



Benefiting from the gold rush

Improving smallholder sesame production in Ethiopia through contract farming



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June 2011

VC4PD Research Paper, No. 13



VC4PD



Pictures: Wim Gorris, Herma Mulder and Francesco Cecchi

This series is a result of the Partnership Programme between the Netherlands' Ministry of Foreign Affairs Government and Wageningen UR.

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In Ethiopia, the VC4PD program supported EPOSPEA and the PPP on Oilseeds, and collaborated with EIAR, FFARM and SNV.



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Summary

The question we address in this report is whether contract farming (CF) can decrease the transaction risks and costs in such a way that poor farmers are included in, and can benefit from, the sesame value chains in Ethiopia. To answer this question, literature was reviewed, many interviews held and a detailed case study on sesame contract farming arrangement in one of the most important sesame producing areas of Ethiopia was carried out.

Our findings suggest that the transaction costs farmers face in dealing with traders are minimal compared to the transaction costs involved in acquiring inputs, especially labour during peak times. This contradicts the results described in most of the literature on marketing of Ethiopian agricultural produce, which highlights that transaction costs in marketing are high.

Nevertheless, the study also revealed that poor farmers do experience high transaction costs when buying the required inputs. We propose that all transactions in the whole value chain are considered in the definition of transaction risks and costs, since these all influence the possibility for farmers to engage in market transactions.

Contract farming can be a mechanism to reduce the costs of exchanging inputs for farmers. Contract farming can provide support in areas such as credit, modern production inputs, technologies and know-how. Hence, contract farming can enable smallholder farmers to enhance their capacities, increase their productivity and competitiveness.

However, working with a myriad of small farmers will increase the transaction costs of the contracting firm. Therefore, Ethiopian companies suggested that contract farming is only viable for them if they can sell the sesame to a high value market that offers a premium price. In addition, contract farming with a producer organisation may considerably reduce the transaction costs for the company. Other studies advocate that only the marketing cooperatives, not just any cooperative, in Ethiopia will be an effective and efficient instrument to reduce transaction costs.

Because so far the greater part of the research in Ethiopia has focussed on the costs during transactions of the outputs rather than the inputs, most development initiatives also focus on improving the marketing of the produce. The promotion of contract farming might be a better option to resolve the bottlenecks currently faced by smallholder sesame farmers.

1 Introduction

Endemic rural poverty and chronic food insecurity are all too well known in Ethiopia. This is often the result of low productivity, high transaction costs, limited use of modern inputs, and minimal levels of commercialization among small-scale, resource-poor farmers. Accordingly, the Government of Ethiopia's economic growth strategy, Agriculture Development-led Industrialization (ADLI) has, since 1991, placed high priority on accelerating agricultural growth through the commercialization of smallholder production (Bernard and Spielman, 2009). It is expected that increased commercialization shifts farm households away from traditional self-sufficiency goals towards profit- and income oriented decision making. However, in the face of imperfect markets, high transaction costs, and agro climatic risks, few smallholders in Sub-Saharan Africa have been able to realize the potential gains from commercialization (Bernard *et al.*, 2010).

One way of explaining the persistently low levels of smallholder commercialization relates to the idea of transaction costs. These are often defined in the literature as the costs entailed in marketing surplus output and that create a wide differential between selling and purchase prices, limiting the benefits smallholders are able to accrue from their market-based exchanges. These transaction costs include the costs associated with finding a partner to trade with, delivering the commodity, negotiating a contract, or enforcing the agreement (for example, Bernard *et al.*, 2010; Eaton *et al.*, 2008; Gabre-Madhin, 2001; Pingali *et al.*, 2005). Importantly, some of these transaction costs are independent of the size of the transaction, thus the unit cost of transacting tends to decrease as the amount to be sold increases. Therefore, smallholders typically face proportionally higher transaction costs than other types of sellers because of the small size of each transaction. Interventions aimed at reducing these transaction costs could encourage increased farmer participation in competitive markets.

The question we address in this report is whether contract farming (CF) can decrease the transaction risks and costs in such a way that poor farmers are included in, and can benefit from, the sesame value chains in Ethiopia. To answer this question, literature was reviewed, many interviews held and a detailed case study on sesame contract farming arrangement in one of the most important sesame producing areas of Ethiopia carried out.

This paper first describes the importance of sesame production in Humera, where the case study was carried out. This is followed by a description of the sesame production and trade in Humera, while highlighting the opportunities and obstacles faced by sesame producers. Chapter 3 shows the value of the sesame sector for the Ethiopian economy and to which end market the sesame is sold. It also portrays how the production and trade is organized in other areas in Ethiopia in order to verify whether the information obtained in the case study is representative for the country as a whole. Chapter 4 discusses which transaction costs and risks are important for sesame producers, whether these are the same for all end markets and for all agricultural sectors in Ethiopia. This is followed by a description of contract farming arrangements and its transaction costs in chapter 5. In the concluding chapter we analyse whether contract farming can help to decrease the transaction costs for poor sesame farmers in the value chain, and hence can contribute to inclusion of smallholders in the value chain.

2 Case study: sesame farming and trade in Humera

Sesame is the major oil seed in terms of exports in Ethiopia, accounting for over 90% of the value of oil seeds exports. Sesame in Ethiopia is grown mainly for the export market and only about 5% is believed to be consumed locally (Mbwika, 2003 and Aysheshm, 2007). Three main types of sesame are grown in the country; *the Humera*, *Metema* and *Wellega* type. Their names are derived from the areas in which they are produced (Mbwika, 2003). The *Humera* and *Metema* types are preferred mainly for confectionery purposes due to the whitish colour, purity, and good taste. The *Wellega* type is used for oil extraction due to its high oil contents (Aysheshm, 2007).

According to Amare (2009) the *Humera* type is most appreciated in the international market. It is therefore not surprising that the area covered with sesame seed in western Tigray (the National Regional State in which Humera is located) has grown rapidly. In 2002/2003 an area of 18,761ha was grown with sesame in Western Tigray, while this had gone up with more than 800% to 151,770 ha in the 2005/06 production season. This represents 74% of the whole area under sesame production in Ethiopia (Amare, 2009). It is in Humera, the heart of sesame production, where this case study took place.

2.1 Humera is thriving because of sesame

Right at the northwest corner of the country, bordering with Eritrea and Sudan, Humera has undergone great changes in the last decade. It has attracted many investors willing to engage in sesame farming and trading, whilst sesame price rose over the past few years on the world market (FAOStat, accessed 8 December 2010). The city has more than doubled in size (reaching 92,000 inhabitants at *woreda*¹ level in 2008) since the year 2000, the beginning of this 'gold rush' as sesame is locally called. It has also seen massive speculation in the construction sector². The city draws up to 450,000 seasonal immigrants from the highland.

The agro-ecological circumstances of Humera can be characterized by hot temperatures, erratic rainfall, vast areas of plain lowlands suitable for large-scale and subsistence agriculture. Humera is one of the most important regions of the country for rain fed, mechanized and commercial agriculture. The major crops grown in the area include sorghum and sesame. Only a few commercial and smallholder farmers grow cotton (BoARD *et al.*, 2002).

Next to sesame, to smoothen down the volatility of revenues resulting from cash crop farming, sorghum is produced. Sorghum is the basic ingredient of the local *injera*, the main dish of Humera's cuisine. If not hit by the *striga* weed, sorghum can produce around 25 quintals³ per ha. It was sold at a price of circa 300 Birr per quintal in 2009. In comparison, sesame yielded 3-4 quintals/ha in the same yield and was sold at 1,400-1,700 Birr. In 2009 it might therefore be a less profitable crop than sorghum. Farmers nevertheless tend to use sorghum for own consumption, only selling the excess quantities to the local market. This risk minimizing strategy allows smallholders to reduce the need for consumption related liquidity, consenting to delay sales of sesame and increasing the expected profits.

According to Amare (2009) farmers prefer to cover almost all their land with sesame when the rainfall is good. Reason is that sesame has a high demand and an attractive market price. According to him large investors mainly grow sorghum for the purpose of food for their workers.

Livestock breeding (cattle, sheep, goats) used to be a dominant activity in the area up to the second half of the 20th century. In the last 40-50 years crop farming, spearheaded by large-scale

¹ A *woreda* is a municipality or a district.

² Interview with Mr. Gezu, Head of the Cooperative Promotion Agency, Ministry of Agriculture, Humera.

³ 1 Quintal is 100 kg

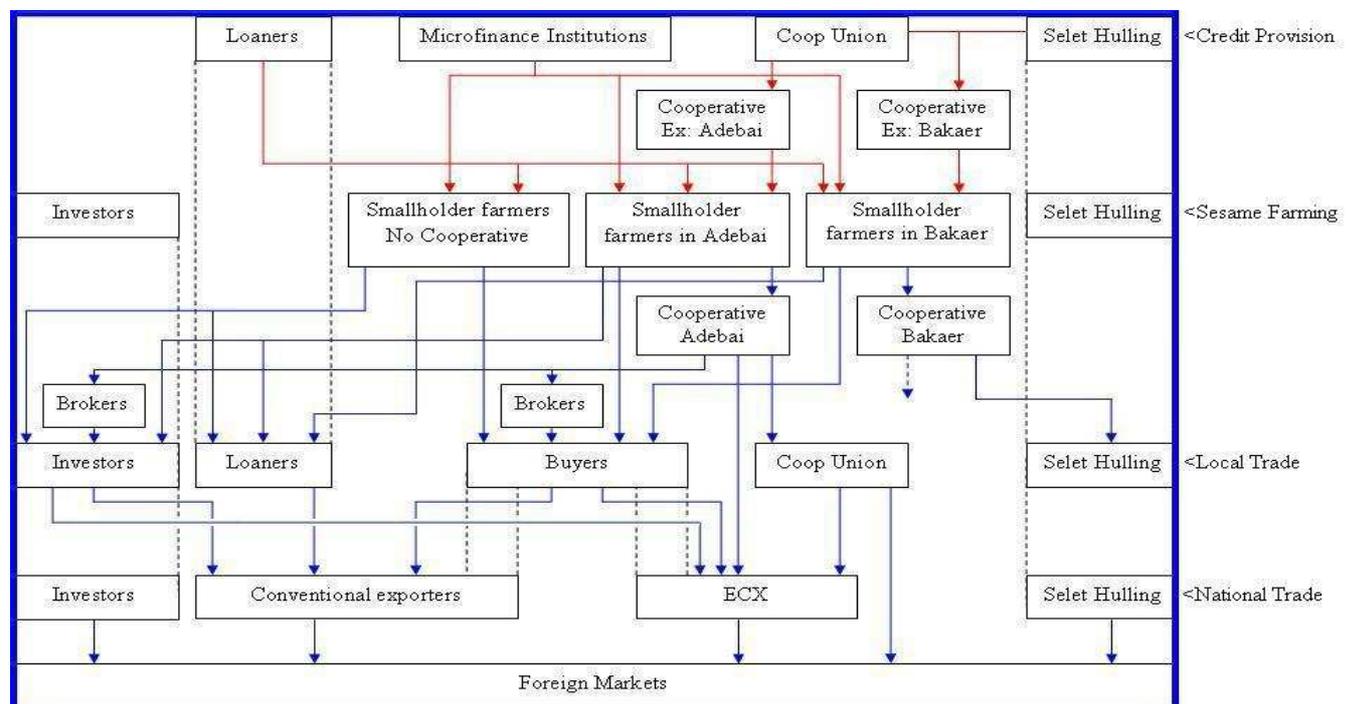
sesame production, was introduced in the area taking a large portion of livestock grazing lands (BoARD *et al.*, 2002).

Next to agriculture, smallholder families often engage in petty trade and other non-farm activities. These are usually run by women⁴.

2.2 Sesame trade in Humera: marginal transaction costs

The value chain of sesame involves various actors. At the top of the chain we have input providers to the farmers. At the bottom end sesame reaches the international markets, after several trade steps. This section only concentrates on the sesame trade in Humera. The production of sesame and how farmers get access to the necessary inputs is described in the following sections.

Figure 1: Humera's sesame value chain



Source: fieldwork Cecchi

In Humera, anyone who is willing to purchase sesame is seen as a trader. However the context and characteristics of these traders can vary enormously. The 'investors' personally engage in farming, trading, and often also export the produce directly. The 'union' buys sesame from their members (primary cooperatives) and sells this to a third party.

'Loaners'⁵ are traders who also perform the task of moneylenders. *Shell* is the common marketing arrangement between these 'loaners' and sesame producers. If a farmer takes credit from this moneylender at the time of planting, weeding or harvesting the borrower is expected to pay back the loan in kind. Since there is no legal protection for usury, moneylenders and farmers agree to sign a contract, which states that the moneylender has allegedly placed several quintals of sesame in the storage space of the farmer, with the intention of retrieving them after a number of months (upon harvest). Up to three testimonies per side are required to sign the contract, therefore allowing the loaner to legally reclaim the sesame 'borrowed'⁶. The number of bags to be

⁴ Participatory observation Cecchi.

⁵ In Ethiopia people generally refer to these 'lenders' as 'loaners'.

⁶ It can be seen as a 'future claim'.

'returned' is based on the predetermined lower price which the borrower and lender set at the time of advancing the loan. 'Loaners' tend to speculate on local market prices, and normally re-sell to other local traders or conventional exporters that come to buy in Humera.

Yet another category of traders is the 'buyers'. They obtain sesame in two ways. In the first case the farmers or the cooperatives agree to sell their sesame and they will be paid upon delivery. The trade happens within a short time period. Therefore, these 'buyers' always need to have high liquidity readily available. In the second case the seller (farmer) accepts to store a given amount of sesame in the store or warehouse of a trusted 'buyer'. The farmer can decide to sell a portion of it any day he wishes at that day's market price. 'Buyers' do not charge a fee for keeping the sesame in their storage. This practice, which is mainly used by farmers rather than by cooperatives, is slowly fading away. Delivering sesame without rigid formal guarantees requires a substantial level of trust.

The 'investors', the union, the 'loaners', and 'buyers' can all sell the sesame to local or national level traders, export directly or can sell through the newly born Ethiopian Commodity Exchange (ECX – see box 1).

A lot of the sesame trading takes place at Humera's central square. Brokers, individual traders and farmers are all in the same physical space. Brokers, who regulate large scale sales for a fee of 2 Birr per quintal, play a vital role in spreading information to the farmers⁷. In fact, being several dozens, they compete on presenting the best price to the farmers and cooperatives, linking them to the right trader. As a consequence, price information floats freely in Humera, changing up to 6 times a day⁸. The idea of a few, price-making and oligopolistic traders going to visit the farmers only sporadically, is as far as it could be from Humera's context. Traders even go to markets in smaller villages (see also chapter 4.1). In Metema *Woreda*, one of the largest sesame production areas in Ethiopia, the situation is similar as in Humera. Traders frequently come from different corners of the country to purchase sesame from local markets (Aysheshm, 2007).

In addition, farmers start looking for opportunities for trans-border trade with Sudan⁹ as soon as the farming season is over. If they perceive a price difference, smallholders will

Box 1: Ethiopian Commodity Exchange

The Ethiopian Commodity Exchange (ECX) is designed to be a marketplace where buyers and sellers meet to trade, with a certain level of quality assurance and with clear delivery and payment procedures. The ECX is a national multi-commodity exchange with the aim of providing market integrity, by guaranteeing the product grade and quantity. It operates through a system of daily clearing and settling of contracts. The Ethiopia Commodity Exchange (ECX) commenced trading operations in April 2008. It currently (December 2010) trades in coffee, maize, wheat, beans and sesame. Coffee was compulsory traded through the ECX. Since November 2010 sesame trading is also exclusively through the ECX.

Trading takes place based on warehouse receipts issued by ECX operated warehouses throughout the country, where commodities are graded, weighed, and certified.

The ECX trading system combines a physical trading floor located in Addis Ababa, where buyers and sellers may participate in "open outcry" bidding for commodities, with electronic remote access to the trading system. Market prices are constantly changing throughout trading hours and are transmitted in real time to producers and consumers directly using electronic price tickers, as well as website and media. In the near future, the ECX aims to work on online trading and futures as well.

For more information, see <http://www.ecx.com.et/CompanyProfile.aspx>

⁷ Information obtained through the Participatory Rural Appraisal (PRA) in Humera. Confirmed through participatory observation (Cecchi).

⁸ Interview with Mr. Eyasu. Op. Cit.

