MARKETING OF BAMBARA IN GHANA

FRI/NRI/DFID PROJECT ON

MARKETING AND PROCESSING OF BAMBARA (W. AFRICA)

By

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INTRODUCTION

1.0 General

The big challenge for current agricultural research is the development of sustainable cropping systems for different agro-ecological environments throughout the world. In the development of an economy, the proportion of the labour force who are engaged in agriculture tends to decrease; though urbanization, population growth and rising incomes create an increased demand for food. There has always been some exchange of goods between groups with different resources and the same basic needs to be satisfied in various ways. The ability to sell goods for money and to buy other commodities with that money widens the range of possessions, extends the variety of possible diets and reduces the risks of local disasters. In rural areas and small towns, consumers usually buy direct from farm families in the daily markets, so that farmers are aware of changes in the volume of demand arising from changes in incomes, in other prices, or in the tastes of consumers. Urbanization widens the distance between farmers and consumers; and foods must be transported, stored, processed and perhaps frozen or tinned.

1.1 Bambara Groundnut

Legumes are important as a foodstuff in the diets of the poor (Lipton, 1990), because of their relatively high protein content, and the complementarity of these proteins with those of cereals when digested at the same time. Bambara groundnut is only one among many legumes that can be used in different proportions according to the taste and form required. The demand for bambara groundnuts thus depends partly upon the volume of the demand for the final products and partly upon its price, relative to the prices of competing crops.

Bambara groundnut (*Vigna subterranea (L) verda*) is a food crop cultivated for its subterranean seeds and mainly cultivated by small holders over much of arid Africa. Most often it is cultivated by female farmers who use the crop for home consumption and selling only the surplus on the local market. World production is estimated to be 330,000 tonnes annually, with West Africa producing about half (Coudert, 1984). Immature seeds are

cooked and used as an early source of food during the rainy season, whereas fully ripe seeds are cooked or milled into flour.

Bambara groundnut is one of the grain legumes noted for its richness in protein. Its biological value is among the highest of the vegetable proteins (Kochhar, 1986). It is an important indigenous African pulse whose origin dates back to the middle ages. Researchers have neglected the crop and its production has reduced considerably over the years. Bambara groundnut produces an almost complete balanced food but has been relegated in its own countries despite the fact that it is one of the most drought tolerant, easily cultivated crop with very little demand on the soil. In Ghana, bambara groundnuts competed with Heinz baked beans in the 1960s and early 1970s with an annual production of 40,000 cans (Doku, 1996). It is cultivated by subsistence farmers as a secondary food and cash crop. Cowpea pulse is the most popular grain legume in Ghana and it contains 24.6 percent protein, 0.7 percent fats and 55.7 percent carbohydrate (ibid). This has led to most farmers and consumers resorting to cowpea because of its fast cooking time and easy handling.

Marketing is commonly linked with those who have surplus to sell. It also has a role that is vital to the poor especially in cases where governments are unable to undertake major transfers of resources, and income raising activities must be self supporting. The marketing of agricultural products as well as choices and preferences are greatly influenced by prices. Food price fluctuations have received attention recently due to the effect it has on the general economic performance and the distribution of income. The consumption pattern of poor households is more price-responsive and they are less able to draw on savings and other assets to buffer fluctuations in seasonal and inter-annual prices; hence price movements have important implications on these households.

In Ghana, the agricultural sector grew at a relatively slower rate of 3.9 percent in 1999 as compared with 5.1 percent in 1998 due to poor performance in all the sub-sectors except the crops and livestock sub-sector (ISSER, 1999). Agriculture contributed 40.5 percent to

the gross domestic product (GDP) in 1999. The area cultivated to starchy crops and cereals in Ghana as at 1999 was 2,808,000 hectares with a positive change in area of starchy crops and a negative change in area of cereal crops (ibid.). However, bambara groundnut is not among the list of crops captured by the Ministry of Food and Agriculture (MOFA) and its production growth rate and contribution to agricultural Gross Domestic Product (GDP) are not available.

The long cooking time of the bambara groundnut produced in Ghana leaves consumers with no choice but to prefer cowpea which has good cooking qualities as it has been improved over the years. Despite the increased awareness of the need to increase protein intake of Ghanaians and the fact that bambara groundnut is noted for its relatively high protein content, the demand for bambara and its marketing is greatly hampered by the seasonal price fluctuations and the intra-annual price increases in general.

Although bambara marketing in Ghana links sellers and buyers and react to the current situation of supply and demand, it does not play its dynamic role in stimulating output and consumption. The failure of the agricultural sector to provide the necessary incentives for research into the improvement of bambara groundnuts has led to some traders travelling as far as Burkina Faso and Mali to purchase the nuts, resulting in high domestic prices. This could be attributed to the fact that the quantity of bambara groundnuts reaching the urban markets are not sufficient to maintain prices at low levels. Upward trends in food prices have been a common characteristic of the Ghanaian economy as evidenced in the consumer price indices presented in Table 1.

Table 1: National Consumer Price Index Numbers; 1997=100 (Food)

1989	1990	1991	1992	1993	1994	1995	1996	1997
7594	10642	11597	12800	15995	20135	32661	44345	53631

Source: *Quarterly Digest of Statistics*, 1998.

According to the MoA (1987), the marketing of foodcrops is quite a neglected area and with bambara groundnuts in particular, action taken to deliberately improve marketing is non-existent. This has acted as a major hindrance to any bambara development programme. Bambara production in Ghana is small scale and farmers tend to incur higher transaction cost than other larger production units, because the quantities of inputs they need and output they sell are smaller (Nyanteng, 1971). They are often less informed and have less bargaining power and also are faced with frequent price fluctuations, wastage due to poor handling and storage and poor transport systems. The present study seeks to redress these problems.

1.2 Objectives of the Study

This study forms part of a project on bambara groundnuts being funded by the Department for International Development's (DFID) Crop Post Harvest Research Programme (CPHP). The purpose of the study is to try and enhance food security through the improvements to bambara production. The project is a collaborative project between the Natural Resource Institute (NRI) of the University of Greenwich, U. K. and the Food Research Institute (FRI) of the Council for Scientific and Industrial Research in Accra, Ghana. Currently, bambara groundnuts provide livelihood opportunities for many people particularly females in the Upper East and West regions and also some parts of the Volta basin of Ghana. The findings of the research will be used to make recommendations concerning how to develop appropriate quality systems for the production and marketing of bambara groundnuts.

This report analyses the marketing of bambara groundnuts in Ghana and its specific objectives are:

i. To identify the deficiencies in the marketing of bambara groundnuts.
ii. To analyse how the marketing system works for bambara groundnuts.

There are five sections to this report along with four appendices. In the remainder of this introductory section, the justification and limitations of the study are outlined. The second section is a literature review of both published and unpublished work on bambara

groundnuts. The third section reviews the methodology as regards research design, methods and procedures, locations, data collection and sample size. The fourth section analyses and discusses the data collected. Topics discussed include details of the 153 traders interviewed (eg. gender, age), producers, retailers, storage, prices, transport, marketing structure, general and specific constraints facing them and future trends and expectations. Section five outlines some of the conclusions of the marketing survey. The two appendices provide a checklist of questions (App. 1) and a sample of the raw data (App. 2).

1.2 Relevance

Bambara groundnuts serve as an important pulse crop for many people of West Central Africa. Despite being ranked third most important grain legume after groundnut and cowpea in semi-arid Africa, bambara has not been accorded due attention in research, and in Ghana, average yields remain low, in the region of a few kilogrammes per hectare. Research on bambara groundnuts in Ghana, initiated in the mid 1960s was discontinued even though production at the farm level continued. However, farmers generally accord low priority to bambara groundnut and it is often planted after the major crops (Doku, 1996).

