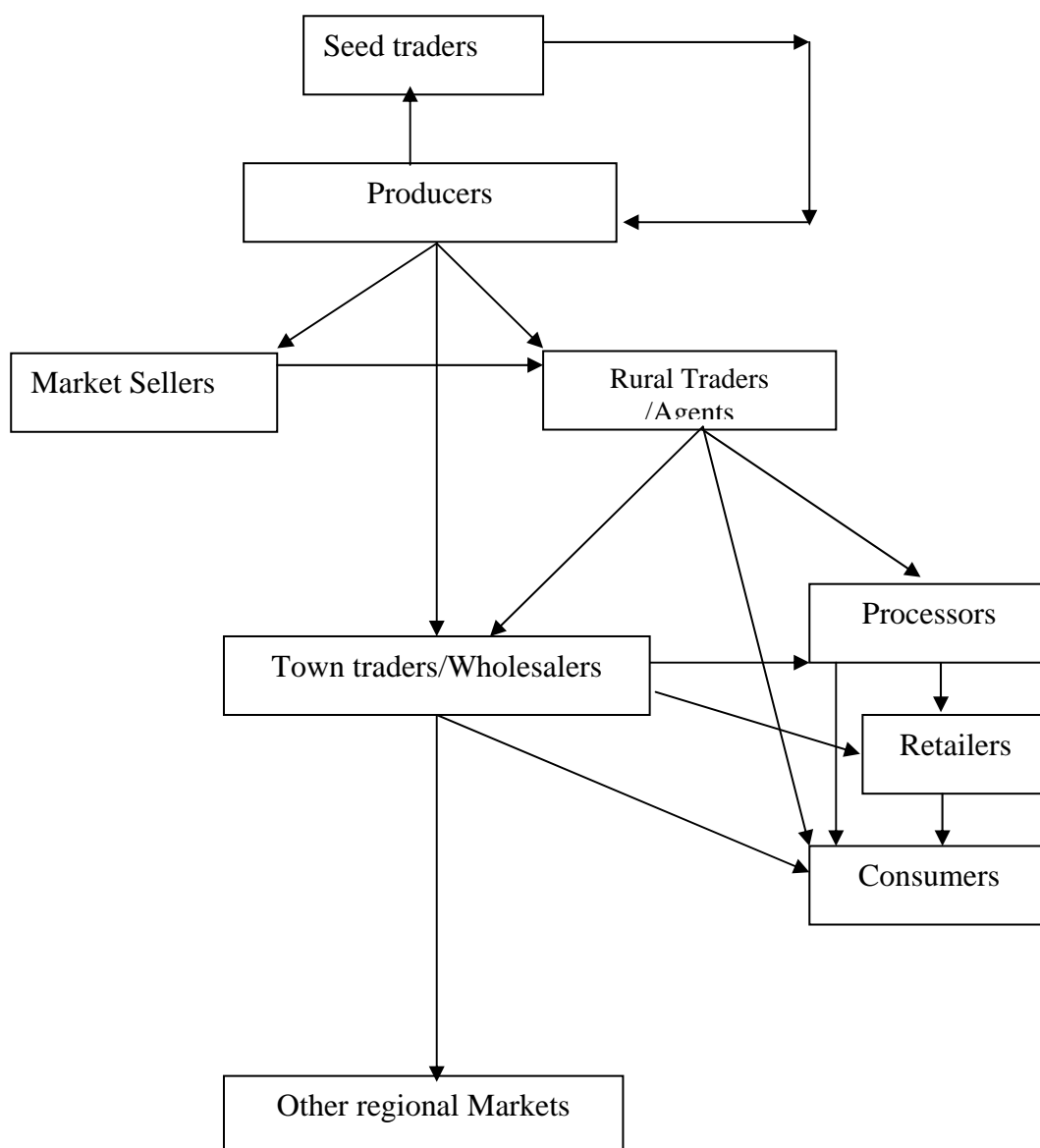
#### **4.4 Consumption of Groundnut and Utilisation**

The utilization of groundnut in Uganda is very wide with slight variations according to region and individual preference. The most important products as far as consumption is concerned are the ground powder paste. The two are produced either by pounding the nuts in a mortar as in homesteads or by a manual or motorised grinder as done by processors. There is also the consumption of roasted nuts as snacks, which although common is not consumed in large quantities as that in groundnut sauce. The processors manufacture peanut butter and other groundnut products. In the eastern region, groundnut skin is removed before pounding or grinding while in the South western and most urban centres the skins are not removed. This has a direct bearing on which varieties of groundnut will be preferred in the different places. Only the region that removes the skin before processing prefers the light brown coloured varieties since to them the skin colour is irrelevant. The other regions prefer the red-seeded varieties.

#### **4.5 Marketing of Groundnuts**

Farmers in the Eastern region find marketing of their produce to be the most difficult challenge they meet in the production of groundnut. Figure 4.1 summarises the groundnut marketing chain in Soroti.

Figure 4.1 Groundnut Market Chain



### **4.5.1 Agents**

The sale to rural traders and town traders is sometimes through agents, who play the following roles:

- buy the produce from the farmers on their farms or the village markets
- inform the buyers of the availability and location of the produce
- inform farmers of the availability of buying points at specific locations and times
- buy the produce for agencies, NGOs and private firms.

The agents hence serve to link farmers to the buyers who are not known in the villages or who do not know the villages. The agents are not necessarily brokers due to the fact that they act on the instructions of the buyers and even where they buy on their (buyers) behalf, they offer prices set by the buyers and utilize the buyers' capital. Some of the agents are actually farmers or belong to the farming community.

### **4.5.2 Groundnut Market Sellers**

The market sellers normally operate at the rural markets. The majority consist of the farmers themselves who carry the produce to the market carry out the actual selling. However, a small number of sellers are not involved in production and only concentrate on the buying of produce from farmers and selling it to consumers at the market. Occasionally, they source for the produce from other markets. Highest volume of sales is driven by the market sellers owing to the frequency and consistency of turn up at the markets. Unlike the farmers, market sellers operate throughout the year and their prices change with the supply. Some market sellers shell whatever they buy and sell as shelled groundnuts. Others sell as unshelled groundnuts retailers who do the shelling. Normally they deal with small volumes like 1-2 bags per market day. They do not have stores and sell their produce in the open-air markets. They have a very limited source of market information especially for situations in distant markets. Their adjustment of prices depends on the local demand, number of competitors and the amounts being delivered to them by the farmers.

### **4.5.3 Rural Traders**

The rural traders normally buy their produce from the farmers, they either collect it from the farm, or they buy it from them at the village market. They normally have stores which where they aggregate stock. Most of the stores are hired on a yearly lease. Some rural traders operate only as long as there are large quantities of the produce with the farmers. When the amounts reduce, the rural traders may decide to engage in a different activity. The rural traders act as buying agents for wholesale urban traders. In most cases money is advanced to the rural trader buy the urban traders. Urban traders are at times based in distant markets and in some cases are not able to communicate in the local language. So the rural traders play the role of easing communication during negotiations. The mobile phone is the most convenient means of communication between the urban trader and the rural trader.

Rural traders deliver their produce to urban traders or wholesalers. They normally shell their produce before delivering to urban traders using machine shellers. They may also shell other farmers produce at a fee. Their source of market information is limited normally just to the few urban traders they deal with.

In the East the trading activities of rural traders reach a peak at the onset of the harvesting and decline to zero activity during the drought months. When the traders cease to bring supplies, retailers are compelled to devise ways of obtaining fresh supplies from areas with abundant supplies such as Kabale, Mbarara, Masaka and Kiboga. They have the option of engaging a local agent in these areas or to travel and be involved in purchasing fresh supplies. The majority use agents although on rare occasions a retailer may travel and purchase the produce himself. On such occasions the retailer goes out on behalf of other traders to assess the market situation and once he is satisfied with the quality, quantity and price of produce, bookings are made with a partial down payment. The produce is then kept in stores located near the municipal market until full payment is made.

This category of traders is located in major towns. They can be found in all large towns such as Mbale, Jinja and Kampala. Their source of produce is normally the rural traders who sell to them what they have bought in the local markets. Two market arrangements exist with the rural traders; the rural traders may deliver their produce for which they will be paid, or the urban traders may send agents to purchase and deliver the produce to them. Either way, the cost of transport is normally met by whoever is responsible for the transportation of the produce to the destination market. Urban traders deal almost exclusively in shelled groundnuts. Some urban traders are also retailers and processors. Otherwise they normally sell large quantities to other traders in other towns, to retailers and to processors. Urban traders and wholesalers deal in large volumes of groundnuts. They have an elaborate network in towns throughout the country and share market information enabling them to adjust prices according to both local and distant demand. They do sometimes also have unofficial associations that assume the marketing regulatory role, including setting prices and ensuring that they are adhered to.

#### **4.5.4 Processors**

Currently, no large-scale processors for groundnut exist. Processing is mainly done by town traders and wholesalers as a means of adding value to their produce before selling. The traders process the nuts into pastes and powder using both manual and motorized grinders. The processed products are normally sold at the point of processing which are normally at market places. It is important to note that the processed products are normally expensive and only ideal for busy town dwellers but not for the villagers who can produce their own. Hence the market for processed products is minimal in the rural areas and processing and value addition are not a priority. Less than 10% of the producers actually added value by shelling, making powder, or paste (Tino *et al.*, 2004).

#### **4.5.5 Retailers**

Normally purchase their produce from wholesalers. They sell properly sorted groundnuts to consumers. They will normally weigh the produce and package it into packs of ½ kg -5kg. Their prices are normally the highest in the whole chain among unprocessed products. Retailers have limited or no market information apart from the prevailing prices at their own respective markets.

#### **4.5.6 Consumers**

Normally buy from retailers already sorted and cleaned produce. They only deal with prices offered by the retailers. They have a wide choice of retailers to pick from. They may purchase either processed or unprocessed produce depending on their needs.

### 4.5.7 Seed Dealers

Seed dealers are a special category of players in the groundnut market chain because they do not deal with products for food. They may be seed companies or individuals who purchase good quality produce from selected farmers and sell it as seed. Their produce is supposed to come from selected farmers whose farms were monitored during the growth period, but some simply buy from farmers as long as they are satisfied that it is a pure variety. Seed dealers normally offer very high prices compared to the normal produce price. They will normally buy it in-shell and do hand-shelling to avoid mechanical damage and preserve higher germination rates.

## 4.6 Groundnut Price trends

The groundnut price trends in Uganda are very complex and unclear, but some facts can be established from them.

- 1) The average groundnut price in Uganda is far higher than at the international markets. The average price at the international market in Rotterdam is about \$0.5 per kilo of shelled groundnuts (Revoredo and Fletcher, 2002). In Uganda, the average price from major markets for the same year was \$0.84.
- 2) No specific town, area or season consistently posts a higher or lower price. This is largely due to the constant movement of the produce from surplus areas to deficit areas. As a result of the network developed by the traders, it is easy to know where a deficit is and supply it hence stabilizing the market.
- 3) Generally, the retail price of groundnuts is increasing with time. The annual averages show a steady increase since 2002.
- 4) Generally, the range between the highest and the lowest price is decreasing with time. This implies that the price differences between markets are becoming more and more stable. The reason for this is may be related to the improved market information and the increased ease of accessing distant surplus markets during times of shortage. According to a dealer at Jinja market, produce is acquired from where it is in plenty depending on the period of the year; January to may from Arua region, June to August from Busoga region, September from Masaka region and October to December from Teso region.

According to traders, their prices are determined by the buying price of the produce and the transaction costs all the way from the purchase to when it arrives in their stores. Most farmers have an estimate of what it costs to transport a bag of groundnuts from one point to the other. A summary of the produce prices at various levels of the market and the margins at each stage are summarised in the table below.