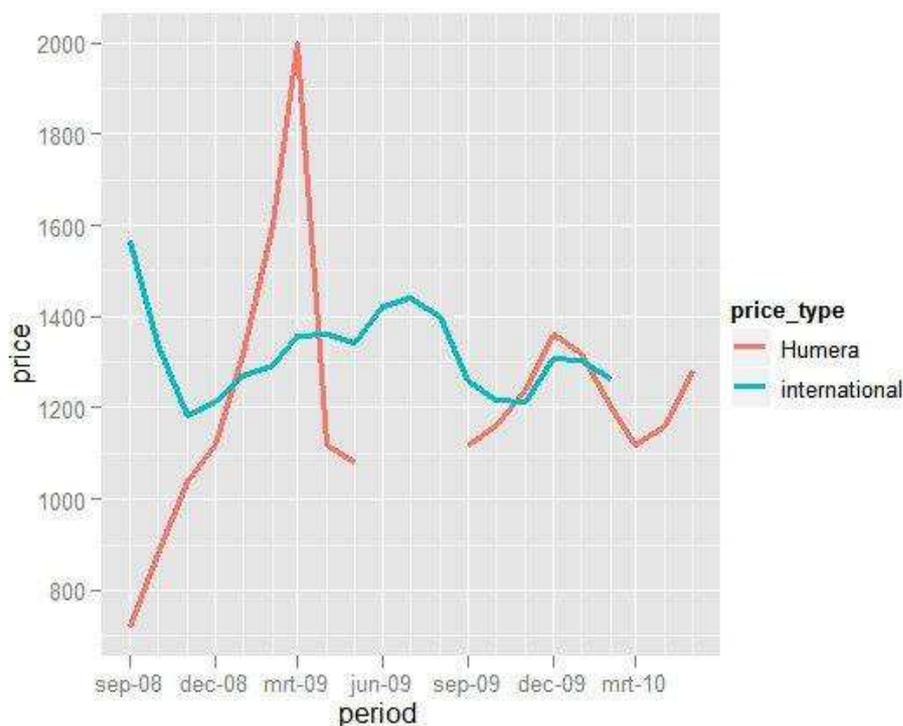
⁹ Sudan consumes a lot of sesame. During years when sesame harvest in Sudan is insufficient, prices in Sudan tend to be relatively high. Sudan is approximately 10 minutes' walk from Humera.

engage in time consuming donkey journeys to import or export just a few bags (a donkey can carry up to 6), capitalizing on price differences as small as 10 Birr per Quintal¹⁰.

2.3 High farmer prices for sesame in Humera

Farmers in Humera have shown to be aware of price trends throughout the year and tend to be tough negotiators. Their attitude is favoured by the need of hard currency that many exporters have. Those Ethiopian exporters that also engage in import are willing to break even or even lose on sesame trade, to collect sufficient US dollars to pay for highly lucrative imports.

Figure 2: Price of sesame (in Birr per quintal) in Humera and the international market



Source: International prices Ethiopia Customs Office; Humera prices, collected in the field by Delelegne Tefera

According to Dr Mussie, in December 2009 the sesame price in Humera averaged 1,700 Birr (USD 1,360) per quintal when the international price flowed around USD 1,450 (see also Figure 2). This is slightly below the breakeven point for exporters, which is considered to be 20% above the buying price. Because regional prices usually differ and prices fluctuate in time (sometimes daily), the estimates for Dr. Mussie and figure 2 may not correspond.

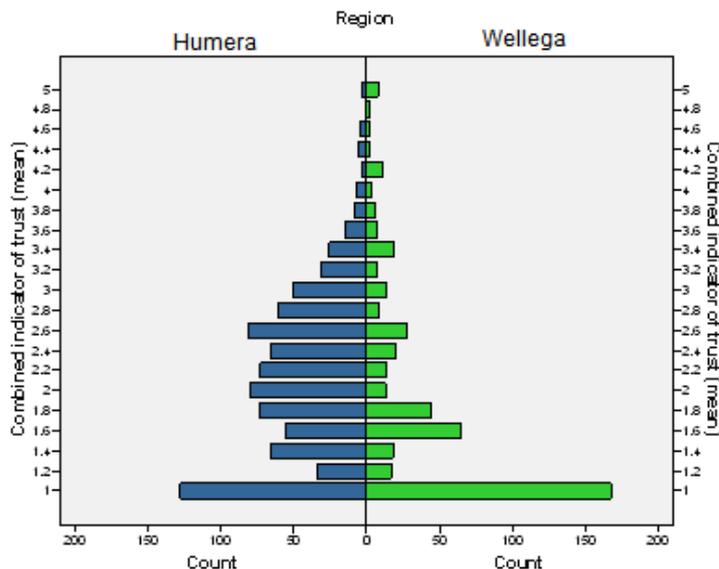
Hence, the assumption that farmers only receive a small portion of the final export price, is not correct for those farmers who were able to sell their produce to whomever they wanted. Nonetheless, those farmers who were obliged to sell their sesame to 'loaners' in exchange for the receipt of working capital at the start of the agricultural season, the assumption does hold true.

Debela Gelalcha (2009) confirms that 46% of the farmers were pleased with the price they received for their sesame. Farmers in both Humera and East Wellega reported that sesame marketing problems were only moderately affecting them. The level of trust between the traders

¹⁰ Ibid.

and farmers in Humera was also relatively high^{11,12}, see Figure 3. Most farmers in Wellega do not trust traders (score of 1) with business practices, such as providing reliable information or giving a fair price. Although many farmers in Tigray also do not trust traders, the picture is more mixed: there are a substantial number of farmers who trust farmers moderately.

Figure 3: Trust levels of farmers in traders in Humera and Wellega



NB 1 = no trust, 2 = little trust, 3 = medium trust, 4 = high trust, 5 = very high trust

The trust measure is a composite of different trust issues pertaining to business practices, such as 'the trader gives reliable information', 'the trader used the scale honestly' 'the trader gives a fair price'.

Source: Meijerink & Eaton, 2009

The time farmers spend to discuss the price, inspect and weigh the sesame and make the payments can be measured in minutes. Conversely, the time spent by traders to sell this sesame to other buyers does take considerable time. Each individual step (meeting with buyers, discussing price and quality, inspection and weighing of sesame, and finally receipt of payment) is measured in hours.

2.4 Farmers have too little working capital too late

Sesame production entails high operational costs; from land clearing to threshing. Timely availability of sufficient finance to pay for the necessary inputs is a crucial element to obtain high yields and profits.

In 2009 there were ten commercial banks in Humera. However, none of the farmers who participated in the study got commercial credit. The amount for a bank loan is too high and the collateral required is above their means.

Discussions during the fieldwork¹³ revealed that farmers in Humera have three sources of credit (see

Table 1). The three sources score differently on timely availability of sufficient and affordable finance. The Microfinance Institution takes between 10 and 19 days to assess the value of

¹¹ 62% of traders reported that they had high trust in farmers, 33% of traders had medium trust.

¹² The fact that the trust levels were good is remarkable because at the time of the research the ECX did not yet provide information on sesame prices. We expect that trust levels will go up if farmers and traders all have access to the ECX price information.

¹³ In Adebay and Ba'ekher

farmers' collateral. The interest rate is the lowest, and farmers can borrow up to 15.000 Birr¹⁴. Farmers who do have collateral prefer this arrangement. However, the amount is insufficient for most farmers. Therefore, members of a cooperative union also apply for credit from their union to supplement their working capital. Farmers consider the interest rate of the union acceptable but the amount is very low and it takes a long time for farmers to receive their loan.

The union has to ask the Commercial Bank of Ethiopia (CBE) for a budget. The CBE approves the budget but often gives less than requested to the union. For example, one union applied for 90 million Birr but the CBE only approved to lend 16 million¹⁵. The Union then has to request for a guarantee from the government. The CBE sends the funds to the union after it has received government approval. The union then sends the money to the primary cooperatives, who finally distribute the credit to the farmers. By the time the money finally arrives, the farming season has already started.

Table 1: Characteristics of different credit types available to farmers in Humera in 2009

	Microfinance	Moneylenders	Union
Max amount known to be received in Birr	15.000	No limit	3.000
Received by PRA farmers	500 to 10.000	1.000 to 14.000	500 to 3.000
Interest Rate	18% in 9 months	15-20% per month	12% in 5 months
Annual Interest Rate	24%	225-240%*	29%
Days for Searching & Info	1	1	1
Days for Bargaining amount	10-19	0-1	2-8
Days between application and receipt of credit	1	1	50

Source: fieldwork Cecchi

Hence, most sesame farmers in Humera have no other option than to go to the moneylender. As mentioned in section 2.2, *shell*, the provision of cash in exchange for a given amount of sesame at the end of the farming season is a common arrangement.

The farmers indicated that they preferred the loans given by the microfinance institution, followed by the moneylenders and finally by the union. They revealed that the low interest rate was not considered as the main indicator of appreciation. The two issues that interested the farmers most were the amount and timeliness. Despite an interest rate charged by moneylenders of up to 240% per year, farmers prefer to go to the moneylender because they are flexible and funds are always available. The farmers that participated in the participatory rural appraisal borrowed between 4.000 and 45.000¹⁶ Birr. Some farmers had received up to 5.000¹⁷ Birr from the union. This was insufficient, hence they had to complement it with capital from other sources. Tefera (2010) also found that the credit available to farmers in Humera was insufficient¹⁸ to cover their needs.

The major problem for farmers is the delay in disbursement of credit. The consequences of this delay are that they first have to borrow from the moneylender. Once the farmers have obtained the loan from other sources, they will use this to (partly) repay the moneylender. Thus in practice the costs of the credit obtained from the union are significantly higher than appears at first sight from table 1.

¹⁴ Approximately € 780

¹⁵ The reason might be that union did not repay 100% of loans in previous years

¹⁶ Between € 208 and € 2,340

¹⁷ Approximately € 260

¹⁸ The average loan taken per farming family from formal institutions was Birr 3069 (€ 170.5) and sesame is the only cash crop to repay the loan (Tefera, 2010)

The question of getting timely access to credit is not new to sesame farmers in Humera. BoARD *et al.* reported in 2002 that, despite the presence of the Commercial Bank of Ethiopia and Wegagen Bank in Humera, the only source of credit available to farmers in the 2001 cropping season was the informal credit from relatives and other farmers. Amare also mentions that the financial constraint was one of the major challenges for sesame producers. The dominant source of farm credit during his study in 2006 was *shell* (43%), followed by cooperatives (38%) and Micro Finance Institutes (14%) and finally banks (3%). As during the time of our fieldwork, the farmers mentioned that the amount of credit obtained from the cooperatives is not sufficient to cover all the operational costs of sesame production (Amare, 2009). The results of Tefera's study (2010) suggest that farm output can increase by 13% if farmers' access to credit increases with 1%.

2.5 Labour at a high cost

Sesame is a labour intensive crop. External labour is required several times throughout the farming season of sesame. During the rainy season (June to September) three weeding sessions take place. Hand weeding is the usual practice.

Harvesting and threshing of sesame starts in late September and extends to the end of November. The majority of the sesame cultivars grown in Humera suffer from seed shattering. This makes it difficult to introduce the most efficient and cost effective mechanical harvesting techniques like other countries do (Amare, 2009). Therefore farmers have no other option than to hire labour for harvesting. It is the most difficult and labour consuming operation of sesame production. A row of sesame plants (about 3 metres) is tied into small bundles and stacked upright in triangular form (*hilla*). After two weeks of drying, the pods open and seeds are recovered by inverting the bundles or '*hillas*' and shaking them on a mat beneath.

Plenty of migrant workers come to Humera during the sesame season. Early in the morning labourers (*shekele*) gather at the central square of Humera but also in the smaller villages. Labourers often come with other workers from the same highland village and tend to bargain their pay in groups, delegating decisions to a 'group leader'. Farmers usually do not take more than half an hour to find the 'right group' and agree on the salary¹⁹. In fact, as for sesame trade, the assembly of many actors in the same physical space facilitates price information flows.

There are two typical types of arrangements between farmers and migrant labourers, a contract agreement or work on a daily basis. The first, the so-called *contratto* deal, is a bilateral incentive-based arrangement. The farmer offers the *shekele* groups a specific amount of money to perform a certain job on a given amount of land. These agreements often require *shekele* to work for several days on the same farm. Since the fields can be very far from the nearest village (sometimes a two hour drive), the farmer offers housing near the farm to the labourers as well as sufficient food for the group. In this arrangement, the farmer only needs to check at the end whether the job has been performed properly. This slashes transaction costs. To put it in the words of one Adebay farmer, in this way '*it is up to the other labourers to control that everybody is working hard*²⁰.

If farmers do not have sufficient liquidity to pre-arrange for housing and food and to pay the labourers immediately after the job, the labourers are reluctant to accept the deal. Labourers often come to Humera without money, and are most importantly hungry²¹. The poor and very small scale farmers therefore have to accept the second arrangement: the more expensive daily contracts. In the *Per Diem* agreements the smallholder hires some labourers for one day, guiding them to the farm and allowing them to return to the village or Humera town by night. This

¹⁹ Search and bargaining costs

²⁰ Information obtained through the PRA in Adebay.

²¹ Ibid.

arrangement permits the farmer to pay the workers gradually, sometimes even several days after the job is performed. The farmers thus gain time to gather the required money but it leads to an enormous waste of time both for the workers and for the farmers. Farmers need to monitor the work of the *shekele* for the whole day. To reduce these monitoring costs, farmers that hire *Per Diem* labour tend to engage in the job (weeding, harvesting, threshing) themselves. The *Per Diem* workers need time to procure their own food and find their own shelter. Because of this, the workers usually prefer the long term *Contratto* deals, and as a result the *Per Diem* daily labour costs rises. During labour scarce but labour intensive weeding times, *Per Diem* salary might even be double that of a *Contratto*²².

In general the overall cost of labour for harvesting and threshing varies depending on the availability of labour in the area. Especially during the first two weeding sessions, when it rains insistently and many labourers get malaria²³, wages rise dramatically. During the fieldwork in 2009, labourers in Humera were getting up to 80 or 90 Birr per day while the daily work price in Addis Ababa was 20 Birr per day²⁴. BoARD *et al.* also confirmed in 2002 that high wages during harvesting and threshing time are a result of the fact that these have to be carried out within a short interval period after physiological maturity. It leads to high labour demands within a very short period and consequently higher wages. The low labour availability during weeding time is, according to the same report, also the reason that almost half of the farmland may not be weeded on time or not at all.

Amare (2009) also mentions that there is high competition for labour between Humera and Metema. The availability of labour in the area will also be affected by the information the labourers have on the prevailing wage rate in Humera and Metema areas (Amare, 2009). Basically the most important production cost for all sesame farmers is the casual labour cost. This is also confirmed in Amare (2009) and by BoARD *et al.* (2002).

2.6 The tractor race to ensure good yields

Humera's farmers indistinctively use mechanical machinery for land preparation. Animal traction is not taken into consideration. To endorse the importance of mechanical farming, it is relevant to mention that land is customarily measured in tractor hours²⁵.

Land is first disked²⁶ to remove the weeds and prepare a seed-bed for sowing. This is immediately followed by a second operation to broadcast the seed (Zee, 2008). The disking machine and tractor are required during a time window of less than three weeks. During that time anyone who intends to produce sesame needs the same machinery for his land, resulting in a high rise in demand.

Investors have their own machinery. They first use it for their own farmland and then rent out, starting the yearly 'tractor race'. For smallholders, the cost of the machinery ranges between 500 and 600 Birr per Hour, depending on kinship relations and on the vicinity of a very large scale investor. Farmers consider finding a tractor during disking time one of the hardest tasks of the year, and an important determinant of the subsequent yield²⁷. Fieldwork in Ba'ekher and Adebay

²² Ibid.

²³ Most labourers come from the highlands where there is no malaria. During periods of incessant rains when huts are flooded, many workers fall ill and some even die. Workers are running away from these conditions and try to find work elsewhere. Leading to labour shortages during the weeding season in Humera.

²⁴ Information obtained through the PRA in Humera, Ba'ekher and Adebay. Confirmed by the interview with Mr. Gezu. Op. Cit.

²⁵ 2 ha equals 1 hour of disking the land. According to BoARD *et al.* (2002) disking is carried out at a rate of 2-3 ha/hr

²⁶ Interview with cor Jan Zee. Op. Cit. Confirmed by participatory observation.

²⁷ PRA in Humera, Ba'ekher, and in Adebay

revealed that in both cases smallholders take an average of eight days to find a tractor. Some farmers disk up to two weeks too late, when land is already too wet to be properly disked²⁸.

Farmers are well aware of the long term consequences caused by the postponement of disking²⁹. Therefore, they try to arrange the machinery well in advance. Nevertheless, these deals have a high chance to be re-bargained or cancelled just before the disking season, leaving the farmers with little else to do other than start searching for other options³⁰. The absence of a tractor rent market increases the burden of finding one. Farmers need to look for individual tractor-owners or their co-workers all around the district. This results in enormous transaction costs for the smallholders, to which one should add the long term opportunity cost of not disking in time in terms of reduced yield. BoARD *et al.* (2002) also confirm our findings that the machinery available for land preparation is inadequate to fulfil the requirements during peak periods. As a result, farmers often face timeliness problem in preparing their land.