Bambara groundnut has received little attention of any kind and information about the crop in Ghana is very sparse. Improving the production and marketing of bambara groundnut in Ghana could be particularly valuable because diets in all parts of the country consist mainly of rice, root crops, yam and other cereals such as maize, sorghum and millet.

Marketing enables a person with some land to move from semi-subsistence to growing produce regularly for sale. It allows an increasing proportion of a country's population to live in cities and buy their food nearby and again, provides an incentive to farmers' income so that farmers form a growing market for domestic industry as well as earning foreign exchange to pay for essential imports. To encourage commercial production of bambara

groundnuts, the efficiency of the marketing system cannot be overemphasized. Marketing of food products is very important in an attempt to attain food self-sufficiency, food security, poverty alleviation and reducing malnutrition since it reduces the costs of food commodities to consumers and allows more to be purchased. It also increases the profits of producers and marketing agents.

Bambara marketing provides an interesting subject for study for a number of reasons. First, transportation is an important factor in food crop marketing because production is largely limited to the Northern savanna zones and some parts of the Volta and Greater Accra regions of Ghana. The groundnuts will then have to be transported to the urban markets notably Tamale, Bolgatanga, Techiman, Kumasi and Accra markets from these production areas. Big time wholesalers transport bambara groundnuts with other commodities such as cowpea and cereals with the observation that high transportation costs in the food crop trade protects these wholesalers from competition from small-scale wholesalers. This is because transportation costs of bringing the bambara groundnuts and other commodities from distant areas yield economies of scale to the larger traders (Nyanteng, 1969).

Secondly, storage is important in bambara marketing because of its seasonal harvesting. Harvesting is done between August and September in the coastal areas and between June and September in the savanna areas. There is little or no harvesting between October to April. The farmers and marketers who are mostly women have very little or no formal education. They use traditional methods to store the bambara groundnuts with no agrochemical, hence insect infestation appears to be predominant.

Most marketing studies on food crops in Ghana are on cereal grains and other legumes, with very little if none at all, on bambara. The dearth of empirical work on marketing of bambara groundnut and the fact that it is gradually being pushed to extinction though it is hardy, could withstand drought and thrive on marginal soils provide ample evidence of the justification for this study. While other crops assumed greater importance due to sustained

research input, bambara groundnut remained in limbo, sustained largely by tradition (Doku, 1996). It is hoped that this study will provide some information to assist policy makers to improve the production and marketing of bambara groundnuts in Ghana.

4.6 Limitations of the Study

The study assumes that a bowl of bambara groundnuts is equivalent to 0.13 bags and that 40 *olonka*[1] (American tin) make a bag of 62.5 kg weight. The study assumes that the rubber bowl is equivalent to the *olonka* though they differ in volume. The short duration of the study did not permit the inclusion of the Upper East region, where some bambara groundnuts are also produced. The timing of the report submission coincided with the production period of the bambara groundnuts so many of the traders involved in the bambara trade could not even be identified and interviewed.

The road to *Kpassa*, a major assembling point in the north of the Volta region was un-motorable so the traders in that market could not be interviewed. The study assumes that traders from *Techiman*, *Accra* and other urban markets travel to the important rural markets such as *Kpassa* to purchase the bambara groundnuts. Though interviews could not be conducted at *Kpassa*, some of the respondents stated that they sometimes travel to the *Kpassa* market to purchase bambara. The *Kpassa* market is assumed to have been covered.

As with all studies dealing with informal business activities, there can be problems in both collating and analyzing the data. In section three, the methodology used in trying to overcome some of these problems is outlined. In designing the questionnaire, the reluctance of many of these traders to provide detailed information on the profitability of their operations was also taken into account. The traders do not pay any salary to themselves and also do not keep any proper accounting books. They recollect most of the things from memory. In a typical market, almost all the traders tend to give similar answers for fear of being asked to pay some taxes in future.

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[1] One *olonka* is equivalent to six margarine tins of 500-gram weight each.

LITERATURE REVIEW

2.0 Markets

Markets are the means to allocate resources to ensure high value production and consumer satisfaction and also stimulate growth by promoting technological innovation, provide incentives to develop new sources of supply and new markets (Smith *et al.*, 1999). A properly functioning market for agricultural products is generally perceived as the best organizational structure to achieve more efficient decisions of producers, consumers and traders (Bardhan, 1990).

Until recently in Ghana, state involvement and private sector participation in markets have varied between commodities. Food crop marketing in Ghana is dominated by the private sector which handles more than 95 percent of the marketed surplus (MoA, 1987). The private sector is composed of a large number of atomized traders. Kamdar (1986) reports that larger producers in Pakistan, who are able to use the marketing channel of their choice, have tended to sell commodities direct to government procurement centers. Most producers are tied to sell to private traders in transactions interlocked with credit and input supply. Kamdar (1986) concluded that the effectiveness of measures for licensing traders, weights and measures, standardization of market charges and dissemination of information were reduced by collusion between traders and bureaucracy.

Liberalization of agricultural markets in Ghana has proceeded gradually and food contractors supply food produce in bulk to governmental and private institutions under agreed terms (MoA, 1987). Siddiqui (1979) and Abid (1980) assumed that traders have market power over producers when their studies of marketing in Sindh highlighted high margins as evidence that middlemen exploit producers. Mohammed (1985) asserts that between 1950 to 1970 less government intervention made it possible for the marketing system to accommodate increases in marketable surplus while maintaining adequate incentives for farmers.

Rural markets are important in most African and Asian countries. In India, 22000 periodic markets and 4500 regulated rural assembly markets exists serving about 60 million farm families; whereas Ghana has about 1000 markets with not less than 50 sellers (Abbott, 1986). However, in Indonesia and Malaysia, rural markets are rare and farmers sell mainly in their houses and by the roadside (ibid.).

In Ghana, the measure is used by most traders who handle cereals and legumes and it is not uncommon for a trader to sell the bambara at the original purchase price but because of the use of the measure as a unit still make quite a handsome profit from changes in the weight being sold (Hall, 1970). Prices, whether those received by farmers or charged to wholesalers, processors, and final consumers are the most important elements in the marketing system in influencing the contribution of agriculture to economic development. Major investments in the improvements of marketing infrastructure will be ineffective if the prices generated within the system are inefficient (Feldman and Ohene-Yankyerah, 1984).

The village and urban markets constitute the most important market levels in the Ghanaian food industry. Each serves as a link in a chain of institutions affecting the marketing process. Marketing charges link prices at each of these levels and consumers serve as the prime movers of the whole process. In a comparative study of African and Asian countries, Ahmed and Rustagi (1987) indicated that costs of marketing are high in Africa.

2.1 Demand, Supply and Consumer Preferences for Bambara

The compelling reason for the intensified concern over increasing the available supply of bambara groundnuts in the country has been the excess demand for the product as a result of low production levels and rapid population growth. According to Nyanteng (1998), a declining price period, low price period, increasing price period and high price period could be distinguished from the food price cycles. A recent study by Obeng-Asiedu *et al* (2000) shows that with the rapid urbanization in Ghana many people have resorted to fast

cooking foods such as cowpea which are used by most street food-vendors instead of bambara since it is cost effective to prepare a cowpea meal.

The importance of legumes in the diet for a nation to be healthy is well known. Consumption patterns evolve over long periods of time. In the case of foodcrops, cultural and technological influences have played important roles in fixing regional patterns of consumption. The Ghanaian economy is highly sensitive to small changes in agricultural production and food production in particular but Ghana's agricultural potential can be fully exploited in a systematic, cost effective and sustainable manner only if agricultural demand is driven by a strong domestic and foreign demand. Coudert (1984) concluded that demand for bambara groundnut in West Africa exceeds the present supply hence increased production would give farmers an additional source of income and improve the quality of the local diet, which often consists mainly of cereals.

