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MAPPING LINKAGES AMONG ACTORS IN THE MILLET VALUE CHAIN IN BORNO STATE, NIGERIA

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ABSTRACT

The study investigated the linkages of the actors along the value chain of pearl millet. Multistage sampling procedure was used to draw 367 millet value chain actors from three Local Government Areas of Borno State who formed the respondents of the study. Structured questionnaires were administered to the sampled respondents for primary data collection. Commodity flow map was used to depict the structure of the flow of millet from one actor to the other as well as frequencies and percentages for summarizing and better presentation of data. The results revealed that varied quantities of millet passes from the producers to the marketers who also distribute to the processors and consumers. The flow map indicated an indirect marketing structure by which the producers use commissioned agents through whom 80.2% of the millet grains they supply goes to the wholesalers. By the structure, the wholesalers, retailers and assemblers were price makers while the producers were relegated as price takers. The final linkage show processors and consumers obtained 56.9% and 49.1% of the grains from the retailers, respectively in smaller units which form the final outlet of the millet grains before being transformed into edible products. It was concluded that the distributive functions of marketing of millet was shifted to the intermediaries as a result they control the millet market and may gain more than the millet farmers. The study recommended that pearl millet producers should form cooperatives so as to sell their grains collectively and enjoy the benefits associated with collective bargaining.

Keywords: Mapping; Value chain; Actors; Linkage; Millet

INTRODUCTION

Global production of pearl millet exceeds 10 million tonnes a year of which approximately one-third is grown in Africa and Asia and about 70% in West Africa (Department of Agriculture, Forestry and Fisheries, 2011). The crop is an important cereal in the food security systems of many poor farmers in marginal rural areas of West Africa, including the Sahel and dry Savannah. In Nigeria, millions of tonnes of pearl millet are used as staple food in many homes, especially in the northern part of the country (Food and Agriculture Organization [FAO], 2007). Consequently, pearl millet is ranked as the most important cereal in the dry sub-humid and semi-arid zones of Nigeria (Ojedran *et al.*, 2010).

In the north-eastern part of Nigeria (where Borno State is located) farmers mainly cultivate millet and sorghum as staple crops (United State Agency for International Development [USAID], 2013) and most households in the State rely heavily on millet, among other crops, for their daily consumption and cash (USAID, 2009). Thus the crop has gained significance in the study area. Moreover, being widely produced and consumed, the crop passes through several stages as it moves from the point of production to consumption. Examining the inter-relationships among different actors involved in bringing products from its initial stage of production to final consumption through identifiable channels have been shown to be an economic analysis that can fully indicate the significance of the interactions within and among actors and the roles of innovation and upgrading in the processes involved in product production (Kaplinsky, 2000; Dolan and Humphrey, 2000; Fitter and Kaplinsky, 2001; Ponte, 2001; Pietrobelli and Saliola, 2008). As the movement of millet is facilitated by different categories of actors. Mapping the linkages will help identify the structure of the millet value chain, the flow of the commodity and relationships that exist among the actors along the millet value chain in Borno State of Nigeria. Against this background, this study is aimed at analyzing the linkages between the different actors along the millet value chain in Borno State, a major millet growing area in the north-eastern part of Nigeria.

MATERIALS AND METHODS

The Study Area

The study was conducted in Borno State. The State is located in the north-eastern part of Nigeria and covers an area of 69,435 km². It lies within latitudes 10^0N to 14^0N and longitudes $11^0.30^{'}$E and 15.00^0E. Borno State is characterised by two major vegetation zones viz; Sahel in the North and Sudan Savannah in the South. The period of wet season varies from place to place but generally the rainy season starts from June to September in the North and May to October in the South **(Borno State Government, 2010)**. The population of Borno State according to the National Population Commission NPC (2006) population census, stood at 4,151,193. Using the Nigerian population growth rate of 3.2% (UNPFA, 2009), the population of Borno State stood at 6,210,830 as at 2013. Numerous ethnic groups and cultures characterised the area, with approximately 80% of the population being small-scale farmers. Agriculture and trading constitute the major economic activities with millet and sorghum predominantly grown in the area (Borno State Agricultural Development Programme, BOSADP, 2000).

