

Marketing Channels and Transaction Costs for Sorghum Value Chains in Ethiopia

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1. Introduction

In Ethiopia, sorghum is the fourth important cereal crop yielding about 2.1million metric tons.Sorghum accounts for 19% of the total cereal produced in the country and covering 18% of the area under cereals. During the period 1997-2009, sorghum production has increased by nearly 6% per annum because of area expansion 93.3%) yield increase (2.7%) (CSA). In the recent past, production has increased from 1.7 millionmetric tons in 2004 to 3.9 million in 2010/11 (Table 1).

Table 1 . Area under sorghum production and yield (2004 to 2011)

Description	20007	20008	20009	20010	20111
Sorghum area (ha)	1464318	1533537	1615297	1618677	1897734
Production ('000 t)	2316.04	2659.13	2804.35	2971.27	3959.90
Yield (t/ha)	1.58	1.73	1.74	1.84	2.09
Share of sorghum in cereal area	17.28	17.57	18.42	17.53	19.58
Number of sorghum grower households	4334872	4264205	4455224	4072326	5097666
Share of sorghum in Cereal yield	1.80	1.94	1.94	1.91	2.23

Source: CSA data of miscellaneous years

There is slight increase in the production of sorghum over the last on decade in Ethiopia. The productivity increase happened because of area increases coupled with introduction of improved varieties. Increase in production of the crops need to be supplemented by value addition on the products along the line from harvest to consumption. There is, however, hardly documents available concerning the crop value chain of sorghum. This documents highlight sorghum values chain analysis focusing on sorghum marketing chain segment based on principal sorghum markets in the country. Much of sorghum produce end up in hands of rural and urban retailers as a grain for consumption where much of the value addition is taken in the form of transport to move to small towns and urban centers.

Major sorghum producing areas of Ethiopia

Ethiopia has different major sorghum producing areas namely; North Gondar with 10.6% share in national sorghum products, North Shewa (9.5%), East Hararghe (7.9%), West Hararghe(7.2%), West Shewa (4.8%), South Wello (4.3%), Jimma (4.2%), and North West Tigray (4.0%). Other important sorghum areas include North Wello, East Wellega, Illubabor, South Tigray, Central Tigray and West Tigray, each contributing 2 to 3% of national production(CSA, 2010) (also see Figure 1).