## 4.7 Groundnut Marketing Profit Margins

Table 4.3 Groundnut marketing margins (Ushs) of Two Common Varieties

Stakeholder	Selling price UShs. (tan)	Margin	Selling price UShs.(red)	Margin
Producers	800		1000	
Market sellers	900	100	1100	100
Rural traders	1050	150	1250	150

Stakeholder	Selling price UShs. (tan)	Margin	Selling price UShs.(red)	Margin
Wholesalers/Town traders	1100	50	1300	50
Retail price (Mbale)	1200	100	1400	100
Wholesale (Kampala)	1500	300	1500	100
Retail (Kampala)	1600	100	1600	100

*Source: AT Uganda, field survey 2006*

## 4.8 Quality Control

The existing production and marketing structure does not have serious considerations for quality. This could be due to a number of reasons:

- limited knowledge of good quality attributes
- the consumers do not consider some quality attributes when choosing produce
- absence of documented national quality standards
- lack of a quality enforcement body

Among the farmers, there was very limited knowledge over what quality standards are important. Very few farmers for example knew that groundnuts develop “poisonous substances” called aflatoxin when they are not properly handled during harvesting and storage. . Because farmers sell most of their produce in shell, they do not pay much attention to quality since there is little to be noticed in this form. The traders are concerned with the grain size and broken grains, which they sort and separate to have good quality, uniform and fully skinned nuts. The processors dealing with registered products and organizations interested in exports are the only ones who consider aflatoxin levels, which is the most important quality consideration for international trade. In such circumstances, the standards at the destination market have to be followed (FAO, 2001). Otherwise the ordinary processors do not mind since the small, shrivelled and broken grains are normally ground into pastes and powders. The quality control committees of the newly formed marketing associations have established some assessment criteria for the nuts that the association bulks for the purpose of marketing. Under these criteria, size, moisture content, and trueness to type of varieties are considered. Table... below gives maximum aflatoxin levels acceptable at some of the important world markets.

Table 4.3 Maximum Possible Levels Of Aflatoxin In Imported Groundnut

Country	Aflatoxin type	Maximum permissible level (ng g <sup>-1</sup> ), 1995	
		Foodstuffs	Livestock feed
Belgium	B <sub>1</sub>	5	20
France	B <sub>1</sub>	1	20
Germany	B <sub>1</sub>	2	20
Ireland	B <sub>1</sub>	5	20
Italy	B <sub>1</sub>	5	20
The Netherlands	B <sub>1</sub>	0	20
Sweden	B <sub>1</sub> , B <sub>2</sub> , G <sub>1</sub> , G <sub>2</sub>	5	10
UK	B <sub>1</sub> , B <sub>2</sub> , G <sub>1</sub> , G <sub>2</sub>	4	20
USA	B <sub>1</sub> , B <sub>2</sub> , G <sub>1</sub> , G <sub>2</sub>	20	20

*Source: Freeman et al., 1999*

The Uganda National Bureau of Standards (UNBS) has not developed any groundnut quality standards specific for Uganda. Issues concerning quality are dealt with using standards borrowed from international CODEX Alimentarius standards, which are internationally recognized, uniform and reasonable. No organization plays any form of regulatory role for groundnut quality.

## 4.9 Marketing Constraints

Listed below are some of the constraints to marketing as reported by a cross-section of the people interviewed and observed during the survey. The list may not be conclusive but generally represents the most important constraints to marketing at all levels.

### 4.9.1 At Farmer Level

- Low prices offered for the farmers produce: Most farmers felt that they do not get a fair price for their produce leading to their being discouraged. They however were not very sure of how to determine a fair price. Farmers receive about USh. 800 per kilo of shelled or USh. 24000 per bag of unshelled groundnuts at the worst and USh. 1300 per kilo (39000 per bag of unshelled). The farmers lacked information on world market prices and even the prices in other Ugandan towns. Lack of information on the best market prices and buyers: Most farmers feel cheated by the buyers of their produce because they lack market information. They always feel that the prices out there are far better than what they are offered. This results in two problems for the farmers, firstly, they are not satisfied with what they get and secondly, they are unable to bargain for better prices. One farmer commented as follows: “The buyers come here and cheat us that the prices are very bad out there. They buy our groundnuts at USh.1000 per kilo and cheat us that they are going to sell at USh.1200. We don’t think so; we believe they sell at much higher prices. If they sell at USh.1200, how could they afford transport and other costs?”
- Immediate need problem: Some farmers felt that they are normally in dire need for cash to fulfill their immediate cash needs so they are unable to wait for market prices to improve nor to reject unfair prices offered. This hinders their ability to get the best price for their produce.
- Lack of a standard measuring equipment for unshelled groundnuts: Most of the unshelled maize is sold either in bags, basins, or korokoro. This kind of equipment is open to abuse by unscrupulous traders. For example, a typical bag of

unshelled groundnut should contain six basins and weighs about 40kg or 30kg shelled, but it all depends on the size of the bag and how it is packed.

- **Transport problems:** Farmers lack good means of transport to use for delivering their produce to the market. They mostly carry it on their heads and on bicycles. This also limits the markets they can access to only those in their neighbourhood. In addition, there is the problem of poor roads, some of which are almost impassable during the rainy season. Such roads affect the prices that the farmers get since buyers argue that transport costs to such areas is high and will eat into their profits.
- **Dishonesty of some farmers and buyers:** This problem is related to the (4) above in that dishonest traders insist on using their own measuring containers which are large during buying (and smaller when selling). When purchasing in bags, they insist on extended bags which may carry up to seven basins instead of six for a normal bag.
- **Rapid release of varieties:** Just as it is a problem at production level, so is it at marketing level. Farmers feel that new varieties are released before they have adequately grown the previous ones to profitability. The market prices hence keep changing since the new ones will fetch high prices for seed.
- **Lack of confidence in collective marketing:** Farmers seem to remember the problems that affected farmers' cooperatives in the previous years making them very hesitant to form any other association. Cooperatives, in the times when produce marketing was controlled by government, were responsible for purchasing all the produce of farmers assigned to them. It was mandatory then for farmers to belong to a cooperative. However, cooperatives were plagued by internal wrangles and mismanagement that affected their ability to raise funding to buy farmers produce. As a result, much of the produce got spoilt or was sold cheaply at below cost of production. Eventually, the inefficiencies of the cooperatives and their loss of credibility led to their collapse. The farmer confidence in farmers associations therefore will have to be very slowly and carefully built because they take on the shape of cooperatives which bring back bad memories.

#### **4.9.2 At Trader Level**

The constraints listed below apply to market sellers, rural traders, town traders/wholesalers and all their agents.

- **High local market prices for groundnut:** As already discussed, the prevailing prices on the local market are higher than the international prices. This actually discourages international trade in groundnut. Despite these high prices, farmers still wish to have better prices. Traders who wish to engage in international trade find it difficult to offer farmers the international prices especially when the transaction costs have been deducted. The international market price is largely determined by large producers with the capacity to produce groundnuts on a large scale at low cost. These producers are more technologically advanced than Ugandan producers in terms of high yielding seed varieties and equipment that enable them achieve economies of scale.
- **Transportation costs for distant purchases:** Many traders actually use private transporters to ferry their produce. This reduces their profit margins to a minimum. This is confirmed by a survey conducted by AT Uganda where it was



established that all the traders together share only 37.5% of the profit margins as compared to the farmer who retains 62.5%.

- **Price fluctuations:** The rapid changes in prices are sometimes a problem especially to traders who purchase large quantities. When prices fall, they have no alternative but to go with the new prices meaning they have to incur losses. Price fluctuations of agricultural commodities are a common phenomenon which is associated with seasons of surplus and shortage. At the harvest the market is flooded with commodities which force the prices down and during dry season supplies are low and high demand forces the prices up.
- **Poor quality produce:** Wholesalers normally wish to have very properly sorted grains to send to distant markets, especially the Kenyan market. They however receive machine shelled produce from the farmers, which is normally broken, unskinned, and contains rotten nuts and lots of foreign matter such as stones and shell particles. This forces them to sort the produce, a process that is time and money consuming. The processors do not have such a big problem with broken and unskinned produce but they also have to remove foreign matter and rotten nuts. The export quality produce is usually shelled by hand to ensure proper sorting and to avoid breakage of the nuts.
- **Aflatoxin contamination:** Although this seems not to be of concern at local trader level, most potential exporters are very concerned about the aflatoxin content of the groundnuts on the markets. The problem however needs to concern all market players since preliminary studies have shown much higher levels in the traders' and processors' produce than in the farmers'. The process of determining the presence of aflatoxin is long and expensive since only few places have the capacity to do it.

## 5.0 INDIVIDUAL GRAIN ASSESSMENT – UPLAND RICE

### 5.1 Production

An increasing number of farmers in Northern and Eastern Uganda have ventured into upland rice growing. However, the upland rice yields are generally low compared with paddy rice. These can be increased by proper timing of planting, the adoption of improved varieties and modern crop husbandry practices that suit the soils, climate and social economic conditions such as the capacity to sustain production in terms of labour and finances.

Despite inadequate research and support extended to upland rice farmers, they have acquired a range of skills and knowledge on conditions and practices that are passed on from farmer to farmer. These include knowledge of different soil types, set and pattern of rainfall, an appreciation of the different characteristics of seeds and their suitability for different cultivation and labour requirements and agronomic practices.

#### 5.1.1 Eastern Uganda

In the Eastern region, JIDDECO is spearheading the introduction of upland rice of Suparica II variety as a commercial crop. The scheme was launched in March 2006 in Iganga district with future prospects of covering other areas beyond Iganga where JIDDECO has a presence in the next 2 years. Preliminary field results on the performance of the crop have shown that 80 – 90% of the produce is consumed domestically due to low yields while 5% is set aside as seed and the rest marketed. The low yields have mainly been due to poor agronomical practices such as late planting and poor timing of weeding. Yields have been as low as 50kg per acre as opposed to the expected 100 kg per acre.

The principal objective of introducing upland rice in the Eastern region by JIDDECO was to enhance household income while maintaining a reasonable level of food security. The choice of Upland was based on a number of factors including; high market price due to strong demand, easy adoption due to minimal input requirements and short maturity duration.

The approach used by JIDDECO to encourage Upland rice production is to provide seed to farmers on credit. Normally, 20kg of seed is provided for an acre. A kg of seed costs Ushs 2,500 in Iganga. So each beneficiary receives credit worth Ushs 50,000 of seed equivalent per Ha. The estimated yield per Ha is 100 Kg. A flexible mode of repayment has been adopted for the Upland rice credit scheme. Repayments are determined by yield achieved in a specific season. If yields are good a farmer is obliged to repay back the full amount of seed loan due to him with some interest. If yields are poor the farmer is asked to repay a portion of the loan and the balance is carried forward to the next season.

VECO Uganda is another partner organization involved in the support commercial production of upland rice in the Eastern region. VECO has played a significant role in mobilizing and organizing the farming community in the East for production. VECO is a Belgian NGO working towards the improvement of the livelihoods of the resource poor members of farming households on a long term basis through program support and organizational strengthening of local NGOs, CSOs and farmer associations as well as

promoting the creation of a more favorable environment for genuine people's participation in development. In order to reach out to more farming households VECO Uganda works in partnership with farmer organization and service NGOs. Support to service NGOs is to enable them to provide quality and relevant services to the farmer NGOs. VECO Uganda also promotes farmer empowerment and civic engagement through capacity building and mobilization of farmer organizations and other CSOs into district based coalitions. It is on the basis of the above background that in Iganga VECO Uganda is working with IDFA to strengthen their capacity to deliver quality service to its farmer recipients.

Rice is grown organically with no chemicals such as fertilizers, herbicides and pesticides used for production. Implements and tools are bought from agricultural shops located in Jinja town. These include hoes, pangas and slashers.

In the South West, upland rice is being introduced by ADP and SASAKAWA 2000. Upland rice was first introduced 4 years ago but the adoption has been modest due to low levels of support from development organizations and high prevalence of pests especially birds.

