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Economic value of Maize (*Zea mays* L.) in Nigeria and its impacts on the global food production

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Abstract

The study surveys the economic value of Maize (*Zea mays* L.) in Nigeria and its impact on global food production. The result analysis proves maize to be of high economic value in Nigeria, contributing massively to global increase in crop production. The crop has shown ability to be used in combating global food shortages. Data of this survey presented that production of maize in Nigeria has raised the standard of living, providing income to smallholder farmers and increased foreign exchange earnings. Utilization of maize in Nigeria ranges from; food, medicinal, pharmaceutical including industrial uses. Increase in maize production across Nigeria has greatly increase land utilization, where more arable land are been covered for the production of this important food crop, in-order to feed the ever-growing world population and as a measure for food/nutrition security, especially in developing countries like Nigeria.

Keywords: Economic Development; Food Security; Global Food; Maize Utilization; Zea Mays.

1. Introduction

From time immemorial Agriculture has always been a means of survival for humanity, providing food, cloth and shelter, in-addition to the huge foreign exchange earnings derived from it. 65% of the Nigerian populations are employed by the agricultural sector. However, the Nigerian agricultural production has been low, failing in part by not fostering economic development due to it declining status, especially in the last two decades, and even worse with the discovery of oil in the country.

The gradual deterioration of agricultural sector is one of the factors resulting in global food shortages, forcing the government to increase her food importation bills. This eventually necessitated the Nigerian government to formulate different programs/policies aim at raising agricultural production with a focal point on the locals, especially the smallholder farmers who produce 90% of the gross agricultural output in the country [1], producing grains, cassava, cocoyam, yam, plantain, sweet potato including horticultural crops [2].

Grains crop produce in Nigeria ranges from; maize, rice, cowpea, soybean, sorghum including millet [3]. Food and Agricultural Organization [4] data indicated increase in maize production in Nigeria, in part because of the plant ability to thrive in different ecological zone within the country. Maize is one of the most important grains in the world. The crop is consumed as staple food in Nigeria, accounting for about 43% calorie in the diet of an average Nigerian [5]. Several studies on maize production has pointed-out the crop increased across all agro-ecological zones of the country. The crop has been utilized by food processing industries, pharmaceutical, herbal including medicinal sectors. The crop was reported by Ayeni [6] to be used as local 'cash crop', indicating that 30% of land has been devoted to maize cultivation. Increase in maize production to 1 – 3 hectares in any farming system was reported by Ogunsumi et al. [7] to be able to combat hunger in household, in-addition to increase food production especially in

Africa. Increase in maize production from 612 thousand tonnes to 70195 thousand tonnes has been reported by Alabi and Esobhawan [8], representing 1000% increase. About 561397.29 hectares of arable land in Nigeria has been put into maize production with increase in the crop price, pointing to the importance of maize in the country's economy.

Maize is usually been intercropped, especially among the subsistence farmers in semi-intensive system of farming. Survey by Eneh and Onwubuja [9] presented maize mixed cropping as a means of better utilization of land and increase in annual crop output, when compared to maize mono-cropping.

The large hectares of land been devoted to maize production indicates the potentials of the crop in fighting global food shortages. Report by IITA [10] indicated maize production at 8 million tons in Nigeria. Annual production of maize in Nigeria accounts to a value of 5.6 million tons [11]. Hartmans [12] findings revealed that maize is cultivation to 1 million hectares in Nigeria, out of the 9 million hectares cultivated in Africa, presenting Nigeria as one of the exporter of maize and the largest African producer of maize, contributing to increase production of crops to feed the fast-growing human population, especially in developing countries like Nigeria

2. Materials and methods

2.1. The study location

The study was carried out in Obubra, southern Nigeria, location of the Faculty of Agriculture and Forestry, Cross River of Technology (CRUTECH), Nigeria, Obubra is on latitude 6° 06' N and longitude 8° 18' E in the rainforest zone of Nigeria. Obubra is characterized by a mean annual rainfall distribution at 2250 mm – 2500 mm with annual temperature range at 25°C – 27°C.

2.2. Methodology

The study surveys data of maize production, total grain produced, percentage of maize grain, area planted to maize and price of maize from Central Bank of Nigeria from 1990 to 2003.

2.3. Utilization of maize in Nigeria

Maize is utilized in multitude of ways which vary according to what the user intends. For instance, maize grains are prepared either by boiling or roasting as paste or as popcorn, eaten all over

Africa, especially West Africa. Maize grain can be processed into traditional Nigerian meal like pap, 'tuwo', 'donkunnu', 'massa', 'cous cous' and 'akple'. Medicinal uses of maize has been surveyed by Abdulrahman [13], where the silk can be used to treat gonorrhea. Infusion from stigma of maize inflorescence can be used for treatment of urinary tract disorder. 80% carbohydrate, 10% protein, 3.5% fibre, 2% mineral has been reported to be among the nutritional benefit derived from maize consumption [14]. Industrial utilization of maize including wet-milling has been surveyed by Watson [15].