Quality, price and the ability to deliver are regarded as the most important criteria by which buyers evaluate potential suppliers (Dempsey, 1978). All buyers emphasize the importance of the reliability of delivery (Hakansson et al, 1977; Ellram 1990) and satisfaction increases when non-coercive sources of power have been used (Frazier, 1983). This results in increased morale and greater cooperation between the channel members (Ganeson, 1994; Morgan and Hunt, 1994). A farmer's satisfaction with past outcomes will indicate equity in the exchange.

However, even if there is an expectation of repeat business, for a long term relationship to be established, respective buyers and sellers must trust the opposite party to fulfill their obligations (Hallen et al, 1991; Han et al, 1993; Morgan and Hunt, 1994). Heide and John (1990) indicate that long term buyer relationships are more likely to develop as the quantity of goods purchased increases and as the criticality of the purchased inputs increased. Krapfel et al (1991) stated that the criticality of the input captures the degree of technical or market substitution and its contribution margin. Relationships occur for the purpose of pursuing mutually beneficial goals and interests (Oliver, 1990).

2.2 Incomes and the Role of Women in Marketing

Real incomes in developing countries have risen by 50 percent since the 1950s, but distribution between and within these countries has been uneven with the World Bank putting the number of people below its poverty line at 1.1 billion earning $370 per year (World Bank, 1990). Populations continue to grow with a growth rate of 4 percent per annum in North Africa which makes them increasingly dependent on food imports (Abbott, 1993). Ghana also with a population growth rate of 3.5 percent per annum will have increasing difficulty in providing lasting food security.

Farmers are naturally inclined to think that any current system of marketing is costly in relation to the services given, and that all traders absorb too high a proportion of the final prices paid by consumers (Whetham, 1972). Nearly everywhere, women are busy turning small quantities of processed food and agricultural crops into cash or barter on an irregular and casual basis from their own homesteads. These sales often provide the savings and capital by which women acquire a greater stake in retailing their own produce. In Ghana, studies by Jiggins (1984) indicate that 80 percent of all traders and nearly all fish traders are women. These women marketers and traders engage in retailing as specialists, as committed even if part-time or seasonal participants. However, it must be noted that women's participation tends to be highest where production, marketing and trading have been least affected by commercialization and industrialization (FAO, 1993).

METHODOLOGY

This section discusses the methods used in analysing the data obtained from the survey. The approach adopted in this study includes graphical presentations and tables to present the results.

A food commodity marketing system in Ghana can be characterized by a flow chart representing product flows from producers to consumers passing through subsequent stages of various marketing channels. Campbell and Hayenga (1978) stated that it is feasible to analyse the interaction between changes in the environment of the commodity system and the performance of the system. Bambara marketing system includes several marketing channels just like any other commodity; consisting of actors supplying marketing services at different levels in the channel. At each level, spatially separated market, defined in this study as a physical area where transactions are concluded, may be linked with each other through arbitrage (Lutz and Tilburg, 1997). Apart from transport and other transaction costs, arbitrage will drive prices in different markets.

Market places can be part of marketing channels as well as spatial networks. A good performance of markets, as part of a marketing channel or spatial network is an essential condition for a proper functioning of bambara marketing systems in Ghana. Assuming a relationship between market structure, conduct and performance, the relevant elements of market structure, conduct and performance developed by Lutz and Tilburg (1997) include:

Elements of Structure	**Elements of Conduct**	**Elements of Performance**
■ Competition	cooperation	effectiveness of supply
■ Entry	integration	efficiency of supply
■ Market	strategies	cost effectiveness transparency
■ Standardization	services	market integration
■ Transaction costs	costs	equity

Following Lutz and Tilburg (1997), the present study discusses competition and entry, transaction costs, competition and prices, services, effectiveness and efficiency of supply as a means of achieving the objectives of the study.

3.1 The Sample

The survey covers the production areas in the savanna and coastal areas of Ghana and some urban markets. In the coastal areas, bambara groundnut is produced in some parts of the Adangbe District of the Greater Accra region notably Ada area and Adidome District in the Volta Region. Production in the savanna areas stretches to all the three northern regions. There is no production in the forest belt of Ghana. A total of 153 farmer-sellers and marketers were interviewed in the two zones with 77 respondents in the coastal areas and 76 in the savanna zone. Due to the scattered nature of production in the coastal belt, notably the Adangbe and Adidome Districts, any identified production village was selected and the farmer-sellers randomly sampled. In the northern parts of Ghana, Damongo, Tamale and Bawku districts were identified as places where bambara is grown. The farmer-sellers were also sampled randomly and interviewed.

At the market centres, due to fewer bambara groundnut sellers in the markets, every bambara seller was interviewed. This was done to ensure that the few traders in the bambara trade are covered to make it as representative as possible. The surveys were conducted in Tamale, Bawku, Kassei Junction, Mafi Kumasi and some rural markets where the few bambara wholesalers as well as traders were interviewed. At *Dzemeni* and *Kpassa*, also in the Volta Region, bambara was not on the market because it was out of supply at the time of the survey and traders and wholesalers could not be reached for interview. The study used agricultural extension agents from the Ministry of Food and Agriculture as enumerators and they were advised to handle only bambara groundnut sellers so as to give some accuracy to any information gathered. The survey took place during the months of June and early July 2000.

3.2 Data Collection

The questionnaire modules consist of open, half-open and pre-structured questions covering information on seller demographics, transportation, transaction costs, farmgate and market prices, market information, price structure, and constraints. Each interview took approximately thirty minutes per seller and they were conducted on market days at the market centres in the urban areas. At the rural areas, farmers who are sellers and traders who sell bambara on the market were interviewed in order to maximise the collection of data. In the Northern savannah areas, the market days follow a six-day cycle.

4.6 Data Analysis

Responses were coded and the Statistical Package for Social Science (SPSS) and Microsoft Excel were used to process the data. The statistical analysis involved simple pie charts, frequency counts, and percentages that are used to present the results and the relevant inferences made.

RESULTS AND DISCUSSIONS

In Ghana, the major players in bambara marketing are the producers, bambara traders, wholesalers, retailers and consumers. Most of the bambara sold in Accra are produced mainly in the Northern sector of Ghana, namely Northern, Upper East and Upper West Regions. In the southern sector of Ghana, some bambara is also produced in the Ada and Adidome Districts of the Greater Accra and Volta Regions.

4.0 Producers

The producers of bambara sell the groundnut to bambara traders in the producing areas from whom most of the retailers in the urban markets such as *Techiman*, *Tamale* and *Bawku* buy to sell directly to customers in the producing areas. The surplus is then sent to the urban markets for sale to traders who have come to buy them. The survey found that the mean area under bambara cultivation is 3 acres with a mean yield of 14 bags.