### **5.1.2 South Western Uganda**

In South West, upland rice is grown both in the first rain season between March and May and second rain season between August and December. The major growing season is the second season during which there is more extensive growing of rice. Production commences with land clearing to remove bushes and other vegetation by slashing, chopping and burning. This is followed by 1<sup>st</sup> and 2<sup>nd</sup> ploughing to prepare a fine seed. Fallows are made and seed is dribbled along the rows. 1<sup>st</sup> and 2<sup>nd</sup> weeding is carried out and timing is based on the intensity of weed growth. At 3 – 4 months the crop is mature and ready for harvest. Harvest is done using pangas and sickles. After harvesting, the crop is spread out on bare ground to dry. When dried, the crop is threshed by beating with sticks to remove the grain. The grain is separated from the chuff by winnowing using locally made baskets.

### **5.1.3 Production inputs**

There is little rice grown in the South West that is marketed beyond the region due to the strong local demand that consumes all available supply.

Table 5.1 below gives the cost of inputs used in a typical Upland rice farm in the Eastern region.

**Table 5.1 Production Inputs for upland Rice, Eastern Uganda**

Inputs	Price
Hoe	3,500
Spade	5,000
Wheel barrow	45,000
Slasher	2,500
Seed	1,700/kg

Information emerging from the ongoing piloting phase of Upland rice production is that Upland rice is grown on ½ acres. The small acreage designated for Upland rice is based on the cautious approach farmers are taking in adopting the crop. Based on interviews with farmers Upland rice is being grown on an experimental basis until farmers are confident enough to increase acreage. It is envisaged that in the next 2 to 3 years, if yields are good, the average acreage could go up to between 1 and 1½ acres.

#### **5.1.4 Production Cycle**

Rice growing seasons are April to May and September and October. The production process involves tilling the land by hoe to prepare for planting; planting is by sowing as opposed to broadcasting to enable proper weeding. Sowing is done in late February as a means of timing the first rains (broadcasting is avoided as this increases labour requirement for weeding). The grass around rice fields is burnt to minimize damage by rats. Most of the labour is provided by groups of farmers in the neighbourhood. Weeding usually takes place after one month and is done by hoe. The rice is ready for harvest after three months and harvesting is done using rudimentary tools such as knives. The whole production cycle takes 90 days from planting to harvest. The harvested rice is then, bagged and stored. From the survey it was found that a number of farmers employ poor methods of drying rice. Some mentioned that they place rice on the ground coated with dried cow dung to dry. This is an indication that a number of farmers are unaware of the effects of drying methods to the quality of rice in terms of flavour (absence of off flavours emanating from the soil) and purity (absence of foreign material such as stones and other particles). However some farmers have demonstrated knowledge of the importance of using clean drying surfaces by using clean surfaces like plastic sheets.

#### **5.1.5 Post harvest handling**

The dried rice is threshed by hand and the chuff is removed by winnowing. The rice is then bagged and stored for either home consumption or for sale. Storage is mostly done in the farmers house because farmers feel this provides a greater sense of security from theft. However, the larger scale producers with 3 ha and above have constructed stores where the rice is kept. On average, it costs Ushs 400,000 to construct a store. Rice is bagged in bags of various sizes of: 70kg, 80kg and 100kg. The rice is normally transported by bicycle to millers where the husk is removed from the rice grain by rice mills. The quality of rice coming from mills is variable and is determined by the type of mill. Majority of the small-scale mills are fabricated locally by artisans and are not efficient in cleaning and sorting the rice. As a result, the rice coming from them is poor quality with a lot of broken grain and foreign matter. The larger scale mills which are usually imported from Japan or China produce better quality rice.

The large scale mills are operated by big rice processing companies like Tilda. Most of the mills are located in the major towns of Iganga and Busembatya or at big rural trading centers. It normally costs a farmer Ushs 2000 to transport 80 – 100 kg bag to a mill 5km away. The price paid to the farmers by millers is determined by the quality and the variety of rice. Table 5.2 gives a range of prices different rice varieties fetch.

Table 5.2

Variety	Price / Kg
K 45 (paddy variety)	800

Upland rice	800
Supa (paddy variety)	600

Rice used for home consumption is processed by grinding the grain in a mortar to remove the husks. The quality of rice processed this way is very low with a high content of fiber from the husks and other foreign matter.

Most of the marketing of un milled rice is undertaken by middlemen who aggregate rice stocks by buying from several smallholder farmers at farm gate. Rice is taken to millers by farmers mostly on occasions where there is an urgent need for cash.

Threshing is carried out with sticks either in the fields or compounds of homesteads. Transport to milling machines is usually hired by the farmer. However, some farmers sell un milled rice on the farm directly to rice traders. Such practices are mainly used by smallholder farmers with average upland fields of less than 1.00 ha.

### 5.1.6 National Production Levels

The main upland rice growing areas in Uganda are shown in Table 5.3. A total of 43,300 hectares were under upland rice in 2002 with almost 50% found in Gulu district. Other areas with upland rice landholdings of approximately 1,000 hectares include Lira, Kibaale, Bundibugyo, Iganga, Kumi, Tororo, Soroti

Table 5.3

Agro – Ecological Zone	Estimated area for Upland rice in Hectares
<b>West Nile</b> Arua, Moyo, Adjumani, Nebbi	100
<b>Northern</b> Gulu, Kitgum	23,000
<b>Mid – Northern</b> Apac, Lira	10,000
<b>Eastern Highlands</b> Kapchowa, Mbale	200
<b>Eastern</b> Soroti, Kumi, Pallisa, Tororo, Katakwi	3,000
<b>South Eastern</b> Iganga, Kamuli, Jinja, Bugiri, Busia,	2,000
<b>Lake Albert Crescent</b> Masindi, Kibaale, Hoima	6,000
<b>Western Highlands</b> Bundibugyo, Kabarole, Kasese, Bushenyi	2,000
<b>Total</b>	<b>46,300</b>

### Cost of production

Table 5.4 shows the inputs farmers need on an annual basis. It should be noted that these inputs are not required annually.

Table 5.4 Farmer Inputs in Rice Production

	Low Input Farmer		Medium Input Farmer	
	Quantity	Value	Quantity	Value
Hoes	3	18,000	4	24,000

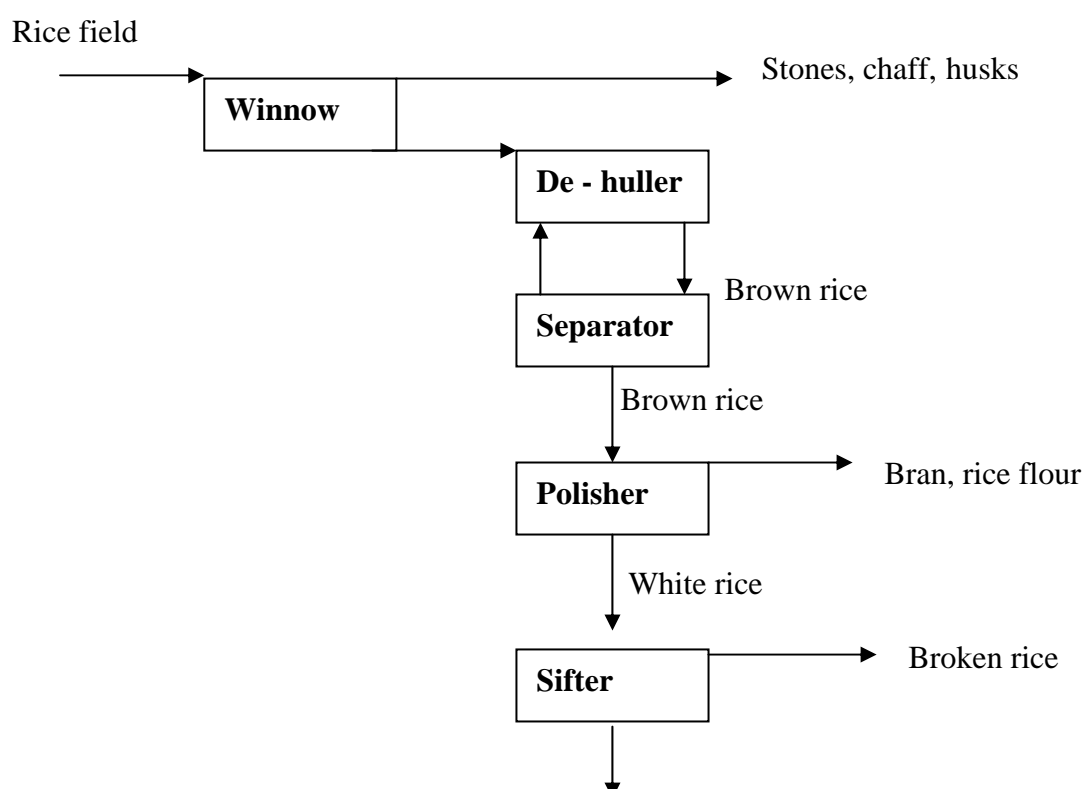
Rakes	-	-	1	2,500
Shovels	-	-	1	5,000
Gunny bags	14	8,400	28	16,800
Seeds (Kgs)	80	24,000	80	80,000
Fertilizers(Kgs) NPK, SSP	-	-	150	105,000
Herbicides (litres) Stomp	-	-	4	26,000
CP – 15 Pumps	-	-	1	90,000
Pangas	1	2,500	1	2,500
<b>Total</b>		<b>52,900</b>		<b>351,800</b>

## 5.2 Processing of rice

The post-harvest requirements of small-scale rice farmers are minimal. Their harvest can be hand reaped and threshed, sun-dried, stored in bags and baskets, and milled at small local mills. Commercial rice producers should by necessity introduce modern post-production technologies that will improve productivity and quality, with appropriate economies of scale to make their investments viable. While the same mills can be used for hulling upland and paddy rice, machine / settings will vary for any one of the two varieties.

Ideally, the hulling process should start with separating the grain from any debris such as stones, dust, rubbish and any other foreign material. However, in most cases, mills in Uganda overlook this step. The rough rice passes through "sheller" machines that remove the hull, and generate brown rice, with the bran layers still surrounding the kernel as illustrated in Figure 5.1 (IDEA Project)

Figure 5.1 Process Flow of a modern Rice Mill



Source: Agribusiness Development Center

Recent development in the milling industry has had strong contribution from the private sector. The number of firms engaged in rice milling has increased considerably in the past 10 years, with the number of mills increasing more than four fold during the period. Most of the new millers are small scale with little capital. A survey of the millers conducted by IDEA project in Mbale, Tororo, Pallisa, Gulu, Apac and Lira towns showed that about 85% of millers had milling investments of less than US\$ 10,000 as shown in Table 5.5.