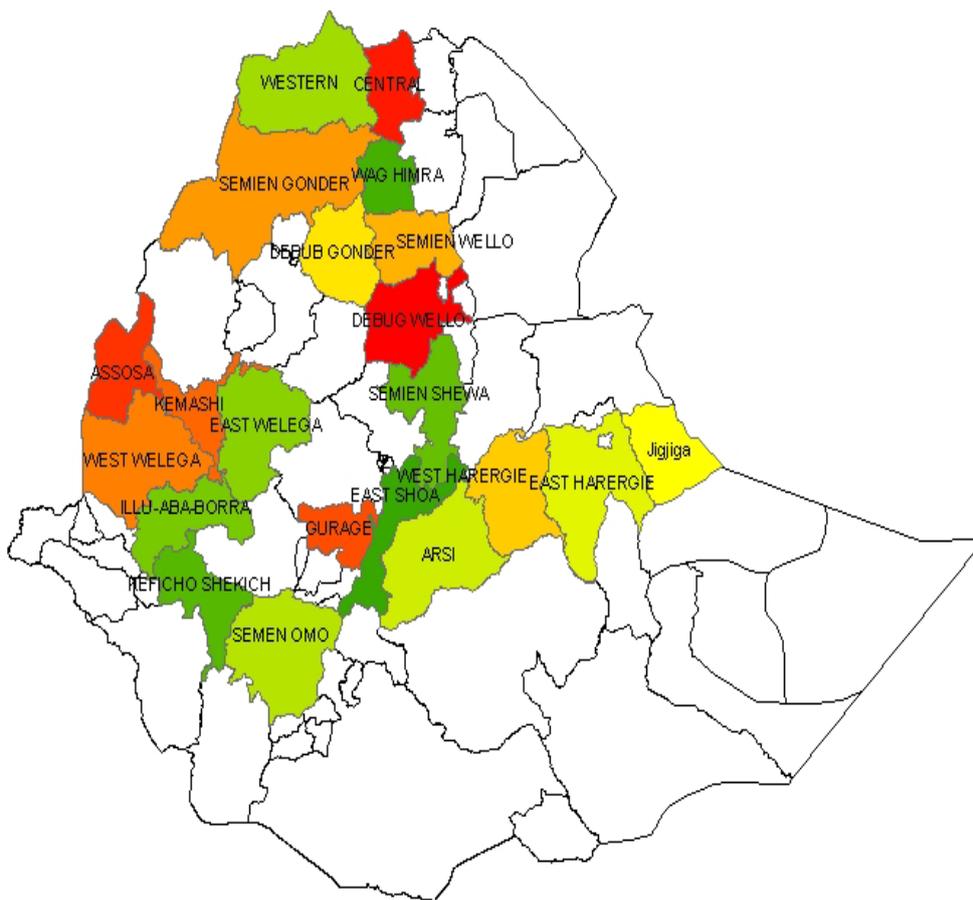


Figure 1 Major sorghum producing areas

2. Description of the Study Area

The survey was conducted in Mieso district of West Haraghe zone in Eastern Ethiopia. The geographic area of the district is 2550 km². The district share border with GubaKoricha, Chiro and Doba districts in the Oromia regional state and Afar and Somali Regional states. Mieso town is its

administrative center. Mieso is the capital of the district. The altitude of the area runs between 900 to 2500 meters above sea level. The average rainfall of the area is 700 to 800 mm while its average temperature is range is 28 to 26°C. Sorghum, maize, common bean, chat are the major crops grows while cattle, shoats and donkeys are the major livestock kept. Sorghum is the dominant crop produced for home consumption and cash as well. Both improved varieties and local varieties area produced. The production is of sorghum is done using draught oxen and human labor.

Market places for sorghum

Dire-Dawa, Harar, Chiro and Hirna are the destinations for the sorghum produced in East and west Hararghe zones. Whereas Addis Ababa, Adama, Harar and Dire Dawa are the major market places for sorghum harvests Dire Dawa from Wollega and North Shewa zones. Dire DawaIn the northern part of Ethiopia Lalibela, Sekota, Woldia,Mekele area the central markets for sorghum produced in North Gonder, North and South Wollo, and North west Tigray.

This paper focus on Harar, Dire Dawa, Hirna,Doba, Chiro, Mieso, and Asebotdistrictsin East and West Hararghe Zones and DireDawaregion of Ethiopia. The study marketsDireDawa, Adama and Harar towns were purposively selected representing market place for sorghum in East and West Hararghe zones and their Dire Dawa, Harar market place of access to road networks. Mieso, Asebot, Chiro, Hirna, and Doba markets were selected as a representative of sorghum producing areas East and West Hararghe zones.

Table 2. Summary major sorghum producer Administrative zones of Ethiopia and their major market places in Ethiopia

Area	Market place
East And West Hararghe	Harar, Dire Dawa, Chiro, Hirna
WolLega, North Shewa,Gonder, GojjamJimma)	Addis Ababa, Adama, Harar, Dire Dawa, Chiro, Jigjiga, Desie, Selale,
Gonder, North Wollo and South Wollo, North West Tigray	Lalibela, Sekota, WoldiaandMekele