2.7 Insignificant use of other inputs causes low yields

Sesame is mostly produced without modern agricultural inputs like improved seed varieties, chemical fertilizer, and agro-chemicals (pesticides and herbicides). Mechanised agriculture started about forty years ago in Humera. Since then the land has been continuously cultivated without any soil fertility management. The only practice observed³¹ was crop rotation every alternate year using the two common crops, sesame and sorghum. The semi-arid soils are exposed to the sun for most of the year. This prolonged exposure does not favour the organic matter accumulation and the moisture conserving capacity of these soils. According to BoARD *et al.* (2002) it is questionable whether in this case there would be a significant benefit from chemical fertilizer application, if the farmers were going to use fertilizers³².

The fertility of the soils declines, resulting in poor yields of sorghum and sesame. To overcome the yield deficit and decline of soil fertility, farmers shift their farm to newly cleared areas. Debela Gelalcha (2009) study estimated the sesame productivity (see Table 2). While sesame productivity ranged up to 4.28 quintals/ha in Humera in 2005 the yields were significantly lower in East Wellega. In both places, the level of reported productivity is much lower than the average national productivity level reported by the Central Statistical Authority (7.07 quintals/ha) for the production year of 2005/06.

Table 2: Estimated average sesame productivity in quintals per hectare by years and regions

Years	Region	
	Humera	East Wellega
2005	4.28	2.92
2006	4.00	2.00
2007	3.68	2.00
2008	3.70	2.38

Source: Debela Gelalcha (2009)

²⁸ Ibid.

²⁹ Tefera (2010) also indicates that farmers in Metema and Humera mentioned that sowing dates, weeding and harvesting dates have a big influence on good yields and quality of sesame. In particular farmers in Humera mentioned that lack of timely available tractors and shortage of labour during weeding resulted in a sizeable reduction of sesame yield in the 2009 production season.

³⁰ Information obtained through the PRA in Adebay

³¹ Cecchi fieldwork 2009

³² All reports indicate that farmers are currently not applying any fertilizers on their sesame fields.

The other important point to be observed is that the productivity is gradually declining from year to year in both places.

Almost all farmers grow sesame varieties from seed that they either kept from their own harvest or which they bought from Sudanese farmers. The varieties are well adapted to the local conditions but have low yield potential. Such seeds are usually a mixture of cultivars and of low purity, viability and germination percentage. Amare (2009) also mentions that there is no formal seed supply system in the *woreda* and that so far no improved varieties of sesame have been released³³. Debela Gelalcha (2009) confirms these findings. According to his study the overwhelming majority of the respondents (92.3%) replied that they cultivate the traditional sesame seed found in their locality.

Sesame producers hardly use chemicals against pre-harvest and post-harvest pests and diseases. It is often 'organic by default'. Despite the fact that there are important outbreaks of pests and diseases³⁴, 81 percent of the respondents interviewed by Amare did not use any chemicals during the production of sesame (Amare, 2009). Farmers do spray around the '*hillas*' against the sesame seed bug that can cause significant losses with harvested and stored sesame.

2.8 Limited agricultural extension for sesame farmers

During the time of the study of Amare, in the year 2006, the Office of Agriculture and Rural Development was the only governmental body rendering extension and other related agricultural services in Humera area. The office provided general advisory services on some agronomic practices as well as pre- and post-harvest pest management. Yet there were no extension services specifically targeted on sesame production (Amare, 2009). This finding was confirmed by Aysheshm (2007). He shows that 42.5% of the sampled farmers received extension services with significant variability among the areas. In addition, the contact of development agents with producer farmers was not frequent and irregular. According to the findings of Debela Gelalcha (2009) the services rendered were very limited. He revealed that no considerable extension service was provided by any responsible body to sesame farmers in Humera and Wellega.

During the time of the fieldwork, in 2009, the farmers producing organic sesame on a contract for Selet Hulling did receive advice on how best to grow their sesame. They were also given an organic pesticide (based on *neem*) and were taught how to apply this to prevent post-harvest losses. However, the farmers did not apply organic fertilizers to restore soil fertility.

2.9 'Humera gold' is not pro-poor

The Ministry of Agriculture identifies three types of farmers in Humera, the smallholder farmers with a land holding size of less than 30 ha, the medium level investors (with landholding ranging between 31- 80 ha) and the large scale investors who have more than 80 ha at their disposal (Amare, 2009). People can rent land for twenty-five years in Ethiopia as long as one can pay the 25 years rent upfront. During the fieldwork carried out by Cecchi, farmers mentioned that only 'rich people from Addis' can afford to rent land for sesame production. Often these investors rent vast areas of virgin, most fertile, land. According to Amare (2009), farmers also rent out their land. Reasons why they rent out their land rather than cultivate it, are the high risk associated with the erratic nature of rainfall, the high costs of labour for sesame production coupled with limited access to credit at a reasonable interest rate.

³³ There are a few trials carried out by Humera Agricultural Research Center (HARC) in collaboration with Werer agricultural Research center on sesame seed varieties

³⁴ Both Amare (2009) and Zee (2008) mention that in some years sesame losses as a result of (mainly) pests and (less) diseases can be dramatic.

The size of the landholding has important implications on the productivity of sesame. The results in the table below indicate an inverse relationship between the scale of operation and the average productivity per hectare. The average yield per hectare of the smallholder farmers and medium level investors is higher than that of large scale investors.

Table 3: Productivity vis-à-vis Scale of Operation (in quintal per hectare)

Scale of operation	Mean	N	Std. Deviation
Small scale farmers	4.39	45	1.68
Medium level investors	4.64	9	2.01
Large investors	2.57	9	.93

Source: Survey results, 2006 (Amare, 2009)

The finding that small-scale family farms tend to be more productive than large farms has also been described in a number of empirical studies³⁵. Sesame exporters in Ethiopia also confirmed that '*sesame production should really be left to small farms that have daily contact*' (Meijerink, 2009). Even though these exporters might have the means to start a large sesame plantation, and would like to do so in order to assure quality and quantity, they have been very reluctant to set up large farms themselves. They were insecure whether they could provide the management needed to assure good yields with the current sesame varieties that have considerable problems of shattering.

Despite the fact that small- and medium-scale farmers achieve higher productivity rates, they have not benefitted to the full of Humera's 'gold rush'. Many of them may not get the relatively high market price because they had to make prior agreements to sell sesame for a low price to the 'loaners' or because they had to sell their produce immediately after the harvest to reimburse the moneylender. The lack of credit throughout the farming season, seriously damages smallholders' profits by increasing transaction costs both in the credit and labour markets. High transaction costs also affect field labourers (see section 2.4), who are among the poorest in the sesame value chain.

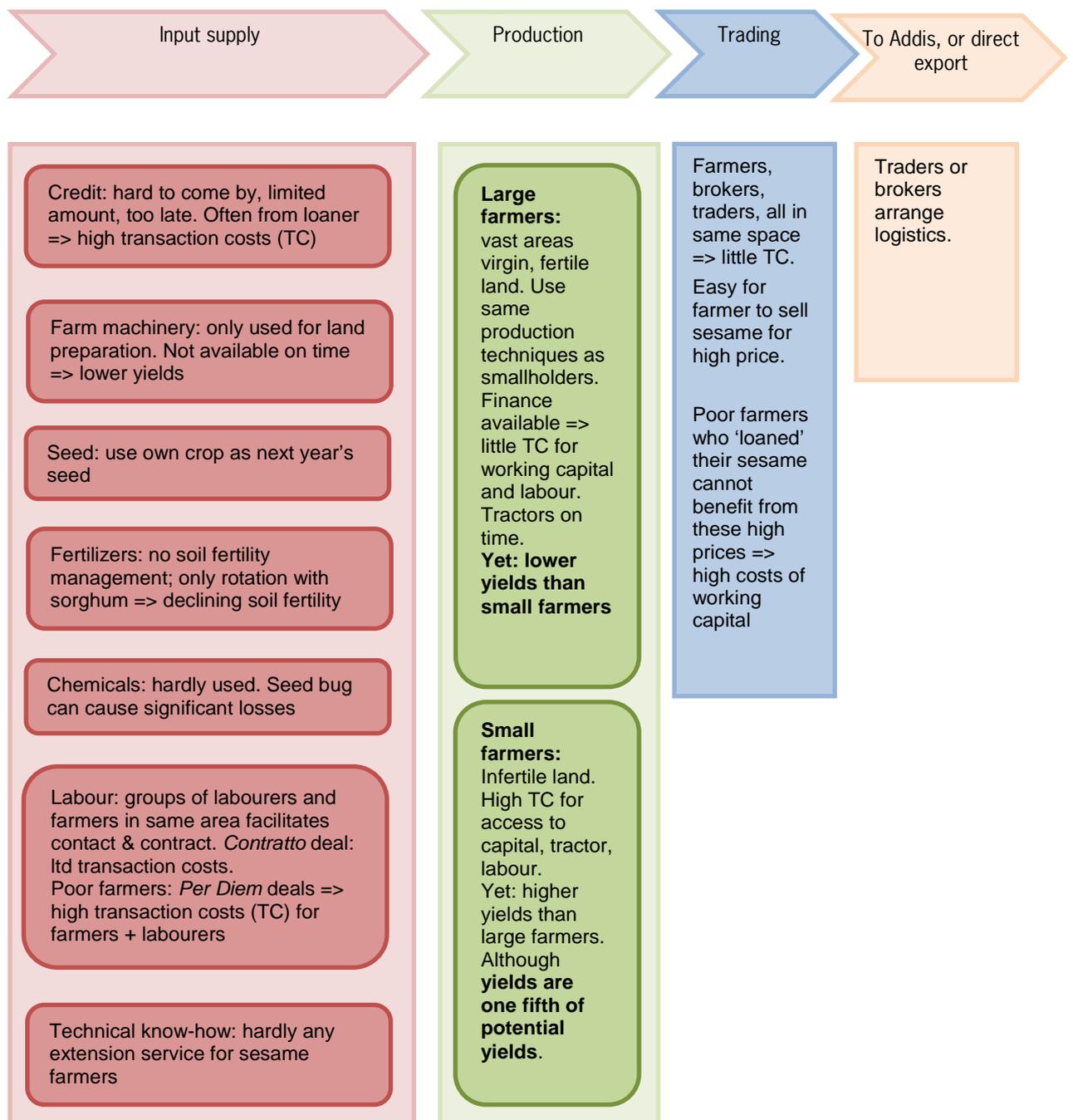
In this scenario 'loaners', middle-traders and large investors seem to benefit mostly. Although the yields are going down because of soil depletion, the prices of sesame rose steadily during the last decade (FAOStat, accessed 8 December 2010). Therefore, many farmers do not seem extremely bothered by yield reductions³⁶. It is also not clear to what extent the large investors are concerned about maintaining soil fertility. They often do not come from the area and, as shown in section 2.3, sesame production and trade is sometimes a means to carry out a different business.

Figure 4 summarizes the main issues in the sesame value chain in Humera.

³⁵ Quoted in Pingali *et al.* (2005). Among them the studies by Van Zyl, Millor and Parker (1996) and Binswanger and Elgin (1992).

³⁶ Information obtained through the PRA in Humera.

Figure 4: Overview of sesame value chain in Humera



3 Sesame sector in Ethiopia: missed opportunities for smallholder farmers

In this chapter we highlight the importance of sesame for the Ethiopian economy as well as for the many smallholder farmers whose main source of income is the sale of sesame. Having said this, we also show in this chapter that the Ethiopian sesame is currently sold to low value export markets hence the potential to further develop the value, increase the foreign exchange earnings as well as the earnings for the farmers.

Our findings show that smallholder farmers could potentially benefit more from sesame production than large-scale farmers. Small farmers are obtaining higher yields because they apply better management practices. They do so despite the difficulties they experience to obtain timely access to sufficient quantity of inputs. Because of their limited access to the necessary inputs, the current productivity is about one fifth of the potential yield.

This chapter also suggests that sesame is mainly produced in semi-arid areas, where farmers do not have many alternative options for cash crops. Generally speaking, farmers are getting a relatively fair price in an efficient sesame market system. Contrary to what is often found in African market systems, sesame farmers in Ethiopia are receiving a high (between 74% and 91%) share of the export price and net profits varying between 37% and 75%.

Taking all these factors into account, cultivation of sesame could be an important opportunity to increase smallholder's earnings provided they have timely access to the required inputs including the know-how to meet requirements of high value markets.

3.1 Sesame is important for the Ethiopian economy

Several authors³⁷ noted that sesame is the most important oil seed export crop in Ethiopia and that its contribution to foreign exchange earnings has been increasing over the years. The Ethiopian Ministry of Agriculture and Rural Development has indicated that it wishes to further enhance market-oriented production for priority crops, such as oilseeds (MoARD, 2004). Consistent to this, the Ethiopian government aimed to double the oil seeds production and export from 2005 to 2010 (PASDEP, 2005). The government enhances foreign investments in the oilseeds sector by incentives: e.g. duty and tax income exemptions from two to eight years for foreign investments directed at export (Wijnands et al., 2009).

The statistics show that the production and export of sesame have gone up. The value of sesame production has steadily increased since 2004. In 2004 it ranked 16th on the list showing the value of agricultural products produced in Ethiopia, while it had gone up to the 10th place in 2008. As comparison, coffee ranked as the 9th valuable agricultural product throughout this period. The importance of sesame for the Ethiopian Economy becomes even more evident when looking at the export value of the different agricultural products. Since 1998 sesame ranks as the second export earning agricultural product³⁸, after coffee³⁹ (FAOStat, accessed 8 December 2010).

3.2 Ethiopian sesame sold at relatively low prices

The world demand for sesame seed is growing. Ethiopia is the sixth world producer in sesame seed (Wijnands et al., 2009). According to Debela Gelalcha (2009), almost all sesame produced by Ethiopian producers is exported. This was confirmed in interviews during the fieldwork.

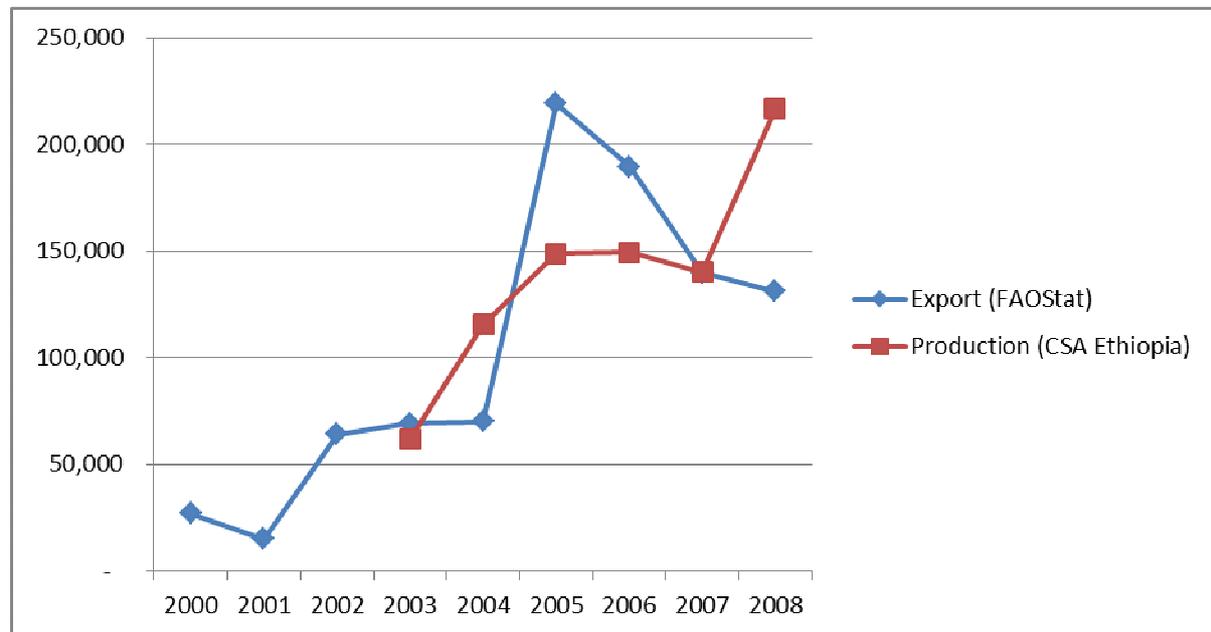
³⁷ Mbwika (2003), Aysheshm (2007), Debela Gelalcha (2009), and Wijnands et al. (2009).