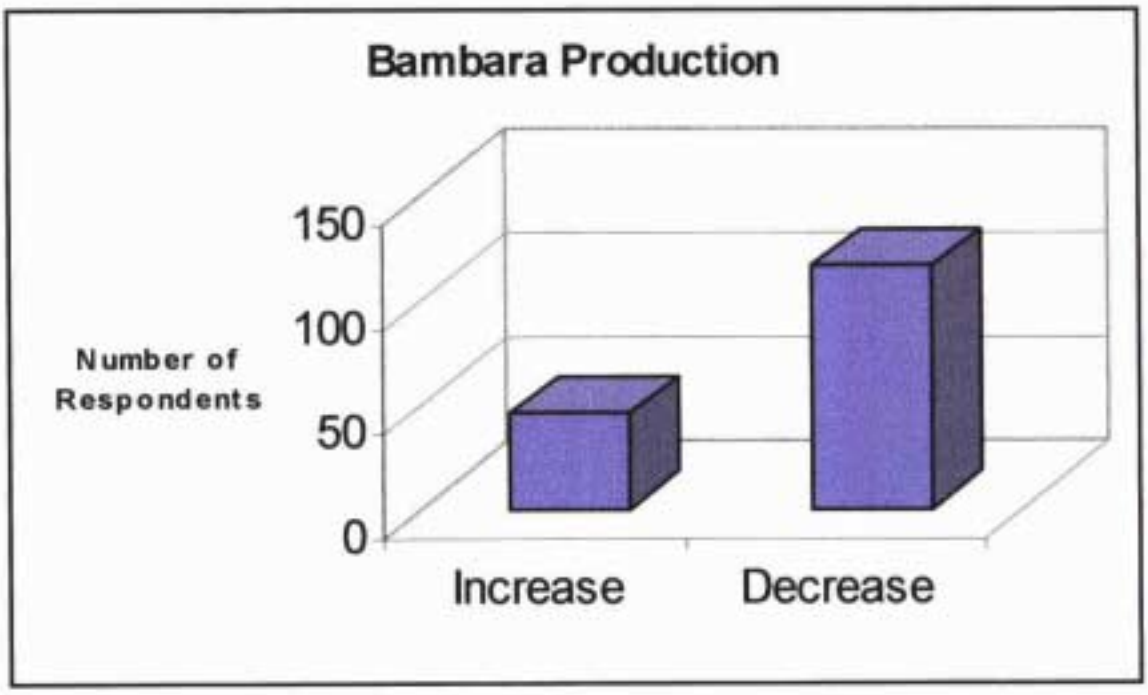


Figure 1: Trends in Bambara Groundnut Production

Source: Authors Computations Based on Data from Survey

The maximum number of bags produced by a farmer is 60 bags with a maximum acreage under cultivation being 25 acres. The study found that 75 percent of the produce is sold for cash and the remainder is consumed at home. The total acreage under cultivation in the survey areas was found to be 381 acres with a total production of 1262 bags annually (i.e. almost 80 tonnes). The results indicate that over the past three years, production has decreased (Figure 1). 72 percent of the respondents indicated that their production of bambara has reduced whilst 28 percent reported an increase. The respondents indicated that lack of inputs (33%) such as good seeds, high cost of labour; lack of land (27%) and reduced income from bambara production are some of the factors that led to the decrease in production.

4.1 Retailers

Retailing of bambara takes place in most of the urban markets such as *Kpassa, Kassei junction, Tamale, Bawku, Techiman* and the *Agbogbloshie* markets. Mainly market women, mostly of low educational level, do retailing in the market places. In these markets, the opportunity costs of trading are low since women have low earnings in other fields; traders move quickly in search of even small gains. The survey shows that 45 percent of the bambara traders have no formal education whereas 55 percent of those interviewed have some form of education (Table 2). Christians form the majority of these traders (53%) with Moslems and Traditionalists consisting of 27 percent and 18 percent respectively (Table 2). Bambara groundnut is usually sold alongside other commodities such as cowpea, groundnut, soybean and other types of beans. Female traders form 94 percent of those interviewed whereas only 6 percent are males (Figure 2).

The retailers use the *olonka* (American tin), rubber bowl and the margarine tin as common measures for bambara groundnuts. Most retailers have pushed in the base of these tin measures to maximize their margins. Larger measures are often used for traders who are buying large quantities and very small ones by retailers. Some traders have both types of measure where the large measure is used for customers and smaller ones for non-customers.

Table 2: Educational and Religious Background of Bambara Traders

Education		Religion	
No education	45%	Christian	53%
Elementary	42%	Moslem	27%
Secondary	1%	Traditional	18%
Others	12%	Others	2%

Source: Authors Computations based on Survey Data

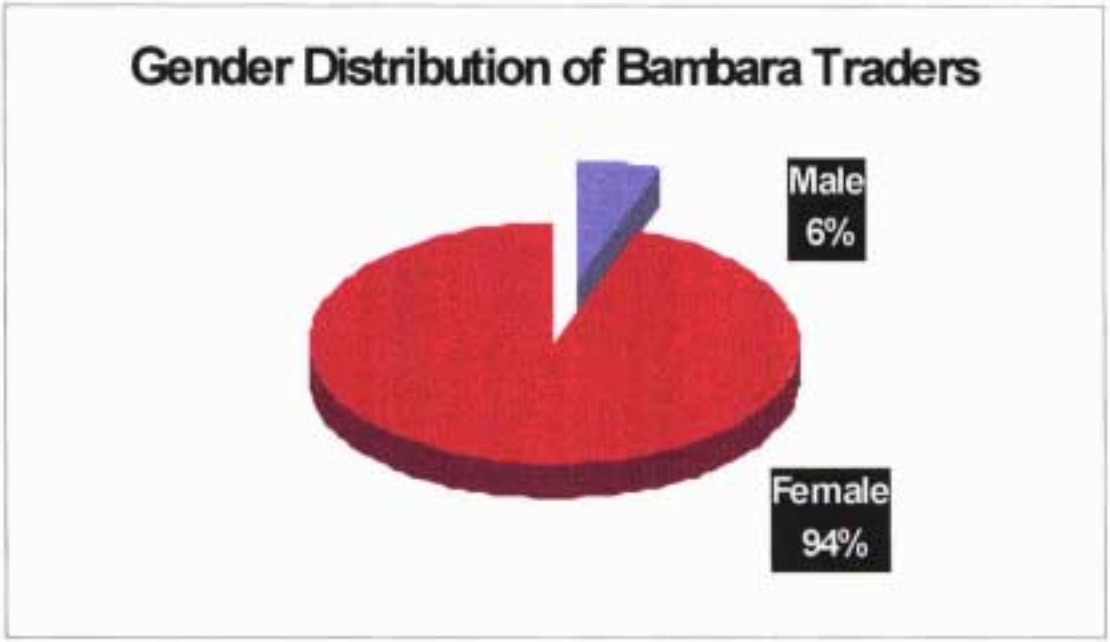


Figure 2: Gender Distribution of Bambara Traders

Source: Authors Computations Based on Data from Survey

Customer relationship develops after a series of transactions. Traders with customers usually serve their customers before attending to other buyers. Some farmers have customer traders to whom they sell their produce and this could range between two or more customers. This creates competition among these buyers. Many traders stick to a particular market to maintain this customer relationship thus ensuring reliable supply.

4.2 Competition and Prices

The day's price for a commodity will be fixed by the first trader who arrives at the market with the produce, a price which will be in line with the closing price of the previous market in that area and to which other traders align their price. Other traders quickly follow any deviation from this price by one trader so that most markets have many traders selling the same produce at the same price. Bambara groundnut is sold not by weight but by measure, which is a kind of bowl. Each trader's profit is very small and is usually derived from a minor adjustment made in the weight and quality of the produce. Bambara groundnuts may change hands several times in the course of the day according to fluctuating prices.

The prices of locally produced food exhibit distinct seasonal cycles which correlates closely with the high and low production seasons of the food crop in particular. Periods of price stability are inconspicuous, even over shorter periods. Seasonal changes in demand and supply associated with tradition have the strongest influences upon the bargaining which eventually determines the range of prices found at any one time. The low price period for bambara groundnuts in Ghana occur during the peak harvesting seasons of June to September. The highest price for bambara groundnut is between October to April.

The survey shows that supply and demand conditions determine bambara prices on the market. This form 52.3 percent of those interviewed; traders' margin forms 2 percent and mode of transportation forms only 1.3 percent. Individual traders influence prices in the markets (39.9%) with the traders association having a little hand in price movements (13.1%). The mean lowest price at the origin market was ¢40,000 (£4.44) per bag of 62.5kg and the mean highest price at the origin market was found to be ¢174,000 (£19.33) per bag of 62.5kg.