Sampling Technique and Instrumentation

This study used multi-stage sampling procedure to select the respondents. At the first stage, three Local Government Areas (LGAs) known for millet production and marketing were purposively selected out of the 27 LGAs in Borno State, Nigeria. These LGAs were; Dikwa, Gubio and Jere. One major market from each of the three Local Government Areas was also purposively selected. These were; Dikwa market, Gubio and Ngom market. Being weekly markets, Dikwa and Gubio market days were Sundays while Ngom were Fridays. As at the time of data collection, these markets were not closed even with the insecurity due to insurgency in Borno, Yobe and Adamawa State. Using the list of

farmers obtained from the farmer associations and that of the marketers association in the study area, proportionate number of respondents were randomly selected from each of the three markets in the selected Local Government Areas. Using a sample size formula $n = N/1+Ne^2$ (Yamane, 1967), a sample size of 367 was obtained out of a sampling frame of 4500 actors.

Data Analysis

The primary data for this study were analyzed using commodity flow map, frequency distribution tables and percentages.

RESULTS AND DISCUSSION

The movements of the various quantities of millet grains in kilogrammes sold among the actors identified in the study area are presented in Table 1 through Table 4. These show the actual quantities of millet supplied by one actor to another along the millet value chain. A commodity flow map represented by Figure 2 also depicts this transfer of millet grains between the actors in percentages. This is to reveal the flow of millet between these actors as obtained in the study area. It also indicates the structure, sequence of activities, the key actors and linkages in the movement of millet from the producers to the final consumers.

Table 1: Flow of millet handled by the producers

Actors	Quantity Supplied (kg)	Percentage (%)
Assemblers	9,697.5	12.8
Wholesalers	60,920	80.2
Retailers	4,100	5.4
Processors	1,000	1.3
Consumers	200	0.3
Total	75,917.5	100

Source: Field Survey, 2014

The Flow of Millet by the Producers

Table 1 showed that the producers supplied a total weekly average of 75,917.5 kg of millet. Out of this quantity, only 1.3% was processed into local value added products such as *waina, fura,* and *akamu*. The retailers handled 5.4% of the total quantity supplied by the farmers whereas the assemblers in the markets handled a higher quantity (12.8%). This could be due to the fact that the process of exchange of millet grains takes place more between the farmers and the assemblers than between the farmers and the retailers. The assemblers are usually the first contact of the farmers as they come along with their small quantities of millet grains into the weekly village markets to sell. As a market conduct, the assemblers taut, haggle and bargain with the farmers the moment they see them coming into the market with their produce. The farmers usually have no choice but to sell at the price dictated by the assemblers because of their need for money to meet other requirements.

Table 2: Flow of millet handled by the assemblers

Actors	Quantity Supplied(kg)	Percentage (%)
Wholesalers	16,000	75.5
Retailers	2,000	9.4
Processors	1,700	8.0
Consumers	1,500	7.1
Total	21,200	100

Source: Field Survey, 2014

The wholesalers are the major buyers of millet from the farmers as they handled 80.2% of the total grains supplied by the farmers. However, these transactions are normally facilitated by commissioned agents locally called Dillali. These agents sell the grains to prospective wholesalers on behalf of the farmers and receive commissions for every quantity sold. This indirect marketing, yet again, relegates the farmer to a price taker and at the mercy of the commissioned agent. Likewise, in the Sorghum Based Stockfeed Value Chain, Dube *et al.* (2014) concluded that farmers have weak negotiating capacities due to lack of knowledge in farm management principles.

The Flow of Millet by the Assemblers

The assemblers mainly sell the total weekly grains they are able to gather to the wholesalers, as they form the bulk of their customers who they trade with. Table 2 revealed that out of the weekly average quantity of 21,200 kg of millet grains supplied into the market by the assemblers, 75.5% were purchased by the wholesalers. The assemblers also sold to the retailers, processors and consumers 9.4%, 8.0% and 7.1%, respectively of the total quantity of millet placed in the market for sale. In these transactions, the assemblers dealt directly with the buyers. In situations where buyers deal directly with sellers, the haggling process is expected to be fair, with the sellers not being put at a price disadvantage as they consider their total cost and profit before agreeing to sell. By implication therefore, the assemblers are more likely to dictate the price for their commodity rather than accepting whatever price they are offered. This may result to the assemblers getting a higher price margin compared to that obtained by the millet producers.

