

**Full Length Research**

# Temporal Production Trend for Selected Non-tradable Staples in Kassena- Nankana East District of Upper East Region of Ghana: The Case of Major Cereal Food Crops

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This study examines the production trend for maize, millet and rice in the Kassena Nankana East District between 2001 and 2013. The production of maize starts to increase between 2001 and 2002 and a marginal decrease (-3%) between 2002 and 2003 and reduce drastically (-51%) between 2004 and 2005. Production for millet starts to decrease between 2001 and 2005 and a marginal increase (84%) between 2009 and 2010 and reduced drastically (-78%) between 2010 and 2011. The production of rice starts to decrease (-52%) between 2001 and 2010 and a marginal decrease of production from 40,000Mt to 10,000Mt between 2012 and 2013. The lowest production of maize was in 2013 (10,000Mt). On the other hand, rice and millet production recorded maximum of 45,000Mt and 12,000Mt between 2011 and 2009 respectively. The area allocated for maize and rice cultivation consistently remained above 20,000ha and maize reaches its highest peak of 30,000ha and rice 25,000ha. The rate of growth also remained stable for millet from 2001 to 2009. The trends reflect the relative importance of the crops in the Ghanaian food system.

**Keywords:** Production, trend, cereals, marginal, guinea savannah

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## INTRODUCTION

Agriculture is the backbone of the Ghanaian economy and a major foreign exchange earner. It contributes about 35% GDP, employs 55% of the population on a formal and informal basis and contributes about 45% of all export earnings. With a land area of some 240,000 square kilometers, Ghana produces a variety of crops in its three climatic zones, which range from dry savannah in the north through transitional to wet forest, which run in east-west bands. Annual rainfall varies between 800mm

and 2,400mm, generally decreasing from south to north and from west to east (Ghana National Commission for UNESCO, 2015).

The agricultural sector is made up of five major sub sectors-food crops, livestock, fisheries, cocoa and forestry. The aim of the sector is to ensure food security and facilitate the production of agricultural raw materials for industry and agricultural commodities for export (Zakaria et al., 2014). Agriculture is predominantly

practiced on small-holder; family-operated farms of 6.2% in 2009, driven largely on account of good rainfall patterns, good growth in the cocoa sub sector and by extension of the land under cultivation, suggesting that the sector can indeed be a driver of growth when the conditions are right. The forestry and logging sub-sector grew by 3.5% while the fishing sub-sector grew by 5% (Ghana National Commission for UNESCO, 2015).

Ghana's agricultural production meets only 50% of domestic cereals and meat needs, 60% of domestic fish consumption and less than 30% of the raw materials needed for agro-based industries. The level of self-sufficiency in food items varies from about 30% rice to 92% for maize. The main food crops grown in the country include cassava, yams, plantains, maize, rice, peanuts, millet and sorghum (Zakaria et al., 2014).

Maize is a heavy feeder and a top staple cereal crop in sub-Saharan Africa. In the past two decades, maize has spread rapidly into the moist Savannas of West Africa, replacing traditional cereal crops such as sorghum and millet particularly in areas with good access to fertilizer inputs and markets. In the West Africa moist Savannas, higher radiation levels, lower night temperatures and a reduced incidence of diseases and insect pests have helped to increase maize yield potentials compared with traditional areas for maize cultivation (Kamara, 2013).

Cereal (maize, millet and rice) production in the Savannas is faced with several production constraints which limit productivity. Poor soil fertility, drought combined can reduce on farm yield by over 70% even with the use of high-yielding varieties. Land-use intensification in the Northern Guinea Savanna has resulted in serious land degradation and nutrient depletion (Oikeh et al., 2003). Nitrogen is the nutrient most deficient in the soils and it most often limits cereal yield (Carsky and Iwuafor, 1995). Unfortunately, due to high cost and poor infrastructure, the availability of N fertilizers is limited.

The problem of poor soil fertility in the Guinea Savanna is compounded by recurrent drought at various stages of crop growth. For maize, drought at the flowering and grain-filling stages can cause serious yield losses (Grant et al., 1999). This indicates that farmers' fields are rarely characterized by only one biotic stress. It would therefore be desirable to increase the tolerance of crops to several stresses that occur in the target environment (Kamara, 2013). This study examines the production trend for maize, millet and rice in the Kassena Nankana East District between 2001 and 2013.

## MATERIALS AND METHODS

### *Description of the study area*

The Kassena Nankana East District lies within the

Guinea Savanna woodlands. It is one of the nine Districts in Upper East Region. The district is generally low-lying. The main type of soil present within the district namely, the Savannah ochrosols and groundwater laterite. The northern and eastern parts of the district are covered by the Savannah ochrosols (porous, well drained, loamy and mildly acidic and interspersed with patches of black or dark-grey clay soils), while the rest of the district has groundwater laterite (are developed mainly over shale and granite and covers approximately 60% of the district land area) (MoFA, 2015).