Bambara prices in the urban markets are extremely high and this can be attributed partly to the supply and demand situations whereby the supply has been trailing the rapidly increasing demand caused largely by the "neglect" of the crop due to the attention

researchers have devoted to cowpea. It is not on the list of crops prioritised by MOFA and the few farmers who produce it do so on subsistence. The survey shows that the mean highest price in the destination market is ¢242,000 (£26.89) per bag of 62.5kg with the mean lowest price in the destination markets being ¢100,000 (£11.11) per 62.5kg bag. Over the years, bambara has faced stiff competition from cowpea because of cowpea's good agronomic features and short cooking time. This combined with low production levels could be attributed for its high price.

4.3 The Marketing Structure

In the foodcrop marketing system, the basic price level for any commodity tends to be determined at the point where the produce enters the supply system, that is, the rural market, because of the relatively small processing which most farm produce undergo. The basic price level is the market clearing equilibrium price established by the forces of demand and supply. Once the basic value is established, it becomes the pivot around which the prices of the other grades and sizes and also for other locations are determined. There are generally several stages which comprise the distribution channel for bambara groundnuts. It is the primary wholesalers, secondary wholesalers, and retailers that are the critical links in the marketing system.

The activity encompassed within the distribution process from the time the bambara is harvested until they are sold at the retail market depends upon the state of the product. The present flow of bambara groundnuts from producer to consumer is one complex picture of inefficiency that has evolved over the years. The flow of goods along the marketing channel begins with the farmer selling his produce to the local or farm level buyer. Then the produce is passed on to the trucker-merchant who transports it to market centers such as Kpassa, Dzemeni, Techiman, Tamale and Bawku where it is sold to wholesalers. The latter deliver the goods to the retailers who in turn may pass on the product to another retailer who completes the final link between producer and consumer

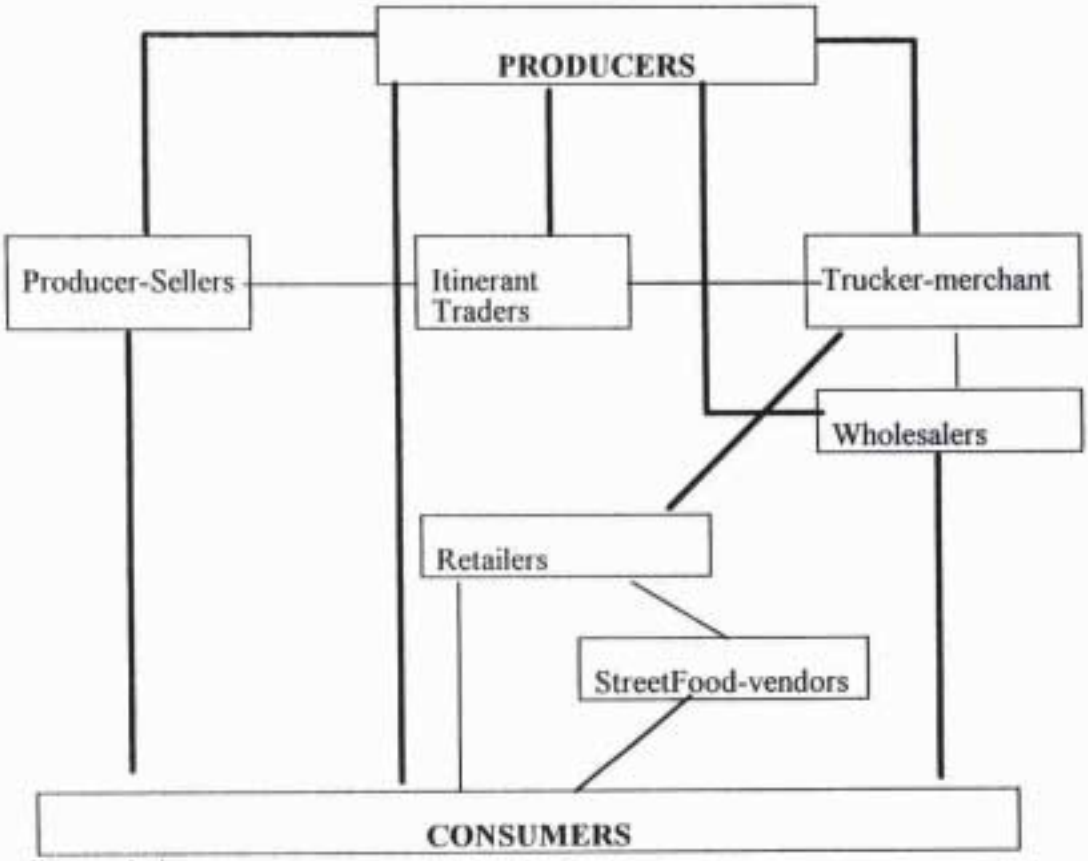
in the marketing channel (Figure 3). Three main streams of traders could be identified in foodcrop marketing. These are itinerant traders who operate within their own acquired geographical area.

He establishes direct contact with producers and makes himself well known to them by offering all types of services just to maintain the relationship. Commodity queens who are mainly wholesalers lead the market-based traders. The queens play a powerful role in the marketing process even to the extent of influencing prices paid to trucker-merchants delivering produce at the market and prices paid by final consumers.

The marketing of bambara groundnuts in Ghana falls under the traditional marketing system. This system exists purely for the marketing of foodcrops. Itinerant traders who could be trucker-merchants themselves are responsible for assembling, storage and transporting the purchased produce to the consuming areas where they are delivered to other traders at the current market prices.

At the consuming markets, market queens covertly make sure that final consumer prices do not fall below certain prices fixed by them. They ensure that food commodities that enter the market are distributed to market based traders for sale to the final consumers. Farmers also have a strong linkage with itinerary traders and the market based traders thus making the social aspect of marketing quite strong. Informally, there is an understanding with respect to the provision of credit and other social needs, market assurance and the process of buying (MoA, 1987).

Figure 3: Channel of Bambara Distribution



Source: Authors

4.4 Competition and Entry

Retail markets for foods and bambara groundnuts in particular operate with strong competition between buyers and sellers. Farmers and farmer's wives often take the bambara to the daily markets in towns or to the periodic markets in the villages which is held on a rotation of six days (Northern savanna zone) and weekly in the coastal belt. Trading in the markets is seldom restricted and entry is unrestricted with people moving between farming and trading according to the seasonal fluctuations in activity. Many people buy bambara groundnuts from the regular markets, buying in small units after much bargaining with sellers over the size of the measure sold for the conventional price. However, competition is probably not perfect. The bambara groundnuts in the markets are of varying quality and are inspected before purchase.

Buyers and sellers are often well known to each other and the final bargains reflect degrees of obligation as well as estimates of the equilibrium price. Knowledge of market trends is far from perfect as the survey results show that farmers and traders have limited or no information about prices and trade in other markets. The absence of regular and current information for bambara traders leads to markets within a few kilometers of each other showing markedly different prices for some length of time, before a few traders move their custom and thus bring about a coordination of prices. Sellers in the urban markets are probably served with information since traders travelling round their sources of supply become aware of trends elsewhere.

4.5 Role of Storage in Marketing

The storage function is performed by both farmer, trader, private and government sector. The government sector operates modern storage facilities. Bambara groundnuts, like any other food commodity, should be stored when prices are low, and sold in periods of scarcity when prices are high enough to make storage economic. This is to increase the income of farmers without necessarily inflating the price paid by consumers. A number of itinerant traders and wholesalers operate a number of storage rooms in the market centres. The survey results indicate that bambara traders store bambara in jute sacks in rooms and the producer-sellers keep their produce in barns. The traders in these markets do not pay rent for storing the bambara as they store all their commodities together in the rooms that attract a minimum fee of ¢500 per bag per week. None of the respondents could give the exact amount they pay on the bambara since it is stored together with other commodities in the store room.