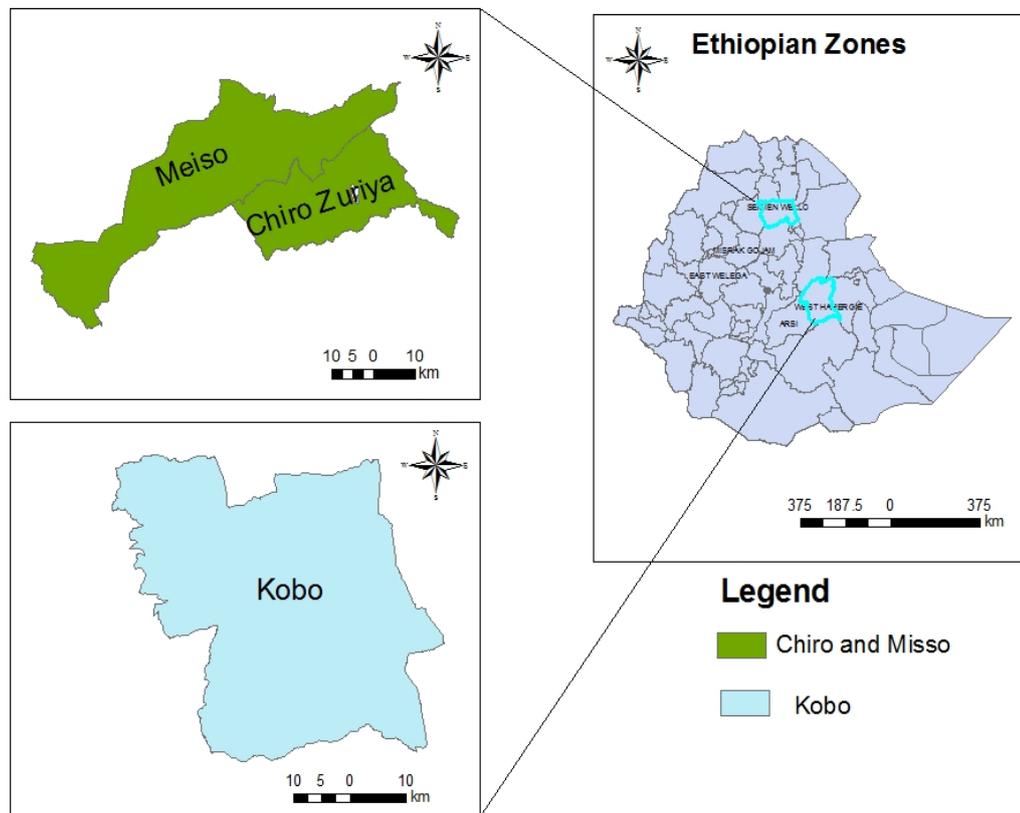


Figure 32. Map of the study area.

3. Method of data collection and data analysis

A survey was conducted along the value chain that links producers in the primary markets with domestic consumers and exporters in tertiary markets. Harar, DireDawa, Adamawere the major market for Mieso area field survey. This included the following key markets located around the major sorghum growing areas of West and East Hararghezones. At the different market levels, the survey included several assemblers (smaller collectors at village level), wholesalers (district traders at district capital) tertiary markets (urban centers) and retailers. District In the study area seventeen sorghum markets were surveyed (Table 3.)

Table 3 Sampling procedure in the selected study areas in Hararghe area

Location of Respondent	Kind of Respondent				
	Urban retailer	Urban wholesaler	District retailer	Rural wholesaler	District wholesaler
Harar	3	2			
Dire Dawa	4	2			
Hirna	4	1			
Chiro	3	1			
Mieso		1	1		
Asebot		1		1	1
Adama	5	1			
Doba	1		1	1	

Table 4 the sample size, the number of traders and market place sorghum traders (in each market) included in the survey.

Location of Respondent	Kind of Respondent						
	Urban retailer	Urban wholesaler	District retailer	Rural wholesaler	District wholesaler	Rural Retailer	Rural assembler
Mekele	4	1					
Woldia	3	3					
Goby	2						
Sekota	2	3					
Waja	1					2	
Lalibela	1	3					1
Alamata	2	3				1	
Shewa Robit	1					3	1
Kobo	3						

4. Data analysis techniques

Qualitative and quantitative techniques (descriptive statistics) were employed to analyses the data. The data were managed and analyzed using Excel and SPSS statistical software.

5. Results and Discussion

5.1 Socio-economic profile of sorghum traders

A significant share of the sorghum trade is run and managed by family workers. Wholesaler (50%), district wholesaler (100%), district retailer (100%), urban wholesaler and 60% of those in the urban retailer markets have at least one full time family worker respectively. Whereas 50,37.5 and 35% of those in the rural wholesaler (50%), urban wholesaler (37.5%) and urban retailer (35%) markets have more than one full time family workers. None of the businesses of district wholesaler and district retailers have more than one full time family worker. About 95% of the businesses in the urban retailer markets have more than one full time family worker, but only 5% had more than three workers for Mieso area. The socioeconomic profile of the traders involved in sorghum trading (see) and experience in grain trading business.

A significant share of the sorghum businesses in Kobo area markets run and managed by family workers. Accordingly, the rural assemblers (100%), rural retailer (100%), urban wholesaler (73.3%) and urban retailer markets (100%) have at least one fulltime family worker respectively. While 13.3 and 10.5% of those in the urban wholesaler and urban retailer markets have more than one full time family workers. None of the businesses in the rural assembler and rural retailer markets have more than one full time family worker. Eighty-six per cent of the businesses in the urban wholesaler markets have more than one full time family worker, but only 13.4% had more than three workers. This shows the small-scale nature of these grain-trading businesses both in terms of the volume of trade and the amount of financial and human capital needed to run them at both sites.