Table 5.5 Milling Investments in Uganda

Town	Cost of Mills (US \$)		
	< \$ 10,000	\$ 10,000 – 50,000	> \$ 50,000
Mbale	11	4	1
Tororo	16	2	1
Gulu	13	1	1
Lira	14	2	0
Apac	8	0	0
Pallisa	14	2	0
Total	76	11	3
Percent of Total	85%	12%	3%

Source: Idea project 2003

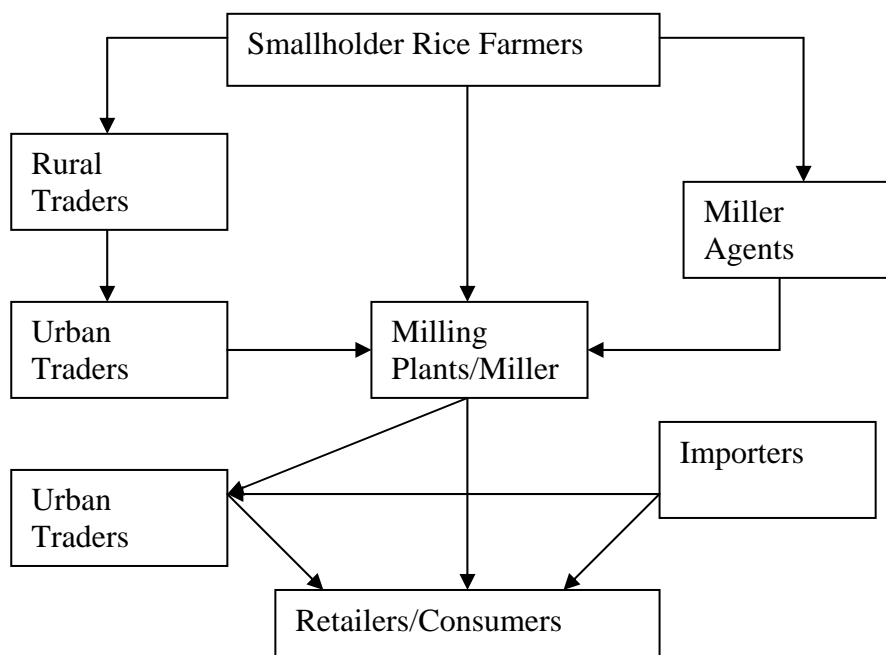
As shown in the table above 85% of the rice mills the low cost of less than \$ 10,000 and 12% are the medium cost mills of between \$10,000 and \$50,000. Only 3% of the mills cost above \$ 50,000. Lira has the highest concentration of mills with followed by Lira and Pallisa.

Volume of production at the farm level has a great influence on adoption of technology. Fragmented farms located in diverse locations have encouraged the growth of small and cheaper mills with simple technology. It is only at Kibimba Rice Scheme where large-scale farming has resulted in more modern processing technology. However, of recent the consistent increase in rice production in the traditional rice growing areas has boosted investments in rice milling. Nonetheless, the volume of production is still low. This affects capacity utilization, and hence profitability of the mills. With about 150 rice mills in Uganda, with an average milling capacity of one ton per hour, working 8 hours per day for 220 days in a year, Uganda has rice milling capacity of 264,000 Mt per year. This is about 2.5 times the volume of rice produced. Therefore, the under utilization of the mills affects profitability of the milling process, and is the biggest hindrance to the adoption of more modern milling technologies. (IDEA project 2002)

### 5.3 Marketing of Rice

The rice marketing outlets can be categorized into three main stages namely primary, secondary and tertiary. The primary stage involves farmers, rural traders/processor agents as the key players. The secondary stage consists of mainly processors and urban traders, while the tertiary stage includes urban traders and importers (Figure 5.2). The players at each stage of the marketing chain influence the overall market conduct and performance.

Figure 5.2 Rice Marketing in Uganda



About 40% of the rice supply is from imports. This is in contrast to almost 80 % of rice imports 15 years back before the introduction of rice as a commercial crop and the establishment of rice miller that now spread over a wide area in the North and North East with varying capacities. The entrance of Tilda rice, a big multinational, transformed the whole landscape as the setting up of their large scale processing facility meant that economies of scale could be achieved making the cost of production lower than the cost of imported rice. Because of the competitive advantage of low unit costs of production and the nice aroma of Ugandan rice, imported rice is gradually losing its competitiveness in the Ugandan market.

### 5.3.1 Primary Rice Marketing Stage

This stage involves negotiations between the farmers with either rural traders or processors' agents. Most often, rice farmers with less than 0.4 ha sell the unmilled rice to either rural traders or processors' agents who collect it from their farms. Rice farmers with landholdings of more than 0.4 ha transport the unmilled rice to the mill and mill it prior to actual sale. It should be pointed out that while the incidences of rice farmers selling milled rice was more common in Eastern Uganda, in the case of Northern Eastern Uganda the farmers typically sold unmilled rice at farm gate. The rice farmers in Northern Uganda attributed the sale at the farm gate to insecurity, inaccessible road networks and high transport costs to the milling centers.

In the Eastern region, there is heavy involvement of middlemen in the marketing link between smallholder farmers and millers. Middlemen buy rice from the farmers after bargaining for the lowest price possible. The middlemen sort and grade the grain according to variety, and quality. Grading is a strategy used by middlemen to maximize earnings. The rice of higher grade or quality is marketed at a higher price than the one of lower grades. The grade of rice is determined by cleanliness i.e. lack of foreign matter like



stones and husks and wholeness of the grain i.e the level of breakage. Rice that is free from foreign matter and the grain is not broken is ranked as the highest grade. Lower grades are determined by the level of breakage and foreign matter content. The same principle applies for varieties as well. The highly demanded varieties are sold at higher prices than the least demanded varieties. Middlemen act as the primary aggregators of rice produce in the marketing chain. They usually hire store in the towns or at the trading centers where rice stock accumulated from farmers is bulked prior to it being sold to millers. The price of un milled rice ranges between Ushs 600 – 800. Most of the rice mills in the Eastern region especially in Iganga and Busembatya are locally made brands with a low outturn and poor quality yield of rice grain. Rice coming from these mills has a high content of foreign matter especially husks. At times the quality is so bad that sorting by hand and secondary winnowing is done to clean the rice before packing and selling to retailers.

The milled rice is usually sold either locally or in neighbouring towns or in Kampala if in large quantities. The demand for rice is strong and rapidly increasing. Rice is a universally consumed food by people from all walks of life regardless of income segment, cultural or ethnic background. The advantage of rice over foods is the ease of preparation in terms of cooking time. Because of the short cooking time, several households are consuming more rice to save on fuel wood, charcoal and other sources of energy. Hence rice is steadily substituting of many staple foods in several households. This has created a strong demand but prices are still high for the low income segment due to insufficient supply. Demand levels for rice are evenly distributed across the country. However, in Kampala and the big up country towns like Jinja Mbale Masaka and Mbarara, demand is matched by consumption due to relatively high population with disposable incomes. Due to insufficient supply from domestic producer to meet high urban consumption, the supply gap which is created is being filled by imports from India, China and Kenya.

The primary stage is characterized by minimal competition and the price paid to the farmers is often low. The main constraints observed at the primary marketing stage included the following:

- Limited competition, thus weak bargaining position for farmers.
- Inadequate market information
- Inadequate post harvest knowledge and handling
- Inadequate storage facilities.
- Lack of grading systems Poor road networks, which were inaccessible during rainy seasons

### **5.3.2 Secondary - Milling plants**

Mills are most often located in trading centers of the main rice growing districts. The mills are also marketing centers where negotiations and deals are concluded between rural traders, processors and urban traders. This stage involves mainly assembling of milled rice and storage as well as selling of milled rice by relatively large-scale farmers, rural traders and processors to the urban traders.

Large-scale farmers often prefer to absorb transport costs to milling centers and pay for milling charges prior to selling their rice. Also, rural traders who collect threshed rice from farmers typically mill it prior to actual sale to urban traders.

A decision by these farmers to incur transport and milling expenses is weighed against the additional benefits accruing from final sale of the milled rice. Otherwise, it could be uneconomic for farmers to engage in such activities, especially where transport costs and milling charges are relatively high.

The secondary stage reflects relatively minimum level of competition amongst the urban traders, since entry is limited due to high capital requirements. The main constraints noted at this stage include:

- Inadequate storage facilities
- Limited entry due to high capital requirements
- Unreliability and seasonality of milled rice supply.
- Price fluctuations

### 5.3.3 Tertiary - Urban Traders

This stage involves large-scale urban traders who are mainly wholesalers and importers who either purchase the milled rice from the processors and farmers or import it. These traders are mainly based in Kampala while a few are from other urban centers. Apart from actual purchase of the milled rice, these urban traders often engage in rice cleaning, aggregation and bulking. It is after this process that milled rice is passed to retailers for consumers.

Due to large capital requirements, there are relatively few traders at this level the main constraints found at the tertiary stage include:

- Limited entry that affects the level of competition.
- Unreliability and seasonality of milled rice supplies
- High marketing costs
- Price fluctuations

## 5.4 Distribution of Margins

Table 5.6 shows the margins obtained by various participants in the upland rice production-consumption chain. From the table, it is evident that agents, wholesalers and retailers took the largest margins. Upland rice farmers realized a loss of about 2%. This implies that farmers who are the key players in upland rice production did not receive a fair share as compared to other participants. This manifests the inefficiencies existing in the upland rice marketing system.

Table 5.6 Margins for Various Participants (US\$/Kg)

	Margins US\$/Kg	Percentage
Farmer	-5	-2
Rural Agent	91	40
Miller	10	4
Transporter	15	7
Wholesalers	74	33
Retailers	40	18

Source: Uganda Bureau of Statistics Price Data 2004

## 5.5 Upland Rice Quality Status

Table 5.7 summarizes the main factors affecting upland rice quality. The poor post harvest handling practices negatively impact on the quality of the final rice product.

These practices include manual threshing of rice on dusty grounds resulting in its mixing with stones and dust. In addition, the storing of un milled rice in stacks does not allow proper aeration but instead leads to rapid moisture absorption and a breeding ground for pests. As a result, during milling, such un milled rice yields low output due to either being broken or reduced to flour that goes out as bran. The field results confirmed such occurrences during the field visits, which revealed that broken rice was as high as 50% of the total yields.

Besides, efforts to improve on rice quality by traders do not achieve much, due to the absence of modern equipment and anxiety to sale off the produce.

Table 5.7 Factors affecting upland rice quality

Level	Quality Parameters	Factors
Harvest	Mature rice absorption of moisture due to weather changes	Manual reaping with sickles which is a slow process.
Post harvest handling	Stones, dust and husks	Manual threshing methods using sticks on dusty grounds and floors Winnowing method using baskets and wind power
	Moisture absorption results in poor yields during milling Loss of colour	Sun drying on open platforms is affected by weather changes and contamination. Not enough drying time due to anxiety to sale
	Dust, pests and other foreign particles like animal and bird droppings contamination	Rice is stored in stacks on open dusty floors at farm level.
Milling	Poor yields with a lot of bran	Poor machinery and operator ineptitude
	Dust and foreign particle contamination	Poor storage at mills
Marketing	Moisture absorption resulting in mould growth and loss of colour	Leaking stores
	Pests and foreign particle contamination	Lack of separate storage facilities
	Broken rice Stones and husks	Limited cleaning equipment, sorting space and time.

Source: Idea Project

## 6.0 INDIVIDUAL GRAIN ASSESSMENT SORGHUM

### 6.1 Sorghum Production

Production of sorghum is mainly by simple hand tools such as hoes, axes, pangas e.tc. Farmers who own oxen use them for ploughing and the implements used for ploughing include a draught power plough mounted on an ox. Most of the implements used for production can be bought from nearby local markets or shops.

Generally farmers use their own seed for planting but improved varieties are now being introduced by NGO's and NAADS. The new varieties have been selected based on a number of characteristics such as resistance to pests, diseases, drought, their color size and quick maturity and commercial value. Epurpur is one such variety that is being introduced for its commercial value in the brewing industry. It is the main raw material used in the brewing of Eagle lager brand, a product of Nile Breweries.

Sorghum grows well in the North East and is one of the most extensively grown cereals. Its peculiar characteristics have made it a highly adaptable crop to the harsh conditions found in this region. These, among others include:

#### *Resistance to drought*

Sections of the North East are semi arid with rains that are erratic and unpredictable. It is estimated that in some part of the region especially in Karamoja, crop fail at least one year in five. According to studies done by LWF/KADP on the resistance of sorghum to drought, it has been established that 40% of sorghum varieties are tolerant to drought.

#### *Resistance to attack of pests and diseases*

While most crops are susceptible to attack from a range of pests and diseases, some sorghum varieties are resistant to certain pests and diseases like stalk – borer and sorghum shoot fly. These varieties include: *Ikwailithe*, *Logoomo* and *Napet*

In the North East, sorghum has got two growing seasons; one from March to May and the other from September to November. The production process involves the following activities: land clearing by slashing and burning to remove vegetation, 1<sup>st</sup> and 2<sup>nd</sup> ploughing by ox plough to prepare a good seed bed, planting by broadcasting, 1<sup>st</sup> and 2<sup>nd</sup> weeding to eliminate weeds and harvesting when the crop is mature.

