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Analysis of the Organization and Challenges of Contract Farming in Tanzania: A Case of Mtibwa Sugarcane Outgrower Scheme

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Authors' contributions

This work was carried out in collaboration between both authors. Author RM designed the study, wrote the protocol and supervised the field work. Both authors were involved in writing the manuscript. Additionally, author JS provided technical assistance in all stages of the study from designing of the study, literature review, field work, data analysis and manuscript writing. Both authors read and approved the final manuscript.

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ABSTRACT

Aims: To analyze the organization and challenges of contract farming in Tanzania.
Study Design: Cross sectional.
Place and Duration of the Study: Turiani division in Mvomero District. Data collection began in February 2013 and ended in March of the same year.
Methodology: The paper utilizes the qualitative data to answer the research questions.
Results: Sugarcane growers are contracted through their organizations. Five main challenges of contract farming in the study area were identified. They include delayed payment, lack of fairness in allocation of quotas, lack of transparency in determining the content of sucrose (rendement), lack of transparency in determining the weight of sugarcane and low price of sugarcane.

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Conclusion: Contract farming in the study area has the potential to overcome sugarcane marketing constraints. However, the challenges identified require an immediate attention.

Keywords: Organization; challenges; contract farming; Tanzania.

1. INTRODUCTION

Global economic integration and market liberalization have led to the emergence of contract farming as an important development strategy for promoting the transition of smallholders in sub-Saharan Africa from subsistence to market oriented commercial production [1,2]. Under the contract system, a farmer agrees to supply a pre-agreed quantity and quality of produce at a pre-agreed price and time, to the processing or marketing firm, which may provide access to technical assistance, production inputs and finance [3].

In the context of developing countries, contract farming is viewed as an important institutional innovation for improving the productivity and output of smallholder farmers that can lead to improved farmer incomes and livelihoods. It is believed that contract farming would solve one of developing countries' development challenges which are delivery of agricultural services (marketing, extension services, input supply, financing and other support) to smallholder farmers [4].

In Tanzania sugar industry is among the sectors where contract farming is practiced. Historically, the sugar industry was fully under the control of state since the 1970s and 1980s. However, because of inefficiencies in their operations, the sugar milling companies were privatized as part of economic reform in the late 1990s [5]. Mtibwa and Kilombero sugar companies are two milling companies that were privatized and have well developed out-grower schemes [6]. In both Mtibwa and Kilombero out-growers sell their sugarcane to the milling companies on contract basis. This study is part of the bigger study which aimed at understanding the perceptions of smallholder farmers on contract farming. In the bigger study both quantitative and qualitative information were collected, however, this paper focussed more on the qualitative information with the objective of answering two main questions:

1. How contract farming is organized in the study area?
2. What challenges do contract farmers face?
3. How are these challenges to be resolved?

1.1 Literature Review

1.1.1 Advantages and disadvantages of contract farming

Proponents of contract farming view this market arrangement as a means to incorporate smallholder farmers into growing markets for processed goods and export commodities. They argue that under contract farming, smallholders are able to obtain reliable and improved agricultural extension services, credit, agricultural inputs, and gain access to reliable markets for their produce [7,8]. It has also been argued that contract farming can facilitate introduction of appropriate technology and business management skill transfer in the form of record keeping, efficient use of farm resources and knowledge of product quality [9].

However, critics argue that contract farming favours resource endowed farmers and marginalizes resource poor farmers thereby exacerbating rural inequality [10,11]. In addition, it has been argued that contract farming rarely encourages farmers to begin any value added activity like packaging and processing or marketing their own produce [12], and can lead to reduced food production if contracted cash crops displace food crops. However, [13] maintains that this does not usually occur if farmers are allowed to make their own decisions. Other reported disadvantage of contract farming include farmers' indebtedness and overreliance on advances, domination by monopolies, manipulation of quotas and quality specifications, unsuitable technology and crop incompatibility, and increased risk [14].