The respondents also indicated that due to lack of capital, they are not able to store the bambara groundnuts with any agrochemical. They therefore resort to traditional practices such pouring moderately heated sand on the bambara groundnuts, sun-drying the beans daily and keeping the unshelled groundnuts in jute sacks. They stated that the beans could be kept in this way for about three months depending on the demand situation.

4.6 Transport

The road system in Ghana is relatively good between the capital and the regional capitals as well as some districts; but even then the link between Accra and some urban centres are in various stages of disrepair. The situation is worse on the roads linking the various rural producing areas to their district capitals. The feeder road system has been improved in these areas. The assembly points in the savanna zone are linked to the first class roads by second class roads, which are usually untarred and unmotorable during the rainy season. Some few feeder roads radiate from the marketing centres and these connect the market centres to some bambara producing villages. These feeder roads are motorable in the dry season (Figure 4). In the savanna zone, the primary markets are mainly reached by foot, donkey cart, and bicycle or by vehicle.

Consequently, the privatization of the petroleum industry in Ghana and the recent increases in petroleum prices has led to exorbitant transport charges. The survey shows that traders pay on the average, between ¢200 (£0.022) for those who use pull carts in the village markets and ¢4800 (£0.53) on a bag of bambara groundnuts transported to the urban market on board a minibus.

The survey indicates that the highest price paid by a trader to transport a bag of bambara groundnuts to the urban market, probably from *Kpassa* to Accra, which according to the traders, could take 3 days because of the bad nature of the road is ¢20,500 (£2.28). The survey indicates that 58 percent of the traders use the road to cart their produce from the assembly markets to the urban centres and also 37 percent of them use wooden mummy trucks whilst 11.7 percent use minibuses. In the rural areas, 48 percent of the farmers carry their produce on their heads and 11 percent own pull carts, which they use to cart their produce from the farm to the market centres. Others use different means of transport such as draught animals. The mean time it takes a trader to travel from the assembly point to the urban centre is 11 hours with the maximum time it takes being 72 hours. The mean distance travelled by a bambara trader was found to be 27 kilometers and the longest distance a trader travels is 300 kilometers.

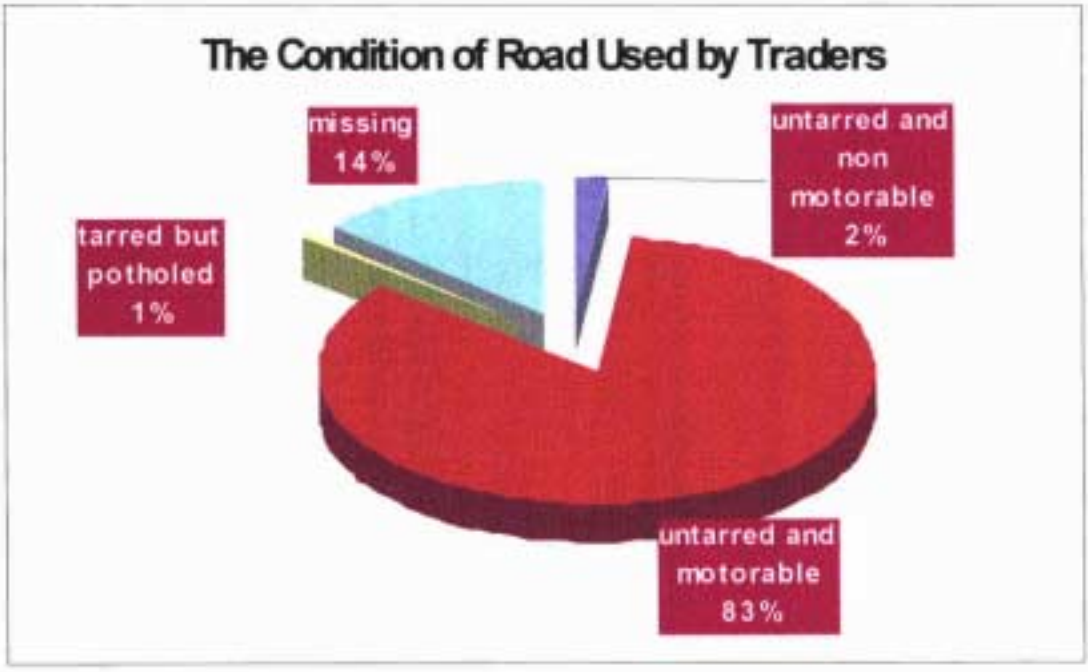


Figure 4: The Roads Used by Bambara Traders

Source: Authors Computations

4.7 Costs of Marketing

In the competitive market system, prices at each stage of the marketing process is determined by the interaction of demand and supply. At the village markets, wholesalers and retailers buy the bambara groundnuts cheap and sell in high priced markets by competing with each other to keep down their own incomes. The wholesalers sell a bag of bambara groundnuts at ¢192,000 (£21.33) to the retailers. The survey results reveal that the cost of distributing bambara groundnuts between farmers and the final buyers amounted to 28 percent of the retail prices for bambara because of high cost of transport from the markets (Table 3).

Table 3: Marketing Margins

Percent of Retail Prices of Bambara Groundnuts			
Retail Price at Accra	¢242,000		100
Retail Margin	¢25,200		10.4
Transport	¢18,400		7.6
Other Costs	¢6,400		2.6
Wholesale Margin	¢18,000	7.4	
			28.0
Producer Price	¢174,000	72.0	

Source: Author's computations based on data from survey of June-July, 2000.

The survey results indicate that the traders pay daily taxes at the market places. The mean tax paid by a trader per day is ¢1000 (£0.11). Other costs such as loading, unloading and wages amounted to ¢5400 (£0.60).

4.8 Market Information

The survey results indicate that traders and farmers have little information of government policy on bambara groundnuts but do not receive any extension services from the Ministry of Food and Agriculture. They are completely left on their own as regarding production and marketing. For instance, they receive information on prices from the market place (Table 4a).

The importance and regular availability of these information from their sources also indicate that of the traders (29 respondents) who have any idea of a government policy, 18.8 percent says it was not adequate whereas 11 traders forming 7.1 percent indicated that it was adequate. 114 traders (74 %) did not respond at all (Table 4b).

Table 4a: Sources of Market information[2]

Type of Information	Source	Percent
Market Price	Market Place	98.6
Quality	Own Observation	32.6
Road Condition	Market Place	97.1
Supply	Other Traders	38.8
Transport	Market Place	96.7
Government Policy	District Assembly	18.8

Source: Authors Computations based on Survey Data in June-July, 2000.

Table 4b: Sources of Market information[2]

Type of Information	Source	Percent
Market Price	Adequate	63.6
Quality	Adequate	33.1
Road Condition	Adequate	29.9
Supply	Adequate	31.8
Transport	Adequate	33.1
Government Policy	Adequate	18.8

Source: Authors Computations based on Survey Data in June-July, 2000.

The constraints identified by the traders include lack of capital from formal sources, lack of assistance from the extension officers of the Ministry of Food and Agriculture, high costs of production among others.

2 Percentages are based on different results

CONCLUDING COMMENTS

This study focused on the deficiencies in the marketing of bambara groundnut in Ghana from the socioeconomic point of view. The study found that the quantities of bambara groundnut produced in the country and the acreage under cultivation is very low as compared to the other food crops. Deficiencies were identified in the way the farmers receive their information as there is no assistance given to these farmers by the Agriculture Ministry.