Harvesting is carried out by cutting the heads with knives. The harvested crop is transported to the farmer's home and spread on the ground to dry. When the drying is complete, threshing by beating the crop with sticks is done to remove the grain from the plant. This is followed by winnowing to remove chuff and bagging in plastic bags. Most farmers keep the produce in their houses because of lack of storage facilities.

### 6.2 Consumption and use

Processing is either done in the home or at grain mills. At the household level, processing involves grinding the grain together with cassava flour in a mortar. Farmers with large quantities take the grain to mills where it is also ground together with cassava flour. Cassava is blended with millet to give it taste and to bind it together when making

local bread called Atap.

Grinding mills are mostly located in towns and close to big village markets. Towns where mills can be found include Monrapesur, Agip, Nakatunya, Pamba and Soroti.

Sorghum is primarily grown for domestic consumption although, increasingly, some is sold to raise cash for basic home requirements such as soap, salt medical care, school fees etc. Sorghum is consumed in various forms including:

- As local bread called Atap
- Fermented into a local brew called Ajono
- As porridge called Euji.

Epurpur variety is grown purely on a commercial basis with the objective of selling it to Nile Breweries who are currently the sole buyers. Once the grain has been dried it is taken to a Nile Breweries agent located in the major towns where it is bought. The grain is used in the brewing of a popular brand of beer called Eagle lager.

In the South West, sorghum growing is mainly dominated by the local varieties. Efforts to introduce Epurpur were fruitless because almost all farmers that attempted to grow it eventually gave it up. This was due to the heavy losses they encountered caused by heavy attack of the crop by pests especially birds and stalk borer.

The planting process in the South West involves land clearing, 1<sup>st</sup> and 2<sup>nd</sup> ploughing to prepare a seed bed, sowing, 1<sup>st</sup> and 2<sup>nd</sup> weeding and harvesting when the crop is mature. Harvesting is done by cutting the head which contains the grain. The grain is dried while still on the head and stored. Threshing only takes place either when needed for domestic consumption or when a market has been identified. The grain is usually sold as whole to the retailers who do the grinding into flour. Grinding is done by mortar if the grain is in small quantities otherwise it is taken to mills.

Sorghum flour is usually mixed with cassava flour and consumed as a meal or as porridge. Other forms of consumption of sorghum in the South West include:

- Fermented to make local beer
- Making of a local soft drink called obushera.

### **6.3 Production costs and margins**

### **6.4 Marketing of Sorghum**

Sorghum is sold by farmers either at the farm gate level or at the nearest rural market. At the farm gate, agents and individuals come and negotiate prices with the farmer. Of the total sorghum marketed about 80% is sold at the rural markets and 20% is sold at the farm gate level. At the rural markets, sorghum is purchased by consumers, millers and agents. Agents buy the produce on behalf of buyers who collect it from hired stores at the nearest market or town. The big buyers have stores with large storage capacity which are located in big towns like Jinja, Iganga, Soroti, Mbarara where produce is kept before being transported to outlets in Kampala Jinja and Busia.

In the South West there is very little buying of sorghum at the farm gate level. Most of the produce is taken by farmers or members of their household to be sold at the village

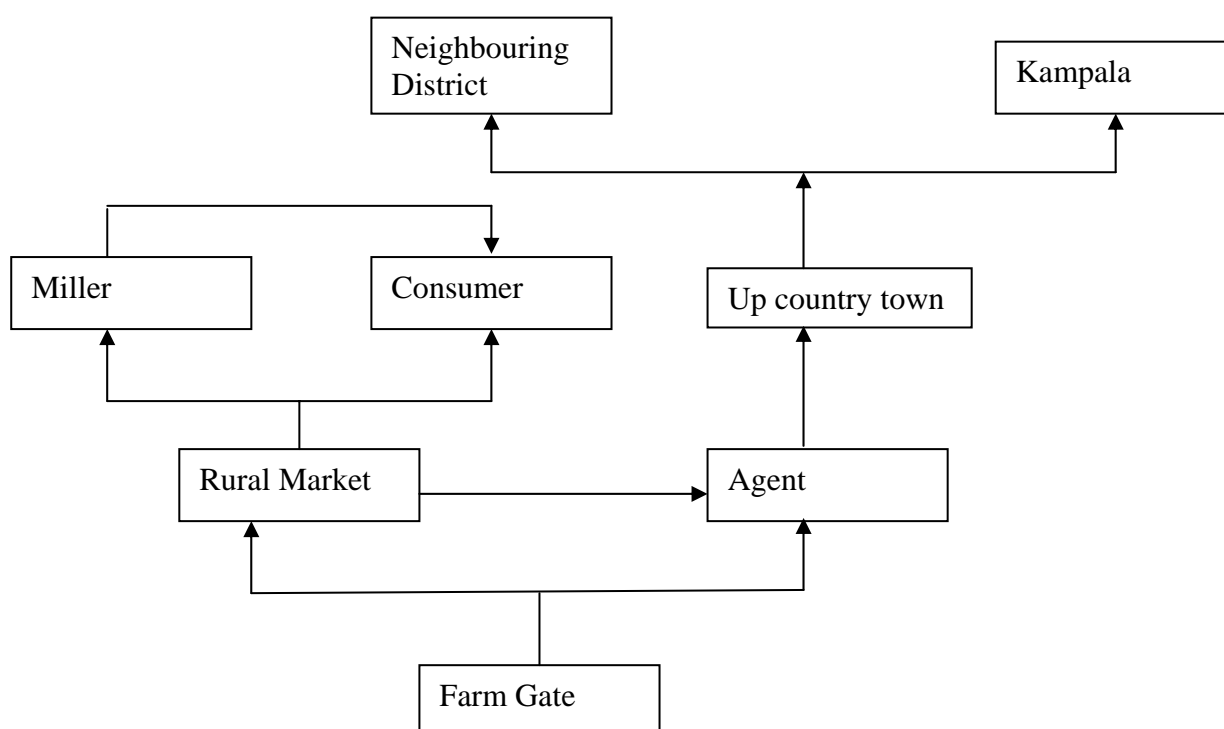
market. Supplies carried to the market each market day vary from 2 – 200 kg. The produce is normally transported either by carrying on the head or by bicycle.

Very little produce is marketed beyond this region due to the strong local market and the weak demand in Kampala the center for mass consumption and distribution.

In the North East, the demand for sorghum staple food for Teso, Lango, Karamoja Acholi and West Nile districts. Marketing of sorghum in the North East generally follows three steps: from the farm gate to the rural markets, from the rural markets to agent's stores or millers, from the agent's store to the urban market.

Farmers take sorghum to the nearest rural market for selling but, to a lesser extent, sorghum is sold by farmers to middlemen who reside in the rural areas. From the rural market, agents who operate on behalf of big buyers in Mbale, Sironko, Jinja and Busia buy the bulk of the produce. The produce is then transported by the agents to the stores in urban centers. At the urban centers the produce is sold either internally or transported to final outlets in Kampala, Tororo, Soroti Mbale and Busia town.

Figure 6.1 Marketing flow of Sorghum



### Profitability Analysis for Sorghum and Simple Gross Margins (SGM)

In the south West sorghum is primarily grown for domestic consumption. Barter trade in sorghum for other consumables is the dominant means of exchange. Rarely do producers take sorghum to the market for sale. Surprisingly though, much as the South West is a big producer of sorghum, most of the sorghum being sold in the markets comes from other regions implying that there is a supply deficit being met by inflows

from other regions. It was therefore not possible to arrive at the gross margins for the South West due to the lack of monetary trade in sorghum among the local producers.

In the East and the North East the average SGM based on monthly sales are shown below

$SGM = \frac{GP}{SP} \times 100$  %. It is expressed as a percentage  
SP

Where: SGM = Simple gross margin, GP = Gross Profit and SP = selling price.

<b>Input Suppliers Enterprise</b>	<b><u>Ushs</u></b>
<b>Sales</b>	
10 boxes of hoes each containing 10 hoes @ Ushs 4000 each	400,000
5 bundles of pangas @ Ushs 35,000 each	175,000
5 boxes of axes @ 70,000 each	350,000
<b>Purchasing cost</b>	
10 boxes of hoes @ Ushs 30,000 each	300,000
5 bundles of pangas @ Ushs 30,000 each	150,000
5 boxes of axes @ Ushs 50,000 each	250,000
<b>Other costs</b>	
Loading	2,000
Offloading	2,000
Transportation	20,000
<b>SGM for Wholesalers</b>	<b><u>Ushs</u></b>
<b>Sales value</b>	
10 bags of sorghum @ Ushs 35,000 a bag	350,000
<b>Purchase costs</b>	
10 bags of sorghum @ Ushs 26,000 a bag	260,000
<b>Other costs</b>	
10 empty bags @ Ushs 1000 a bag	10,000
Labour	5,000
<b>Gross Profit</b>	75,000
<b>SGM</b>	21.4%
<b>SGM Retailers</b>	<b><u>Ushs</u></b>
<b>Sales value</b>	



50 bags of sorghum @ Ushs 44,000 a bag	2,200,000
<b>Purchase value</b>	
50 bags of sorghum @ Ushs 32,000 a bag	1,600,000
<b>Other costs</b>	
Transportation	250,000
Loading & offloading	20,000
<b>Gross Profit</b>	330,000
<b>SGM</b>	15%

## 7.0 CURRENT INTERVENTIONS BY CORDAD PARTNERS

### 7.1 Production level support

#### 7.1.1 ADP

- Agricultural Development Project (ADP) was founded by the Fort portal Diocese with the objective to develop, sensitize, promote and support smallholder farmers groups, with special emphasis on women, to develop economically viable, sustainable small-scale agricultural activities. ADP is using farm demonstration methods to train farmer in proper farm management practices.
- ADP is facilitating extension services by contracting community agriculture extension workers (CAEWs) to organize and supervise the crop demonstrations as part of their on-farm training. Support provided to extension workers to facilitate their work includes training and extension kits.
- ADP has provided materials used in the setting up of the demonstration farms including seed, measuring tape, 2kg measuring containers (jug), record farms, extension notes, signboards. ADP plans to have two demonstrations of each crop under consideration per parish.
- For the crop considered by this report, ADP has designed the following objectives:
  - **Beans:** To calculate the most profitable variety of beans to grow in the first season.
  - **Groundnuts:** To find out which spacing gives best economic control of rosette disease in the first rain season.
  - **Sorghum:** To test the adaptability and multiplication of a new beer sorghum variety, Epuripur.

#### 7.1.2 SOCADIDO

This was established by the Soroti Catholic Diocese in 1981. SOCADIDO's primary intervention areas include:

- Empowering the people to analyse and address their problems
- Reducing the vulnerability of the poor by strengthening their livelihood capacities.
- Improving access of the poor people to basic services
- Addressing gender inequality and inequity.

SOCADIDO has achieved major successes in its efforts to implement the above objectives. These include the following among others:

- Community education on integration
- Adoption of good livelihood practices by the community
- Training of Community Resource Person
- 83% of existing development groups were trained and strengthened.
- Literacy and Basic Adult Education classes

- Disbursed improved seed and other agricultural in put on loan including groundnut seed, sorghum seed, pangas, axes and ox ploughs. The recovery rate for each item was between 50% - 60%.
- Linked farmers to markets

In the Eastern region, JIDDECO is supporting the establishment of an integrated system of micro livestock and crop enterprises at household level. The goal of this innovative approach is to provide participating household with multiple sources of income while also ensuring a satisfactory nutritional status particularly among the children of the household. The beneficiaries, the target group are the poorest segment young of the village population and women.