³⁸ The value of sesame export in US \$ was 61,804,000 in 2004 and more than tripled to 209,929,000 in 2008.

³⁹ The value of green coffee in US \$ was 264,921,000 in 2004 and increased to 561,511,000 in 2008.

Respondents mentioned that since export prices for sesame seed rose, they preferred to sell the seed rather than process it into oil. Figure 5 shows an inconsistent picture of the proportion of sesame that is exported. During several years the quantity of sesame exported exceeded the production. This raises doubt about the reliability of some of the statistics on sesame. Hence all data should be interpreted with care.

Figure 5: Production and Export of Ethiopian Sesame (in tonnes)



Source: CSA agricultural sample survey 2008/2009 and FAOStat, accessed 7-12-2010

The price paid for Ethiopian sesame seed is below world average because Ethiopia exports to countries that pay rather low prices (Wijnands et al., 2009). This is confirmed by data from FAOStat (accessed 8 December 2010). The FAO statistics show that in 2008 the value of sesame in the export market was almost double the value of the sesame in Ethiopia. Yet the value of coffee on the export market was nearly four times the value it had in Ethiopia. This could indicate that Ethiopian coffee is mainly sold on high value markets whereas the Ethiopian sesame is rather sold to low value markets.

The main export markets for Ethiopian sesame seed in 2008 were China, Israel, Turkey, and other countries in the Middle East. On the other hand, there is limited sesame import from Ethiopia to Europe and the USA. The reason behind this is probably the fact that sesame is mainly used for bakery applications in these countries. They request assurance of high food safety standards that Ethiopia currently cannot provide (Wijnands et al., 2009).

Van der Mheen-Sluijer (2010) also mentions that it is remarkable that no direct exports exist from Ethiopia to Japan, the second largest world importer. Sesame oil is an important component of Japanese cooking. Japanese sesame importers visited Humera in 2009. They intended to import 100,000 tons (for comparison: Ethiopian export of sesame seed in 2008 was nearly 131,000 tons). Yet only a very small quantity of organic certified sesame met the Japanese demands of a traceable and pesticide free product. The same report highlights the trend of major retailers all over the world to request for products that are not only of high quality but the products also need to be traceable and for which information on production processes should be available (Van der Mheen-Sluijer, 2010).

At this moment it is not certain whether the sesame quality grades and standards set by the ECX and the Quality and Standard Authority of Ethiopia (QSAE) will suffice to conquer the high value market. According to Tefera (2010) importers of sesame have different quality requirements, depending on the end user. These quality specifications do not always match with the grades and standards currently used in Ethiopia. Most exporters followed the specifications set by their customers, which were more demanding than the ECX and QSAE standards. However, Tefera also mentioned that Ethiopian exporters were only able to guarantee the physical characteristics of sesame seed, such as seed size, colour, moisture content and level of purity. Chemical compositions like free fatty acid, protein contents and chemical residues, cannot be verified in Ethiopia. Currently, laboratory testing is often done by the foreign customer. Lute (2011) also states that the Ethiopian standards do not meet the EU requirement for food safety.

3.3 Sesame production mainly in semi-arid areas

The major sesame growing areas in Ethiopia are located in the South-western, Western and North-western lowlands (Amare, 2009 and Debela Gelalcha, 2009). These are semi-arid agro-ecological zones. According to the Ethiopian Statistical Authority the dominant sesame production areas with over 70% contribution to the national production are Humera, North Gondar (Metema) and Wellega areas (CSA, 2006/07). Gambela is also coming up as a sesame production area.

Map 1 Major sesame producing regions of Ethiopia

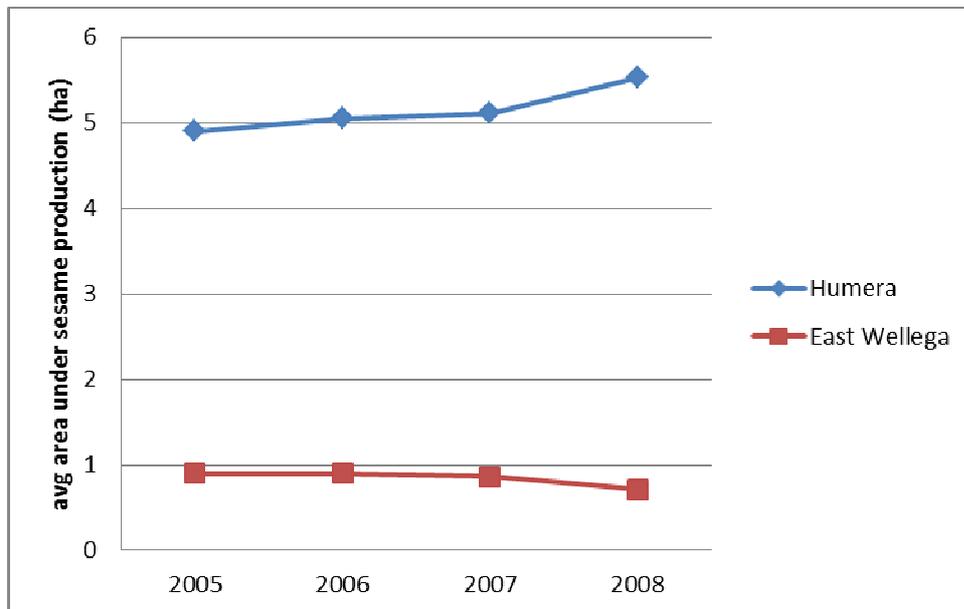


Source: Based on Aysheshm, 2007 and Gabre-Madhin, 2001.
NB the borders are approximate and unofficial

In chapter 2 we have already indicated that there has been a high increase in area covered under sesame in the North-western lowlands of Ethiopia. The average area under sesame production is considerably higher in this area (production area of white sesame) than in Wellega (production of brown sesame).

Figure 6 below also shows that, while the average land size allocated for sesame production by farmers in Humera is slightly increasing, there is a declining trend in East Wellega.

Figure 6: Mean area allocated to sesame by year and region per household



Source: Based on Debela Gelalcha (2009); survey included 1300 sesame farmers

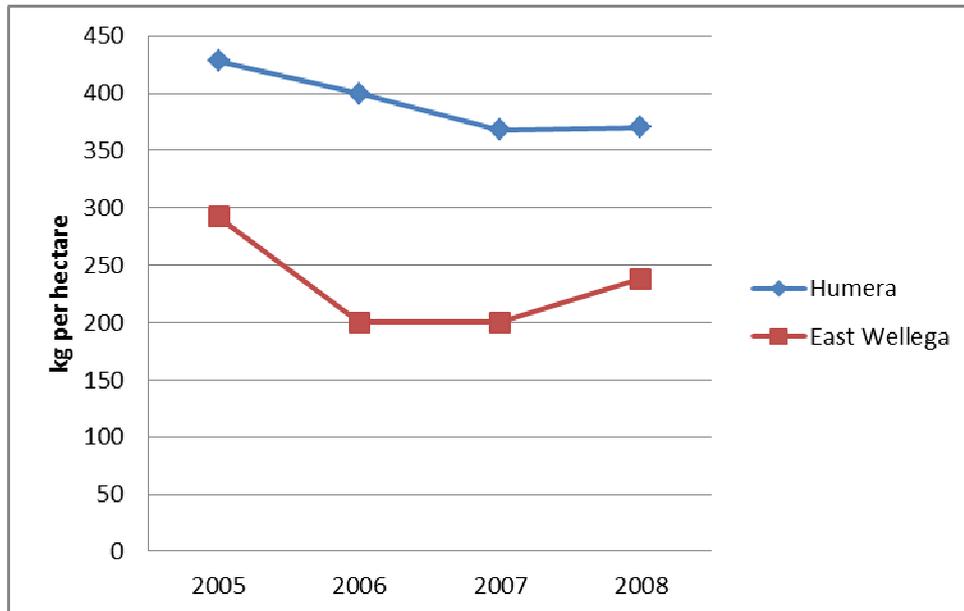
Aysheshm (2007) found that the average land holding size in the Metema *woreda* was even much higher than in Humera. It was 15.84 hectares, although with significant differences between farmers. One of the main reasons for the smaller size and gradual decline of land allocation for sesame production in East Wellega is the competition of maize and sorghum with sesame. According to Debela Gelalcha (2009) the sesame yields are decreasing to such a level that farmers in Wellega consider it as the most risky crop to produce. They believe that crops like maize and sorghum are less risky and more profitable. In the Tigray and Amhara Regions, the relative area expansion in sesame lies at the expense of sorghum land, fallow land, and sometimes clearing forest land especially when the price of sesame is attractive (Demelash, 2004).

3.4 Lack of access to inputs results in low sesame yields in all regions

Despite the potentials of oilseeds, their yields have been very low due to biophysical and socio-economic challenges, inadequate interventions, limited intensification and poor production practices (Adugna *et al.*, 2009). Adugna *et al.* state that the soils of Ethiopia have sustained crop production for long periods without use of adequate external inputs. Most of the oilseeds, like sesame have been grown in mono cropping pattern, resulting in continuous depletion of nutrients from soil, which in turn, reduce yields drastically. Several authors confirm the low yields (Agonafir, 2005; Aysheshm, 2007, Demelash, 2004; Debela Gelalcha, 2009, Tefera, 2010; Wijnand *et al.*, 2009). According to the MoARD master plan the average productivity of sesame was 458 kg per hectare in 2000. Demelash (2004) found that the yields in Amhara Region fluctuated between 402 and 547 kg / ha in the period between 1987 and 1994. For the seasons 2008/2009 and 2009/2010 they were 370 kg/h and 400 kg/ha respectively (Tefera, 2010). The Ethiopian Statistical Authority, however, reported in 2005/2006 a higher productivity level of 707 kg per

hectare for the country (Debela Gelalcha, 2009). The hypothesis that the increase in yields in the season 2005/2006 is a result of better agronomic practices, cannot be confirmed by the data collected by Debela Gelalcha (2009) that are shown in Figure 7 below. The data he collected during his field work (from approximately 1200 respondents) show an average productivity that is considerably less than 707 kg/ha.

Figure 7: Estimated average sesame yields (kg/ha) by years and regions



Source: Based on information from Debela Gelalcha (2009); survey included 1300 sesame farmers

Most authors agree that the potential yield of sesame is much higher than the actual yield. Potential yields are probably as high as 2,000 kg/ha (Wijnands *et al.*, 2007 and 2009). A study conducted by Demelash (2004) even revealed that the yield of sesame in pure stand and good management can be as high as 3,000 kg/ha.

Numerous authors⁴⁰ come up with the same reasons for the low sesame yields in Ethiopia. Firstly, farmers have no access to improved seeds. Even access to quality seed of available cultivars appears to be very limited (Adugna *et al.*, 2009). As a result, the majority of seeds planted each year comes from the previous crop harvest and are low yielding varieties. Secondly, producers do not apply fertilizers yet they are continuously producing crops on the same fields. Thirdly, sesame is highly affected by insects and pests. The lack of agro chemicals at the right time and at fair prices as well as the lack of technical know-how to use the chemicals properly are a major constraint. Yield loss due to diseases and pests in sesame can be very high. Fourthly, shortage of capital⁴¹ to recruit labour mostly results in a delay in harvesting and thereby reduced yields through shattering of sesame. Also weed control uses a high labour input as this is currently done by hand. There are opportunities to improve weed control by mechanisation, if sowing in rows is

⁴⁰ Adugna *et al.*, (2009), Agonafir (2005), Aysheshm (2007), Demelash (2004), Debela Gelalcha (2009) and Wijnand *et al.* (2009)

⁴¹ According to Demelash (2004) one of the major constraints in sesame production and trade in the Amhara region is the shortage of capital. He quotes a Rural House Hold Survey held in 2003 in 56 *woredas* in the Amhara region where they found that more than 57 % of the rural households lacked access to credit. Out of those households who did have access to credit, 73 % mentioned that they obtained the credit through the informal financial system (relative/friends, local money lenders). Some cooperatives in the region did provide credit. However, the amount was very limited. Also not all farmers had access to this form of credit because cooperatives are not present in all sesame producing areas.

used. Lastly, the lack of extension services is mentioned as a factor hampering improved production practices. Or, in case development agents are present in the area, the services rendered by the extension service were found to be very limited.

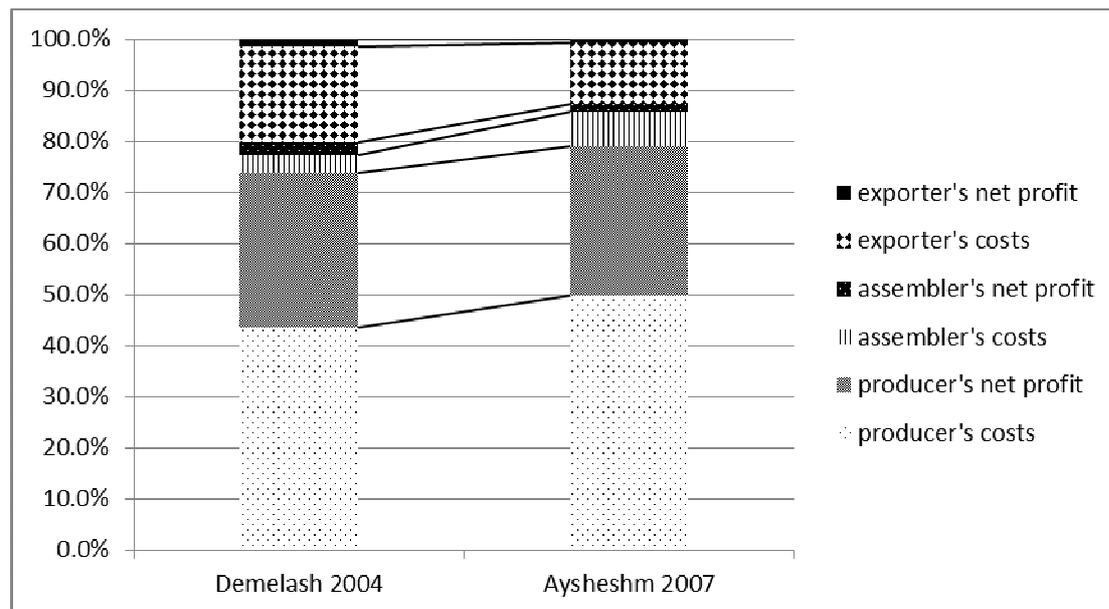
Since Ethiopia is aiming at increasing the export of organic sesame, Wijnands et al (2009) also draw the attention to the prerequisites of organic sesame production systems. Organic farming systems never use inorganic fertilizers or pesticides. The challenges in such systems are: 1) soil fertility and prevention of exhaustion of the soil, 2) control of pests and diseases, 3) control of weeds, 4) designing a fully organic rotation system. Only if all these requirements are met, can Ethiopia benefit in a sustainable way of the higher prices offered for organic products.

3.5 Farmers receive highest share of sesame price

For export products world market prices are in general leading. Ethiopia has to compete on the world market with a number of other suppliers. The world market prices are therefore the starting point in price formation. Each link in the chain has costs and will lower the returns for the previous link in the chain. The price of oilseeds at farm gate will be the end result.

Complaints are often heard that middlemen drive up prices of sesame and margins for them are high. However, this has not been supported by research (Wijnands et al., 2009; Demelash, 2004; Tefera, 2010, and Aysheshm, 2007). Figure 8 visualizes the cost structure of Ethiopian sesame, as calculated during different years.

Figure 8: Costs and margins in sesame export value chains (in % of export price)



Source: Based on Demelash 2004 and Aysheshm 2007

Demelash (2004), Aysheshm (2007) and Tefera (2010) all state that, based on available data, one cannot conclude that the sesame market is exploitative to farmers. The fact that farmers are getting a high share of the free on board (f.o.b.) price, largely recovering their production costs, and are making the highest net profit in the whole value chain, is also confirmed by the data in Table 4.

Table 4: Farmer's costs and margins in sesame value chains

Season	% of f.o.b price received	production costs farmer as % of price received	Net profit farmer as % of price received	Source
2003/2004 Amhara	74%	59%	41%	Demelash (2004)
2007 Amhara	79%	63%	37%	Aysheshm (2007)
2009/2010 Metema	87%	25%	75%	Tefera (2010)
2009/2010 Humera	91%	43%	57%	Tefera (2010)

By contrast, the assemblers only received 6% of the f.o.b. price in 2004. They used 60% of this amount to cover their costs, while 40% was their net margin. In 2007, the assembler received 8% of the export price of which he spent 84% to pay for his costs.