### *Data Type, Source, Sampling and Analysis*

A descriptive analysis of production trends was carried out using food production estimates for selected food crops from Ministry of Food and Agriculture, Kassena Nankana District of Ghana between 2001 and 2013 for three major cereals which include maize, millet and rice and cultivated land areas in hectares (Ha) between 2001 and 2013 for the three cereal crops. These food items were selected because; they account for a large share of overall household food budgets in Ghana. At the national level, cereals constitute the highest share of the overall food budget in all localities (Fearson, 2013) and descriptive statistics was used in describing the socio-economic characteristics of household. Secondary sources include published and unpublished information about the study area and from the internet.

## RESULTS AND DISCUSSION

The population of the people from 2000 population and housing census was estimated to be 79,187. The sex composition of the districts population favors female. The female population forms a little over one-half of the total population of the district. The female population was estimated to be 40,940 representing 51.7% while the male recorded 38,247 representing 48.3% of the population (MoFA, 2015). The age of the household below 15 was estimated to be 9,504 representing 12% while age above 65 was estimated to be 69,683 representing 88%. The labour employed include family estimated to be 47,512 representing 60% while casual labour recorded 31,675 representing 40% (Table 1)

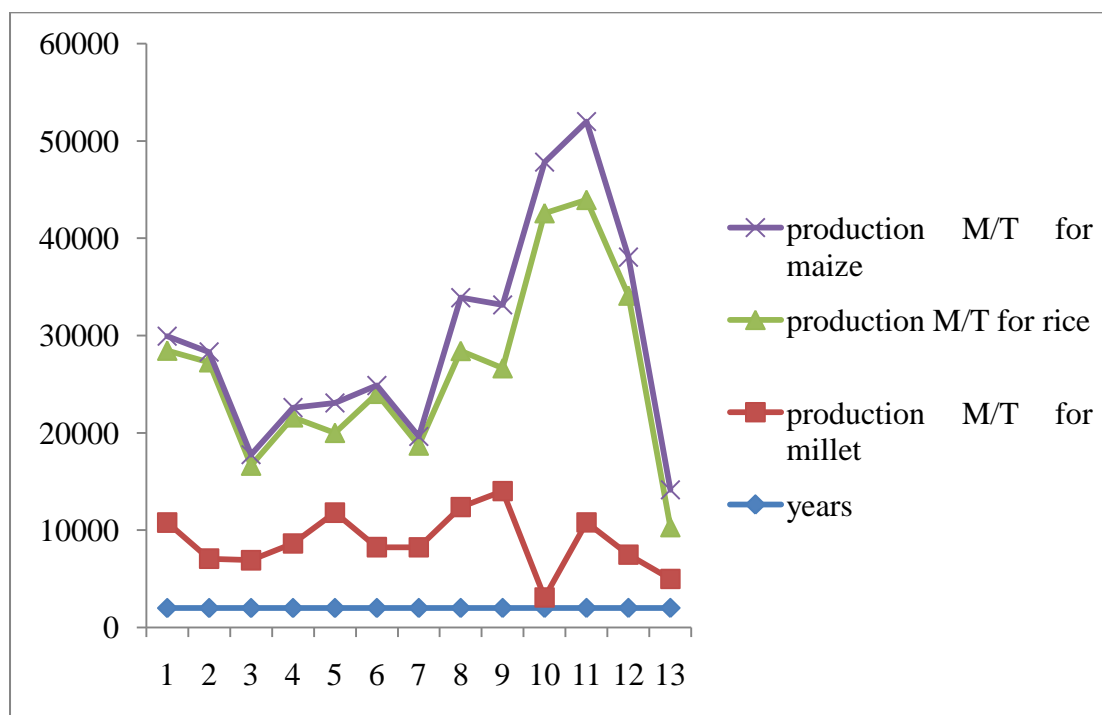
### *Production Trend for the Selected Food Crops*

Figure 1 below shows the production trend for the selected food crops in Kassena Nankana East District of Ghana between 2001 and 2013 which include maize, millet and rice and the x-axis represents the production year and y-axis represents production in metric tons It

**Table1.** Personal and household characteristic of household

Socio-economic characteristics of household	Frequency	Percentage
<b>Gender</b>		
Male	38,247	48.3
Female	40,940	51.7
<b>Age</b>		
Below 15	9504	12
Above 65	69,683	88
<b>Labour</b>		
Family	47,512	60
Casual	31675	40

