

# The current status of mango farming business in Ghana: A case study of mango farming in the Dangme West District

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## ABSTRACT

Mango (*Mangifera indica* L.) is a crop which is assuming great economic importance in Ghana. There is limited empirical information on the current status of the mango farming business to justify the growing interest in the crop. The purpose of the study was to identify the major characteristics and the perceived constraints and prospects of the mango farming business in Ghana. Based on a case study of mango farmers in the Dangme West District, it was found that mango farming business in Ghana is male dominated, and predominantly practised as monoculture by small to medium scale holders, with Kent and Keitt as the major varieties grown. The main and trustworthy sources of mango planting materials are the Ministry of Food and Agriculture (MoFA) and private seedling producing farms that collaborate with MoFA. Fluctuating market price of the fresh fruit, pests and diseases, especially the mango fruit-flies, and inadequate funds were found as major constraints to most mango farmers. Nonetheless, the mango business is perceived to have good prospects because the crop has high demand and good local and export market that can improve and, thus, with support from stakeholders, including government, NGOs and industry, the crop can become a big export produce for Ghana.

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## Introduction

Mango (*Mangifera indica* L) is one of the economically important crops in Ghana. It is considered one of the best fruits in the world market due to its special qualities, especially, in carotene, delicious taste, excellent flavour, beautiful colour and attractive fragrance (Arya, 2004). The crop account for approximately half of all tropical fruits produced worldwide, and by FAO estimate, worldwide production is nearly 35,000,000 t (FAO, 2011). Africa's contribution to this is

only 2.5 million tonnes, representing about 10 per cent of the fresh mango and 11 per cent of the processed. In Ghana, the crop is gaining popularity as one of the major non-traditional fruits for export. Thus, it is being promoted to become a major potential foreign exchange earner in the next 5-10 years.

Ghana's favourable climate for the production of fruit and its proximity to the European market gives it a comparative advantage in the production of fresh mangoes, and logistical advantage for air and sea shipment

of the fruits for export. The government and the private sector have realised this comparative advantage, and are doing everything to support mango production to meet the high export and local demand as fresh fruits, and processed products including mango jams, dried fruits, flavours and juice. For example, the Integrated Tamale Fruit Company is assisting farmers through out-grower schemes and GLOBALGAP certification to produce and export organic mangoes from Northern Ghana. To this end, the company expects 6,000 t of organic mangoes each year from 2015, with an export valued of US \$3,300,000.00. According to the Jaeger *et al.* (2010) between 2001 and 2008 mango export from Ghana to the European Union (EU) increased from 62 to 1,098 t (from € 107,291 to € 2,417,928 in monetary value), giving Ghana 0.5 per cent of the market share of EU's mango import, and the trend is expected to continue.

Currently, there is growing interest and pressure on potential farmers to take up mango production in the savanna regions of the country, based on the perception that it is an economically viable enterprise. But interestingly, there is very little empirical information specific to Ghana that supports these claims by politicians and the media, to inform decisions made by potential mango farmers, horticulturists and agricultural policy makers on the issue.

The general objective of the study was to describe the status of the mango farming enterprise in Ghana based on a case study of the Dangme West District, which is a major mango growing area in Ghana. The specific objectives were to describe the characteristics of the mango farmers, and to identify the challenges and prospects of the mango

farming business in the country. The intent is to provide empirical information on the status of the mango farming business in Ghana, which hopefully, will inform production and policy decisions by government and stakeholders including farmers in their effort to promote sustainable mango production in Ghana.

### Materials and methods

To provide a better understanding of the current status of the mango farming enterprise in terms of the farmers involved, their challenges and the prospects of the enterprise, a case study research approach was used. The Dangme West District was purposively selected as a case study area because it is a major mango growing area in Ghana. The district is characterised by transitional forest-savanna vegetation with an average rainfall of about 1200 mm, conducive for flowering, fruit formation and development of mango. The area is one of the few guaranteed of a double harvest in a year, the major (May – July) and minor (October – November) seasons compared to the savanna regions in northern Ghana (Aboagye, 2009). It also has several farmers and viable mango farmers' associations that could provide valuable information on the crop. It is also the most accessible, and the researcher understands, and speaks the local language of the people, which is an added advantage for rapport building and ensuring reliability of data.