Furthermore, a concern over power relations between smallholder vis-à-vis contractors has been documented in the literature. It is argued that smallholders under contract farming face unequal relations, leaving them vulnerable in case the contractor changes or uses loose loopholes in the contract. Their bargaining power depends on the availability of alternative sources of livelihood which may provide a safety net against monopsony power of firms [7,15,16]. For these reasons, [17] maintain that contract farming displaces decision-making authority from

the farmers to the downstream processor, turning farmers into quasi-employees.

Other studies have taken a more neutral position. They report that whether contract farming is beneficial or not, depends on various factors because it is not the contract per see, which is harmful, but how it is implemented in a given context [18]. Diversity in the type of firms, farmers, nature of contracts, crops and socio-economic environment play an important role in determining the effectiveness of the contract farming system. Moreover, how farmers perceive contract farming, and define their relationship with companies differs across cultures, markets and production systems [19]. In practice, it is logical to argue that contract farming works if its advantages outweigh the disadvantages for both agribusiness firms and farmers.

1.1.2 Models and typologies of contract farming

Contract farming can further be understood by highlighting the models and typologies presented and discussed by various authors. Available literature shows five different models of contract farming. They include the; centralized model, nucleus-estate model, multipartite model, informal model and the intermediary model [14,20-23]. The centralized model involves a centralized processor and/or packer buying from a large number of small farmers. Farmers' quotas are distributed at the beginning of each growing season and quality is tightly controlled. This model is preferred for crops that are subjected to stringent processing standards, require a high-level of experience from farmers, entail frequent changes in farm technology, and involve significant long-term investment [20].

Meanwhile, the nucleus-estate model involves the firm owning and managing estate plantation but also involves some contracted farmers [19]. While the contracts in the preceding types are bilateral (between the contractor and each farmer), the multipartite model involves more than two parties in the contract. This type of contract may develop from the centralized or nucleus estate models by organizing farmers into cooperatives or the contract may involve a financial institution a party to the contract [20]. The fourth type is referred to as the informal model because it is characterized by individual entrepreneurs or small companies who are engaged in informal production contracts, usually on a seasonal basis. This type of contract often requires government support services such as research and extension. Due to its non-formal nature, it often suffers from extra contractual side-marketing [20].

The fifth (Intermediary model), involves the processor in subcontracting linkages with farmers or intermediaries. Some drawbacks to this model are that the processor may lose control of production and quality as well as prices received by farmers [20].

Three main types of contracts have been adopted with producers in order ensure that processors remain in control and can provide the products and services to the end user in an efficient, timely and profitable manner [21,13,23]. The first is the market specification contract where there is a pre-harvest agreement between producers and contractors on the condition governing sale of the crop. The contract usually specifies the; time, sale location and the quality standards of the commodity to be supplied by farmers. Under this type of contract, the farmer maintains most of the decision rights over his farming activities and bears most of the risk of his/her most production activities. The second type of contract involves a production management contract, where the contractor has more control of the production processes compared to the market specification contracts. Under this contract the producer agrees to follow the production methods precisely and adhere to the prescribed type and amount of required inputs. The third type of contract is the resource provision contract, whereby, the contractor agrees to provide key inputs but also can act as a market outlet for the commodity produced. The costs of inputs are recovered upon product delivery [24].

2. METHODOLOGY

2.1 Area of Study

This study was conducted in Turiani division in Mvomero district about 130 kilometres from Morogoro municipality along Kilosa-Handeni road. Mvomero district lies between longitudes 37°10' to 38°31' East of Greenwich and between Latitudes 5°5' to 7°4' South of the Equator. The division of Turiani is found at Longitude 37°36' East and Latitude 6°00' South. Turiani division comprises five wards namely, Mtibwa, Sungaji, Mhonda, Diongoya and Kanga ward. In terms of climate, the division receives a bimodal type of rainfall with peaks in the months of April and

December. The dry season is experienced between the months of May and October. The average rainfall per annum is 1200 mm with variations from 800 mm to 2000 mm.