The exporter, like the assembler, also receives low margins. In 2004 20% of the f.o.b. price went to the exporter of which he used 93% to cover his costs and the remaining 7% was his net benefit. In 2007 the exporter only received 13% of the export price. He spent 94% of his earnings to pay for costs incurred.

All these studies concur with our findings in Humera, that farmers receive a high share of the export price for their sesame. A possible reason mentioned by Humera farmers and also brought up in Amhara by Demelash (2004) could be that the exporters do not limit their activities to sesame export but also involved in import of goods. Hence, they may look at the overall profitability of all their activities rather than the export of sesame only.

3.6 Poor storage conditions and quality control of sesame

The majority of the farmers interviewed in Humera and East Wellega are selling their sesame crop immediately after the harvest (Debela Gelalcha, 2009). The most important reason they gave was that they needed cash. Approximately half of the farmers felt that sesame could be stored for a long time. However, this does not mean that they have appropriate storage facilities, neither that they wish to store the sesame. More than half the respondents mentioned that they prefer to sell their crop as soon as possible since, according to them, prices go down later.

The data collected by Aysheshm (2007) from local level traders and cooperatives did effectively show that late sales prices of sesame are lower, highly variable and that late sales led to losses for many actors. Likewise, Demelash (2004) in a study carried out for the ECX, advised that - assuming that economics of storage is profitable- to benefit out of storage of sesame, it is required to have modern storage at strategic village markets.

Before storing, the sesame needs to be cleaned. Product adulteration is perceived as the major problem of sesame marketing (Amare, 2009). Debela Gelalcha (2009) and Meijerink (2008) also refer to local collectors and purchasing companies who complain about poor quality of the seed due to significant quantity of admixtures⁴² in the seed. Nevertheless, in Humera we found that traders checked each and every quintal they purchased from farmers. In Amhara Region Aysheshm (2007) also saw that traders were checking farmer's bags of sesame. Traders gave priority to seed type, colour, admixture, and the seed size (in that order) when inspecting the sesame. Tefera (2010) investigated whether there was a relationship between the prices farmers received and the quality of their sesame. The results suggest a positive and significant linear relationship between farm gate price and sesame quality. This was confirmed by 68 per cent of the farmers, who responded that sesame quality is an important aspect in their price negotiations.

⁴² Such as sand and reject sesame seeds.

Besides quality checks at farmer level, these checks also need to be carried out in other parts of the value chain. Reportedly, traders (brokers) buy reject seeds from refineries so that they can mix it with their own seeds and increase quantity. This enables them to offer (slightly) higher prices to farmers, and outbid their competitors (Meijerink, 2008). The costs of cleaning and grading the sesame will be borne by the exporter in such cases.

Because of the impurity of the sesame, Wijnands et al. (2009) highlight the importance of seed cleaning⁴³. Up-to-date cleaning machines capable of 99.5+% purity are available in Ethiopia but the total capacity is limited and does, according to the authors, not meet European demand.

An additional problem with sesame purity is that farmers and traders who sell sesame sometimes blend different seed types. This decreases the overall value of the seeds: tracking the origin of the product and matching the particular qualities of the seeds with the specific requirements of the end users are hampered, while information on origin are of great importance for the global sesame value chain (Wijnands et al., 2009).

According to Amare (2009) it may become difficult to stay in the international market for sesame seen

'[...] the quality deterioration of our sesame coupled with the entrance of new countries in to the production and exporting of sesame. For instance, as a result of the above problems Japanese importers (largest importing country of sesame in the world) have shifted their attention to other countries such as Guatemala, Nigeria and India' (Amare, 2009).

3.7 Efficient sesame market in Ethiopia

Several authors⁴⁴ mention that, in general, farmers either sell their crop from their farm, their home (own store) or take their sesame to the nearest markets where they fetch a relatively fair price. In Amhara Region, as in Humera, the village markets are the major market places where different traders are coming together to collect the produce harvested. Sesame traders (exporters) or their agents establish permanent or temporary collection posts in these villages. These markets are the assembly point of major sesame producing areas where cooperatives, assemblers, wholesalers, and exporters are competing to buy sesame. Debela Gelalcha (2009) also reveals that farmers talk to about two buyers on average to decide to whom to sell their sesame.

Aysheshm's study (2007) also looked into the integration of the different sesame markets: the village market, the district market and the national market. He found that the sesame market in Ethiopia was very efficient because the different markets were all integrated.

⁴³ Cleaners remove impurities such as straw, dead seeds, soil and pods, resulting in up to 99%-99.5% purity.

⁴⁴ Amare (2009), Demelash (2004), Aysheshm (2007), Debela Gelalcha (2009).

4 Transaction risks and costs along the whole value chain: from inputs to sales transaction

A lot of research has been carried out studying transaction costs in the marketing of grain within Ethiopia. The findings suggest that there are high transaction costs in the Ethiopian grain market (Gabre-Madhin, 1999). This chapter shows that one cannot simply copy these conclusions from the grain sector to the sesame sector. Only 18% of the grain is marketed within Ethiopia, while 95% of the sesame is exported. Moreover, many Ethiopian companies are eager to trade in sesame as this gives them access to hard currency. This has led to a situation in which the transaction costs for smallholders of marketing sesame are minimal compared to marketing grain.

This does not mean, however, that sesame farmers are not facing transaction risks and costs. On the contrary, there are clear indications of the costs smallholders incur because they do not have timely access to sufficient quantities of inputs. We argue that the costs of these transactions also need to be taken into account when investigating the reduction of transaction costs for smallholders. Before a farmer is able to sell his sesame, he first needs to produce it and hence undertake all transactions in the value chain. For sesame, it is exactly these transaction risks and costs which are the reason why smallholders are currently not fully benefitting from the high prices offered to farmers.

If Ethiopia decides to also target the high value sesame markets, all actors in the value chain will have to deal with a new set of transaction costs that emerge from dealing with a food system characterized by different rules, regulations, and players. Table 5 (page 31) summarizes the main issues and transaction costs at key stages in the sesame value chain.

From the 2010 season onwards, all sesame has to be sold through the Ethiopian Commodity Exchange. Therefore, this chapter sometimes refers to transaction costs and risks that can be reduced by the ECX. Still, the ECX currently cannot lower all transaction costs incurred by farmers. Other institutional arrangements are essential to lessen the transaction costs that farmers currently face to secure the required inputs in time. Likewise, if farmers wish to produce for a higher value market, they need information and technical assistance. These complementary arrangements may help to overcome some of the hurdles and maximize farmers' benefits from sesame production.

4.1 Transaction risks and costs in Ethiopia: focus on marketing of outputs

Transaction costs are usually defined as the resources expended in the process of exchange relations. This consists of the efforts devoted to finding a market, negotiating, signing a contract, controlling contract compliance, switching costs in case of premature termination of the contract, and any lost opportunities. A large part of transaction costs consists of the expenditure of time on the part of buyers or sellers. And this time (or other resources) is generally devoted to acquiring information. In many cases, the acquisition of such information serves to reduce the extent of uncertainty the buyer or seller confronts (Eaton *et al.*, 2008).

In general three types of transaction costs have been distinguished related to commercial exchange. Search and information costs (Contact) occur as someone visits or calls, asks information on prices, checks quality and in general searches a suitable counterpart for a transaction. Bargaining and decision costs (Contract) arise as agents spend time and money in negotiating a written or oral agreement. Finally, supervision and enforcement costs (Control) take place as agents spend time, efforts and resources in monitoring and enforcing these

agreements, avoiding opportunistic behaviour and shirking. A central point of transaction costs is the time spent in acquiring information to reduce the transaction risks (Eaton *et al.*, 2008).

Gabre-Madhin (2001) found that the transaction costs of market search were significant⁴⁵ in the Ethiopian grain market, amounting up to a number of days for traders. In addition, grain farmers had very little information on prices prevailing even in nearby markets. She highlights that, despite the market reforms, only 18 per cent of the grain passes through the marketing chain. Bernard *et al.* (2010) also quote several studies that suggest persistently high transaction costs associated with trading agricultural commodities in Ethiopia. Smallholders and traders do not have price information because of inadequate market information systems.

On the other hand, the study of Shiferaw and Teklewold (2009) shows that differences in price information for the marketing of chickpea was related to the size and type of markets. Domestic chickpea market information was accessible to all traders at all market levels. Yet, traders in the primary and secondary markets had better information on farmers' chickpea produce than traders in the tertiary markets. Contrary to this, traders at the upper end of the chickpea value chain had access to information about export markets, export quality standards, grading, labelling, food safety issues and certification. This information was largely unavailable to primary and secondary traders. Tefera's (2010) findings in the sesame sector in Ethiopia appear to support the findings of Shiferaw and Teklewold. Farmers and local collectors did not have prior knowledge about the grades and quality criteria of sesame. Moreover, there was no monitoring system at the village and secondary markets that enforces the standardization and/or differentiation of sesame quality. The exporter, who is aware of the requirements, therefore currently bears the costs of cleaning and grading the sesame to meet the quality criteria of the buyers.

Our field research revealed that, contrary to the findings in the Ethiopian grain market, the search and information costs (Contact costs) in the sesame sector were very limited. As harvest is over, the opportunity cost of time of farmers is very low, and taking a 'couple of hours' to find the right buyer is not perceived as a burden⁴⁶. In October for example, both in the town and in the villages, literally hundreds of different traders are competing to buy the first sesame that arrives on the market and price information flows easily. Especially now that the ECX has also made price information available that is linked to the international market price, farmers' price information is complete. According to Gabre-Madhin's definition (2001) of market search costs being a function of the opportunity cost of a trader's time, the time spent for searching and the amount of search labour, these Contact costs are minimal in the sesame sector.

Like in the grain market, sesame traders and farmers sometimes also make use of brokers. Their costs are only one tenth of a per cent of the price of a quintal of sesame. The low transaction costs of search are confirmed by Debela Gelalcha (2009)⁴⁷ and Tefera (2010)⁴⁸ for Humera, Wellega, Metema and Amhara Region. These are the most important production areas of sesame in Ethiopia. Besides, this institutional arrangement (the use of brokers) leads to positive externalities for the minor sales, as it favours the spread of price information among the agents. Farmers had no problem to get access to market information.

The bargaining and decision costs (Contract costs) were found to be minimal in the sesame sector. Debela Gelalcha (2009) reports that farmers in Humera and East Wellega take approximately 16 minutes to discuss the price and quality with their buyers.

⁴⁵ The transaction costs of search represented 19 percent of the total marketing and transaction costs.

⁴⁶ Information obtained through the PRA in Ba'ekher.

⁴⁷ According to Debela Gelalcha it took farmers approximately 1 hour to find a buyer.

⁴⁸ Tefera observed that large export companies participated directly in the village markets or through their agents to buy sesame. Village markets were extremely crowded during the survey time, late November-February, the peak marketing season for sesame.

The enforcement of the deal (Control costs) has hardly any transaction costs for the farmer, as once the price is set, the exchange happens simultaneously (spot market)⁴⁹. The whole operation of inspecting the sesame, weighing and paying it takes about 27 minutes (Debela Gelacha, 2009).

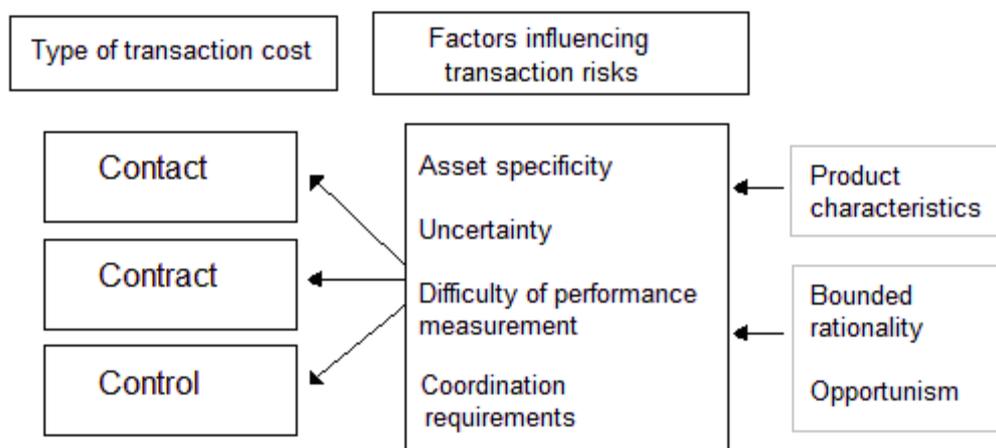
4.2 Factors influencing transaction risks and costs: significant difference between grain and sesame markets

Various factors can influence the transaction risks and consequently the size of transaction costs. According to Eaton *et al.* (2008) the transaction costs are affected by four kinds of attributes:

1. Asset specificity (the specificity of investments required)
2. Uncertainty
3. Difficulty of measuring performance in fulfilling the terms of an agreed transaction
4. The need for coordination with other transactions with other actors

These factors are discussed below, including the relative size of these factors in sesame value chains in Ethiopia.

Figure 9: Types of transaction costs related to determining factors



Source: Eaton *et al.* (2008)

4.3 Asset specificity

Refers to the extent in which investments made by one or both parties to a transaction are specific to that transaction. This means that such investments have less value for alternative transactions with other parties. It is often stated that for poor rural areas, asset specificity is mostly the result of 'thin' markets⁵⁰ (Dorward and Kydd, 2003). Francesconi (2009) mentions that a commodity exchange is an institutional response to the fundamental problem of 'thin markets'.

While Gabre-Madhin (2001, 2005) does refer to persistent 'thin' markets in Ethiopia, our research did not find this phenomenon in the sesame sector. On the contrary; none of the assumptions of a 'thin' market were met in the sesame market in Humera. Farmers can easily find a buyer for their sesame. Those buyers are usually willing to pay a high price to the producers (see sections

⁴⁹ Information obtained through the PRA in Humera. Confirmed through participatory observation.

⁵⁰ Defined as markets in which there are few purchases and sales

2.3 and 3.5). This situation is not unique to Humera. Several authors have also described this for Amhara Region. Hence asset specificity currently does not increase the transaction risk for sesame farmers.

4.4 Uncertainty

Is a basic feature of agricultural production. The amount and quality of output that will result from a given bundle of inputs are typically not known with certainty, due to uncontrollable elements, such as weather. The effects of these uncontrollable factors are accentuated by the fact that time itself plays a particularly important role in agricultural production, because long production lags are dictated by the biological processes that underlie the production of crops. Thus markets for agricultural products are often characterised by volatile and possibly cyclically fluctuating prices. In the face of such uncertainty, concluding agreements or contracts is difficult; in other words, transaction costs are high, because renegotiating and adaptation might be required when unforeseen events emerge (Williamson, 1979).

Sesame yields are uncertain as they depend on weather conditions. The risks of crop failure are currently born by the producers, as hardly any farmer has signed contracts with buyers before planting. The aversion to risk and uncertainty does influence the area under sesame. As mentioned in chapter 2, farmers allocate their limited resources to subsistence (sorghum) and commercial (sesame) production such that the disutility of risk is balanced against the utility of market goods.

The arrangement between producers and loaners, in which the farmer agrees to 'return sesame at harvest time' to the loaner, can be considered a transaction cost. The 'interest rate' is high because the loaner faces the price risk upon harvest and also faces the risk of non-payment by farmers if the crop fails.

Shiferaw and Teklewold (2009) in their study examining the chickpea marketing system mention that unreliable and deficient supply is one of the key constraints faced by traders. Meijerink (2008) also mentions that traders can face substantial (price) risks when they enter into agreements with exporters to deliver a certain quantity of sesame for a fixed price. In years of low (world) production when sesame prices at farm gate are high, the trader may lose out.

4.5 Difficulty of performance measurement

Transaction costs are also affected by the extent to which it is difficult for one contracting party to measure the performance of the other party in fulfilling the terms of the contract. Gabre-Madhin (2001) described the high vulnerability of grain traders to swindle. Main reasons are that there is no formal standardization and classification system of grains, contracts are oral and non-standardized, grain shipments are not inspected or certified officially, and there are very limited means of legally enforcing contracts. Cheating also occurs by sesame farmers and traders who try to mix various sesame qualities and also mix the sesame with straw, sand or small stones. Visual inspections of the bags and cleaning of the seed is necessary and does normally occur, which does represent transaction costs for the traders. While the findings of Tefera (2010) suggest that there is a positive correlation between the price and perceived quality in the markets he studied. Nevertheless, this does not mean that traders and exporters are getting the quality they need. Tefera found that the moisture content and impurity levels of sesame were often much higher than the accepted standards⁵¹. He quotes an example of an exporter who spends 130 Birr⁵² per quintal to clean the sesame of foreign matters. The measurement and corrective actions are significant cost for sesame buyers. The newly established ECX has introduced various

⁵¹ Sesame exporters and field experts revealed that the level of moisture content is usually above 8% and impurity 7% (Tefera, 2010).