For an in-depth study of mango farming in the study area, five major mango growing communities were initially selected from the district. These include Dodowa, Ayikuma, Agomeda, Afienya and Asutsuare. From these communities, 45 mango farmers out of a population of 125 who were members of

Dangme West District Mango farmers Association were randomly selected for the study based on proportionate sampling procedure (Table 1). Semi structured interview schedules were used for data collection. The data collection lasted for 4 weeks, from January 22 to 19 February 2010. Qualitative and quantitative data were collected and analysed with descriptive statistics including frequencies and percentages.

TABLE 1  
*Mango Farmers Sampled for the Study*

<i>Community</i>	<i>Number of farmers Sampled farmers</i>	
Dodowa	22	8
Ayikuma	40	14
Agomeda	47	17
Afienya	8	3
Asutsuare	8	3
Total	125	45

## Results and discussion

### *Background characteristics of the mango farmers*

The results showed that mango farming in the study area is done mainly by men (Table 2). Out of 45 informants who participated in the study, about 89 per cent were men. This is not surprising because plantation crop production in Ghana is dominated by men. The reason being that a plantation crop such as mango requires a large span of farmland, high initial capital, and labour which Ghanaian women generally lack (Duncan & Brants, 2004). However, there is high women presence in the distribution and marketing of the mango fruits locally.

The results also indicated that a great proportion of farmers (62.2%) in the mango

production business in the study area are adults in their middle ages (40-59 years); there is, however, a growing interest by the youth in the business. Despite the major problem of the youth in Ghana in acquiring the necessary initial capital and land to enter cash crop production (FAO, 2004), the results showed quite a substantial proportion (29%) of young farmers (20-39 years) engaged in the mango production business. Interestingly, unlike in the other cash crops, the farmers in mango production business have higher levels of education. About 78 per cent of them have a minimum of secondary school level education with some (15.6% ) having tertiary level education. Additionally, most (80%) of these farmers are full-time mango growers and have been in the business for over 6 years (Table 2). The three most important reasons the farm-

TABLE 2  
*Characteristics of the Mango Farmers in the Study*

<i>Characteristics</i>	<i>Frequency</i>	<i>Percentage</i>
<i>Sex</i>		
Male	40	88.9
Female	5	11.1
<i>Age ( years)</i>		
20 – 39	13	28.9
40 – 59	28	62.2
> 60	4	8.9
<i>Educational level</i>		
Non-formal	1	2.2
Primary	9	20.0
Secondary	28	62.2
Tertiary	7	15.6
<i>Level of occupation</i>		
Full-time	36	80.0
Part-time	9	20.0
<i>Years of experience</i>		
1 – 5	9	20.0
6 – 10	25	55.5
> 10	11	24.5

ers gave for engaging in mango farming were that the enterprise is 1) low risk and, thus, offer a better security, 2) profitable in terms of net returns, and 3) easy to maintain.

#### *Farming system used in mango production*

Just like most cash crops cultivated in Ghana, monoculture is the farming system used by mango farmers in the study area. This is a system of farming where only one type of crop is cultivated on the same piece of land for many years (Acquaah, 2005). However, at the early stages of growth, the mango is inter-cropped with maize, yam, cocoyam, tomato, plantain and pepper which are the main food crops grown in the area. This is important to the farmers as they claimed the practice helps them maximise the use of the land while the mango trees are young, and can enjoy a clean farm as the food crops are regularly maintained at no extra cost to the mango business. Moreover, the study revealed that farmers use the income from the food crops to support the mango production business in terms of purchasing labour and other necessary inputs.

Majority (77.8%) of the mango farmers operate on small (< 4 ha) to medium (4 – 8 ha) scale in the study area (Table 3). Only few (18.2%) farmers are growing the crop on a large scale basis (> 8 ha). The study showed that five main mango varieties are grown commercially in the study area. These include Kent, Keitt, Palmer, Springfield and Haden. The study revealed that the farmers cultivate only one or a combination of varieties. However, majority (68.9%) of them grow two or more with Kent, Keitt and Palmer as the most popular varieties in a decreasing order of preference (Table 3). The Kent is large and oval, with an aver-