2.2 Sampling and Sample Size

This study employed a multi-staged sampling procedure to select contract farmers for sugarcane production around Mtibwa Sugar factory. The first level of sampling involved selecting two wards among the five wards in Turiani division where the factory is located. Although sugarcane farms that are owned or managed by smallholder out grower farmers exist in all five wards of Turiani division, the majority of smallholder farmers who grow sugarcane live in Diongoya and Mtibwa wards. Therefore Diogoya and Mtibwa wards were purposively selected for the study. Two villages were then randomly selected from each ward. As shown in Fig. 1, the list of villages is, Manyinga and Lusanga (Diongoya ward) and Kidudwe and Lukenge (Mtibwa ward).

2.3 Data Collection and Analysis

Qualitative methods were used to collect information for answering the research questions. Interviews with key informants in the study area were conducted using a list of guiding questions. The key informants interviewed include the Ward Executive Officers and extension agents from the two wards. Other key informants were; the leaders of the out-grower organizations (MOA and TUCOCPRCOS LTD) and the chairman of Turiani Savings and Credit Cooperative Society (TuriSACCOS).

Four focus group discussions (FGDs), one in each village, also were conducted. Members of the focus groups ranged between 7 and 10 and constituted both men and women who were recruited based on homogeneity in their socioeconomic characteristics in order to maximize disclosure. The time used for each FGD ranged between 60 to 90 minutes. In order to get required information from the FGD questions asked were divided into three main parts: Opening (engagement questions), exploration and exit questions. In both wards, the moderator and the assistant moderator facilitated the discussions. Data collected were analysed using content analysis where many words of the text were classified into smaller content categories and describing the connections among them.

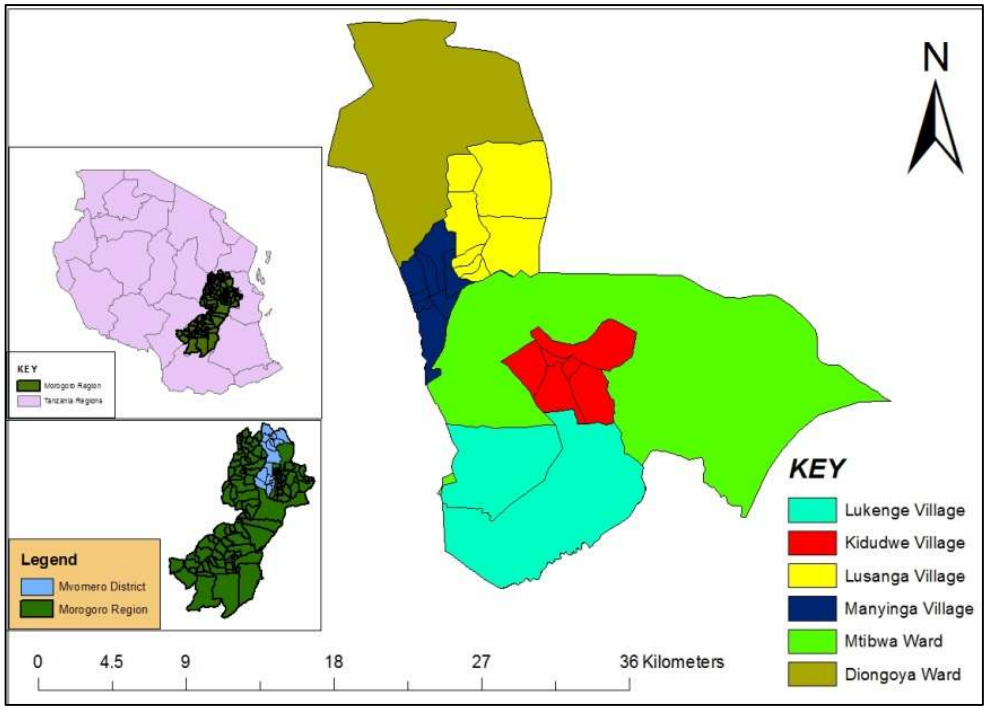

Fig. 1. A map of study areas

3. RESULTS AND DISCUSSION

3.1 Organization of Contract Farming in Mtibwa

3.1.1 Sugarcane production and supply processes

In Mtibwa, production and supply of sugarcane involves five basic steps: land clearing, sugarcane planting field, maintenance, harvesting and haulage. Out-growers clear land either by using family labour, casual labourers, hired tractor services or all three. Stem cutting is the most common propagation method. Each cutting contains at least one bud, and the cuttings are hand planted. Once planted, a stand (a new plant crop) can be harvested several times; after each harvest, the cane sends up new stalks, called ratoons. Successive harvests give decreasing yields, eventually justifying replanting. In other parts of the world experience shows that when the field is well maintained up to 10 harvests can be supported. However, extension agents in the study area reported that out-growers in Mtibwa can harvest up to six times if fields were well maintained, there was good weather and livestock keepers did not graze their cattle into the fields. Otherwise, most out-growers harvested three times.