## **7.2 Support Services.**

### **7.2.1 Agro Inputs Suppliers - Eastern**

Agricultural input suppliers are mainly located in the urban centers and almost none can be found in the more rural inland areas. It was observed that premises are located strategically in such a way that they are easily visible and accessible. Common locations include: along the main street, near a busy trading center, busy places characterized by high levels of human activity such as a traveling terminals e.g taxi/bus park.

Most of the Agriculture input shops are well stocked with a variety of Agriculture input supplies to meet any kind of farm requirements. But accessibility is severely constrained by high prices which are beyond the means of a vast majority of farmers.

The main buyers of agricultural inputs in the East are NGOs, NAADS, Research organization, donor funded Community Based Orgainsations. Most these organizations provide input support by buying and distributing inputs to farmers at subsidized prices or even, in some cases, providing them for free.

Many of the Agro input shops act as agents or outlets for much larger distributors such as NASECO and FICA who are large seed distributors, Balton international and Twiga Chemicals who are suppliers of Ago chemicals and other up coming distributor of farm inputs including Nsanja – based in Kampala at Nalukologo, Bukola – based in Kampala along Ben Kiwanuka street.

The transport costs for fresh supplies of Agricultural inputs are met by the big distributors who make deliveries at the stockiest shop by delivery van. The stockiest earn commission on every item sold. However, they were unwilling to reveal however much commission they earn.

Table 7.1 below gives a price list of essential Agricultural chemical available in the Eastern region.

Table 7.1 Price list of essential Agric Chemicals in Eastern Uganda

Name of chemical	Function	Crops applied to	Strength of solution	Price per unit Ushs
Tufgo	Pesticide	Gnuts, Rice	40mls/20L water	2,000
Polytrin	Pesticide	Gnuts, beans	30mls/40L water	4,000
Malathion	Pesticide	Rice	40mls/20L water	10,000
Butanil – selective for rice	Herbicide	Rice	200mls/20L water	22,000
Sulthnil	Herbicide	Rice Sorghum	200mil/20L	30,000

### 7.2.2 Input Suppliers – North Eastern

In the North East, the number of stockiest of Agricultural inputs is small but those available have a good supply and product range of products to meet the input requirements of farmers in this region.

In the North East, UNADA is the dominant supplier of Agricultural inputs and has a network of about 36 stockiest in 4 districts of Kaberamaido, Katakwi, Soroti and Kumi. UNADA. UNADA is registered as an NGO under the NGO statute. UNADA has a countrywide network of stockiest and distributors through which agro inputs are made available to farmers. The organization has well organized administrative structures run by highly qualified professionals. The mission statement of the organization is: to strengthen the capacity of its members to provide fairly price, high quality agricultural inputs consistently in the desired quantities, time and place.

UNADA has formed strategic partnerships with various key stakeholders in the Agriculture sector who are able extend support towards increasing access to agro inputs by farmers.

These include:

- Private Sector Foundation
- The Agricultural Council of Uganda
- Uganda Seed Trader's Association
- USAID
- Rockefeller Foundation
- Agricultural Productivity Enhancement Program (APEP)
- SPEED Project
- Crop Life Uganda

Due to the large resource base and the large size of operation, UNADA is in a better position meet agro input requirements of farmers in terms of quality, type and quantity than other stockiest. The main customers of Agro inputs in the North East include NGO's such as SOCCADIDO, World Vision and farmer groups who and distribute to farmers at subsidized prices or on cheap loan. Farmers in the North East are too poor to afford agro inputs without support in form of subsidies or loans.

Table 7.2 below gives the price list of seeds available at agro input dealers in the North East.

**Table 7.2 Groundnut seed variety**

Variety	Price of Seed per Kg Ushs	Price of produce per Kg Ushs	Yield
Serenut I	2,000	1,000	3 times
Serenut II	1,500	1,000	3 times
Serenut III	3,000	1,000	3 times
Serenut IV	2,500	1,000	3 times

**Table 7.3 Beans seed variety**

Variety	Price of Seed per Kg Ushs	Price of produce per Kg Ushs	Yield
KI 31	1,500	800	2 times
KI 32	1,500	800	2 times
KI 20	1,500	800	2 times

**Table 7.4 Sorghum seed variety**

Variety	Price of Seed per Kg Ushs	Price of produce per Kg Ushs
Sekedo	1,200	400

A price list of essential agricultural chemicals stocked by agro input stockiest particularly UNADA stockiest is given in table 7.5 below

**Table 7.5 Essential agricultural chemicals**

Name of chemical	Function	Crop	Concentration	Price Ushs
Pyrix	Multipurpose pesticide	Beans	40 mils/30L	18,000
Cypercol	Multipurpose pesticide	Bean, Gnats	40 mils/30L	2,500
Diamethoinate	Multipurpose	Beans, Gnats		20,000/L
Alazne 350/200 SE	Pre emergence herbicide	Upland rice		18,000/L

## **7.3 Tools Manufacturers**

### **7.3.1 North Eastern**

The North East is blessed with Soroti agricultural implement manufacturing company (SAIMMCO); the largest agricultural implement manufacturing plant in the country. The company manufactures a wide range of implements that are designed according to specific technological needs of farmers operating under varied farming conditions.

The technology used by SAIMMCO was developed and adopted on site by three British engineers Keith Martin Elliot, Andy Prichard and Burton with funding from UNIDO. The plant is therefore capable of designing and manufacturing any type of farming implement and tool according to any specification.

Much as there is general awareness among farmers of the importance of acquiring SAIMMCO implements in relation to increased productivity, access is limited due to high prices. The typical customers therefore continue to be NGO's, institutions that have the financial resources to afford the implements. These include among others Self Help International, Oxfam, World Vision, SOCADIDO, and Government under prime minister's office.

SAIMMCO has a near monopoly of the agriculture implements market though some competition is beginning to set in from cheaper imports from China. The threat of competitors has forced SAIMMCO broaden its market base by setting up distribution points and outlets in the districts of Gulu, Hoima, Kasese and Kampala.

Table 7.6 below gives a price list of implements produced at the factory

**Table 7.6 Price list of implements produced at the factory**

No.	ITEMS	PRICE
1	SUNGURA OX-PLOUGH	180,000
2	OX-CART WITH TYRES	1,872,000
3	OX-CART WITH WHEELS	823,300
4	SWEET POTATO SLICER WITH STAND	200,600
5	POTATO HEAPER	264,000
6	GROUNDNUT SHELLER	273,600
7	GROUNDNUT LIFTER WITH PLOUGH	204,000
8	DAM SCOOP	302,400
9	SPIKE TOOTH HARROW	244,800
10	BRICK MOULD	432,000
11	HAMMER MILL 15 – HP	1,872,000
12	MANUAL OIL PRESS MILL	777,600
13	HAMMER MILL 25 – HP	2,880,000
14	OX – WEEDERS SAARI TYPE	244,800
15	BICYCLE AMBULANCE	300,000
16	BICYCLE CART WITH WIRE MESH	252,000
17	BICYCLE CART WITH PLATES	360,000
18	HAND CART	174,000
19	WEEDER ATTACHMENT	100,800
20	PLANTER ATTACHMENT	129,600
21	GROUNDNUT LIFTER ATTACHMENT	180,000
22	PLANTER	273,600
23	TATU OX-PLOUGH	129,600
24	MULTI FURROW RIDGER	180,000
25	OX – YOKE	90,000
	<b>SPARES:</b>	
1	MOULD BOARD	25,950
2	FROG	23,050
3	HANDLE LEFT/RIGHT	10,450
4	CHAIN ASSEMBLY	20,200
5	HITCH OR FRONT ASSEMBLY	21,600
6	SPREADER	3,600
7	HOOK OR SHACKLE	1,900
8	FLAT SHARE	8,650
9	LANDSIDE	8,650
10	HANDGRIP	1,900
11	GRIP – GUARD	1,900

12	BOLT AND NUT FOR SHARE	900
13	WHEEL ASSEMBLY	25,950
14	U – BOLT CLAMP	5,800
15	MOULDBOARD TO BEAM ATTACHMENT	4,350
16	MOULDBOARD TO HANDLE ATTACHEMENT	4,350
17	STAY BEAM TO HANDLE LEFT	2,900
18	STAY BEAM TO HANDLE RIGHT	2,900
19	PLOUGH SPANNER	2,900
20	CROSS BRACE	7,200

### 7.3.2 South West

- **Agro Input Suppliers**

In the South West, UNADA is the leading agro input supplier with stockiest at almost all the major towns. UNADA stockiest provide a wide range of agro inputs including seed, agro chemicals, implements in addition to extension services in addition to training provided to farmers as a way of promoting their products.

In common with other regions, supplies are delivered to stockiest premises by the big distributor companies many of whom are based in Kampala. Some of the big distributors include FICA, Naseco seed and Victoria seed who supply seed, Balton Uganda limited and Twiga chemical who supply chemicals. Income is earned on a commission basis paid for each item sold by the stockiest.

Based on the survey results, it was found that the most common seed varieties stocked in the South West include:

- **Beans**  
KI 34  
Nabi 4  
Sweet bean
- **Sorghum**  
Epuripur  
Sekedo
- **Groundnuts**  
Red beauty  
Serenut varieties (I,II, III and IV)

The growing of sorghum variety Epuripur has been abandoned by majority of the farmers due to high incidences of losses resulting from high infestation of pests particularly stalk borers and birds. Epuripur was introduced by ADP, NAADs and other grass roots based organizations as a commercial crop to diversify the source of income at the household level. This was after Uganda Breweries indicated interest in procuring supplies from all farmers engaged in producing Epuripur. Commitment was expressed by the appointment of a buying agent responsible for buying produce from farmers.

Price lists of other agro inputs stocked in the South West including implements and agro chemicals are given below.

**Table 7.7 Price list of inputs**

Implements	Buying Price	Selling Price
Hoes	3,000	3,500
Slashers	4,000	4,500
Spades	4,000	4,500
Pangas	2,500	3,000

**Essential Agro chemicals stocked in the South West****Table 7.8 Price list of essential Agro Chemicals**

Name of chemical	Function	Buying price Ushs	Selling price Ushs	Concentration
Roundup	Herbicide	9,500	12,000	100 mls/20L
Kalach	Herbicide	10,000	13,000	100 mls/20L
Malathione dust	Post harvest preservation (Kills weevils)	1,200	1,500	60gm/100kg
Fumaphos tablets	Used in stores as a fumigation agent		20,000	Single tablet per side (4 in total)

In order to create awareness of their products, stockiest undertake an advertising campaigns during extension training with farmers. The extensions services are provided for free.