⁵² As comparison: the sesame price in Humera averaged 1,700 birr per quintal in the 2009/2010 season.

grades, and uses a commonly accepted set of weights which may help reducing part of the transaction risks.

While quantity and quality is relatively easy to determine, some characteristics may not be easily determined, such as how the product was produced (e.g. through sustainable production processes, were ILO labour conditions adhered to). Transactions of products that include these traits thus involve higher transaction costs. The high value markets for sesame normally request assurance of food safety, environmentally sound production methods, traceability, and respect of ILO labour conditions throughout the value chain. This can currently (2010) not be guaranteed by the ECX (see also section 3.2).

4.6 Coordination requirements

The collection of small amounts of produce from a multitude of farmers, transported and sold to different markets requires a lot of coordination. In the Ethiopian grain sector, market coordination is an important cost. Gabre-Madhin (2001) has calculated these costs through the commissions paid to brokers and agents for the purchase or sale of goods, as well as the commissions paid to transport brokers for finding transport services. They represented 6 to 10 per cent of the total marketing costs. During our fieldwork⁵³, we found that the commission paid to sesame brokers in Humera (a cost of 2 Birr per quintal) represented only one tenth of a per cent. This is far less than the broker fee in the grain market, and sesame farmers considered this a limited price for a good deal⁵⁴.

Other authors are using a broader definition of coordination. They also include the connectedness to other transactions. Reason they give for this addition is that transactions usually do not take place in an isolated manner and are often dependent on other transactions in the supply chain or in the sector (see Kydd and Dorward, 2004; Dorward et al., 2007; Eaton *et al.* 2008). For example, producers first need to procure inputs (cash, seeds, fertilisers) before they can start producing and selling. In developing countries, input markets may be relatively undeveloped. Inputs are not available at the right time, in the right quantities or at the right quality. The efforts expended to coordinate these transactions can also be viewed as a form of transaction cost (Milgrom and Roberts, 1992). Gabre-Madhin in her different studies on transaction costs in the Ethiopian grain markets did not include these costs in her calculations. Her focus is rather on the marketing costs of outputs, hence her emphasis on traders, brokers and buyers rather than farmers.

The importance of the above factors are linked to two behavioural assumptions, namely bounded rationality and opportunism. These will indirectly influence the size of transaction costs. Bounded rationality implies that agents experience limits in formulating and solving complex problems and in processing (receiving, storing, retrieving, transmitting) information. Opportunistic behaviour includes disguising attributes or preferences, distorting data, concealing issues and otherwise confusing or deceiving partners in exchange. In the absence of commitment and enforcement mechanisms, agreements between transacting parties may not be binding; one of the parties may not or only partly fulfil the agreement (on delivery, quality, quantity, payment etc) and renegotiating or settling disputes can involve high transaction costs. The uncertainty problem can be compounded by (asymmetrical) information problems, on the quality of produce, prices in other markets etc. Either costs need to be made to obtain information (e.g. testing quality, price survey) or the party with information has an advantage in the transaction.

Above we have already shown the influence of opportunistic behaviour on the control costs (monitoring quality, i.e. performance measurement). Next to this, Gabre-Madhin, (2001) reports

⁵³ December 2009

⁵⁴ Ibid.

misuse of price information in the Ethiopian grain market. However, in the sesame market it appears that price information asymmetry is not a problem. There is no evidence that brokers or other traders misuse this in order to increase their margins. On the contrary, it was found that sesame farmers are aware of the prices paid at different markets and that they are tough negotiators. They capitalize on the fact that some exporters need the hard currency to import other goods.

On the other hand, Ethiopian exporters are sometimes seen as unreliable partners. The lack of commitment and enforcement mechanisms and the consequent behavioural uncertainty are seen as a crucial problem in the whole sesame value chain by many people (Meijerink, 2008). One interviewee said that *'In Ethiopia, contracts are seen as an intention, not as a binding agreement'*. This is why stakeholders in the oilseed sector see a 'code of conduct' between exporters as one of the solutions to address the problem of opportunistic behaviour of Ethiopian exporters⁵⁵.

The explanation given for this opportunistic behaviour is that apparently, some exporters have come into the business without much experience, but with a substantial loan they received through contacts with the bank. They take large risks and go bankrupt, damaging the reputation of other exporters in the chain (Meijerink, 2008). This phenomenon is possibly the reason why 5 out of the 24, i.e. one fifth of the members that the Ethiopian Oil Seeds and Pulses Exporters' Association (EPOSPEA) counted in 2004⁵⁶ were no longer member in 2010⁵⁷. At the same time the membership lists shows that 54 new companies joined the association in the past six years. Membership thus has tripled in this relatively short period.

The ECX is also trying to put an end to the opportunistic behaviour, has set very clear rules for all agents trading sesame at the commodity exchange and is enforcing these (<http://www.ecx.com.et/Operations.aspx#CM>). All the same, farmers currently suffer little from opportunistic behaviour of buyers. Since most sales take place in an area where many brokers and traders meet with farmers, it can be seen as a spot market where information on prices and quality can easily be obtained. It is mainly the final clients who will benefit from clear quality grades, transparent sesame trading and enforcement of rules and regulations.

4.7 Sesame farmers face high transaction costs to secure inputs

Considering the points mentioned in the previous section it is hardly arguable that small farmers selling sesame are put at a disadvantage because of high transaction costs in the output market. On the contrary, they are getting relatively high prices for their product when judged against the price paid in the export market for bulk sesame, and when one compares the margins of the traders and exporters with those of the farmers. Despite what is commonly stated in literature about African smallholder agriculture, sesame producers in Humera and Amhara even receive the biggest portion of the final export price.

Nevertheless, the previous chapters have also shown that small farmers do experience high transaction costs at the other end of the value chain. They are especially struggling with the transactions they need to make in order to be able to produce the sesame, i.e. to gain access to the necessary inputs.

The lack or shortage of timely available credit throughout the farming season seriously damages smallholder's profits by increasing transaction costs both in the credit and labour markets. Farmers who do not have sufficient cash during peak labour times (weeding, harvesting, threshing) have no other option then to conclude *Per Diem* agreements with labourers. Some

⁵⁵ The ministry together with EPOSPEA are currently working on the development of such a Code of Conduct for the oilseeds exporters.

⁵⁶ see names listed in annex Demelash, 2004

⁵⁷ EPOSPEA members directory 2010

interviewees during the fieldwork in Humera mentioned that *Per Diem* salary can sometimes be double that of a *Contratto* arrangement. The costs disparity could be considered as a transaction cost emanating from the interconnectedness between the labour market and credit availability. The labourers, most likely the poorest in the value chain, are equally affected by these transaction costs. They also prefer a *Contratto* arrangement as it saves time to search for new contracts, as well as time to travel to the farmers, find shelter and food.

In previous sections we have shown that farmers are able to obtain high prices for their sesame. However, those farmers who do not have their own capital or do not have timely access to sufficient credit, and who therefore have to accept deals with 'loaners', cannot benefit from these high prices offered by traders. Also farmers who obtained loans at high interest rates from moneylenders and who need to repay these loans immediately upon harvest, cannot afford to store sesame anticipating to benefit from possible price hikes later. The ECX is aiming to introduce the 'warehouse receipts' system. In that case, farmers will be able to deposit their sesame harvest in an ECX warehouse and can use the 'warehouse receipt' as bank collateral. This would reduce farmers' need to sell sesame for a low price immediately after harvest. Yet, this measure does not satisfy sesame producers' access to the required inputs at the start of and during the farming season.

The delay in formal⁵⁸ credit or the disbursement of insufficient amounts can be seen as a potential transaction cost for farmers. The consequences of this are that farmers first have to borrow from a moneylender, whom they will reimburse as soon as they receive the formal credit. Therefore, one could argue that the difference between the interest rate paid to the moneylenders and the one agreed with the formal credit institutions is a transaction cost born by farmers due to the unavailability of timely and sufficient farming credit.

Moneylenders and 'loaners' make good deals with the farmers before harvest, counting on the scarcity of credit at farmers' disposal. One could argue that the high interest rate that moneylenders charge, and the low prices offered by 'loaners' for a quintal of sesame, is the monetary value of the transaction risks and enforcement costs they incur. As already mentioned before, there is the uncertainty of a bad harvest and low repayment rates. Legal action is costly and uncertain, therefore moneylenders often prefer to re-bargain the deal or informally enforce it.

The transaction costs of securing tractors seemed to arise from the relative scarcity during the disking season. Because timely disking is an important factor for good yields, the farmers are obliged to engage in time consuming search campaigns sometimes renegotiating deals that they made prior to the agricultural season.

Eaton *et al.* (2008) stated that the output markets are often strongly interconnected with input markets in rural areas in developing countries. We would rather advocate to always examine the risks and costs of all transactions in the whole value chain⁵⁹. Starting from input markets and ending with the transactions of the final product (output market). Our study reinforces the importance of input transactions: they are not a mere 'annex' through interconnectedness. To unravel the bottlenecks to pro-poor participation in sesame production and markets, all transactions in the whole value chain need to be taken into account.

4.8 Additional transaction costs in high value sesame markets

The commercialization process today has a very different face from even that of ten years ago. Private companies, in order to capture markets and differentiate their products, put ever more stringent conditions on suppliers. Customers are increasingly willing to pay for product attributes

⁵⁸ Credit made available by banks, microfinance institutions or farmer unions.

⁵⁹ The ILO defines a value chain as a sequence of target-oriented production factors which combine to create a marketable product or service – from conception stage through to the final consumption.

that include high quality, safety, as well as environmentally- and socially sound production methods. This is also the case for sesame as has been described in section 3.2.

These high value markets necessitate continuous information sharing on consumers' changing preferences, on quality requirements through grades and standards, and on high postproduction and service value addition. New standards require better screening and monitoring precisely to ensure quality and safety requirements (Boehlje 1999). This raises the cost of entry into the market in two ways. First, there are increased costs of production stemming from the investments needed to meet the requirements of the output market. Second, there is a greater level of exchange with new players in input and output markets, which is inevitably more costly.

These requisites incur costs that tend to diminish with farm size. Thus, entering the food system on a competitive basis is problematic for small farmers because of the transaction costs associated with the new agricultural market. Hence, dealing with a modern food system characterized by different rules, regulations, and players entails a new set of transaction costs for the small farmer (Pingali *et al.*, 2005).

According to Pingali *et al.* (2005), it is precisely because many small farmers are locked into traditional modes of production far removed to meet the requirements demanded by modern food systems that transaction costs have tended to become prohibitive. These factors go some way to explain why smallholder farmers do not participate fully in commercialized agricultural markets.

The chickpea study (Shiferaw and Teklewold, 2009) also showed that supply of low quality chickpea was one of the major limiting factors in the chickpea export market. While traders in tertiary markets had access to information on export quality standards, grading, labelling and certification, this information did not flow to farmers and traders in the primary markets. This also applies to the sesame sector.

Table 5⁶⁰ below summarizes the main issues currently encountered by farmers and other actors in the sesame value chain. It also highlights the main transaction costs that actors encounter in the whole sesame value chain. Farmers do not incur these costs in the 'marketing of output stage', as is the case in the Ethiopian grain market, but rather in transactions needed to secure the required inputs to produce the crop.

⁶⁰ Based on information presented in chapters 2, 3 and 4

Table 5: The current sesame value chain: main issues and transaction costs at key stages of the current value chain in Ethiopia

Value chain stage	Supply of inputs (for smallholder farmers)	Production	Trade and logistics (local)	Meeting clients requirements	Trade (export)	Market
Main issues	<p>Improved seeds not available => low yields (§3.4 and §2.7)</p> <p>Variety: shattering problem => low yields (§3.4 and §2)</p> <p>Ltd tractor availability land preparation => low yields (§3.4 and §2.6)</p> <p>No application fertilizers => low yields (§3.4 and §2.7)</p> <p>Ltd treatment insects & pests => low yields (§3.4 and §2.7)</p> <p>Lack technical know-how => low yields (§3.4 and §2.8)</p> <p>Too little working capital, too late at high cost => high costs of labour, too little labour => low yields (§3.4, §2.4 and §2.5)</p>	<p>Traditional production methods (§3.4 & §2)</p> <p>Area under production increases fast, esp. in semi-arid areas (§ 3.3)</p> <p>Yields appr. 1/5th of potential yields (§ 3.4)</p> <p>No adherence to codes & standards (§ 3.2)</p> <p>Farmers get between 74-91% of f.o.b. price. Net profit varies between 37-57% (§ 3.5)</p>	<p>No traceability (§ 3.2)</p> <p>Assemblers get between 6-8% of f.o.b. price. Net margin varies between 16-40% (§ 3.5)</p> <p>Efficient sesame market; all parties meet at (village) markets. Information flows. Farmers get fair prices (§ 3.7 and §2)</p>	<p>Check at farmers' level: only physical characteristics (type, colour, admixture, size) (§ 3.6, §4.2).</p> <p>Yet exporters still need to clean seed. Capacity seed cleaning machines ltd. (§ 3.6, §4.2)</p> <p>No laboratory facilities available to test chemical qualities (§ 3.2)</p> <p>Most exporters follow specifications of clients; more demanding than ECX and EQSA standards (§ 3.2 and § 4.1)</p>	<p>Sesame mostly produced for export (§ 3.2)</p> <p>Exporter gets between 13-20% of f.o.b. Net margin varies between 6-7% (§ 3.5)</p> <p>Hard currency from sesame used to finance other business of exporter. Objective: overall profitability of all business activities together (§ 3.5)</p>	<p>Since 1998 sesame is 2nd export earning agricultural product (§ 3.1)</p> <p>6th world producer sesame (§ 3.2)</p> <p>Export to low value markets => price received below world average (§ 3.2)</p> <p>Japan (2nd largest importer), USA and EU request, next to high quality, also traceability, proof of food safety, environmentally and socially sound production methods (§ 3.2)</p>
Transaction costs in sesame value chain	<p>Difficult access to credit (§4.3, §2.4, §2.5)</p> <p>=> difference interest rate moneylender & formal credit => difference market price and price obtained from loaner = proxy for TC</p> <p>=> difference <i>Contratto</i> and <i>Per Diem</i> labour</p> <p>Difficult access to tractors: high contact and contract TC (§4.3, §2.6)</p>	<p>Yields are uncertain: => high costs of informal credit = proxy for TC</p> <p>=> risk for traders if they can't deliver volumes agreed upon (§4.2)</p>	<p>No asset specificity for conventional sesame; no 'thin market' (§4.2)</p> <p>Coordination: broker fee is marginal (§4.2)</p> <p>Search & info: very little TC (§2.2, §4.1)</p> <p>Bargaining & decision: very little TC (§4.1)</p> <p>Control costs: very little TC (§3.6, §4.1)</p>	<p>Difficulty performance measurement: relative high TC (§ 3.6, §4.2)</p> <p>For high value market: not all criteria can be measured (§ 3.6, §4.2)</p>	<p>Opportunistic behaviour of exporters leads to higher TC for all actors in the VC, except for farmers (§4.2)</p>	<p>Information on consumer preferences high value market not available throughout value chain => high TC within current configuration of sesame sector</p>

5 Contract farming

The previous chapters have shown that transaction costs are incurred by all actors who are involved in a transaction in the sesame value chain. Each of these actors can be expected to pursue its own objectives, including minimizing its costs. For a competitive Ethiopian sesame sector, it is essential to reduce the total of all transaction costs. Yet, according to Pingali *et al.* (2005) there is no single innovation or intervention, public or private, that can reduce them. The reason is that transaction costs vary over households and enterprises, commodities, and regions.

While the ECX will most likely reduce transaction costs that traders and buyers sustain when trading sesame, farmers incur the highest transaction costs when sourcing inputs at the start of and during the farming season of sesame. As a consequence, the resource poor labourers are also experiencing high transaction costs. In addition, if smallholder farmers want to produce for the high value sesame market, they have to deal with a new set of transaction costs related to information on customer requirements regarding quality, safety and production standards. To meet these requirements new investments and a greater level of exchange with new players in input and output markets is necessary.

In this chapter we investigate whether contract farming can help to decrease the transaction costs of the poor in the sesame value chain. Our findings suggest that sesame producers can get access to the required inputs through contract farming arrangement, and that this has also helped them to access a high value sesame market.

Yet contracting firms may experience a new set of transaction costs in contract farming arrangements. Managing a commercial relationship with a myriad of partners is a complex task. The main transaction costs are summarized in table 6. Because of these additional risks and costs, Ethiopian companies have concluded that contract farming in sesame is only viable if they wish to target the high value markets.