Mtibwa Sugar Estate Limited (MSEL) contracts smallholder farmers through their farmers' organizations that are present in the area. These organizations include Mtibwa Outgrower Associations (MOA), Turiani Cane and other Crop growers Cooperative Society LTD (Tucocpricos Ltd) and a private company known as KIOMA which is owned by a group of fairly big farmers (those who operated more than 10 acres) from Turiani. Therefore, cane harvesting (cane cutting), sugarcane loading and transportation were organized by the three organizations. Although retention of crop resi dues is a recommended practice in sugarcane harvesting [25,26], in Turiani the field is set on fire before harvesting. The fire burns dry leaves, and chases or kills any lurking venomous snakes, without harming the stalks and roots. After the field is set on fire, sugarcanes are supposed to reach the mill for processing within 48 hours. After sugarcane has been cut, a special machine called a grab loader loads the sugarcane into the trucks which transport the sugarcane to the sugarcane yard. The service charge for sugarcane cutting, loading and transportation is deducted from the farmers' paycheck.

At Mtibwa mill, sugar is not the only product of the sugarcane processing. Other products derived from the processing include bagasse, molasses, and filter-cake.

3.1.2 Services provided to out-growers

Out-growers do benefit from services provided by various actors in the sugarcane commodity chain. The services provided include new technologies for example improved seeds, credit, production inputs (notably, inorganic fertilizer), rehabilitation of rural roads, sugarcane cutting, loading and transportation. Actors that provided the services include farmer organizations, Savings and Credit Co-operative Society (SACCOS), banks, Mtibwa Sugar Estate Limited, donors, government and private companies. However it is important to note that farmer organizations were the main actors providing some of these services. The main services provided by the farmer organizations are sugarcane cutting, loading and transportation. The other services include facilitating access to credit by acting as guarantors for out-growers to get credit from SACCOS and banks. Also, farmer organizations organize acquisition of agricultural inputs and rehabilitate rural roads.

Extension services, the only services provided for free to out-growers, were provided by the government in collaboration with donors. It was noted that about seven government extension agents were seconded to a project operating in the study area (the European Union Sugar Development Project) to provide extension services to out-growers. These extension agents continued to be paid by the government, the project facilitate them with transport in order to reach many out-growers. It was also noted that some farmers bought new improved sugarcane varieties from Mtibwa Sugar Estate Limited.

3.1.3 Selling cane to Mtibwa company

Farmers receive different prices depending on the quality of their sugarcane, which is determined by the sucrose content of the sugarcane. The technical term for the amount of sucrose is 'rendement' which is calculated based on how many tonnes of sugar can be obtained by crushing 100 tonnes of sugarcane. For example, a rendement of 11 implies 11 tonnes of sugar are produced after crushing 100 tonnes of sugarcane and the rendement of 10 implies 10 tonnes of sugar are obtained after crashing 100 tonnes of sugarcane and so on. In the context of Mtibwa,

when the rendement falls below seven, usually the sugarcane is not purchased by the factory. In such circumstance usually a farmer incurs loss because he/he is legally bound by the contract (Clause 10) which categorically stipulates the quality of sugarcane to be delivered to the mill. In rare cases the Mill Operations Committee can decide to purchase the sugarcane at a very low price.

Two distinct categories of out-growers were identified at Mtibwa. The first category is fully contract farmers and the second is partially contracted farmers. The fully contracted farmers are characterized by owning or managing small pieces of land (less than 10 acres) and low incomes. Furthermore, the fully integrated farmers receive the whole package offered under the contract including sugarcane cutting, loading, and transportation and marketing service. The partially integrated farmers are characterized by owning or managing larger pieces of land and have relatively higher income as compared to fully integrated famers. Additionally, partially integrated farmers receive only marketing service. Because of these differences the two categories of farmers differ the way the gain access to market (see Fig. 2).

