

SOCIOECONOMIC IMPORTANCE OF PLANTAIN CULTIVATION IN GHANA

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ABSTRACT

A study was conducted to assess the socioeconomic importance of plantain production in Ghana. Data were collected from 300 farmers selected randomly from 20 villages using structured questionnaires. In addition 156 plantain sellers at transit selling points and mini-markets were interviewed. Secondary data were collected from Statistics, Research and Information Department of the Ministry of Food and Agriculture (SRID-MoFA) and other sources. Information obtained included household characteristics and household access to resources. Data from the survey were analyzed using descriptive statistics. The results showed that the mean age of plantain farmers was 47 years. The mean size of plantain farm of the respondent was two acres (0.8ha). Plantain cultivation contributed more income to female farmers than the male farmers. Increased research and extension activities have introduced improved production technologies to farmers hence contributed to the enhanced livelihood. Farmers get increased output per unit area and that production has been increasing at a faster rate than the area cropped. Plantain production experiences seasonal glut between October and December. The marketing of plantain involves a large number of producers and a few wholesalers who distribute plantain to consumers on a large scale. The market queens play a very significant role at the organized markets. Four main channels leading to the consumer were identified: producer > wholesaler > retailer; producer>retailer; wholesaler>agri-industry; and producer> agri-industry. The four main constraints to plantain production identified by the farmers were credit, weeds, diseases and labour in that order. The major marketing problems were low price for the produce and the buyers dictating the price.

Key words: *Musa*, Plantain, Production, Socio-economics, Marketing

INTRODUCTION

Ghana is the largest producer of plantain in West Africa and the second in Africa after Uganda and Rwanda (FAO, 2010). Plantain belongs to the non-traditional sector of the rural economy, where it is used mainly to shade cocoa and is an essential component of the diet. More than 90% of the cultivated area in Ghana belongs to small holder farmers. In the Ghanaian agricultural sector, plantain is ranked third after yam and cassava (FAO, 2010) and contributes about 13.1% to the Agricultural Gross Domestic Product (AGDP).

Plantain cultivation is of great socioeconomic importance in Ghana from the view point of food security and job creation. Plantain and banana are also very important sources of rural income (Ortiz and Vuylsteke, 1996).

Although plantain is a crop with permanent production, harvesting periods are influenced by external factors such as strong winds and rainfall. These production movements or periods in turn cause upward and downward price trends according to supply and demand volumes. Plantains are scarce on the market from May to August. The scarcity is due to the strong winds experienced at the beginning of the rainy season. During April/May the plants become dehydrated as a result of the

five months dry season. Plantains become abundant on the market from September to March with the peak in December-January.

As regards job creation, mechanized, traditional or inter-crop cultivation of one hectare of plantain generates 1.68, 0.39 and 0.19 permanent direct jobs per ha per year. In the light of this, it is estimated that one hectare of plantain generates an average of 0.75 permanent jobs (Rodriguez and Rodriguez, 2001). When set against the national cultivated area, this gives approximately 350,523 permanent jobs. This is equivalent of 70,000 families of five persons devoted to plantain.

The marketing of plantain is very difficult because of the dispersal of the production zones, the lack or poor conditions of the lines of communication with urban consumption centres and the irregular supplying in the market by wholesalers and middlemen who set the prices. In addition, perishable produce like plantain suffers from continuous deterioration resulting from poor post-harvest management. This aggravates loss of quality and quantity and thus affects the final price.

Plantain is more expensive on European markets than in North America. This is mainly the result of high transport costs and customs dues. Prices have been fluctuating around USD1.76/kg. Over the years plantain

from Ghana to the European market attracts a higher premium than from other producing countries. In the early 90s the price of Ghanaian plantain was US\$ 1.53 per kg over a 4-year period. The current world price of plantain is US\$ 1.91 per kg (Lescot, 2000). The current plantain price on the world market is in the fifth position after ginger (2.09/kg), yam (2.00/kg), pineapple (15.40/ctn), and coconut (11.57/bag) among the non-traditional export commodities transported by sea. The geographical location of Ghana places the country in a position to capture the European market compare to other exporting countries like Colombia, Ecuador, Venezuela and Costa Rica all in Latin American and Caribbean regions.