Table 1: The Percentage Contribution of Maize to Total Grain Production, Economic and Global Food Improvement in Nigeria in Thousand Tones from (1990 – 2003)

Year	Maize	Total Grain	% of Maize	Area Planted to Maize (Ha)	Price of Maize (N/ton)	CPI 1990 = 3.459
1990	5,768.00	19725	29.2	211740	3000	3.459
1991	5,810.00	20464	28.4	263000	4000	5.068
1992	5,840.00	21590	27.1	676000	6000	8.002
1993	6,290.00	21780	28.9	693200	5500	11.746
1994	6,902.00	22041	31.3	925400	13000	20.177
1995	6,931.00	24776	28	898600	15500	26.465
1996	6,217.00	24872	25	912000	20000	28.556
1997	6,285.00	25798	24.4	905300	25000	30.565
1998	6,435.00	27082	23.8	908660	30000	32.465
1999	6,515.00	27450	23.7	908865	35000	34.225
2000	6,491.00	31554	20.6	928530	35000	36.177
2001	6,592.00	29988	22	935300	35000	37.175
2002	6,698.00	30755	21.8	940000	35000	39.445
2003	7,019.50	32497.4	21.6	940000	36000	40.02
SUM	89,793.50	360372.4	35.8	11046595	298000	353.545
Average	6413.82	25740.89	25.41	789042.50	21285.71	25.26

Source: Central Bank of Nigeria [16]; Ogunsumi, et al. [7]. Official exchange rate (where ₦135 = 1US\$).

Number of year = N, where N = 14,

Where, $\frac{\text{SUM}}{N}$ = Average Value.

3. Results and discussions

Data presented in (Table 1) indicated that the production of maize has greatly increased the economy of the nation, with the highest price of maize (N/ton) been sold at 36, 0000, hence presenting the crop has having the potential to increasing income of local farmers, apart from generating huge foreign exchange earnings for the country, this finding agrees with the findings of Ayeni [6], where the researcher reported the crop been used as a local cash crop for income generation.

Result of this survey also presented a huge increase in the cultivation of maize compared to other crops like cassava, thereby agreeing with the research findings of Hartmans [12], where the experimenter reported Nigeria as been the highest producer of the crop in Africa.

It could be said that maize production increases as the year increases, this can be observed in the data presented in (Table 1), where area of land devoted to maize production as at 2003 (94000) stands above 1990 (211740), hence, presenting the fact that as the days goes by, increasing cultivation of maize could be expected, this partly owing to the fact that the crop is easily adaptable to all agro-ecological zones of the country, apart from the fact that the crop is been used to combat food storages, food insecurity and global hunger. This fact is in accordance with the research findings of Ogunsumi [7], where the researcher stated that maize could be used to fight household hunger and food crises, especially in

Africa where human population is always on the increase, in-addition to contributing to increase global food production.

Result of the study can be used to predict increase in the cultivation of maize, especially as human population increases, and as the crop is been used as one of the major crops grown to combat global food shortages/food insecurity.

Table 2: Average of Analyzed Data, Presenting the Status of Maize Production in Nigeria

Year	Maize	Total Grain	% of Maize	Area Planted to Maize (Ha)	Price of Maize (N/ton)	CPI 1990 = 3.459
1990 - 2003	89,793.50	360372.4	35.8	11046595	298000	353.545
Average	6413.82	25740.89	25.41	789042.50	21285.71	25.26

Source: Analyzed survey data.