The study further revealed that the storage methods practiced by the farmers and traders result in high losses of the groundnuts. The traders have to travel to far places to bring the beans to the urban centres and because of the poor condition of some of the roads, they spend days before they get to the destination markets. The study revealed that it is relatively expensive to produce and market bambara groundnuts as compared to other food commodities.

The study again shows that about six actors are involved in bambara marketing. These include the producers, itinerant traders, trucker-merchants, wholesalers, retailers and the final consumers. The study shows that 6 percent of the traders are males and these could be wholesalers. Women with no or little education mainly do retailing in the bambara trade and they use measures of different sizes. The constraints faced by the bambara traders and farmers are beyond their collective control since there is no association that caters for their needs and they also do not receive help in terms of research and improvements from any quarter. The constraints they face include long cooking time, storage losses, lack of funds, roads and transport services and lack of standardization.

Based on the findings from the study, the following recommendations are made:

i.) Rigorous research should be conducted into the agronomy of bambara groundnuts and how it can be improved to suit the tastes of consumers.

ii.) The Ministry of Food and Agriculture (MOFA) should accord some recognition to these farmers by extending their extension services to them. This will encourage these farmers and let them have a sense of belonging. Due to its

rich protein content and the fact that it could be exported, MOFA could start gathering information on the crop as it does for other crops.

iii.) The government has done so well in its road construction policies but the survey indicates that the roads used by the bambara traders are not good. They are unmotorable whenever it rains. Since harvesting of the crop also starts at the onset of the rains, steps should be taken to correct this situation.

iv.) A study should be conducted into the feasible ways of meeting the credit needs of bambara farmers and traders at reduced costs.

v.) Bambara groundnuts have the potential of becoming a major export crop and the government should take a serious look into its production and marketing in the country. This could provide employment for people, increase the incomes of farmers and traders as well as reduce food insecurity in the country.

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APPENDIX 1

MARKETING OF BAMBARA BEANS IN GHANA

QUESTIONNAIRE

A. SOCIO-ECONOMIC BACKGROUND AND GENERAL INFORMATION

i. Respondent Code Number .....
ii. Date of interview .....
iii. Name of respondent .....
iv. Name of town/village .....
v. District ..... Region .....
vi. Ecological zone .....

1. Sex: ☐
   Male = 1 Female =2

2. Age ☐

3. Educational Level ☐
   No formal education = 1 Primary/JSS/Middle = 2
   Secondary/SSS = 3 Others (specify) = 4 .....

4. Religion ☐
   Christian = 1 Moslem = 2
   Traditionalist = 3 Others (specify) = 4 .....

5. Marital Status ☐
   Married = 1 Single = 2
   Divorced = 3 Separated = 4
   Widowed = 5

6. Main occupation ☐
   Farming = 1 Hunting and gathering = 2
   Fixed salary based job = 3 Trading = 4 Others (specify) = 5 .....

7. Secondary occupation ☐

B. MARKETING

Marketing:

8. Do you sell bambara for cash or consume at home? ☐
   Consume = 1 Sell for cash = 2 Both = 3

9. If you sell for cash, what proportion do you sell? ☐
   All = 1 75% = 2 50% = 3 25% = 4 None = 5

10. On the average, how many bowls/bags of bambara can you sell in
    i. a day ..... ii. a week.....

11. How much do you realise on a bowl/bag? .....

12. What is the farm-gate price for a bowl/bag of bambara? .....

13. What is the highest selling price? .....
14. What is the lowest selling price? .....

15. What is the market price for a bowl/bag of bambara? .....

16. Are there lean seasons? ☐
Yes = 1 No = 2

17. In which months of the year are bambara prices high? .....

Transportation:

17. What mode of transportation do you use in moving the produce?

Stage of movement	Mode of transportation
Farm-gate to assembly point	
Market to urban market	
Market to assembly point	
Assembly point to urban market	

head load =1 Road = 2 River/lake =3 Draught animal = 4 Rail = 5 Others(specify) = 6 .....

18. What type of vehicle do you use in road transport? ☐
Articulated truck = 1 Tractor = 2 Minibuses = 3
Draught = 4 Cargo buses = 5 Wooden mummy truck = 6 Others (specify) = 7

19. Do you own or hire the vehicle? ☐
Own = 1 Hire = 2

20. What is the nature of the road you use in your bambara movement? ☐
Untarred and non-motorable during rainy season = 1
Untarred but motorable during rainy season = 2
Tarred but pot-holed = 3 Tarred in good condition = 4

21. In which town/market is your bambara sold? .....

22. How far is the town/market from your farm? .....

23. How long does it take from the farm-gate to the selling point? .....

24. Do you transport the bambara with other commodities? ☐
Yes = 1 No = 2

25. If yes, specify the type of commodity? .....

Market information

26. What is the type of market information available to you?

Type of information	Yes	No	Source
Market price			
Government policy			
Road condition			
Quality of bambara			
Supply condition			
Transport charges			
Others (specify)			

1. Market place 2. District Assembly 3. Agent 4. Transporters
2. MOFA 6. Farmers 7. Own observation 8. Other traders

27. How would you describe the information you receive?

Information	Adequacy	Regular availability	Relevance
Market price			
Government policy			
Road condition			
Quality of bambara			
Supply condition			
Transport charges			
Others (specify)			

1. Not adequate 2. Adequate 3. Readily available 4. Fairly available
5. Seldom available 6. Relevant 7. Not relevant

Transaction cost:

28. What were the major cost components in your transaction during the last two seasons?

Elements of cost	Type of transport		Condition of road	Distance	Cost/unit volume	
1. Transportation	Vehicle	Road			Peak	Lean
2. Storage	Type of storage		Period of storage		Cost/unit	
			Peak	Lean	Peak	Lean
3. Taxation	Type				Tax/unit	
4. Loading/unloadin	Cost/unit					

g						
	Loading			Unloading		
	Peak		Lean	Peak		Lean
5. Assistants	Type of labour			Sales/Commission/unit		
	Permanent	Temporal	Family	Permanent	Temporal	Family

Prices & price structure:

29. What are the purchasing price and selling price of bambara?

30. What are the lowest and highest price periods within a year?

Use table below for 29 & 30

Product	Purchasing price	Selling price	Highest price/month		Lowest price/month	
			Origin market	Destination market	Origin market	Destination market

31. How are prices determined in the markets you buy your products? ☐

Individual traders = 1 Traders association = 2 Co-operatives = 3
Government = 4 The market = 5 Others = 6

32. How are prices determined in the markets you sell your products? ☐

Individual traders = 1 Traders association = 2 Co-operatives = 3
Government = 4 The market = 5 Others = 6

33. What factors influence the determination of your price? ☐

Road conditions = 1 Transportation mode = 2 Distance = 3
Supply and demand = 4 Traders margin = 5 Others (specify

APPENDIX 2

SAMPLE DATA

Town sold	Distance	Time to Town sold	Transport Type	Storage Type	Taxtype	Tax/unit
	2 mile					
Kassei	2km	60min				
Tamatoku	1 mile	20min				
Tamatoku	2 mile					
Tamatoku	3 mile	15min	cart			
	2 mile					
Tamatoku	3 mile					
	2 mile	50min				
Kassei	1 mile	30min	cart	barn	market /road toll	500
Kassei	1 mile		minibus		market	500
Tamatoku	3 mile	60min	cart	barn	market	500
Tamatoku	2 mile	60min	cart	barn	market	500
Tamatoku	1 mile	30min	cart	barn	market	500
Tamatoku	0.5 mile	10min	cart	barn	market	500
Tamatoku	1 mile	30min	cart	barn		
	2 mile	45min				
Tamatoku	2 mile	45min	cart	barn		
Kassei						
Kassei	2km	30min				
Kassei	2 mile	90min	mummy truck		market	1200
Kassei	1.05km			storeroom	market	500
Kassei	3km	2hr	truck	storeroom	market	1000
	2 mile		truck	storeroom	market	400
Kassei	1km	60min	cart	barn	market	500
Kassei-Ada	3km	60min	minibus	barn	market	2000
Kassei-Ada	3km	60min	minibus	barn	market	2000
Kassei-Ada	3km	60min	minibus	barn	market	4000
Kassei	3km	60min	tractor	barn	market	500
Kassei	3km		tractor	barn	market	500
Kassei	3km	1 day	tractor	barn	market	500
Kassei	3km	1 day	tractor	barn	market	8000