As indicated in Fig. 2, partially integrated farmers sell their sugarcane to MSEL through the three organizations (MOA, TUCOCPRCOS and KIOMA). However, fully integrated fully integrated farmers sell their sugarcane through either MOA or TUCOCPRCOS or sometimes both in the same harvesting season. Selling through both organizations is possible if a grower is registered in two different organizations. It is worth noting that as per constitutions of farmers' organization it is an offense for a farmer to register in two different organizations, however, at Mtibwa this happens in order to increase the chance of getting the services of sugarcane cutting, loading and transportations that are provided in different locations on a quota basis. Farmers overcome the limitation of the constitution by a husband and spouse joining different farmers' organizations.

Also, Fig. 2 indicates that fully integrated farmers can also sell their cane to partially integrated farmers who finally deliver the sugarcane to the firm (MSEL). This usually happens when the fully integrated farmers anticipate delays in getting paid by the company. They sell their cane to partially integrated farmers who seem to have more resources compared to fully integrated farmers. During interviews with extension workers and leaders of farmers' organizations, it was pointed out that even though fully integrated farmers receive low price when they sell their sugarcane to partially integrated farmers, they receive immediate and timely cash payments. This enables them to weed and buy fertilizers for their farms that increase the productivity of the ratoon crop or new stand for the following year.

Furthermore, when fully integrated farmers sell sugarcane to partially integrated farmers, they avoid many deductions. When they sell through MOA or TUCOCPRCOS deductions appear on the final pay slip for sugarcane cutting, sugarcane transport, grab loading, MOA or TUCOCPRICOS levy, fuel stock, Tanzania Sugarcane Growers Association (TASGA), infrastructure, out-grower (OG) services and District Council Levy. Table 1 is an example of the pay slip of one farmer which shows specific details.

Calculations in Table 1 show that the grower will get a loss of 305,384.65Tsh (USD 193.28) if it is a new plant crop.

The results of the first scenario concur with the explanation given by the operations and human resource Manager of MSEL when he was asked whether farmers make a profit in all harvesting seasons. He explained that for a stand (new plant crop), usually production costs are higher compared to what farmers get. However, he mentioned that for a ratoon crop, some farmers can get a profit of more than 100% if fields were well maintained. The following second scenario shows estimated cost and benefit for a ratoon crop.

3.1.4 Second scenario: A ratoon crop

For a ratoon crop, the farmer does not incur costs for farm preparation, planting and seed. For this case when these costs equivalent to 678,000Tsh (USD 367.09) are not incurred, the invoice total would be 372,615.35 (USD 235.83) per acre. The exchange rate is taken at 1USD = 1580Tsh in the year 2013 when data were collected.

3.2 Challenges of Contract Farming at Mtibwa

Results from the four focus group discussions consistently identified five main challenges. In the order of their importance, the challenges