Source: MoFA, 2015

**Figure1.** Production trends for the selected food crops in Kassena Nankana East District of Ghana (2001- 2013).

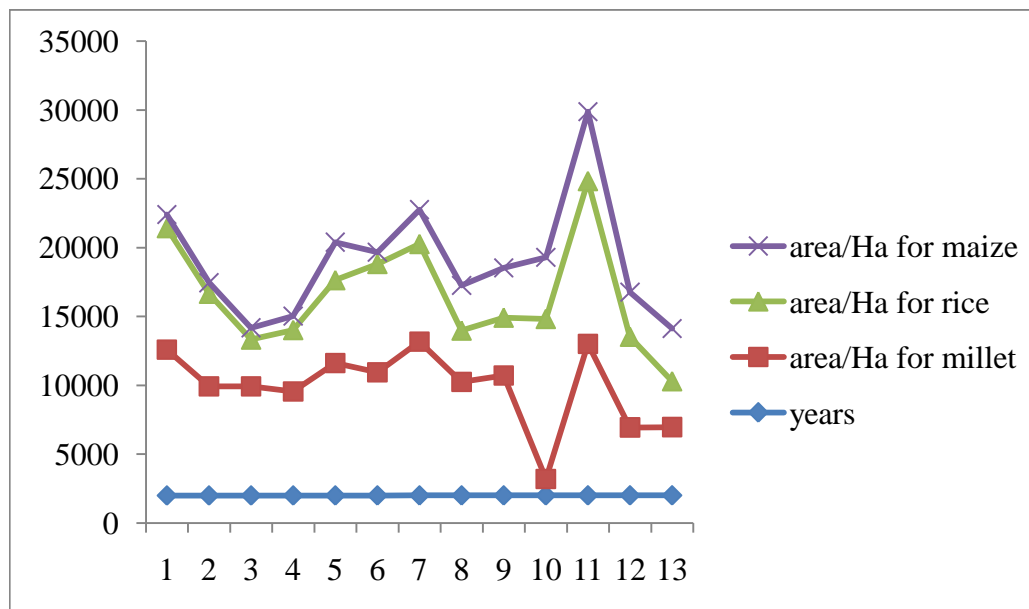
can be seen from the Figure 1.

The production of maize starts to increase between 2001 and 2002 and a marginal decrease (-3%) between 2002 and 2003, (-5%) between 2006 and 2007 and reduced drastically (-51%) between 2004 and 2005, (-71%) between 2007 and 2008 and marginal increase (34%) between 2011 and 2012 and marginal decrease (1.5%) between 2012 and 2013.

Production for millet starts to decrease between 2001 and 2005 and marginal increase (84%) between 2009

and 2010 and reduced drastically (-78%) between 2010 and 2011 and a proportionate increase (30%) between 2012 and 2013.

The production of rice starts to decrease (-52%) between 2001 and 2010 and a marginal decrease of production from 40,000Mt to 10,000Mt between 2012 and 2013. The lowest production of maize was in 2013 (10,000Mt). On the other hand, rice and millet production recorded maximum of 45,000Mt and 12,000Mt between 2011 and 2009 respectively. The trends reflect the relative



**Figure 2.** Trends in area cultivated for the selected food crops in Kassena Nankana East District of Ghana (2001-2013).

importance of the crops in the Ghanaian food system. The decrease in maize, millet and rice production could be attributed to poor fertility, drought, land degradation and nutrient depletion.

### **Trends in Area Cultivated for the Selected Food Crops**

Figure 2 shows the trend in area expansion for maize, millet and rice in Kassena Nankana East District of Ghana between 2001 and 2013 and the x-axis represents the production year and y-axis represents area cultivated in hectares. The area allocated for maize and rice cultivation consistently remained above 20,000ha and maize reaches its highest peak of 30,000ha, rice 25,000ha and millet above 10,000ha. The rate of growth also remained stable for millet between 2001 and 2009. There is marginal decline for millet (-11%) between 2006 and 2007 and (-12%) decline between 2004 and 2005 and reduced drastically (-80%) between 2009 and 2010 while increasing for maize between 2010 and 2011 and an increase for rice between 2010 and 2011.

### **CONCLUSION AND RECOMMENDATION**

The study reveals the production and area trends of the selected food crops from Kassena Nankana East District of Ghana between 2001 and 2013. The production of maize starts to increase between 2001 and 2002 and

marginal decrease (-3%) between 2002 and 2003 and reduced drastically (-51%) between 2004 and 2005. Production for millet starts to decrease between 2001 and 2005 and an increase (84%) between 2009 and 2010 and reduced drastically (-78%) between 2010 and 2011. The production of rice starts to decrease (-52%) between 2001 and 2010 and a decrease in production from 40,000Mt to 10,000Mt between 2012 and 2013. The lowest production of maize was in 2013 (10,000Mt). On the other hand, rice and millet production recorded maximum of 45,000Mt and 12,000Mt between 2011 and 2009 respectively. The area allocated for maize and rice cultivation consistently remained above 20,000ha and maize reaches its highest peak of 30,000ha and rice 25,000ha. The rate of growth also remained stable for millet between 2001 and 2009. The trends reflect the relative importance of the crops in the Ghanaian food system.

In view of the findings, there is the need for the district to take advantage and increase production for both domestic and external markets.

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