Table 3: Flow of millet handled by the wholesalers

Actors	Quantity Supplied (kg)	Percentage (%)
Assemblers	0.0	0.0
Retailers	66,400	89.9
Processors	3,600	4.9
Consumers	3,900	5.3
Total	73,900	100

Source: Field Survey, 2014

Flow of Millet by the Wholesalers

The wholesalers are the major primary value chain actors along the millet value chain, this is shown by the volume of the commodity they handle. Table 3 showed that on the average, the wholesalers supplied 73,900 kg of millet weekly into the market. Of this amount, 89.9% was sold to the retailers. The retailers are therefore, the major buyers of millet grains from the wholesalers. Small-scale processors of millet, who transform the grains into various millet products, also bought 4.9% of the total supply directly from the wholesalers. Consumers, who make thick porridge called *tuwo* or a pap called *kunu* for human consumption, bought 5.3% of the quantity of millet supplied by the wholesalers. These set of processors and consumers buy in larger units, usually 100kg or 70 kg bags. Due to the volume of millet handled, the wholesalers were at an advantage position where they can exercise some power of *captive governance* as indicated by Gereffi *et al*. (2005). Furthermore, this agrees with the findings of Mmasa, and Msuya (2012) who also indicated that the potato market they investigated was being controlled by the middlemen.

Table 4: Flow of millet handled by the retailers

Actors	Quantity Supplied (kg)	Percentage (%)
Assemblers	0.0	0.0
Processors	18,100	56.9
Consumers	13,700	43.1
Total	31,800	100

Source: Field Survey, 2014

Flow of Millet by the Retailers

The retailers buy in larger units. They, however, sell in smaller measures using bowl locally called *mudu* or *kwano*. These bowls are in two different sizes; one measures about 1.5 kg and the other about 2.5 kg. Table 4 revealed that the retailers sold a weekly average quantity of 31,800 kg of millet. It also showed that the retailers have two major buyers; those who process millet into other finished products and those use millet for home consumption purposes. The retailers supply 56.9% of the total quantity of millet they handled to processors of local millet products and the remaining 43.1% to the consumers. These buyers purchase millet grains in smaller quantities measured in bowls, marking the final outflow of the millet grains from the market before being transformed into edible products.

The Structure of the Millet Flow

Figure 2 is a commodity flow map that presents the flow of millet from producers to the final consumers. In essence, Figure 1 showed that the supply of millet mainly flows from the producers to assemblers to wholesalers to retailers then to processors and consumers.

The commodity flow map revealed that the flow of millet in the study area follows an indirect marketing channel structure, where the producers do not deal directly with

wholesalers and retailers. Instead, the producers participate in the marketing process through intermediaries. In indirect marketing channel structures where the producer passes through marketing intermediaries in getting products to consumers, the distributive functions are shifted to the market intermediaries (Kotler and Armstrong, 1996). In such cases exploitation may occur where the producers have less negotiating power.