MATERIALS AND METHODS

The study was conducted in 2006 using data from primary and secondary sources on the production and marketing of plantain in Ghana. The primary data were collected from a survey conducted in two major plantain growing regions (Ashanti and Brong-Ahafo regions) in Ghana. Random sampling of farmers in selected major plantain growing villages was conducted. Prepared questionnaires were administered to randomly selected farmers and market women in selected markets in Brong-Ahafo and Ashanti regions of Ghana. In addition market women in transit and those selling at permanent locations along the Kumasi-Accra trunk road were also interviewed.

The survey involved four districts in Ashanti and three in Brong-Ahafo regions. In all, 20 villages were randomly chosen from all the villages in the selected districts. From these randomly selected villages, 20 plantain farmers were further randomly selected from each of the villages. In addition, 156 plantain seller on transit and permanent road side sellers were interviewed. A total sample size was 400 farmers and 156 plantain sellers. Information obtained included household characteristics, household access to resources (land, labour and capital), household objectives, production constraints, problems or constraints limiting production practices, marketing and assess to cost effective new technologies. Data from the survey analysed using descriptive statistics. Secondary data were collected from Statistics, Research and Information Department of the Ministry of Food and Agriculture (SRID-MoFA, 2006) and other sources.

RESULTS AND DISCUSSION

Majority (80%) of the farmers fell between 31 and 60 years with 34% were over 40 years old. The study however showed that only seven percent of respondents were below 30 years old and were into plantain production. The mean age of the respondent farmers was

about 47 years indicating that much older people were in the production of plantain than young people (Table 1). All the farmers have had longer experience in cultivating plantain (14.7years). The total number of plantain field each farmer had ranged between 1 and 10 and averaging 2.7. This suggested that farmers maintained their previous plantain farmlands in addition to establishing new fields. The mean size of largest plantain field was 0.8ha (2 acres) suggesting that most farmers were small-scale producers (Table 2).

The respondent farmers had large family sizes with most of the family members below 17 years. The mean family size was 9.4. The large family sizes can be attributed to the extended family system practiced in the areas. The large family size could also help as the labour force needed for the farming activities.

The yield of plantains fluctuated slightly around 8 Mt/ha from 1996 until about 2002 when it generally began to rise (Fig. 1). Production and yields have however, increased sharply to nearly 10Mt/ha since 2003. This indicates that farmers are getting increased output per unit area and that production is increasing at a faster rate than the area cropped. Furthermore, it indicates intensification of land use by plantain farmers. This could partly be attributed to the increased research and extension activities in introducing improved production practices to farmers. Nevertheless, as yields increase, excess production leads to glut that need to be absorbed through exports, increased consumption and processing into value-added products. Thus, marketing and post-harvest handling become important issues that must be addressed.

Production and area cropped to plantain have generally been increasing gradually in the regions of Ghana since 2000 (Tables 2 and 3). The Eastern Region has had the largest area put under plantain production in Ghana since 1996 (Table 3). This is followed by the Ashanti, Western, Brong Ahafo, Central and the Volta Region in that order (Table 3). The general trend is that the area put under plantain production has been increasing steadily depicting the increasing importance of the crop in these regions. This may also be due to the expansion in cocoa production as the crop serves as a shade plant for young cocoa plants. In general, the yields from the Ashanti and Eastern regions are much higher than those in the other regions.

Over a period of 6 years (between 2000 and 2005), farmers tended to receive higher prices for their produce between April and September peaking in August (Fig. 2). This may be attributed to the long dry period between December and February. The beginning of the rainy season is normally associated with strong winds resulting in stem lodging of the plantain plants. However, the bulk of the plantains are harvested between September and December. This therefore results in the

glut with its associate lower prices for plantains at this time because of excess supply to the market.