TABLE 3  
*Characteristics of the Mango Farming System used in the Study Area*

<i>Characteristics</i>	<i>Frequency</i>	<i>Percentage</i>
<i>Farm size</i>		
< 4 ha	15	33.3
4 – 8 ha	20	44.5
> 8 ha	10	22.2
<i>*Varieties grown</i>		
Kent	41	91.1
Keitt	33	73.3
Palmer	14	31.1
Springfield	6	13.3
Haden	8	17.8
<i>Number of varieties grown</i>		
One variety	14	31.1
Two varieties	17	37.8
More than three varieties	14	31.1
<i>*Source of seedlings</i>		
Personal nursery	13.3	
Ministry of Food and Agriculture	29	64.4
Private farms	28	62.2
Association of Mango Farmers	6	13.3
Friends	1	2.2
<i>Frequency of harvesting (per year)</i>		
Once	2	5.0
Twice	40	87.5
Not yet harvested	3	7.5

\*Multiple responses: the total percentage may be more than 100.

age weight of 0.57 kg. When ripe, the skin is orange-yellow and blushed slightly with deep red. The flesh is yellow-gold in colour, juicy and fibreless. The Keitt is the largest commercial mango variety with an average weight ranging from 0.79 kg to 1.36 kg. It is oval and remains green when ripe, with slight dark red or yellow colour. The yellow-gold flesh is juicy and fibreless except close to the seed. The Palmer is also large (0.3 – 0.8 kg), and when ripe, the skin is orange-yellow and blushed red with pale bloom. The flesh is dull-yellow and firm with very

little or no fibre. In the view of the farmers, cultivating more than one variety satisfies the diverse customers' needs and as such ensures better market and income.

The sources of mango planting material (seedlings) available to farmers in the district are from the Ministry of Food and Agriculture (MoFA) in the district, the Association of Mango Farmers in the district, private nurseries, and farmers' own nurseries. A majority of the farmers buy their mango seedlings from MoFA (64.4%) and private nurseries (62.2%) with the explanation that seedlings from these two sources are usually of high quality (Table 3). The farmers indicated that acquisition of mango seedlings for cultivation is not a problem in the study area because they are available from the various sources and, even so, the farmers can easily raise their own with the assistance from MoFA extension officers, who provide technical assistance in grafting the seedlings. Most of the farmers (87.5%) said they harvest their mango fruits twice each year, except two, who claimed to harvest only once a year. This is expected, given that most of the farmers grow the Kent variety which fruits twice in a year – January to March and May to August.

#### *Major constraints of mango farming*

The study revealed that mango farmers in the study area are confronted with a number of problems. The most common among these are fluctuating local market price of fresh fruit, incidence of pests and diseases, lack of capital and high cost of inputs. The rest are lack of processing and storage facilities, theft, labour cost for farm maintenance, unfavourable weather conditions and bush fires in a decreasing order of popularity (Table 4).

The farmers mostly sell the mangoes in the fresh fruit state. But, just like most agricultural crops in Ghana (FAO, 2004; Karlan *et al.*, 2010), the price fluctuates between very low to high especially during main and off seasons of mango. Price fluctuation which is usually beyond the control of farmers makes their income uncertain and can make a significant difference in how much a family earns for the year. According to Karlan *et al.* (2010) this situation can make farmers unwilling to take on additional risks by borrowing and making long-term investments due to this uncertainty. However, capital is an essential input for the production of any agricultural commodity including mango. Lack of funds makes farmers unable to buy the necessary inputs which they claim to be expensive, and expand and maintain their farms. The farmers in the study explained that they use their own personal saving or borrow from friends, family and money lenders for their mango business. The advantage of informal credit is that the provision of the loans is relatively faster although often more expensive compared to the banks (Macpherson & Agyenim-Boateng, 1991).

TABLE 4

*Constraints of Mango Farmers in the Study*

<i>Constraints</i>	<i>Frequency</i>	<i>Percentage</i>
Fluctuating local market price of fresh fruit	30	66.7
Pests and diseases	26	57.8
Lack of capital	24	53.3
High cost of inputs	19	42.2
Lack of processing and storage facilities	12	26.7
Theft	8	17.8
Labour cost for farm maintenance	8	17.8
Unfavourable weather condition	6	13.3
Bush fires	5	6.7

High lending rates have scared many potential mango farmers from taking loans from the financial institutions. However, there is promising development in mango production business in the country with industry (e.g. the Integrated Tamale Fruit Company) and NGOs (e.g. ADRA) involvement with micro-credit and out-grower schemes.