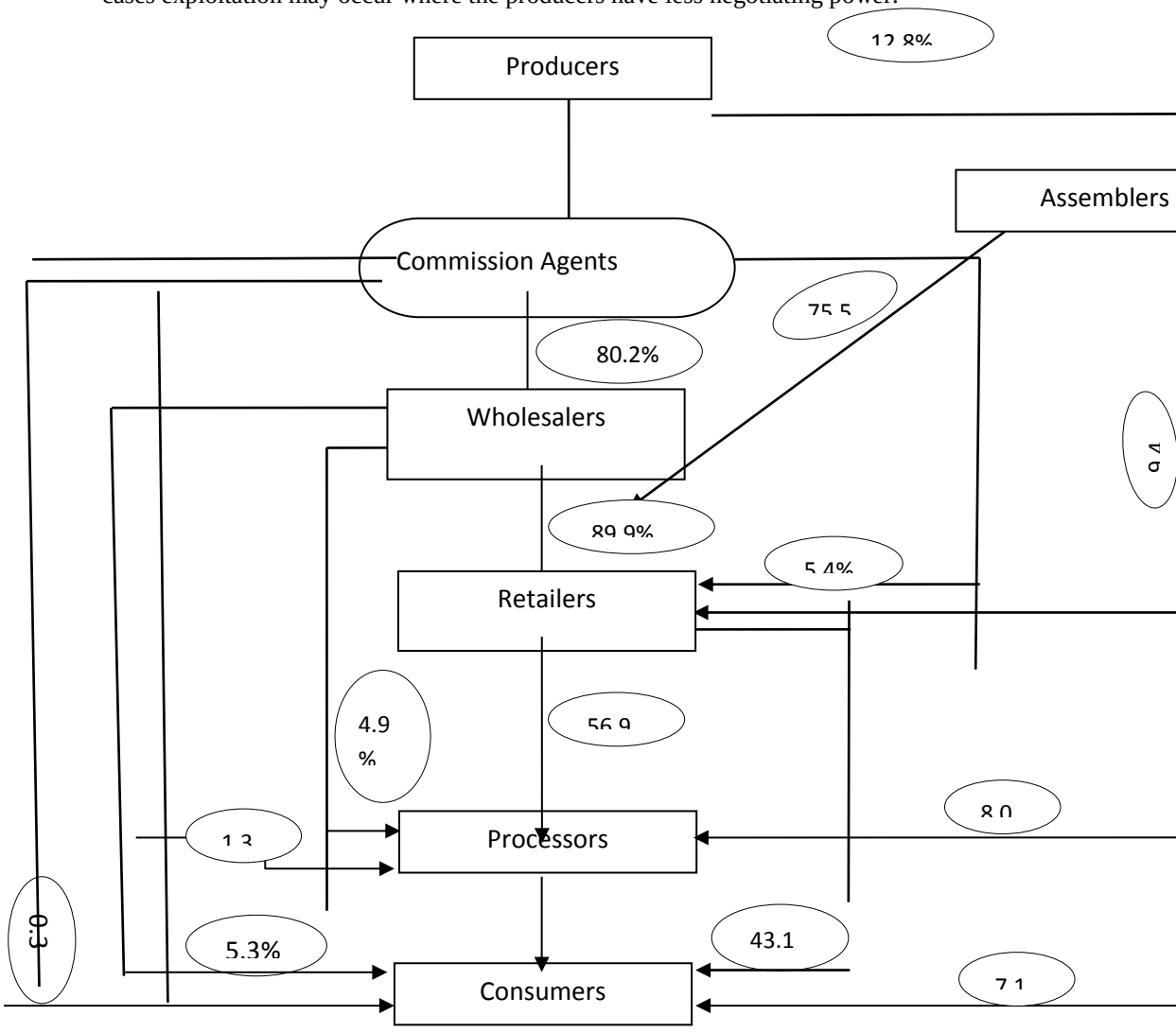

Figure 1: Commodity flow map of millet in the study area

CONCLUSION

The study has shown that the flow of millet grains move from the farmers who are

the producers, to the marketers including assemblers, wholesalers and retailers. Whereas, the processors and the consumers obtain most of the millet they use from the retailers.

The structure of the millet value chain as shown by the commodity flow map revealed that it followed an indirect marketing channel structure where the producers supply the grains through the wholesalers and retailers using the commissioned agents. This results to shifting the distributive functions to the market intermediaries and putting the farmer at a disadvantage position in terms of lower prices. The study, therefore, recommends that pearl millet producers should form cooperatives so as to sell their grains collectively and enjoy the benefits associated with marketing cooperatives such as higher prices, reduced marketing costs, as well as better bargaining power. The Borno State Agricultural Development Project (BOSADP) could come to the aid of the producers as to how best to organize such cooperatives and to form market linkages and better and assured marketing such as forward contracting.

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