The study revealed that 73% of the farmers had knowledge about when low and high prices occurred but could do little to take advantage of such periods to maximize profits (Dankyi *et al.*, 2007). Plantain harvesting and sales have the same seasonal pattern indicating that they are sold as soon as they are harvested. Thus, the majority of farmers sell their plantain also in October and November. Fewer households harvest and sell plantain between March and May. Seventy percent of the farmers indicated that traders visited their villages once to thrice a week and 30% indicated four to seven times a week with the mean number of visits being thrice weekly. Getting traders to purchase produce from farmers was therefore not difficult. This could explain why transportation was not much of a problem to the farmers because traders came to their villages to purchase plantain quite often (Dankyi *et al.*, 2007).

Data on parameters like total domestic production of plantain, production available for human consumption and national consumption in Ghana are given in Table 4. A biological production of 85% is assumed for the production available for human consumption. There is a positive correlation between national consumption and the population. As the population increases so is the consumption of plantain. This means that plantain will remain an important staple for many Ghanaians in the years ahead. Plantain has, however, been having an increasingly surplus production since 2001 (Table 4). Therefore there is the need for value to be added to surpluses to extend the shelf-life. Considering the export and value added potential of plantain, these surpluses could be cosmetic. There is therefore the need for processing into various products to curtail the surpluses.

As plantain is a fruit that is generally eaten and marketed immediately, it has the marketing characteristics specific to all perishable foodstuffs whose production is complex and the distribution is difficult to organize rationally. The process involves a large number of producers and a few wholesalers who distributes plantain to consumers on a large scale. As the wholesalers are not numerous at a specific market, information about plantain moves between them rapidly, enabling them to agree among other things about prices and quantity to be put on the market. Furthermore, there are market queens in every market that regulates the quantity and the price. Often new entrants are not permitted to sell their produce if they do not belong to that market.

During the study it came out that some farmers harvest and conveys their produce from Brong-Ahafo and Western regions to Accra themselves. In other areas the farmers organize themselves into groups and send one person with the truck load of plantain to Accra. Others also sell to middlemen who buy at the farm gate. Most

plantain producers are small scale growers who are scattered and generally sell the fruits at the farm gate. Middlemen therefore play an essential role in the coordination of purchases of plantain, transport and sale, thus being able to pocket a larger proportion of the value added during the process.

The traditional markets consist of purchase centres, permanent and temporary (transit) markets. In order to define the conditions of negotiation given the heterogeneity of the fruits all the plantains must be present at the site of transaction. In recent times the crisis in Cote d' Ivoire has benefited the plantain industry in Ghana significantly. In former times the haulage of plantain from the transit markets was a major problem resulting in huge post-harvest losses. However with the crisis in Cote d' Ivoire, there is availability of haulage trucks from Burkina Faso and Mali traveling down south and help to convey the produce from inland to the coast.

Table 1: Descriptive characteristics of the sample

| Characteristic | Mini. | Maxi. | Mean |
|--------------------------------------|-------|-----------|-----------|
| Age of farmer | 22 | 100 | 47.1± |
| Years of education | 0 | 21 | 8.4± |
| Years of growing plantain in village | 1 | 75 | 14.7± |
| Total number of plantain fields | 1 | 10 | 2.7± |
| Number of fields planted in 2005 | 0 | 6 | 1.5± |
| Size of largest field in 2005 (ha) | 0 | 10 (25ac) | 0.8 (2ac) |