## ANAYSIS OF CONSTRAINTS AND POTENTIAL INTERVENTIONS

### Technology/Product Development

Category	Constraints	Analysis	Potential Intervention
	<ul style="list-style-type: none"> <li>▪ Lack of appropriate equipment to enhance productivity</li> <li>▪ Prohibitive prices of inputs</li> <li>▪ Lack of credit</li> <li>▪ Lack of training</li> <li>▪ Low literacy level</li> </ul> <p>Lack of cooperation between the NGO's that oprate in the same region</p>	<p>Farmers use rudimentary tools such as hoes thus the level of productivity that can be attained in terms of yields and acreage is limited.</p> <p>Farmers are increasingly finding it difficult to access appropriate technology in the form of agro inputs because their costs are rising yet the prices of agricultural output are continuously declining.</p> <p>Commercial banks are unwilling to extend credit to farming activities because they are considered as high risk.</p> <p>Farmers lack training in use of a range of technologies that have been developed for typical smallholder farmers. These technologies include high yield seed, efficient farm implements that have remained at research level and have not been adopted at farm level.</p> <p>Illiteracy is a handicap in adoption of certain technologies that require a minimum level of literacy. Technologies like agricultural chemicals that have instructions for users and mechanical devises that have users manual are rendered inappropriate for smallholder farmers due to their illiteracy.</p> <p>There is a lack of a common agenda among NGO's on how to tackle developmental issues at the grass roots. This has lead to duplication of activities which has proved to be counter productive with resources not being effectively used.</p>	<p>Communal farming on communally owned land especially in the western region could be introduced as a way of promoting mechanization. This will encourage smallholder farmers to be more capital investment oriented.</p> <p>With farmer associations established, farmers, through the established adminstartion structures will be able to acquire assets. These assets can then be used to secure loans from banks.</p> <p>Appropriate technology suited to farmers with low literacy levels should be identified and disseminated through partner organization based at the grassroots.</p> <p>Stakeholders including NGO's, local government authorities and farmers need to get together in a forum in order to streamline and coordinate their activaties for greater development impact.</p>

## Markets and marketing

Category	Constraints	Analysis	Potential Intervention
	<ul style="list-style-type: none"> <li>Small quantities of marketable produce.</li> <li>Lack of information and training</li> <li>Poor quality products</li> <li>High transportation costs</li> <li>Lack of organization among the producers</li> </ul>	<p>Smallholder farmers do not produce sufficient quantities of marketable surpluses needed to achieve economies of scale in order to realize positive returns on investment. Since agricultural products have thin margins, volume sales necessary to break even.</p> <p>Smallholder farmers lack information on prices, market opportunities and cost of marketing. Basic training business management and marketing would empower farmers to identify and exploit market opportunities in order to maximize margins.</p> <p>A number of chicken coming from smallholder farms is either diseased, under weight or both. Farmers have a tendency of selling diseased chicken because they can not afford the cost of treatment and want to avoid losing both money and the chicken if it dies on the at his home. Since subsistence production is not market oriented, farmers lack the understanding of the relationship between product quality and profit maximization.</p> <p>High transportation costs prohibit farmers from accessing some lucrative markets.</p> <p>The failure of smallholder farmers to organize themselves into associations that would have the economies of scale to access lucrative urban markets, have the bargaining power to negotiate reasonable prices and regulate the quality of products coming from members has lead to emergence of exploitative middlemen. In the marketing of local grain, the middlemen appear to benefit more than smallholder farmers.</p>	<p>Farmers should be encouraged to form farmers associations in order to form synergies that place them in a position to take advantage of opportunities in urban markets. A farmer belonging to an association could be used as a condition of accessing assistance from donor programs</p> <p>Rapid Market Appraisal, a product developed by FIT could be introduced to the small holder farmers to equip them with marketing skills needed to access lucrative markets.</p> <p>Farmer forums could be started at sub county level to provide a platform for farmers to articulate issues affecting production and marketing of produce. These forums would provide incentive for farmers to organize themselves into groups. This initiative could be facilitated and sustained by FIT partners dealing with farmers at the unit level.</p> <p>Cordaid Partner Organisations need to sensitize farmers on the need to organize themselves into groups for improved access to markets, loans and donor support.</p>

**Input supply**

<b>Category</b>	<b>Constraints</b>	<b>Analysis</b>	<b>Potential Intervention</b>
	<ul style="list-style-type: none"> <li>▪ Expensive for smallholder farmers.</li> <li>▪ Inaccessibility</li> <li>▪ Lack of appropriate inputs</li> </ul>	<p>Smallholder farmers operate at a subsistence level with very little income earned from their activities. Consequently, input are unaffordable by most of them</p> <p>Most of the input suppliers are located in urban centers whereas most of the smallholder farmers are located in rural areas which are distant from the urban centers. This has created an accessibility problem for farmers with limited means of transportation to and from urban centers.</p> <p>Most of the inputs available on the markets are not appropriate the farming systems in Uganda. For instance most tractors imported in the country are big power machines used on large scale commercial agriculture yet the average acreage of Ugandan farm holdings is 2 acres. This is clearly a mismatch between available technology and farm requirement.</p>	<p>Input prices should be subsidized in order for farmers to be encouraged used input to increase yield. In need be, inputs can be provided on loan</p> <p>As mentioned above the formation of farmer groups will help create a critical mass needed to achieve volume sales.</p> <p>Appropriate technologies that are suitable for respective regions should be identified and piloted. If the trial results are positive, a sensitization campaign on the merits of the technologies should be launched.</p>

### Management and organization

Category	Constraints	Analysis	Potential Intervention
	<ul style="list-style-type: none"> <li>Lack of managerial skills.</li> </ul>	Smallholder farmers have hardly any resources that call for managerial input. But as small farmers begin to commercialize and expand the scale of production, lack of managerial skills will be a limiting factor that will affect the decision making process consequently hampering productivity.	Extension services that involve regular visits on a monthly basis could provide guidance to farmers on how to properly manage their farms. If this assistance is provided for over a period of time, the farmers will acquire the managerial skills to manage the farms on their own. Stakeholders involved in grass roots support could provide this services. These include, Soccadido, Jidecco and ADP.
	<ul style="list-style-type: none"> <li>Lack of organization</li> </ul>	Lack of organization structures to manage and mobilize farmers' efforts has meant that farmers can not capitalize on synergies to maximize income from their activities.	Farmers need to be sensitized on the importance of being a member of a farmer group. This could be done through seminars, workshops and other appropriate forum organized by stakeholders such as NAADs in conjunction with rural based FIT partners.
	<ul style="list-style-type: none"> <li>Lack of training.</li> </ul>	Extension services coverage is still narrow thus creating a knowledge gap among farmers. Farmers lack knowledge on timing of farm activities, importance of inputs to increasing yields, post harvest handling and record keeping.	A holistic approach that addresses issues of illiteracy should be considered when providing extension services. This may require cooperation with an adult literacy provider.
	<ul style="list-style-type: none"> <li>Low literacy levels.</li> </ul>	As the subsistence farmers commercialize, low levels literacy will become a limiting factor as the organization and management of higher levels of resources might require a reasonably good level of literacy competency.	

**Policy**

Category	Constraints	Analysis	Potential Intervention
Policy	<ul style="list-style-type: none"> <li>Lack policy intervention</li> </ul>	There is a lack of policies that comprehensively address the need for market access, training in farm mechanization, generation and dissemination of technologies.	Political activists should be lobbied to persuade government to formulate policies that are pro agriculture development.

**Finance**

Category	Constraints	Analysis	Potential Intervention
Finance	<ul style="list-style-type: none"> <li>Lack of access to credit</li> <li>Lack of affordable credit</li> <li>Accessibility to financial institutions</li> </ul>	<p>Agriculture is perceived as a high risk activity by commercial banks. Most banks are unwilling to finance agriculture thus constraining the farmers access to credit that is essential in up scaling farming operations.</p> <p>The cost of the commercial loans is so high that it would be inappropriate to finance agriculture production activities with commercial loans.</p> <p>A lack of banking facilities to service rural areas has hampered farmers' access to banking services.</p>	Alternative credit for agriculture production other than what is currently available from commercial banks should be sought. This may involve coming together of stakeholders to formulate an agriculture credit strategy.

**Infrastructure**

<b>Category</b>	<b>Constraints</b>	<b>Analysis</b>	<b>Potential Intervention</b>
<b>Infrastructure</b>	<ul style="list-style-type: none"> <li>Poor road network.</li> <li>Market structures to enhance market linkages</li> </ul>	<p>Although the main trunk roads are in good condition, the vast network of rural roads that farmers often use is in bad shape especially after heavy rains. This has contributed to the cost of doing business in terms of lost marketing opportunities, high transportation cost and</p> <p>Physical structures such as market stalls warehouse facilities are essential in facilitating merchandising of farm produce. This will also eliminate middlemen who take advantage of farmers because of their vulnerable position in the market place.</p>	<p>Little can be done to improve road infrastructure as this is a large undertaking requiring huge resources. However, the problem in the respective areas can be brought to the attention of responsible government departments. Specific mention could be made of the benefits of having good infrastructure to efforts of fighting poverty.</p> <p>In consultation with farmers, existing markets can be improved by erecting structures such as shades to create an environment conducive for trade. The principle focus should be use locally available materials like wooden poles and grass for thatching.</p>

**Support services – skills development**

<b>Category</b>	<b>Constraints</b>	<b>Analysis</b>	<b>Potential Intervention</b>
Support services – skills development	<ul style="list-style-type: none"> <li>Poor extension services</li> <li>Inadequate number of trainers.</li> </ul>	<p>Extension services provided in the past five years have had little impact on the transformation of farming practices in Uganda. This implies that the information being disseminated is not relevant to solving the prevailing problems farmers are facing.</p> <p>Insufficient number of trainers have been recruited by agricultural institutions and NGOs providing extension services. This has meant that the efforts being made by trainers are over stretched thinly with no substantial impact on the beneficiaries.</p>	<p>Technical support could be provided to farmers through periodic visits on a monthly basis. These visits would bridge the gap in technical support created by a lack of extension services.</p> <p>The technical support proposed above could be introduced in areas where partner organizations exist and where extension services are lacking. The technical support should incorporate a component of training locally based support staff who will be responsible for training farmers.</p>

## 8.0 CONCLUSIONS

Uganda's agricultural production is characterized by smallholder subsistence production with limited use of inputs and improved technology. The average size of land holdings is between 0.5 – 0.8 ha. The yields on these farms are very low and crops are vulnerable to pest attack and drought making agriculture a high risk activity.

Survey of areas where Cordaid partner organizations are involved in transformation of subsistence agriculture to market oriented production has shown that agricultural production can be increased substantially if farmers are provided with necessary inputs and training which are the major constraints facing farmers.

The marketing systems are still un developed with some of the linkages in the value chains either weak or missing. This has resulted in accumulation of produce on the farms during harvest forcing farmers to get directly involved in marketing to avoid post harvest losses due to spoilage. Because of the need to dispose of the produce quickly, farmers are forced to sell their produce at very low prices. This is a disincentive to large scale production.

Generally there is lack of information for the farming community on market prices, new technologies, markets. This has lead to speculation and exploitation of farmers by traders and loss interest on part of the producer to produce for income.

It has been demonstrated by Cordaid Partner organization that the welfare of the rural populations can be improved through increased agricultural production and improved market access if farmers work together as a group with proper organization structures instead of producing as individual households with limited resources and bargaining power.

The major issues constraints to production are: High cost of inputs, post harvest losses due to poor storage, lack of quality standards to adhere to and weak linkages between producers and traders or processors.

**SWOT ANALYSIS FOR GRAINS**

<b>STRENGTHS</b> <ul style="list-style-type: none"> <li>• Two harvests are realized in a year thus are good source of food security.</li> <li>• When properly dried, they can be stored for long periods.</li> <li>• Legumes are a good source of proteins in rural area where they are scarce.</li> <li>• They can be exported to neighboring countries that are deficit producer.</li> </ul>	<b>WEAKNESSESS</b> <ul style="list-style-type: none"> <li>• Inputs are expensive and not affordable by farmers.</li> <li>• Lack of training in improved production methods to increase yields.</li> <li>• The marketing chains are not developed</li> <li>• Grown of small plots that are not economically viable.</li> </ul>
<b>THREATS</b> <ul style="list-style-type: none"> <li>• The prices are erratic and fluctuate a lot.</li> <li>• Pests and diseases</li> <li>• Declining productivity per acre due to depletion of soil of nutrients.</li> </ul>	<b>OPPORTUNITES</b> <ul style="list-style-type: none"> <li>• Use of inputs and technology can result in increased yield.</li> <li>• They can be a good source of farm income.</li> <li>• The production methods are not complicated.</li> </ul>

**Recommendations**

- There is a need for a continuous technical support to farmers. For instance, farmers need to be guided on how to cut down on cost and be kept abreast of any new technological developments (i.e. new seed varieties, etc).
- Promotion of farmer-group marketing initiatives to play a greater role in marketing in the face of the growing local and national competition.
- Establishment of basic infrastructure in collection and rural-based commodity marketing exchange centers should be developed and supported with a reliable communication network.
- On the basis of the current agricultural practices and their possible impact on the environment, it is proposed that FIT should, in its training program, emphasize improved environmental practices.
- Cordaid Partner Organisations should consider supporting any initiatives by the private sector to establish some cost effective bean/grain cleaning and grading operations.