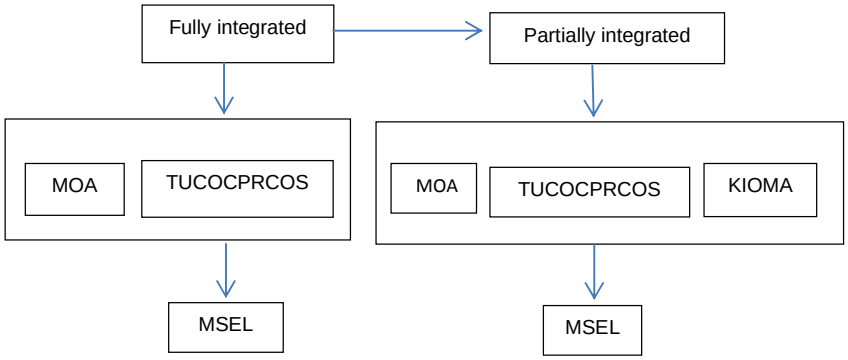

Fig. 2. Contracting chain for fully and partially integrated farmers

Table 1. Balance sheet for Cost and deductions

Description	Amount	USD equivalent
Area planted (in acres)	1	
Total tons sold (tons)	25.18	
Rendement (percentage of sucrose)	10.1%	
Rate per ton (Tsh)	38, 720.19	24.50
Gross income (Tsh)	974, 974.35	USD 617.07
Deductions		
Sugarcane cutting	100,720	63.74
Grab loading	75,540	47.81
MOA levy	8,813	5.58
Fuel stock	6,295	3.98
TASGA	2,518	1.59
Infrastructure	21,403	13.55
OG services	10,072	6.37
Sugarcane transport	191398.72	121.14
District council levy	15,599.59	9.87
Total deductions (Tsh)	432,359	273.64
Invoice total (Tsh)	542,615.35	343.43
Other cost (in Tsh): First scenario: A stand (a new plant crop)		
Farm preparation: hiring tractor	40,000	25.32
Planting (one acre)	58,000	36.71
Buying seed (one acre)	580,000	1,580
First weeding (one acre)	58,000	36.71
Second weeding (one acre)	100,000	63.29
Pesticides (one acre)	12,000	7.59
Inorganic fertilizer (The farmer did not use inorganic fertilizer)	0.00	0.00
Total cost not reflected on payslip	848,000	536.71
Invoice total minus Cost not reflected on payslip	-305,384.65	- 193.28

Source: Field results 2013

include delayed payment, lack of fairness in allocation of quotas, lack of transparency in determining the content of sucrose (rendement), lack of transparency in determining the weight of sugarcane and low price of sugarcane. The next section discusses these challenges in detail.

3.2.1 Delayed payment

It was reported during focus group discussion that delayed payment has been a perennial problem. Members of FGD pointed out that the sugarcane farmers had for a long time complained through their associations - MOA and Tucocpricos Ltd, but nothing was done. These complaints were also confirmed by a key informant (a leader of Tucocprcos LtD) who pointed out that “The farmers, who are members of Tucocpricos, are currently demanding 578 m/- (USD 416, 066.80) from the company, however, the company is reluctant to pay the debt”. Interviews with a key informant from Mtibwa

Sugar Estate Company revealed that the company was waiting for the price of sugar to rise otherwise sugar was to be sold at loss. The reason for falling of the price of sugar was mentioned to be the result of the government decision to import sugar from outside. Further supporting farmers complaints on delayed payment, two months after data collection the District Commissioner of Mvomero announced to close down the factory because of unpaid debt of Tsh 1.9 billion (USD 1.3Million) that included farmers' payments and salaries of employees. The delayed payment caused a lot of problems to contracted farmers including failure to repay the advance payment from various money lenders.

3.2.2 Lack of fairness in allocation of harvesting quotas

Lack of fairness in allocation of quotas was another challenge faced by contract farmers. It was mentioned that sugarcane harvesting is determined by quotas given to each farmer organization. An organization with many members is likely to be given bigger quota. This implies that having many members is not a decisive factor of being given bigger quota; justification on how many sugarcane tones can be supplied is also required. Owing to this fact, it was possible an organization having few members with bigger sugarcane farms to be given a bigger quota than the one with many members. During the focus group discussions, members from all four groups lamented that in some years their sugarcane remain unharvested due to lack of fairness in allocation of quotas. It was pointed out that some corrupt leaders of famers' organizations do not properly follow the harvesting calendar; instead they harvest sugarcane of those who can bribe them. The key informant interviews confirmed the existence of the problem however the contributing factor was mentioned to be poor roads. It was explained that during rainy season most of the roads are impassable and therefore they have to harvest sugarcane located in areas where trucks can easily reach.