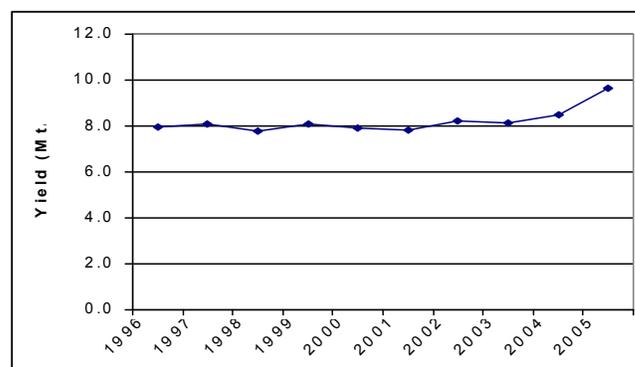


Fig. 1: Yield of plantain in Ghana, 1996-2005

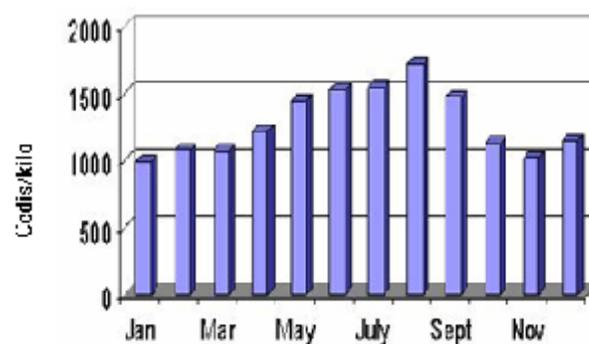


Fig. 2: Mean National Seasonal pattern of wholesale prices of Plantain, 2000 – 2005

Table 2: Production of plantain within the Regions of Ghana ('000 Mt)

| Region | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
|--------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| Ashanti | 435.0 | 435.0 | 476.3 | 531.3 | 584.4 | 568.7 | 606.0 | 607.9 | 600.6 | 1063.2 |
| Eastern | 855.0 | 818.1 | 817.0 | 758.9 | 556.8 | 672.0 | 705.6 | 700.2 | 757.5 | 788.9 |
| Brong- Ahafo | 173.9 | 189.4 | 218.5 | 278.7 | 295.4 | 310.2 | 387.8 | 432.3 | 458.1 | 630.0 |
| Western | 279.8 | 305.7 | 325.4 | 392.9 | 404.6 | 428.8 | 470.3 | 473.3 | 521.2 | 573.3 |
| Central | 49.9 | 41.9 | 47.7 | 52.9 | 58.5 | 60.3 | 66.9 | 70.4 | - | 468.5 |
| Volta | 29.8 | 28.2 | 27.8 | 31.4 | 32.7 | 33.8 | 42.1 | 44.4 | 43.5 | 48.0 |

Source: SRID, MOFA 2006

Table 3: Area under plantain production within the Regions of Ghana ('000 ha)

| Region | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
|--------------|------|------|------|------|------|------|------|------|------|-------|
| Ashanti | 54.7 | 54.7 | 57.9 | 59.5 | 63.7 | 66.2 | 66.3 | 66.4 | 65.6 | 118.6 |
| Eastern | 95.0 | 91.0 | 96.8 | 93.1 | 70.0 | 84.0 | 85.6 | 85.6 | 79.8 | 80.7 |
| Brong- Ahafo | 27.1 | 24.5 | 32.6 | 38.2 | 40.8 | 42.9 | 49.3 | 56.7 | 59.6 | 68.7 |
| Western | 38.8 | 40.9 | 44.8 | 47.9 | 54.0 | 55.8 | 57.0 | 57.5 | 57.2 | 61.7 |
| Central | 8.2 | 8.5 | 8.7 | 8.9 | 10.3 | 10.5 | 11.6 | 12.1 | 11.8 | 17.2 |
| Volta | 4.9 | 5.0 | 5.0 | 5.0 | 5.4 | 5.7 | 7.0 | 8.1 | 7.2 | 7.5 |

Source: SRID-MOFA 2006

Table 4: Estimated Domestic Plantain Supply and Demand

| Year | Total Domestic Production ('000Mt) | Production available for human consumption ('000Mt) | Per capita consumption (Kg/Annum) | Estimated National Consumption ('000Mt) | Surplus ('000Mt) | Population (Millions) |
|------|------------------------------------|---|-----------------------------------|---|------------------|-----------------------|
| 1996 | 1,823.0 | 1,549.6 | 91.5 | 1,486.8 | 67.8 | 17.7 |
| 1997 | 1,577.5 | 1,595.9 | 89.2 | 1,512.0 | 83.9 | 18.0 |
| 1998 | 1,912.8 | 1,625.9 | 91.8 | 1,528.8 | 97.1 | 18.2 |
| 1999 | 2,046.2 | 1,739.3 | 96.1 | 1,545.6 | 193.7 | 18.4 |
| 2000 | 1,943.9 | 1,652.3 | 88.8 | 1,562.4 | 89.9 | 18.6 |
| 2001 | 2,073.9 | 1,762.8 | 93.2 | 1,587.6 | 175.2 | 18.9 |
| 2002 | 2,300.0 | 1,995.0 | 100.2 | 1,629.6 | 325.4 | 19.4 |
| 2003 | 2,329.0 | 1,979.7 | 100.2 | 1,663.2 | 316.5 | 19.8 |
| 2004 | 2,381.0 | 2,023.9 | 101.8 | 1,764.0 | 259.9 | 21.0 |