Kassei	3km	1 day	tractor	barn	market	8000
Kassei	3km	60min	minibus	barn	market	500
Kassei-Ada	3km	60min	minibus	barn	market	2000
Kassei-Ada	3km	60min	tractors	barn	market	500
Kassei	3km	20min	tractors	barn		
Tamatoku	1 mile		minibus	barn	market	500
Tamatoku	1 mile	30min	cart			
Kassei	2.5km		minibus	barn	market	3000
Kassei-Ada	3km	60min	minibus	barn	market	1000
Kassei	2 mile	3 hour				
Kassei	0.5 mile	30min				
Kassei	2 mile	60min				
Kassei	3km	2 hour				
Kassei	3 mile	2 hour			market	
Kassei	3km	60min	tractor	barn	market	2000
Kassei	3km	60min	tractor	barn	market	2000
Kassei	1.5km	60min	tractor	barn	market	1500
Kassei	1km	60min	tractor	barn	market	2000
Kassei	3km	60min	tractor	barn	market	3000
Kassei	3km	60min	tractor	barn	market	1000
	3km	60min	tractor	barn	market	1500
	2km	60min	tractor	barn	market	1500
Kassei	3km	60min	tractor	barn	market	2000
	1 mile					
Tamatoku	1 mile	30min	tractor			
Kassei	3km	60min	tractor	barn	market	2000
Kassei	3km	60min	tractor	barn	market	1500
Kassei	3km	60min	tractor	barn	market	1500
Mafi-kumae	17km		tractor	sac	Dist. Ass ticket	400
Mafi-kumae	17km		tractor	sac	Dist. Ass ticket	400
Ho	35km		tractor	sac	Dist. Ass ticket	500
Mafi-kumae	17km		tractor	sac	Dist. Ass ticket	400
Mafi-kumae	17km		tractor	sac	Dist. Ass ticket	400
Mafi-kumae	17km		tractor	sac	Dist. Ass ticket	400
Mafi-kumae	17km		tractor	sac	Dist. Ass ticket	400

Mafi-kumae	17km		tractor	sac	Dist. Ass ticket	500
Mafi-kumae	17km		tractor	sac	Dist. Ass ticket	500
Mafi-kumae	17km		tractor	sac	Dist. Ass ticket	2000
Ada junction	100 mile	1 day	cargo bus		way bill	1500
Ada junction	100 mile	1 day	cargo bus		way bill	1500
Dabala	100 mile	1 day			way bill	1500
Mafi-kumae		1.5 day	cargo bus		market	2000
Ada junction	100 mile	1 day	cargo bus		way bill	1500
Alelo-bawku	19km	25min		in room		
Damongo	4 mile	4hr	tractor	sac and drum	market toll	1000
Garu	14km	3hr	minibus	jute sac	landing fee	500
Bawku	6km	3hr	minibus	sac and drum	market toll	400
Bawku	4km	2hr	minibus	sac and drum	market toll	200
Bawku	6km	3hr		sac and drum	market toll	500
Bawku			minibus	sac and drum	market toll	400
Alelo	1mile	30min		pot with ah		
Bawku	10km	30min	minibus	pot with ah	market toll	500
Bawku	6km	20min	minibus	in room	market toll	500
Bawku	14km	30min		jute sac	market toll	500
Alelo	6km	1hr	minibus	jute sac		
Alelo-bawku	2km, 14km	30min		jute sac		
Kpaluwega,bawku	cannot tell		ferry	poly sac on raised platform	market toll	500
Bawku	10km	4hr		jute sac on raised platform		
Damongo	3mile		tractor	fert. sac	market toll	1000
Damongo	2mile	4hr	tractor	sac	market toll	1000

Damongo	4mile	4hr	tractor	sac	market toll	1000
Damongo			wooden lorry	sac	market toll	1000
Damongo	3mile	1hr	tractor	fert.sac	market toll	1000
Damongo	5mile	2hr	tractor	drum	market toll	1000
Damongo			wooden lorry	sac	market toll	1000
Damongo	16mile	2hr	wooden lorry	wood ash in sac	market toll	400
Damongo	16mile	1.5-2hr	wooden lorry	sac and put in wooden platform	market toll	400
Damongo	15mile	3hr	wooden lorry	put in sac	market toll	400
Market of buipe and damongo	45mile,18mile	4hr,1.5hr	wooden lorry	put in sac	market toll	400
Damongo	12-14mile	1.5-2hr	wooden lorry	put in sac	market toll	400
Damongo	15mile	1.5hr	wooden lorry	put in sac	market toll	400
Damongo	19mile	2hr	wooden lorry	kept in sac on a platform	market toll	400
Wa and damongo	125mile;15mile	8hr;1.5hr	wooden lorry	sac	market toll	400
Damongo	16mile	1-1.5hr	wooden lorry	sac and put in wooden platform	market toll	400
Damongo	18-24mile	1day	tractor	neem liquid treatment	market toll	400
Damongo	3mile	2hr	tractor	fert.sac	market toll	1000
Damongo	5mile	4hr	tractor	fert.sac	market toll	1000
Tamale	30km	1day			market toll	200
Tamale	2km	1day			market toll	500
Tamale	3km	12hr			market	200

					toll	
Tamale	5km	1day			market toll	1000
Tamale	100km	1day		sundry	market toll	1000
Bolga	100mile	1day		sundry	market toll	500
Tamale	30km	8hr			market toll	200
Tamale	45km	1day			market toll	200
Tamale	don't own farm	1day			market toll	500
Tamale	2km	1day			market toll	200
Tamale	100km	1day			market toll	1,500
Tamale	30km	1day			market toll	200
Tamale	130km	1day			market toll	200
Tamale	60km	1day			market toll	200
Tamale	don't own farm	1day			market toll	200
Avelgu,tamale,tali,kimbrau	15mile	12hr			market toll	200
Tamale	1km	2day			market toll	200
Tamale	35km	12hr			market toll	
Tamale	50km	1day			market toll	
Tamale	12km	5hr			market toll	
Accra	cannot tell	2day		sundry	market toll	500
Accra	cannot tell	2day		jute sac	market toll	1,500
Accra	cannot tell	2day		sundry	market toll	1,500
Tamale	100km	1day			market toll	1,500
Tamale	60km	1day			market	1,500

					toll	
Tamale	30km	1day			market toll	1,500
Tamale	60km	1day			market toll	1,500
Tamale	100km	1day			market toll	1,500
Bawku				none	market toll	400
Garu	17km	3hr		jute sac	landing fee	500
Garu	17km	2hr		earthenware pot	landing fee	500
Garu	3km	1hr		jute sac	landing fee	500
Garu	15km	2hr		pot	landing fee	500
Accra	cannot tell	3day		pot	market toll	1000
Accra	cannot tell	2day		jute sacj	market toll	1000
Accra	>3000km	1week		jute sac	market toll	1000
Obuai	cannot tell	1week		sundry	market toll	1000
Bawku	1km					1000
Bawku	1.5km	40min		sundry		500
Bawku	3mile	1.5hr	donkey	sac		500
Bawku				none	market toll	400