3.2.3 Lack of transparency in determining the content of sucrose

Another concern raised during FGD was lack of transparency in determining the content of sucrose. Members of FGD explained that the way sucrose content is determined leaves a lot to be desired. This concern was also confirmed by the key informants (leaders of the farmer organizations) who pointed out that fully integrated farmers were more affected by lack of transparency because in determining sucrose content it is not possible to attribute the amount of sucrose to a specific farmer. This is attributable to sugarcane gathered into piles at the sugarcane yard containing sugarcane from different farms owned by different farmers. After the sugarcane has been crushed, the sucrose content (rendement) is assigned randomly to farmers. This affects more farmers with smaller farms (fully integrated farmers) because a single round of crushing might contain sugarcane from more than 10 famers, thus attributing the rendement to a specific farmer is very difficult. In the context of business ethics in Tanzania, the way sucrose is measured at Mtibwa is not acceptable. A similar problem existed in other sugarcane growing areas in Tanzania, for example Kilombero however, the problem was solved by fixing sucrose level at 9% for all sugarcane accepted by the factory.

3.2.4 Lack of transparency in determining the weight of sugarcane

Determining the weight of sugarcane is another contentious issue raised during the FGD. More than three quarter of members of FGD in all villages believed that there were a lot cheating in determining the weight of cane. Members of FGD were concerned by lack of growers' presentative at the cane yard. One key informant indicated that the trucks carrying sugarcane off-load the sugarcane at the cane yard after driving through the weighing bridge which determines the weight of the sugarcane in the truck. An employee of MSEL then records the information from the computer. The key informants suggested that transparency in weight recording could be enhanced if they had their representative or an independent person who is not an employee of the MSEL, at the weighing bridge. However, key informant from MSEL responded to this allegation by saying that they once requested growers to have representatives at the weighing bridge but growers were not ready to incur extra deductions to cover the cost of paying their representatives. They wanted MSEL to pay their representatives, the fact which MSEL did not agree with them.

3.2.5 Low price of cane

The last major challenge faced by contract farmers is low price of sugarcane. During FGD more than two thirds of members in all groups agreed that they received low price of their

sugarcane. One member of the group put it clearly that "Although we have a couple of representatives in organs that set the price, we peasants remain price takers". He argued that price setting is not based on cost-benefit analysis but rather the financial position of the company and other factors that do not consider the cost of production of the sugarcane grower. As a result of low price about one third of the participants reported to have decreased the acreage of sugarcane and replaced it with paddy. However, still they faced challenge of birds and other rodents which are harboured in sugarcane plantations.

4. CONCLUSION AND RECOMMENDATIONS

Contract farming at Mtibwa has potential to overcome marketing challenge which smallholder famers face in Tanzania. However, in order for sugarcane growers at Mtibwa to realize the benefits of contract farming, it is mandatory to pay attention to the challenges raised by sugarcane growers. Regarding the problem of delayed payment, it is suggested that MSEL should pay sugarcane growers at least 50% of the total value upon delivering sugarcane to mill. This will help sugarcane growers to continue with other farm activities which require immediate attention. The remaining 50% payment can be paid at any time not exceeding 90 days as the contract stipulate. In addition to farmers' contribution from their pay check, a community fund to help road rehabilitation should be established. This will allow accessibility of roads throughout the harvesting season including the rainy season. However, this should go hand in hand with improvement of the crushing capacity of the miller (MSEL). Furthermore, in order to buy all sugarcane from out-growers other millers should invest in the area. These efforts will contribute toward solving the problem of manipulation of quota which is the result of uncertainty in buying and crushing all sugarcane from out-growers. With regard to lack of transparency in determining the content of sucrose, use of core sampler which is a standard method in rendement measurement should be adopted. Also, there should be harmonization of rendement determination across all sugar factories in Tanzania. Transparency in determining the weight of sugarcane can be enhanced by having a representative of out-grower at the weighing bridge. However, a thorough analysis should be made before employing the representatives so as to ascertain how much per acre a grower can gain or lose by having a representative at the weighing bridge. Also, the analysis can shed light on whether representatives should be employed on permanent or seasonal basis. In order to break even, price setting should be based on the cost production per ton; however, farmers should be encouraged to adopt block farming in order to reduce the cost of production. In order to increase the price of cane, the value of other by-products including molasses, bagasse and mud mills must be shared between out-growers and the miller and the price should be uniform across all sugar growing sites where the costs of producing one ton of sugarcane are almost equal.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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