## **ANNEXES**

## **Annex I                      List of Respondents in South West**

Name of Respondents	Sex	Acrag	District	Village
Byaruhanga Robert	M	1	Kyenjojo	Nyaibanda
Kabadaki Pelusi	F	0.5	Kyenjojo	Nyaibanda
Asiimwe Ruhweza Joseph	M	1	Kyenjojo	Nyaibanda
Tibemanya Yosilasi	M	0.5	Kyenjojo	Nyaibanda
Rwamwaro James	M	2	Kyenjojo	Nyaibanda
Agaba Selevano	M	1	Kyenjojo	Nyaibanda
Kampimpina William	M	1	Kyenjojo	Nyaibanda
Koguhangire Joy	F	1	Kyenjojo	Nyaibanda
Turyamuleba Abel	M	1	Kyenjojo	Nyaibanda
Babigambe Benison	M	1	Kyenjojo	Nyaibanda
Tigeita Eunice	F	0.5	Kyenjojo	Nyaibanda
Kyaligonza Abudara	M	1	Kyenjojo	Nyaibanda
Wikika Sandya	F	1	Kyenjojo	Nyaibanda
Kamusiime Vasita	F	0.5	Kyenjojo	Nyaibanda
Purisika	F	0.5	Kyenjojo	Nyaibanda
Alagwirweho H	F	0.5	Kyenjojo	Nyaibanda
Runkurti More	M	1	Kyenjojo	Nyaibanda

## **Annex II    List of Respondents in North East**

Name of Respondents	Sex	Acrag	Sub County	District
Aujo Lucy	M	0.5	Ngora	Kumi
Abayo Rose	F	0.5	Ngora	Kumi
Ejok Loyce	M	0.5	Ngora	Kumi
Abeja Domilia	M	0.5	Ngora	Kumi
Alluo Immaculate	M	0.5	Ngora	Kumi
Acom Mary	M	0.5	Ngora	Kumi
Alilo Lucia	M	0.5	Ngora	Kumi
Okudi June	F	0.5	Ngora	Kumi
Opio Mary	M	0.5	Ngora	Kumi
Okiring Teddy	M	0.5	Ngora	Kumi
Amaso Rose	F	0.5	Ngora	Kumi
Oloit faustine	M	0.5	Bukedia	Bukedia
Omoding Hellen	F	0.5	Bukedia	Bukedia
Opio Pius	F	0.5	Bukedia	Bukedia
Oloit Joseph	F	0.5	Bukedia	Bukedia
Okiria John	F	0.5	Bukedia	Bukedia
Agar Elizabeth		0.5	Soroti	Kidetok
Ikea Elizabeth		0.5	Soroti	Kidetok
Alami Elizabeth		0.5	Soroti	Kidetok
Apio Jesica		0.5	Soroti	Kidetok

## **Annex III            Survey of Services Providers**

Name of Business	Contact Person	Services Provided	District	Location
UNADA		Input Supplier	Soroti	
Balton		Input Supplier	Kampala	Kibira Road
Aliga Store		Millers	Kyenjojo	Iganga Main street
UNADA	Mugweri Sam James Tel: 0772902906	Input supplier	Kyenjojo	Kyenjojo Main street

## **Annex IV                      Grains Sub – Sector Questionnaire**



**SAMPLE FILLED – IN QUESTIONNAIRE****CONTACT INFORMATION**

Name of Individual	
District	<b>Iganga</b>
Village	<b>Bubaka</b>

**COMPANY STATUS**

- For how long has your farm been operational? 6 years
- How many family members are on the farm? Please indicate in the table below:

Family Members		Total
Male	Female	
<b>3</b>	<b>5</b>	<b>8</b>

**MARKET ACCESS**

- What do you see as your main needs/ opportunities in accessing markets?

*We have a marketing problem. We are not paid good money for our produce. The middlemen come here and pay us little money for our produce and then take it to Kampala where they sell it for a lot of money. We would like to sell directly to Kampala. We would get a better price in Kampala.*

- To whom do you sell your produce (traders, direct to the consumer, other)?

*We mostly sell to middlemen. The middlemen are fellow villagers from the same locality. After buying from us, the middlemen sell the produce to traders from the big towns or Kampala.*

- How do you market your produce?

*Middlemen come and buy the produce at the farm. But on some occasions when we need money to solve a problem like treatment, school fees, so we do not wait for the middlemen; we take the produce ourselves to the village market where it is sold.*

Who are the buyers

*The buyers are either middlemen or traders from either the big towns or Kampala.*

- How strong is the market for your produce right now? Next year?

*The market is seasonal. It is good soon after harvest when traders come from big town to buy in bulk. Because of competition from other traders who are willing to sell at very low prices, we are forced to sell our produce at low prices too. But when the produce is scarce we get good prices because we have the power to determine what price traders have to buy the produce.*

- Are some markets (customer groups) better than others in terms of sales and revenue growth? Which one?

*Kampala market is the most lucrative. But the quantity of produce from our farm does not justify us spending on transportation of produce to the Kampala market. So we rely on the middlemen who buy produce from the farms and the village market sales.*

- Do you ever collaborate with other farmers in marketing your produce?

*Every farmer sells his produce as an individual. On rare occasions we can collectively pay a transporter to take our produce to a market we have identified.*

## **MANAGEMENT/ ORGANISATION**

- In the area of organization and management, what are your major needs/opportunities?

N/A

- Who does most of the work in the areas of: general management/supervision, purchasing marketing, etc (owner, employees, or external)?

N/A

- What processes do you sub contract?

N/A

- Do you some times collaborate with other farmers to produce and deliver customer orders?

N/A

- Which aspects of your business do you intend to change in the next 2 years (machinery, equipment, marketing strategy, quality control, management system, worker skills)?

N/A

- What management skills would you like to strengthen in order to grow your business?

## **INPUT SUPPLY**

- What are your major inputs?

*Seed*

*Hoes*

**Pangas  
Slasher  
Axe**

- What are your major needs/opportunities in the areas of input cost, quality, and availability?

***Inputs are available in the shops but are expensive especially chemicals. Since we cannot afford them, we do not use them on our farms. The only inputs we use are implements such as hoes, pangas axe and slasher***

- If you have suppliers who are they

***Input suppliers are located in the towns which are about a distance 5 km from the farm.***

- Are there problems in obtaining some important inputs? Explain

***The main problem in obtaining input is lack of funds.***

- Have you ever purchased inputs jointly with other farmers? Explain

***No. We only purchase inputs on an individual basis.***

## **FINANCE**

- Where do you go when you need money for your business?

•

***We borrow from relatives and friends***

- Do you obtain input on credit from suppliers? What are the terms?

***Yes we have obtained seed, ox ploughs and other implements from NGO's working with us. NGO's mentioned are SOCADIDO, JIDDECO and ADP.***

- Do you have need for additional financing at the moment? If so, what would it be used for?

***Yes. We need financing for inputs and acquisition of land for large scale production. We also want to start other income generating projects which are more sustainable than growing crops. The projects mentioned include:***

- ***Poultry keeping***
- ***Raring of milk goats***
- ***Fish farming***
- ***Dairy farming.***

What sources (formal or informal) have you approached for loans, and what have been the key problems, if any?

***We usually get funding through associations we belong to. These associations were formed by local leaders and Community Development Officers to organize us into groups through which formal assistance from government and donors could be channeled to us.***

## INFRASTRUCTURE

- What are the most important infrastructure constraints affecting your business growth and profitability (road/transport conditions, telephone service, electricity supply, crime/corruption, storage, etc)?

*The roads are in poor conditions with many of them impassible during the rainy season.*

## BUSINESS MEMBERSHIP ORGANISATIONS

- Is your sector represented by national or local farmers associations? *Yes*
- If so name them.

Those mentioned include:

### Kyenjojo

- Kyakatwire
- Mwaro Twimuke Tukole
- Ija nkoku oli
- Kyakahuli W. Marketing
- Enjeru Sisimuka
- Are you a member?

### Soroti

- Omilto women's group
- Mukura women's group
- Odokai women's group

*Yes*

- What are the primary functions and benefits of these associations?

*They organize training for members in various agricultural activities.*

*They help raise funds for member to finance their farm activities*

*They encourage networking which is useful for exchange of ideas*

*They assist in accessing distant markets through collective marketing.*

- What additional services should they provide?

*Establish institution to provide credit for our expansion plans.*

*Develop training programs to equip them with skills in modern farming methods.*

- Do they have a properly established administrative structure? Explain

*Yes. They have an elected chairman supported by executive committee members who are also elected.*

**CONTACT INFORMATION**

Name of Individual	
District	
Village	

**COMPANY STATUS**

- For how long has your farm been operational? \_\_\_\_\_
- How many family members are on the farm? Please indicate in the table below:

Family Members		Total
Male	Female	

**MARKET ACCESS**

- What do you see as your main needs/ opportunities in accessing markets?
- To whom do you sell your produce (traders, direct to the consumer, other)?
- How do you market your produce?
- How strong is the market for your produce right now? Next year?
- Are some markets (customer groups) better than others in terms of sales and revenue growth? Which one?
- Do you ever collaborate with other farmers in marketing your produce?

**TECHNOLOGY / PRODUCT DEVELOPMENT**  
 (APPLICABLE MAINLY TO THE LARGE FARMERS & PROCESSORS)

- What are the major needs in service delivery?
- What have you done recently to improve your farm?
- Please describe your important pieces of production machinery

- What kind of equipment would improve your business?
- Do some of your workers need additional training? In what skills?

## **MANAGEMENT/ ORGANISATION**

- In the area of organization and management, what are your major needs/opportunities?
- Who does most of the work in the areas of: general management/supervision, purchasing marketing, etc (owner, employees, or external)?
- What processes do you sub contract?
- Do you some times collaborate with other farmers to produce and deliver customer orders?
- Which aspects of your business do you intend to change in the next 2 years (machinery, equipment, marketing strategy, quality control, management system, worker skills)?
- What management skills would you like to strengthen in order to grow your business?

## **INPUT SUPPLY**

- What are your major inputs?
- What are your major needs/opportunities in the areas of input cost, quality, and availability?
- How do you source your inputs
- If you have suppliers who are they
- Are there problems in obtaining some important inputs? Explain
- Have you ever purchased inputs jointly with other farmers? Explain

## **FINANCE**

- Where do you go when you need money for your business?
- Do you input on credit from suppliers? What are the terms?

- Do you have need for additional financing at the moment? If so, what would it be used for?
- What sources (formal or informal) have you approached for loans, and what have been the key problems, if any?

## **POLICY/REGULATIONS**

- What government policies/regulations benefit your business?
- What government policies/regulations are obstacles to growing your business?

## **INFRASTRUCTURE**

- What are the most important infrastructure constraints affecting your business growth and profitability (road/transport conditions, telephone service, electricity supply, crime/corruption, storage, etc)?

## **BUSINESS MEMBERSHIP ORGANISATIONS**

- Is your sector represented by national or local farmers associations?
- If so name them.
- Are you a member?
- What are the primary functions and benefits of these associations?
- What additional services should they provide?
- Do they have a properly established administrative structure? Explain

## **FINAL OPEN ENDED QUESTIONS**

- What do you think are strengths of the Sorghum/Upland rice/beans/ Gnut sub sector?
- What are the main weaknesses of the Sorghum/Upland rice/beans/ Gnut sub sector?
- What do you think are the greatest challenges facing the Sorghum/Upland rice/beans/ Gnut sub sector?

Can you name some Sorghum/Upland rice/beans/ Gnut farmers who are leaders – for example in terms of quality, mar