The last part of this chapter looks into the possibility to reduce these transactions costs through contracting with a producer organisation. Findings in Ethiopia confirm the general opinion in the literature that collective action can be an effective means to provide marketing services to farmers facing prohibitive transaction costs. Whether the producer organisation actually fulfils this potential depends on a number of factors. The marketing cooperatives in Ethiopia have been found quite effective, in contrast to the multipurpose cooperatives that mainly focus on social activities (Bernard *et al.*, 2008 and 2010, Bernard and Spielman, 2009, Francesconi, 2009). Hence, contracting through producer organisations will most likely reduce the transaction costs if this is done with the few cooperatives in Ethiopia that have been marketing their members' products. Although these are currently the minority, most of these cooperatives are located in Tigray and Amhara Regions, the main sesame producing areas in Ethiopia.

5.1 Sesame contract farming in Humera

In 2007 a joint venture Selet Hulling PLC was set up between Tradin Organic Agriculture BV (the Netherlands) and Kaleb Trading PLC (Ethiopia). Selet Hulling has a state-of-the-art cleaning, hulling and packaging plant. The factory, warehousing and storage area meet international food standards. Furthermore, a laboratory is equipped at factory level, intrinsic and organic quality testing protocols, pest control systems and computerized traceability systems are in place. High purity, graded, de-hulled and attractively packed sesame provides a sharp premium over the currently poorly cleaned, raw exported sesame (Wijnands *et al.*, 2009). During our fieldwork we observed that the company set a new pace for export by selling sesame to Japan, Europe and North America. Markets that have been difficult to enter because of the high requirements. Selet was able to sell the organic certified sesame at a substantial quality premium and confirms the

findings of the OECD (2009) that interacting with foreign buyers and companies may enhance local firms' capabilities and access to high value distant markets.

According to Selet Hulling, the supply of certified organic sesame is the key to establishing a sound, traceable, organically hulled sesame supply chain (Wijnands *et al.*, 2009). Therefore, they also engage in farming activities in Humera. Selet Hulling has their own 300 hectares farm, and they also have contract farming arrangements with approximately 1,500 farmers. These contract farmers are members of two village (primary) cooperatives, *Fana* (1,000 contract farmers) and *Shawit* (500 contract farmers), respectively located in Maicadra and Ba'ekher⁶¹. Selet Hulling has a full-time agronomist, six extension officers and a well-experienced part-time farm manager, to train farmers and guarantee an effective organic internal control system. Their own farm has been used to study the impact of organic fertilizers, seed loss reduction, row planting and suitable rotation crops.

Next to the agronomic advice, contract farmers also received credit and free imported organic pesticide (*neem* tree oil) to be sprayed after harvest. Selet Hulling collaborates with the Cooperative Union in the area. Selet Hulling offered an interest free loan to the Union, which was topped up by the Union and by the two primary cooperatives. The usual process that Unions follow in disbursing credit (described in chapter 2.4) was followed. During the 2009 season, the 1,500 contract farmers each received on average 1,000 Birr pre-harvest loan. The maximum loan a farmer could get from Selet Hulling in 2009 was 3,000 Birr. Although this credit was by far not enough to satisfy the needs of the contract farmers and it also arrived relatively late in the season, it is important to note that such an arrangement could be a valuable breakthrough to reduce the various transaction costs that farmers are facing. Moreover, it is expected that, as Selet Hulling gains more experience with contract farming, they will make more credit available at the time when farmers need it most.

The contract farmers received the December prevailing sesame price, which is usually the time when sesame prices are relatively high. In addition, Selet Hulling will give a bonus as an incentive to contract farmers. The amount of the bonus depends on the price that Selet will receive for its organic de-hulled sesame. On average organic products fetch 20 per cent higher market prices.

5.2 Contract farming increasingly popular in developing countries

Contract farming is defined as an agreement between farmers and processing and/or marketing firms for the production and supply of agricultural products under forward agreements, frequently at predetermined prices (Eaton and Shepherd, 2001). The agreement often includes the provision of production support by the buyer (the processing and/or marketing firm) to the producer, for instance the supply of production inputs or technical assistance. The basis of a contract farming arrangement is a commitment on the part of the farmer to provide a specific commodity in quantities and at quality standards determined by the buyer and a commitment on the part of the buyer to support the farmer's production and to purchase the commodity.

Contract farming is on the rise in recent years, covering over 110 developing and transition economies, spanning a wide range of commodities and, in some cases, accounting for a high share of a country's agricultural output (UNCTAD, 2009). The introduction of stricter quality and safety regulations, the changes in consumer preferences for sustainably produced goods, and the rapid rise of supermarkets in food retailing who often work with a limited number of preferred suppliers are all reasons why companies and farmers are increasingly opting for this arrangement⁶². Since importing companies have few possibilities to control and verify farms'

⁶¹ Interview with Cor Jan Zee, farm manager and consultant for Selet Hulling P.L.C.

⁶² Eaton et al., 2008, Kirsten and Sartorius, 2002; Reardon and Barrett, 2000, Reardon and Berdegué, 2002, Sáenz-Segura, 2006, and UNCTAD 2009

production processes when they buy through wholesale markets⁶³, they often interact directly with host-country farmers through contract farming. Contract farming allows better control over product specifications and supply than spot markets. Furthermore, it is difficult to ensure a constant volume of supply that meets a particular standard through spot markets. To resolve these problems, companies often resort to contract farming for sourcing agricultural produce. At the same time contract farming is less capital intensive, less risky and more flexible than land lease or ownership. Because contract farming fosters direct links between farmers and the trading company, it also reduces the transaction costs for traders.

From the perspective of farmers, contract farming can provide support in areas such as credit, modern production inputs, technologies and know-how. Hence, contract farming can enable smallholder farmers to enhance their capacities, increase their productivity and competitiveness, and become part of national or international value chains. UNCTAD in its World Investment Report 2009 advises developing countries not to underestimate the potential of contract farming for enhancing development objectives. It can have a very important impact on agriculture in developing countries, in particular by helping to ease input and other constraints on local farmers, who might otherwise lack access to these services. Jayne *et al.* (2010) also concluded that strategies attempting to link African farmers to markets must take account of how inequality in productive assets and low crop productivity constrain most smallholders' ability to participate in markets.

In many countries the role of the state in supporting activities and services provision has been greatly reduced (UNCTAD, 2009). In Ethiopia, the role of the state in service provision has also greatly reduced during the past years. The resulting lack of access to inputs for sesame farmers, has been described in Chapters 2 and 3. Contract farming may therefore be a good institutional arrangement for smallholder farmers in Ethiopia.

In most cases contractors advance credit to finance production inputs and/ or investment (Eaton and Shepherd, 2001). Agribusiness firms have an advantage over banks as lenders in such circumstances, because of their ability to monitor and enforce credit contracts. Their contracts with smallholders usually include forward payments or provision of inputs to help overcome the problem of financial constraints faced by these farmers (Simmons, 2003).

According to the World Investment Report (UNCTAD, 2009) contract farming has played an important role in the promotion of the commercialization and modernization of agriculture. In many cases, it has led to significant transfers of skills, know-how and methods of production, facilitated access to credit and various inputs, and given access to markets to a very large number of small farmers previously involved mostly in subsistence farming. One of the ways in which companies have accelerated and intensified the commercialization of agriculture in host developing countries is through the diffusion of international standards with respect to quality and safety of agricultural products. The few examples of contract farming that exist in Ethiopia also suggest this positive impact. Tiruwha Melese (2009) describes that companies have created awareness with farmers on features of international markets, competitiveness of Ethiopian produce and farmers, and have significantly improved the quality of farmers' produce.

Furthermore, since production for high value markets may fetch higher export prices (as has been shown in section 3.2 for the sesame market) and help producers to capture a larger share of the value, it can be in the interest of smallholders to work towards the adherence to these standards. Most empirical studies suggest that contract farming schemes have raised the income of participating farmers (e.g. Little and Watts, 1994; Porter and Phillips-Howard, 1997; Swinnen, 2005; Minten *et al.*, 2005; Minot, 2007; Bolwig *et al.*, 2009; Miyata *et al.*, 2009). The World Investment Report (UNCTAD, 2009) describes examples of contract farmers in India whose

⁶³ As it is hard to trace the origin of the produce sold in these markets.

revenues were two to four times higher than those of non-contract farmers (BIRTHAL, Joshi and Gulati, 2005), as well as contract farmers with significantly higher incomes than other farmers: from 10% to as much as 100% higher in Guatemala, Indonesia and Kenya (World Bank, 2007).

Box 2 gives a brief overview of the major models used in contract farming.

Box 2: Typology of Contract Farming

In recent years, contract farming has spread widely, and particularly rapidly to developing countries, as a way to coordinate production and ensure quality. There are five different models of contract farming:

- The *centralized model* is the classical model for contract farming in which a company buys produce from a large number of (small) farmers. In this model there is strict vertical coordination, which means that quality is tightly controlled and quantity is determined at the beginning of the growing season. Products produced and traded under this model are those requiring a high degree of processing (e.g. sugar cane, tea, coffee).
- The *nucleus estate model* differs from the centralized model in that the contractor not only sources from independent farmers but also has its own production facilities (an estate plantation). The central estate is usually used to guarantee throughput for the processing unit but is also sometimes used only for research and breeding purposes. This model is mainly used for perennial crops, but there are examples of its application for other crops as well.
- In the *multipartite model* the contractor is a joint venture between a statutory entity and a private company. Public or private providers of credit, extension services and inputs may be part of the arrangement. This model has often been used by developing countries as part of the liberalization process.
- The *informal model* is characterized by individual entrepreneurs or small companies contracting informally with farmers on a seasonal basis. The success of this model often depends on the availability of supporting services, sometimes provided by government agencies. This model is used particularly for crops that require only a minimal amount of processing, such as fresh fruit and vegetables.
- In the *intermediary model*, contractual arrangements are made between at least three different levels: a processor or major trader formally contracts with a collector (or “middle person”), who then informally contracts with a number of farmers. The model has both elements of the centralized and the informal models.

Source: Bijman, 2008, Eaton and Shepherd, 2001, and UNCTAD, 2009.

5.3 Contract farming: reduction of transaction costs for high value products

The question we wish to answer is whether these increasingly popular contract farming arrangements can also reduce the transaction risks and costs for smallholder farmers producing and selling sesame. In order to answer this question, we will look at the factors that influence the transaction risks and whether these are significant in sesame contract farming.

Contract farming can solve a number of problems related to uncertainty, which may confront both the producer and the buyer. For the producer uncertainty about buyers and prices are reduced, as contracts provide a guaranteed outlet and typically specify at the beginning of the growing cycle the prices to be paid at product delivery. As shown in previous chapters, sesame farmers do not really experience this uncertainty. For the buyer, such contracts reduce the risk of obtaining sufficient produce at the right time and of the right quality, which may be crucial for processing but also for traders that have contracts for high value markets. It is therefore in the

interest of the buyer to offer an attractive contract farming deal to the farmers, since this last group has alternative market outlets.

Contract farming allows better performance measurement, as farmers and buyers make agreements on how and when to monitor product quality. Contracts also provide an opportunity for repeated interaction which generates information on the actions and products of particular producers. The example of Selet Hulling has shown that their staff frequently interacts with the producers and their staff was also responsible to perform the internal controls.

According to Eaton *et al.* (2008), if asset specificity is low it would not favour an institutional arrangement like contract farming. In Ethiopia farmers can currently sell their sesame to any buyer. The investments they have made for sesame production are not specific to a particular buyer or market. Hence the asset specificity for conventional sesame is low (see also section 4.2) and would not be in support of contract farming arrangements. Yet, the Selet Hulling case is an example of conditions under which contract farming does become attractive. Firstly, the contract farmers produce sesame for the processing industry (dehulling of sesame). Processors want to be assured of sufficient quantity and quality of supplies because processing requires substantial investments in plant and machinery which cannot be used for other purposes. Secondly, Selet Hulling sells organic sesame. When products have to comply with such kind of specific quality requirements farmers need to invest to meet these requirements. Farmers may not be interested to invest because they entail a high market risks. Will they be able to recover the additional costs they have made? Thus, buyers of organic products like Selet Hulling usually enter into contracts with producers, providing them with resources, technical assistance, and marketing guarantees. If other Ethiopian exporters wish to sell sesame to the demanding high value market, they will most likely also opt to enter into contract farming arrangements in order to meet all the market requirements. According to Meijerink (2009) exporting companies felt that if they could offer a premium price to farmers for a premium quality product, this could possibly keep side-selling under control. In the regular sesame market the risk of side-selling is too high for a contractor.

Considering all these factors, contract farming arrangements are a logical option for buyers if they wish to sell the sesame to a special, demanding and therefore premium market. Because of the current imperfections in the Ethiopian markets for credit, inputs for production, and technical assistance, the buyer will have to invest considerably to raise product quality in order to obtain a higher product price. This investment is an additional transaction cost to the contracting company which might be a threat to their competitiveness. Companies who internalize the cost of support services that may be provided free of charge by public agencies in competing regions, are at a disadvantage.

By providing inputs to all of the contracted farmers, inputs costs per unit are reduced for the farmer and farmers hardly need to spend time to access the correct inputs in time. Moreover, a financing institute may be willing to grant loans to large groups of smallholder farmers if these producers can show a market specification contract, and if the buyer assures technical assistance to these contract farmers. In this way, even smallholders who currently do not have access to formal credit may be able to get finance for their sesame crop⁶⁴. Timely access to sufficient finance reduces the risks for the buyers and can lead to significant savings for the farmers as we have seen in chapters 2.4 and 4.3.

⁶⁴ Liverpool and Winter-Nelson (2010), in their paper examining the impact of formal credit on the use of improved technology in rural Ethiopia, show that there has been a rapid expansion of participation in microfinance among the better-off farmers. This confirms our finding in Humera, where we found that farmers need collateral in order to get access to a loan from a MFI. Hence these loans are not within reach of the poor farmers.

It should be noted, however, that the effects of microfinance programs in rural Ethiopia are not uniformly distributed (Liverpool and Winter-Nelson, 2010). The results from this study imply that, even if asset poor households have access to credit, they may lack the complementary resources to benefit from new technologies. Anstey (2008) has also observed that Ethiopian farmers have very limited access to the technologies that could improve their productivity and income. Their ability to produce using very limited resources is born of necessity. Contract farming could be the answer in such situations, as it usually delivers a package⁶⁵ of inputs, necessary to raise productivity levels and achieve a high quality product. Hence, in principle poor farmers can benefit more from contract farming than the relatively better-off farmers, provided these poor farmers do have the entrepreneurial spirit and managerial skills needed to implement new agronomic practices.

Despite the potentially large benefits, small farmers may also experience some disadvantages of contract farming. For instance, farmers lose flexibility in their choice of farming activities. Bound to a crop or livestock enterprise by a contract, farmers cannot adjust production mixes so as to benefit from market opportunities. In Humera and Amhara, where sesame is the main cash crop, the trade-off would rather be between sesame and the food crop, sorghum.

Another threat experienced by contract farmers in other countries, is that buyers might renege on contractual terms if market circumstances change. For instance, if market prices at product delivery time are substantially different from prices agreed in the contract, buyers may force renegotiation or may engage in contractual hold-up. Such hold-up could be the rejection of products delivered under the pretext of non-conformity to quality regulations. For farmers it is usually impossible or at least very costly to check the appropriateness of the buyer's claim. Buyers might also intentionally avoid transparency in the price determination mechanisms of the contract, making it very difficult for the farmer to assess whether he has received a proper remuneration. Nevertheless, in the current situation in Ethiopia with many alternative market options and a public announcement of sesame prices by the ECX, this is not considered an important risk for sesame producers.

A particular concern is that of the asymmetry in the relationship between many supplying small farmers and monopsonistic buyers, which often raises serious competition issues. Farmers run the risk of becoming highly dependent on contracting companies for all their inputs. This can pose problems if a restricted number of large buyers are in a position to exercise power and uncompetitive conduct in the definition of the terms of the transactions with farmers (Da Silva, 2005). Again, this is not the current situation in the most important sesame producing areas in Ethiopia. There are many buyers willing to pay a good price for the output.

A possible negative effect of farmers' dependency on inputs from contracting firms and that may occur in Ethiopia, is that farmers may be tempted to enter into a sesame contract while using some of these inputs on an alternative crop. This may lead to repayment problems and a 'debt trap'.