About 50% of the traders in the rural wholesaler markets, 12.5% in the urban wholesaler markets and 10% in the urban retailer markets maintain up to two fulltime non-family employees to run the business at Mieso area. In Kobo area, 16.7% of the traders in the rural retailer markets, 5.3 % in the urban retailer markets, and 40% in the urban wholesaler markets maintain up to three fulltime non-family employees to run the business. However, none of the surveyed traders in the target markets had more than three hired employees.

In terms of the gender involvement, at Mieso area about 75% and 85% of the businesses in the urban wholesaler and urban retailer markets either owned or managed by male workers while the

female occupies the remaining balances. At Kobo area, about 73.3% urban wholesaler and 94% urban retailer of the businesses in the markets either owned or managed by male workers, while female workers account for the remaining balance 26.7% urban wholesaler and 5.3% urban retailer respectively. This can be an indicator of capital and other entry barriers that hinder the female traders from entering into business as the trade volume and degree of specialization increases.

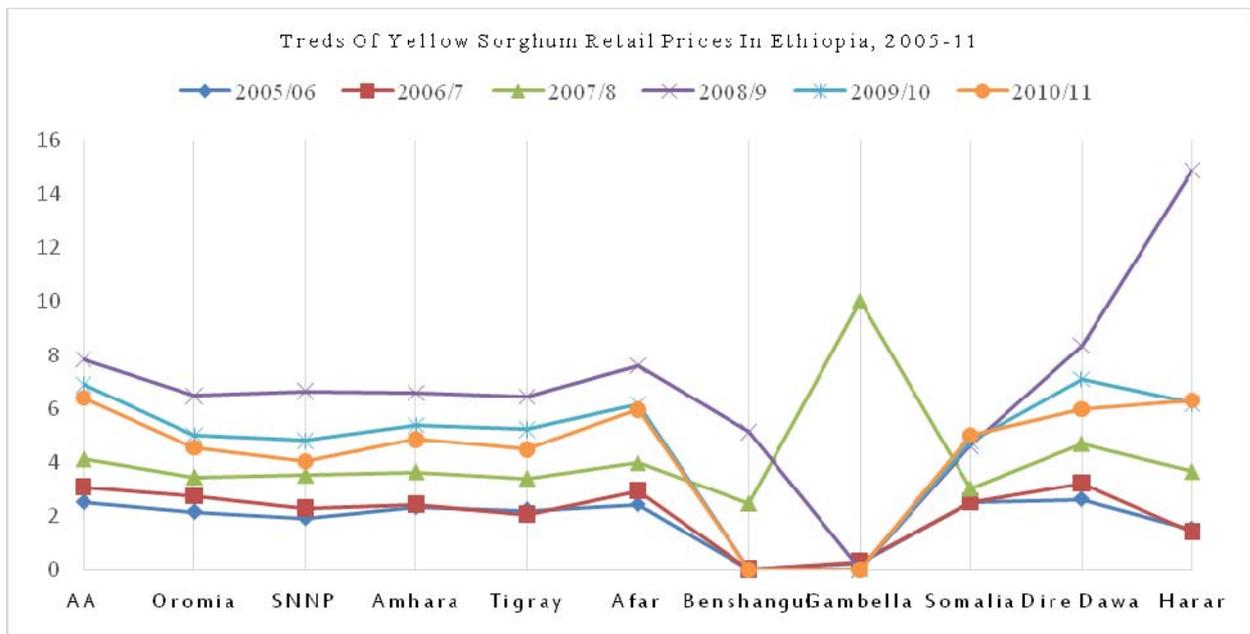
As far as the years of formal schooling of the business managers or owners is concerned, there were no illiterate traders at Mieso sites. In Kobo area, the survey results indicate that on average 83% of the traders were illiterate with this value ranging from 33% in the rural retailer market to 50% in the rural assembler market. Interestingly, most of the traders (on average 52% of the traders) at Mieso completed secondary school, while at Kobo area most of the traders (on average 93% of the traders) of the traders are under junior secondary.

The study also revealed that among the sampled traders, none of the traders in any of the markets specialized in the sorghum trade alone. In addition, traders in most of the markets indicated that they get into the sorghum trade after they have obtained experience in marketing other grain. It was observed that about 44% of traders in the grain market had more than 11 years of experience at Mieso area.