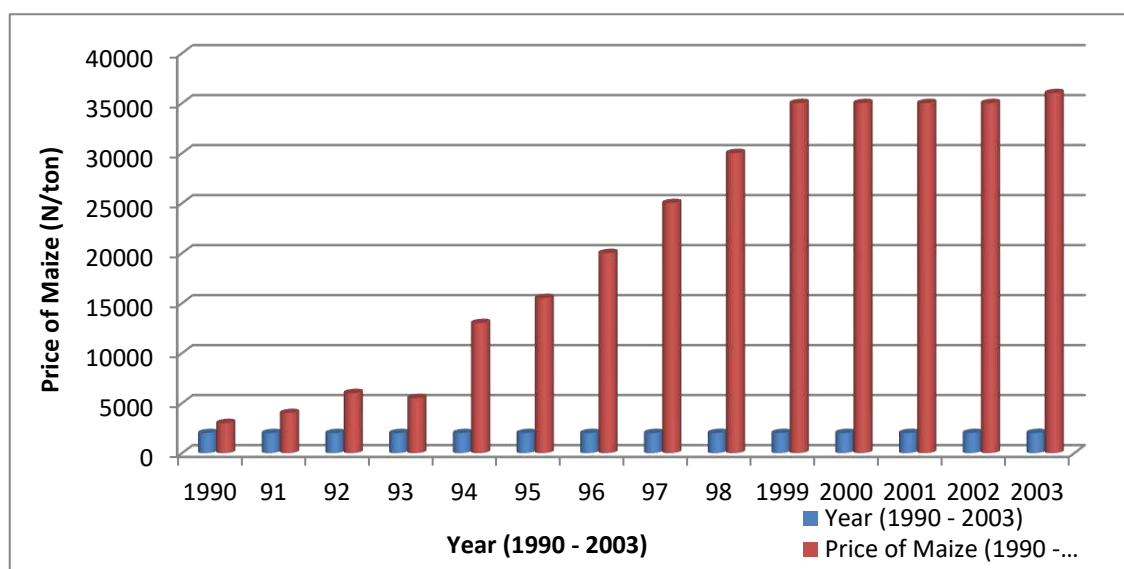


Fig. 1: Impact of Maize on Global Food Production and the Economy of Nigeria (1900 – 2003).

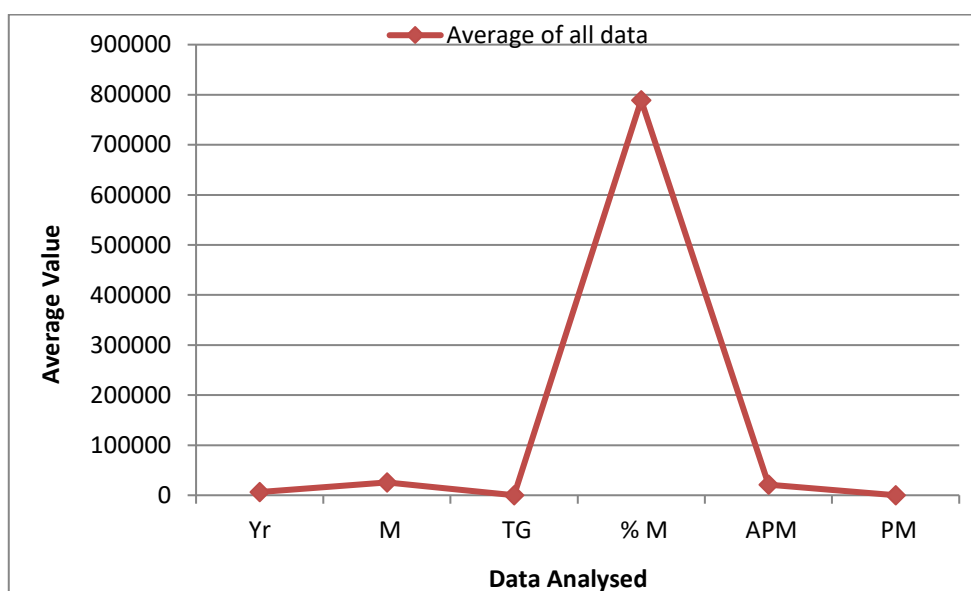


Fig. 2: Average Value of Research Data Where, Yr = Year, M = Maize, TG = Total Grain, %M= % of Maize, APM= Area Planted to Maize, PM= Price of Maize.

Data presented in (Table 2 and represented Figure 2) indicates the average value derived from the data analyzed in this study, indicating the crop potential/ability in contributing to global food production, in-addition to the huge economic benefit derived from it, the data clearly indicated that maize is a potential crop which have the ability to sustain the economy of the country as presented in (Figure 1), if effectively and productively cultivated and managed.

4. Conclusion

Result of the survey indicated increase; in the total grain of maize, percentage of maize, area of land been planted to maize including price of the crop, hence presenting maize as one of the most important food crop, in-addition to its ability to generate income, especially for local smallholder farmers.

Cultivation of maize in large scale has been revealed to be effective in Nigeria, as the crop now serves as one of the major means of income generation for local farmers. Research data of this findings indicated maize as having the potential to increase foreign exchange earnings, as price of the crop increases with increase in years.

5. Recommendation

Form the result of the survey, it could be recommended that continuous cultivation of maize will not only generate income to smallholder farmer, and foreign exchange to government, but could also be used as one of the effective tool in combating shortages in global food production, while serving as a measure for food/nutrition security.

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