The contracting firm will also weigh the advantages and inconveniences of contract farming. Because yields and sesame production per household is low, the company will have to contract many farmers in order to obtain a sufficient amount of quality supply. This will increase his transaction costs. Supplementary transaction costs that specifically emerge from dealing with large numbers of small farms are (Hayes, 2000) firstly, the bureaucratic costs associated with managing and coordinating integrated production, processing, and marketing. Secondly, the opportunity cost of time used by the contractor to communicate with farmers and coordinate them. Thirdly, the screening costs linked to uncertainties about the reliability of potential suppliers or buyers and the uncertainty about the actual quality of the goods and lastly, the costs involved

⁶⁵ Often not limited to credit only.

in establishing and monitoring long-term contracts with a large group of smallholder farmers. These costs can be considerable in situations where alternative markets are easily accessible and where contractual enforcement is weak. As was shown in chapters 2 and 3, sesame farmers do have many market options as traders are competing to buy their sesame. In such circumstances farmers can be tempted to sell the produce to competing buyers, partly to avoid repaying credit and inputs they received as part of the contract or to receive higher prices outside the contractual bond. Hence, we come back to the conclusion that the high value sesame market may offer the best scope for contract farming in Ethiopia.

5.4 Contract farming with producer organisations: decrease in transaction costs?

When dealing with large numbers of farmers, buyers still face high transaction costs. Managing a commercial relationship with a myriad of partners is a complex task as the previous section has shown. As an intermediary between farmers and the contractor, producer organisations can solve a number of barriers to efficient use of contract farming. By doing so they can make contract farming more attractive.

A producer organisation can be defined as a member-based organisation created by producers to provide services that support the members' farming activities. In this paper we focus on a producer organisation that is an economic organisation, often legally a collectively owned firm with economic activities, assets and strategies.

They can play several roles⁶⁶ in facilitating contract farming. Firstly, they can assist smallholders in aggregating their surplus output, realising economies of scale in marketing. Secondly, by pooling their surplus output into a single tradable lot and using this larger quantity as the basis for negotiating with buyers, they can increase their bargaining power in the market and reduce per-unit transaction costs. Hence, the producer organisation can build countervailing power to reduce the often uneven bargaining balance between farmers and agribusiness firm (see also section 3.3) and can bargain favourable terms with the contractor. Thirdly, the producer organisation can reduce transaction costs for the company in dealing with multiple agents. A major source of transaction cost is the asymmetric information between farmer and buyer on farmer performance. The producer organisation can solve (part of) this problem, as it has better information on the quality and reliability of the producer. It can help tackle the problem of contract default. Consequently, it reduces the transaction costs of 'contact', 'contract' and 'control'. Fourthly, they can organise the provision of inputs and credit to the farmers, including the delivery of technical assistance. Once the produce has been harvested, producer organisations can also assist with the collection, sorting, grading, etc. of the produce. Lastly, they can play an important role in dispute resolution, and therefore dispute prevention.

Hence, working together—both horizontally and vertically—can provide better and more stable financial returns, improve each actor's ability to supply what the market requires, and provide economies of scale and marketing support (Bernard *et al.* 2010, Boehlje 1999; Van der Vorst 2005). Transaction costs will diminish as partnerships and trust reduce the need for contracts and expensive negotiations.

While small-scale farmers who coordinate their activities can jointly benefit from reduced transaction costs, collaborative action also brings with it a whole new set of transaction costs (Bernard *et al.* 2010, Pingali *et al.* 2005). Not enough is yet understood about the potential benefits and, particularly, costs. The time and effort needed to govern and manage the organization - to coordinate meetings among members, collect their membership fees or other contributions, resolve conflicts and disputes, monitor compliance with the organization's rules, organize the organization's activities, and so on - are transaction costs internal to the producer

⁶⁶ Based on Bernard and Spielman (2009), Bernard *et al.* (2010), Chen *et al.*, (2007) Coulter *et al.* (1999), Eaton *et al.* (2008), Francesconi (2009) and World Bank (2008)

organisation. Moreover, successful association requires management and entrepreneurial skills - 'soft' assets that many smallholders with little education are less likely to have (Swinnen, 2005). Tefera (2010) is also of the opinion that the lack of qualified personnel limits the effectiveness of Ethiopian producer organisations. The World Bank (2007) has also indicated that one of the reasons of collective marketing failure can be related to poor managerial capacity. According to the World Bank, agricultural cooperatives in developing countries are frequently managed by village elders or elites, who often lack the necessary skills and resources to sustain collective business over time. Another reason suggested in the same report is that cooperatives typically operate in the context of rural communities where they are subject to norms and values of social inclusion and solidarity. This may clash with the requirements of professional, business-oriented organisations that must help members compete in the marketplace (World Bank, 2007). Another issue that is highlighted by Bijman and Doornevert (forthcoming) is that decision-making processes can be slow by producer owned co-operatives, which can lead to below optimal financial results. In Ethiopia there are anecdotes of cooperatives that missed out on profitable opportunities because of the time they took for discussions with their members and for following administrative procedures before they sold their sesame. As a result some were remaining with stocks of sesame that they had to sell at a very low price (Meijerink, 2009 and Tefera, 2010).

In Ethiopia, most agricultural cooperatives serve farmers to procure improved and subsidised farming inputs from the state and from NGOs (Spielman *et al.*, 2008). This is confirmed through a study of Bernard *et al.* (2010) who found that cooperatives market 67 per cent of all fertilizer imports in Ethiopia and 85 per cent of domestic fertilizer distribution. On the other hand, Francesconi (2009) found that few agricultural cooperatives provide basic services for output marketing, such as collection and sale of members' supplies. Additional services like storage, transportation and manufacturing, are extremely rare.

Nevertheless, policymakers and donors in Ethiopia and elsewhere are showing renewed interest in producer organisations as a key mechanism of linking farmers to markets, increasing agricultural productivity, and ultimately reducing rural poverty (Bernard and Spielman, 2009, Bernard *et al.*, 2010). The formation of producer organisations has often been promoted through interventions by state and non-state actors (Francesconi, 2009). The reason is that government agencies and nongovernmental organizations expect that the help of producer organisations will help them to better identify and reach out to the rural poor with an array of social and economic welfare programs (Bernard *et al.*, 2010 and Spielman *et al.*, 2008). It is therefore not surprising that the evidence found by Bernard *et al.* (2010) suggests that grain-marketing cooperatives in Ethiopia are engaged in a wide range of non-marketing activities. These social activities are often promoted by external partners. Yet, the evidence also suggests that inclusion of such non-marketing activities may significantly affect membership structure, thus reducing the cooperative's capacity to provide marketing services to its members. This is in line with the findings of the World Bank (2007) who report that in many developing countries these social interventions tend to attract opportunistic and subsistence farmers, eager to extract subsidies rather than embark in marketing activities.

As a result of these developments, Bernard *et al.* (2008) found that marketing cooperatives are a minority in Ethiopia. Therefore agricultural commercialisation mostly takes place outside the cooperative system, depending exclusively on individual entrepreneurship and resources. Furthermore, Bernard and Spielman (2009) and Bernard *et al.* (2010) observed that of those cooperatives that claimed to be engaged in marketing members' output, only 59 per cent actually performed this activity during the 12 months prior to the survey⁶⁷. Aysheshm (2007) also found

⁶⁷ For those cooperatives that did market output, the average value sold per member was 1,116 birr (about US\$122.76), although for 75 per cent of them, the value was below 200 birr (about US\$22.00) (Bernard *et al.*, 2010).

that only 17,7% of the agricultural produce was marketed by the 16 primary cooperatives and 0,4% by the only cooperative union in Metema *woreda*. According to him most cooperatives were ineffective, had scanty business operation data, and they suffered from administrative and technical problems.

Nevertheless, those cooperatives that do provide marketing services were found to be relatively well organized to do so and usually obtained improved prices for their members (Bernard *et al.*, 2010); Francesconi, 2009). What is interesting to note is that, according to Francesconi's study, these relatively well-functioning marketing cooperatives are mainly found in the two main regions for sesame production, Tigray and Amhara Regions. This is a clear opportunity for companies who want to initiate sesame contract farming relations with producer organisations. However, it is very important that firms who wish to set up contract farming arrangements identify cooperatives that have experience with marketing output. Muradian and Magnus (2009) also found that, although firms are often prepared to offer support to the development of producers' organisations – for instance, through training, provision of inputs, pre-financing, etc – they only work with cooperatives that already have a certain level of 'doing good business'. These organisations are most likely able to reduce transaction costs for the buyer of sesame, while this can currently not be expected from the majority of producer organisations in Ethiopia.

To what extent such a partnership between a farmers' cooperative and a contracting firm will contribute to poverty reduction is not yet clear. According to Francesconi (2009) the Ethiopian agricultural cooperatives tend to exclude the 'poorest of the poor' (defined as rural households with little or no land). Findings of the studies of Bernard and Spielman (2009) and Bernard *et al.* (2010) suggest that smaller farmers tend to self-exclude from participating in marketing cooperatives, as their returns from membership are less than the costs of membership. At the same time these authors also note that some degree of exclusion is necessary for marketing cooperatives to maintain a certain degree of homogeneity in members' interests or levels of commitment. Coordination costs tend to increase with the heterogeneity of preferences among members, as intergroup agreement becomes more difficult to reach. Companies aiming to reduce transaction costs in contract farming arrangements will therefore most likely look for rather homogeneous, entrepreneurial producer organisations.

Table 6: Main issues and transaction costs at key stages of value chain with use of contract farming (CF) arrangement

Value chain stage	Supply of inputs (for smallholder farmers)	Production	Trade and logistics (local)	Meeting clients requirements	Export and market
Main issues	Provision of inputs and technical know-how by contracting firm => higher yields Farmers dependency on inputs from contracting firm => risk of 'debt trap' (§5.3)	Contract farmers often higher income than other farmers (§5.2) Asymmetric relationship company – farmer; sesame farmer has many alternative outlets => ltd risk for exploitation (§5.3)		Provision of inputs and technical know-how by contracting firm => diffusion international standards (quality, safety, environmental and social standards) (§5.2)	High risk of side selling sesame & high TC for contracting firm (see below) => contract farming only for high value sesame (§5.3)
Transaction costs in sesame CF value chain <i>No producer organisation</i>	contractor ensures supply of inputs => TC minimal for farmers (§5.1, §5.2) provision inputs to large number of farmers => high TC for contractor (§5.3) Asymmetric info between farmer & buyer on farmer performance => high TC (§5.4)	Asset specificity for certified sesame => high TC; can be lowered through CF (§5.3) Uncertainty about quantity and quality of produce is reduced for contractor (§5.3)	Firm needs to contract many farmers => high TC for contractor (§5.3) Firms / farmers may renege on contract if price changes. Farmers have many marketing outlets => possible TC for companies (§5.3)	Performance criteria written in contract. Yet measurement of performance with many small farms => high TC for contractor (§5.3)	Info sharing with all stakeholders => little TC for contact (§5.2) Control production easier => less TC (§5.2)
Transaction costs in sesame CF value chain <i>with Producer Organisation (PO)</i>	Marketing ⁶⁸ POs in Ethiopia can organise provision of inputs and credit to farmers (§5.4) PO better info on quality & reliability producer => less contract default => less TC for contact, contract, control (§5.4)	Collective action PO: new TC ⁶⁹ internal to PO (§5.4) PO with similar member interest => lower coordination costs for PO (§5.4) Poor managerial capacity PO and slow decision making process => higher TC (§5.4)	Contract: reduce per-unit TC (§5.4) PO can assist with collection, sorting, grading, sesame etc. Storage & transportation by POs is rare in Ethiopia (§5.4) Economies of scale in marketing => less TC (§5.4)		

⁶⁸ Please note the importance of careful selection of the PO. See section 5.4 where we explain that only marketing cooperatives, which are a minority in Ethiopia, are in a good position to perform this role in contract farming.

⁶⁹ New set of transaction costs, such as coordination of meetings among members, collection of fees and contributions, organize activities, monitor compliance, resolve conflicts and disputes, etc.



6 Contract farming can reduce transaction costs in high value sesame chains

Currently large-scale farmers, often investors from Addis Ababa, with sufficient working capital and tractors are making huge profits from the production of sesame. Smallholder farmers do not benefit to the same extent from sesame production because of the difference in transaction costs sustained. Pro-poor development measures should therefore tackle these transaction costs by favouring the introduction of alternative institutional arrangements.

Our research aimed to answer the question whether contract farming can decrease the transaction risks and costs in such a way that poor farmers are included in, and can benefit from, the sesame value chains in Ethiopia. The assumption is that high transaction costs are constraining small farmers' market access. If these are reduced then smallholders are encouraged to participate in competitive markets.

We first studied the nature of transaction costs and how they constrain farmers' possibilities to enter the sesame market. We found that the transaction costs for farmers in terms of search and information costs (contact), negotiation costs (contract) and monitoring costs to ensure that the terms of the transaction (quality standards and payment arrangements) are adhered to (contract) were minimal in the sesame output market. Moreover, we found that farmers were receiving a very high share of the export price and, of all value chain actors, they were receiving the highest net profits. Hence, our findings in the sesame sector are different than what is commonly published on smallholders in other agricultural sectors in Ethiopia.

Our findings rather suggest that small sesame farmers face high transaction costs in the input market. This not only affects their market participation but also negatively influences the benefits they derive from this participation. Unlike the richer investors, poor farmers pay a high cost to obtain access to the required working capital, labour, tractor services, etc. Despite their struggle to gain access to these inputs, the yield of smallholder farmers is higher than that of large-scale farmers. This suggests that if small farmers would have timely access to inputs and the transaction costs of the input markets can be decreased, they might gain considerably.

Accordingly, we explored whether contract farming could be a valuable institutional arrangement to cut these transaction costs. Many studies on contract farming suggest that contract farmers do benefit from reduced transaction costs in the input market, meeting market requirements and increased yield and income. Buyers benefit because the contract farmers will provide them with constant and improved quality products. The threats that contract farming may entail for smallholders are hardly present in the Ethiopian sesame sector. Farmers do have price information, this has even improved with the ECX currently providing up-to-date price information as well. Therefore, it is not very likely that companies are going to 'squeeze' the small farmer. Especially because there are many buyers for the sesame and they are willing to pay relatively high prices. Farmers therefore do not depend on a few monopsonistic buyers.

Hence, contract farming seems a logic option to diminish transaction costs for smallholders as it intervenes in the place where the highest transaction costs occur. However, while this arrangement may be ideal for smallholder farmers growing sesame, contract farming does bring about additional transaction costs for the contracting firms. Managing relationships with and providing inputs to thousands of small farmers has a cost. Moreover, in the current situation in which there are many buyers sometimes willing to pay prices that exceed the foreign market prices for sesame, there is a high risk for the contractor that farmers will sell their sesame to another buyer. Ethiopian companies thus concluded that contract farming is only viable if the

sesame can be sold to high value markets that pay a premium price. In this way they can offer attractive prices to farmers and recover the additional costs they incur.

When exploring this option, we found that the production for high value markets leads to new transaction costs for the farmers. Clients look for reliable business partners who can deliver products in specific volumes, at a good price, on schedule, and that meet quality and environmental and social sustainability requirements. The majority of the Ethiopian farmers is not yet familiar with these market requirements and need to be trained. The costs caused by farmers who do not meet the standards, are higher for the contracting firm than the farmer; the firm has invested in this farmer, yet is not getting any output while the farmer can still sell the sesame to another buyer.

Once more it appears that the small-scale farmers could benefit from this arrangement. Especially since participation in the high value market encourages the application of modern inputs and farming techniques, and specialization in more tradable crops. It is generally believed that this commercialization can increase yields, farming incomes and reduce vulnerability among smallholders. Moreover, producing for a sustainable market also suggests that good agricultural practices are followed, and that farmers and labourers will benefit from fair treatment and fair remuneration.

Considering that a contract farming arrangement may have substantial advantages for smallholder farmers, the next question that needs to be answered is 'what can be done to decrease the transaction costs for contracting firms to encourage them to invest in contract farming?' Producer organisations often perform the role of an intermediary between farmers and the contractor. By doing so they can make contract farming more attractive since transaction costs are reduced. Different experiences with Ethiopian producer organisations point out that only a minority of the cooperatives currently provide marketing services and are relatively well organized. Usually the firms that are prepared to start contract farming and offer support to the development of producers' organizations (suppliers) will prefer work to with cooperatives that already have a certain level of 'doing good business'. Presently few cooperatives and/or unions qualify but most of them which do, can be found in the major sesame producing areas.

The overall conclusion is that contract farming can reduce transaction costs for smallholder farmers. This institutional arrangement is an opportunity for poor farmers and labourers to participate in commercial, sustainable farming and get fair remuneration for these efforts. Whether firms will be interested to invest in contract farming arrangements with smallholders depends on two main factors. Firstly, whether they can sell the Ethiopian sesame to a premium market and secondly, whether they can identify an efficient marketing cooperative that can function as intermediary between farmers and company.

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