6. Market structure and functions of different participants

The analyses of marketing channels are intended to provide a systematic knowledge of the flow of goods and services from their origin (producer) to their final destination (Scott, 1995). Marketing of sorghum generally starts with the collection of grains from the farm-gate and village markets moving on to the district towns and then on to terminal markets in the cities. In the marketing chain the product passes successively through a number of market actors (representing the links in the value chain) before it reaches the end user (Figure 6). Shiferaw *et al.* (2007) described the market structure and the different market participants in the sorghum value chain and their primary operations. The main actors include a network of assemblers, retailers, wholesalers, farmers union, exporters, and processors operating at different levels in the value chain. The behavior and functional role of the different participants in determining the structure and performance of the sorghum marketing system is described below. Rural assemblers play an

important role in collecting grain from smallholder producers at primary markets and deliver the grain to wholesalers at different levels. In most cases, these actors are independent operators who use their own financial resources and their local knowledge to bulk sorghum and other grains from the surrounding area and transport the grains using pack animal and trucks for sale in secondary and tertiary markets. To some extent, wholesalers often place orders with trusted assemblers. Once the desired or available quantity of sorghum has been collected, the assemblers deliver the product to their buyers, who invariably arrange their own transport. The assemblers often receive cash advances to fund their activities. Gebremeskelet *al.* (1998) noted that although the assemblers typically operate independently, they also act as agents for wholesalers on a fixed-fee or commission basis.