Source: MOFA (SRID) 2004

The study revealed that marketing of plantain is becoming a cartel in the organized markets. The market queens play a very significant role at the organized markets. They determine who should sell on which day and if new entrants come in with produce from the farms, they are prevented from selling. The new entrants are compelled to sell the produce to the middlemen as he or she does not belong to the market structure. A price range is generally set in this type of transaction in order to avoid fluctuations that are too sudden and require produce classification in conformity with the types usually sold. This is sometimes causing serious post harvest losses on the markets. The farmers who bring in their produce from the farms become frustrated by the arrangement.

As everywhere, the study revealed that the national plantain market is liberalized with no protection

for the producers who are always smallholders. The market responds to the requirements of supply and demand but lacks a regulating body, which has contributed to the development of complex marketing channels. In this context four main channels leading to the consumer were identified: producer > wholesaler > retailer; producer>retailer; wholesaler>agri-industry; and producer>agri-industry.

Agri-industry: The agri-industry development of plantain processing in Ghana is recent. The study has identified about five industries that are currently processing plantains into fufu flour. The green fruits of False and True Horns are the preferred cultivars for processing as the fruits are large and have less moisture content thus high dry matter content. Unlike the French plantains, the False and True Horns are easier to slice into chips. Over the past five years the processing industries

have concentrated on fufu flour production and plantain chips. The chips are mainly for local consumption with minimal export; while the 'fufu' flour is targeted at the Africans in the diaspora. The plantain chips industry has generated several jobs on the local market. There are also several small scale processors for roasted plantain, deep frying of ripe plantain, chips, 'kelewele', 'kaklo' and 'tatale'.

Conclusion: Plantain production has great socio-economic importance in Ghana. However the youth are not getting involved in plantain farming. Plantain production is mainly the result of smallholder farmers with small landholdings and large families. Production per unit area has increased over the years as a result of research and extension activities. Plantain farmers are primarily older above forty six years old; who had minimal formal primary education. Future of the plantain industry may be at risk if younger farmers do not get involved. Research has contributed to the increase in production of plantain. Plantain production and its processing have a great potential to improve the socio-economic status of the farmers. Though markets are liberalized, producer protection from exploitation is necessary for the enterprise to reduce the risks involved in trade-off between crops or exit options to enhance food security and income. Therefore all efforts should be made to realize an enhanced production and efficient processing to elevate the social status of the farmers and improve the economy of Ghana as the crop has the great potential.

REFERENCES

- Dankyi, A. A.; B. M. Dzomeku, F. O. Anno-Nyako,; Alex Adu-Appiah, Gyamera-Antwi, (2007). Plantain production practices in the Ashanti, Brong-Ahafo and Eastern regions of Ghana. *Asian J. Agri. Res.* 1(1): 1-9
- FAO, (2010). (Food and Agriculture Organization). Food and agriculture indicators ESSA
- Lescot, T. (2000). The importance of plantains and cooking bananas in Africa: outlets for the subtropical zones. *INFOMUSA. The International Magazine on Banana and Plantain* 9(1): 25-28
- Ortiz, R. and D. Vuylsteke (1996). Improving plantain and banana-based system. In Ortiz, R. and M. O. Akoroda (Ed.). *Plantain and Banana. Production and Research in West and Central Africa. Proceedings of a Regional Workshop 23-27 September, 1995* pp ii-166.
- Rodriguez M. J. L. and S. A. Rodriguez (2001). Socioeconomic aspects of plantain cultivation in Colombia. *INFOMUSA. The International Magazine on Banana and Plantain.* 10(1): 4-9
- SRID-MOFA, (2006). Ministry of Food and Agriculture, Statistics, Research and Information Department (1992 –2005). 12pp