Mango diseases and pests are other serious threats that confront farmers in the mango industry in the study area. The farmers isolated the mango fruit fly (*Diptera tephritidae*) as their major economic important pest. The larvae or maggot enters the mango fruit and feed on the pulp from inside. A common mango disease indicated by the farmers is anthracnose (*Colletotrichum gloeosporioides*). This is a major fungal disease of mangoes and a great threat to the mango industry, which when not control can lead to postharvest losses and ruin an otherwise high quality mango fruits. The disease can affect all parts of the mango plant and reduce yield (Gupta & Satish, 2008).

#### *Prospects of mango farming*

A greater proportion of the mango farmers (60%) who participated in the study indicated that there is ready market for the fruit, and they are satisfied with the price offered to them by buyers (Table 5). At the time of the study, a kilogram of mango fruit was sold at 60 Gp and a tonne at Gh¢600.00. The buyers are wholesalers, retailers, processors and consumers with most of them (86.7%) selling their fruits directly to retailers. The farmers claim prices offered by wholesalers are relatively low compared to the others. Only about a quarter (26.7%) of the farmers could make direct contact and sell to processors who process the fruits into mango juice

TABLE 5  
*Prospect of Mango Farming in the Study Area*

<i>Factors</i>	<i>Frequency</i>	<i>Percentage</i>
<i>Market availability</i>		
Ready market	27	60.0
No ready market	15	33.3
Yet to sell fruit	3	6.7
<i>Satisfaction with price offered</i>		
Satisfied	27	60.0
Not satisfied	15	33.3
Yet to sell fruit	3	6.7
<i>*Market channel</i>		
Retailers	39	86.7
Wholesalers	18	40.0
Processors	12	26.7
Direct sale to consumers	4	8.9
Yet to harvest	3	6.7
<i>Level of profitability</i>		
Very profitable	29	65.0
Profitable	14	30.0
Moderately profitable	2	5.0
<i>Perceived future of the industry</i>		
Very bright	37	82.2
Bright	8	17.8

\*Multiple responses: the total percentage may be more than 100.

and squash.

Although a substantial proportion of the farmers (33.3%) said there is no ready market for the fruit and are not satisfied with the price, they all made the point that there is available market and better price for the fruit during the off-season for those with varieties such as Kent that fruits twice a year or have their fruits keeping long on the tree. Consequently, all the farmers based on their experiences in terms of input and income perceived the mango farming business as profitable. Invariably, despite the numerous constraints in the mango farming business, the farmers said it has bright future. The increasing government and other stakeholder

interest in the mango farming industry is, therefore, not a misplaced priority.

### Conclusion and recommendations

The findings suggest that mango farming in Ghana is an emerging enterprise in the last 10 years, given that most of the farmers have spent between 1 and 10 years in the business. The business is more attractive to educated middle age men, which could be due to the large farmland required, some technical knowledge which requires some level of education for appreciation, full-time commitment, high labour and initial capital which most women in Ghana lack.

The study suggests that mango production in the country is done on monoculture basis mainly by small to medium scale producers, who grow mainly Kent and Keitt varieties among others including Palmer, Springfield and Haden which they harvest twice annually. The findings also suggest that the main and trustworthy sources of mango planting materials to farmers are the MoFA and their collaborating private nurseries.

Fluctuating local market price, incidence of pests and diseases, lack of capital and high cost of inputs are the most common challenges confronting the mango farmers. The less common challenges are lack of processing and storage facilities, theft, labour cost for farm maintenance, unfavourable weather conditions and bush fires. Despite the constraints in the mango farming business in the country, the study suggests that it has prospects because the crop has high demand and market and, moreover, there is a growing interest and support for its production by government and private sector organisations including NGOs.

To sustain farmers' interest and sustain-

able development of the mango enterprise in Ghana, it is important that industry, NGOs and other stakeholders including government – MoFA, should help create the enabling environment that ensures that the menace of pests and diseases, especially fruit-flies are minimised, and prices of mango products especially the fresh fruit are stable. Also, policies and systems should be developed to make capital, farmland and sustained market available, to enable potential farmers including the numerous educated youth and women to enter into the mango farming business.

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