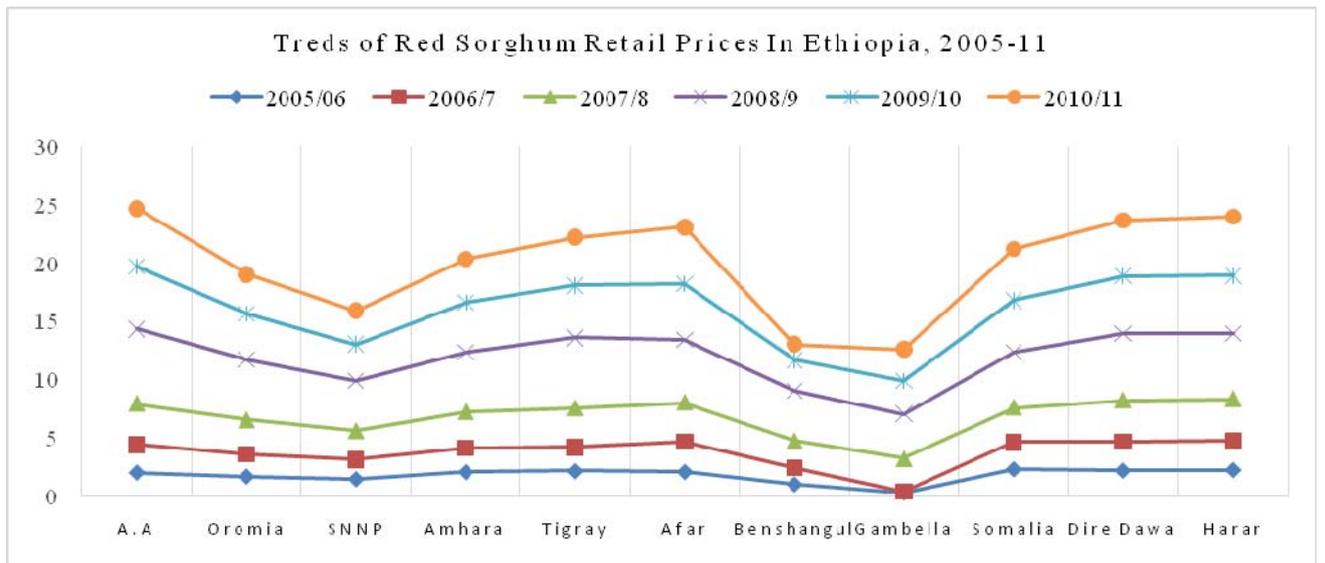
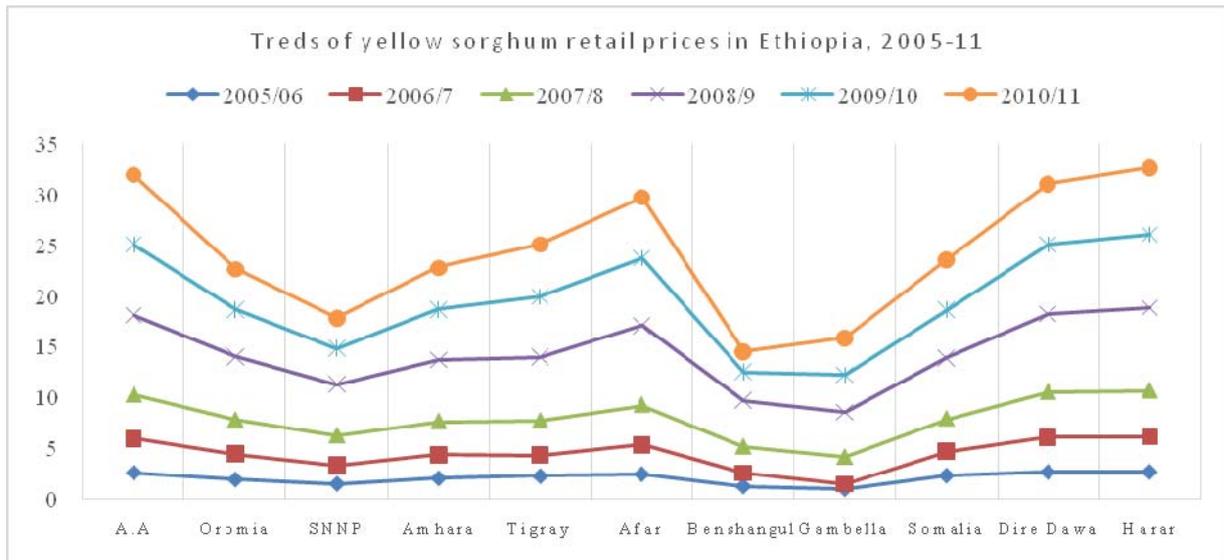
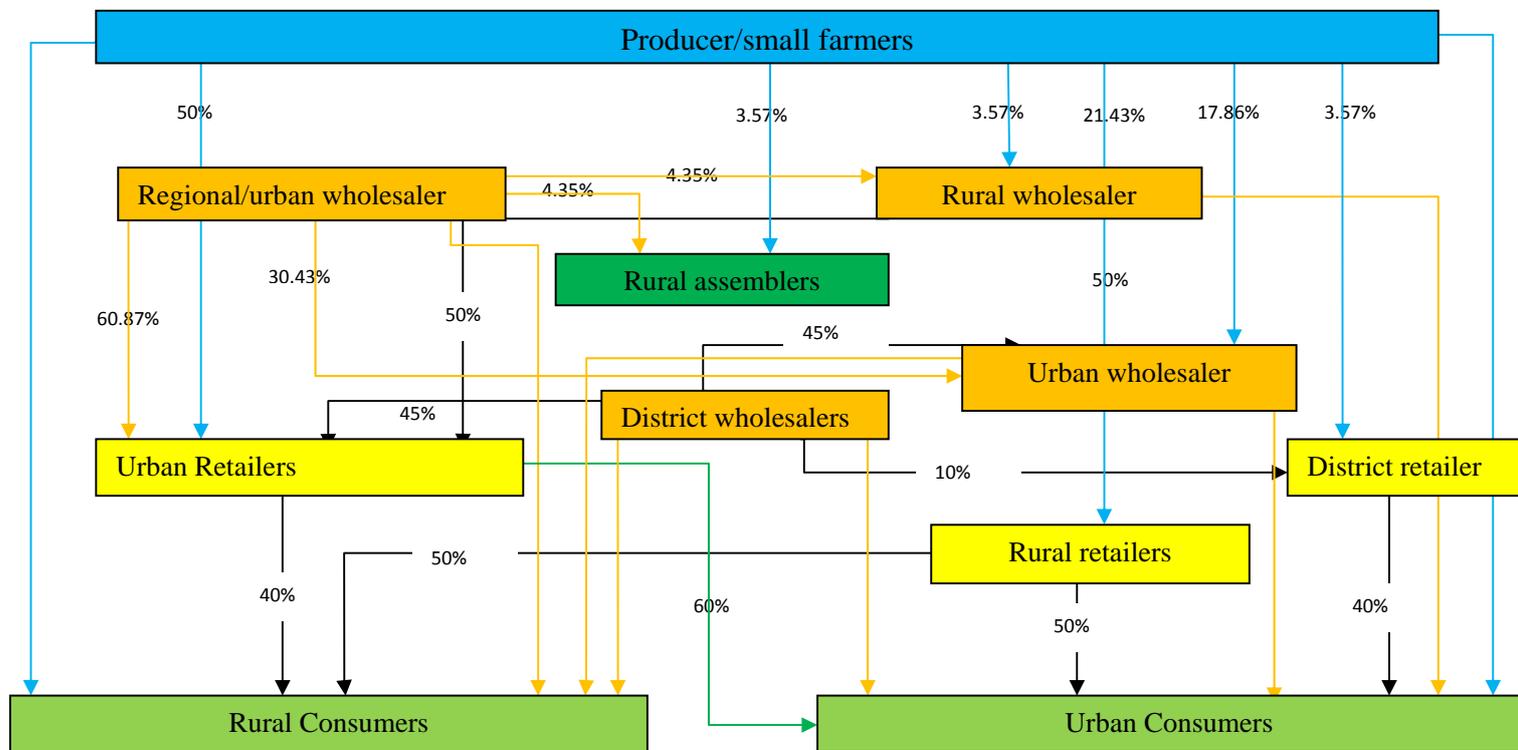


Figure 3. Trends of retail price of red color of sorghum from 2005/06-2011

Value chain mapping of sorghum



Numbers in the diagram represent proportion of sorghum flow to the next channel.
Figure 4. Marketing channels and value chains of sorghum grain.

7. Major actors in the value chain of sorghum

Wholesalers

Broadly, there are two types of wholesalers in sorghum marketing business. These are wholesalers at district towns and wholesalers at regional cities operating at the terminal markets. Survey results indicated that wholesale market both at the secondary and tertiary levels are the main assembly centers for sorghum grains in their respective surrounding areas. These markets have better storage, transport and communication facilities than the rural markets. Almost every whole trader has a warehouse in the market either self-owned or rented. They have an easy access to transport, which makes it situated both for producers and for other traders to move sorghum grain from one market to the others. Almost all wholesalers have at least one cellular phone, highly beneficial in conducting their buying and selling activities through a range of

contacts they have in different markets.

Usually, approximate storage to benefit from inter-seasonal price movements is rarely practiced because of poor liquidity and high storage risks (Sorghum easily attacked by storage pests). Sorghum transaction from the *district* level wholesalers to urban wholesalers and other actors is usually facilitated by arbitrage of brokers to coordinate inter-marketing of sorghum based on trust. Similar to other grain marketing practices in Ethiopia, brokers identify sorghum buyers, sell sorghum on behalf of *district* level wholesalers and collect and send back money from the sale of sorghum. The market intermediaries communicate market information back to their clients on a regular basis.

Retailers and processes

The majority of sorghum retailers both in urban and rural areas (district towns that has small number of population comparing with big towns) is characterized by non-specialized activities, which sell small quantities of diverse qualities of grains. In domestic consumption, retailers play an important role in sorghum marketing business by delivering the grain to the final consumers. As far as sorghum marketing outlet options is concerned, village level retailers operate only in local areas while *district* level retailers undertake their business transactions mainly at the *district* market. In the sorghum grain, business there is no large scale processing industries. However, there are small scales local processing industries like local alcohols (*areke and tela*).

8. Sorghum grain collection and distribution points

The survey results about the collection and distribution points for sorghum taking Harar, Dire Dawa, Chiro, Mieso, Hirna, Doba, Asebot and Adama as reference markets indicated that number of sorghum buying and selling points vary across different actors in the markets. Urban wholesalers and urban retailers in Dire Dawa, Chiro, Mieso, Hirna, Doba, Asebot and Adama have at least one (75%) buying, selling (100%), (65%) buying, and selling (95%) points within their district respectively. Where as taking Kobo, Alamata, Lalibela, Mekele, Robit, Gubye, Sekota and Waja as reference market indicated that number of sorghum buying and selling points vary across different actors in the markets. Urban wholesalers and urban retailers in Kobo, Alamata, Lalibela, Mekele, Robit, Gubye, Sekota and Waja have at least one (27%) buying and selling (80%) and (37%) buying and selling (74%) points within their district respectively. About (13%)

buying selling (0%) in the urban wholesaler and 21% buying and selling 16% in the urban retailer markets have two buying and selling points in Kobo, Alamata, Lalibela, Mekele, Robit, Gubye, Sekota and Waja respectively. However, some actors in the markets (Dire Dawa, Chiro, Mieso, Hirna, Doba, Asebot and Adama) have buying and selling points outside of the districts. Some traders in the markets who used markets outside of the districts used Wolega, Minjar, Wolinchiti, Addis Ababa, Adama and other East and West Hararghe districts as buying points of origin and Harar, Dire Dawa, Adama, Chiro, and Hirna as important selling points. Whereas, in the markets (Kobo, Alamata, Lalibela, Mekele, Robit, Gubye, Sekota and Waja) Kobo, Alamata, Waja, Wolega, and Robit and other North and South Wollo districts as buying points and Kobo, Desie, Mekele and other districts as important selling points. Still, Wollega and Minjar were important sorghum buying points of origin while Harar, Dire Dawa, Chiro, Hirna and Adama served as major sorghum selling points for these traders (in Dire Dawa, Chiro, Mieso, Hirna, Doba, Asebot and Adama). Particularly, the results indicated that most of traders in the markets have buying links with traders in Addis Ababa market.

Table 5 Major market places for transaction of sorghum grain in Ethiopia

Major market places (buying point) as an origin of the product	Major market places of selling point	Remark
Wollega	Addis Ababa, Dire Dawa, Adama, Harar, Chiro, Hirna	Wollegais the main source of sorghum grain in the country. Whereas
Minjar and Merhabete	Addis Ababa Harar, Dire Dawa, Chiro, Hirna, and Adama	sorghum produced from Minjar and Merhabete is more preferable for injera mixing with tef.
Wolinchiti	Adama, Harar, Dire Dawa, Chiro	
Addis Ababa	Harar, Dire Dawa, Chiro, Hirna, and Adama	
Adama	Harar, Dire Dawa, Chiro,	
East and West Hararghe districts	Harar, Dire Dawa, Chiro, Hirna	
Kobo, Alamata, Waja, Wolega, Robit and other North & South Wollo districts	Kobo, Desie, Mekele, and other districts	

9. Quality characteristics of traded sorghum

The survey indicates that traders at different markets classify sorghum into different grades. About 56% and 31% of traders recognized sorghum as having two and three grades respectively. There is uncertainty about the number of valid quality grades for sorghum in the market. However, the Ethiopian Statistics agency present four quality grades for sorghum by color (White, Red, Yellow and Mixed). Majority of the traders in the urban wholesaler and urban retailer markets (17 and 29%) recognized two quality grades for the commodity. About 31% of the traders tend to recognize only three-quality grade, while 7% of the traders tend to recognize four grades in the markets (Annex1).

10. Major Constraints and Opportunities in the sorghum markets

- Poor quality of produced sorghum grain
- Lack of access to market information
- High transport and transaction costs
- Lack of diversified use of the crop apart from subsistence
- Lack of genuine current price information from different actors
- Unstructured marketing system
- Shortage of supply of sorghum production
- Illegal traders in the markets of sorghum
- Storage pest problem
- High demand of sorghum by consumers for food
- Creating demand for other crops which are used for mixing with sorghum like tef

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Scott, 1995

Shiferaw et al 2007

Gebremeskelet al. (1998

Annex 1. Number of grades established in Sorghum marketing (percentage of respondents)

Location name	No. of grades	Type of trader								Total (N=77)
		Rural assembler (N=2)	Rural wholesaler (N=2)	rural retailer (N=6)	District wholesaler (N=2)	District retailer (N=2)	Urban whole saler (N=23)	Urban retailer (N=39)	Urban whole saler&urban retailer (N=1)	
Mieso	1	0.0	0.0	0.0	2.9	2.9	0.0	0.0	0.00	5.9
	2	0.0	0.0	0.0	0.0	2.9	11.8	32.4	0.00	47.1
	3	0.0	5.9	0.0	2.9	0.0	8.8	20.6	0.00	38.2
	4	0.0	0.0	0.0	0.0	0.0	2.9	5.9	0.00	8.8
	Total		0.0	5.9	0.0	5.9	5.9	23.5	58.8	0.00
Kobo	1	0	0	0	0	0	0	7.0	0	7.0
	2	2.3	0.0	11.6	0.0	0.0	20.9	25.6	2.3	62.8
	3	2.3	0.0	2.3	0.0	0.0	14.0	7.0	0.0	25.6
	4	0.0	0.0	0.0	0.0	0.0	0.0	4.7	0.0	4.7
	Total		4.7	0.0	14.0	0.0	0.0	34.9	44.2	2.3
Total	1	0.0	0.0	0.0	1.3	1.3	0.0	3.9	0.0	6.5
	2	1.3	0.0	6.5	0.0	1.3	16.9	28.6	1.3	55.8
	3	1.3	2.6	1.3	1.3	0.0	11.7	13.0	0.0	31.2
	4	0.0	0.0	0.0	0.0	0.0	1.3	4.0	0.0	6.5
	Total		2.6	2.6	7.8	2.6	2.6	29.9	50.6	1.3