“Hunger Can't Wait in Nigeria”: An Analysis of Crop Production in Relation to Population Explosion

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ABSTRACT
“Hunger can't wait was a bumper sticker inscribed on a car plate”. What is the message this sticker is trying to convey to us? This paper examines issues bordering on population explosion in relation to the production capacity in of some crops grown in the country which is grossly inadequate, thereby bringing about hunger to the populace. The environmental indices such as edaphic, inclement and vagaries of weather conditions that have affected the production of some food crops and livestock which also have consequently affected their consumption, cost of purchasing these food stuff in the market, eating habit, malnutrition, inadequate balance diet, problems of storage facilities, and more recently, the problems of kidnapping, insurgency, terrorism, armed banditry as they affect food and animal production in the country. Data for this study were obtained from various secondary sources, such as the National Bureau of Statistics (NBS), the Central Bank of Nigeria (CBN) Annual Bulletin, Food and Agricultural Organization Year Book (FAO), and the International Institute for Tropical Agriculture (IITA), Ibadan, Nigeria. The data obtained were analyzed using descriptive and inferential statistics such as percentages, graphical illustrations, as well as, Pearson Moment Correlation which is an inferential statistics used to show relationship between the population figures and the crop yields per kilogramme/Hectares where applicable , especially the trend analysis. The results showed the trends in the production of the available data on cash and food crops yields per kilogram/ hectares. The results show that the crops grown were grossly inadequate with the teeming population. The results also show that there exist both positive and negative significant relationship between the population and the crop yields.

Key Words
Hunger, Crop yields, Population, Malnutrition, Food security, Poverty.

1.0 Introduction

As Julius Nyerere, former President of Tanzania once remarked: “while others try to reach the moon, we are still trying to reach the villages.” (quoted from Aboyade, 1990).

Similarly, Jimmy Cliff in one of his lyrics titled “Remake the World” said:

Too many people are suffering.
Too many people are sad.
Too little people got everything.
Too many people got nothing.
Remake the world, promote
human dignity,
Wipe off tears and poverty.
Put your conscience to the test.
North, South, East, and West.
Get racism off your sight.
With love and happiness.

The above lyrics of the popular song of Jimmy Cliff buttress this point of hunger, poverty, pestilence, disease, and penury. The song is apt and timely to this sub-themes on this conference, which is 'hunger can't wait' as man needs the three basic necessities of life which are food, shelter and clothing/fibre.

Perhaps, the most important among them is food as can be seen that "An hungry man is an angry man" (What is the source of this statement?). There is acute malnutrition in the country, which has claimed about twelve (12) lives in Gombe State of Nigeria, and 1,732 were hospitalized because they could not feed on adequate balanced diet as reported in the *Sun Newspaper* of 3rd August, 2019. Similarly, the *Channels Television* also reported on Wednesday 7th, August, 2019 that: Millions of people are facing food crisis in Zimbabwe according to the United Nations. The case of Zimbabwe has been brought to focus as one of the African nations that cannot adequately feed her population. The 2015 on 17 Sustainable Development Goals agenda listed article (2) as zero tolerance for hunger.

1.2 Obstacles to food production in Nigeria

More recently, the issues of terrorism and insurgency have disallowed able-bodied men and women in Agriculture in the food basket areas to vacate their lands as a result of banditry and insecurity of these areas. Men and women who could have assisted in the agricultural production of food are now in several Internally Displaced Persons Camps (IDPs). The children are not left out, as they are being malnourished from lack or absence of balanced diet. Compounding this problem is the issue of the herdsmen and farmers' clashes, which have consequently led to farmers' inability to farm. Sometimes, their crops are destroyed and eaten by the animals of the herdsmen.

Other obstacles include lack of storage facilities, inadequate fertilizers, the use of crude, and archaic use of farm implements such as hoes and cutlasses for the farmers, as well as, the use of rickety boats for fishing. The use of line and hook fishing methods are still predominant in some of our rivers and lakes.

Perhaps, some of the questions that should be asked, and addressed include the followings:

- Is there enough food in circulation for human sustainability?
- What is the nutritional value of the available foods?

1.3 Research methodology

Data for this study were obtained from various secondary sources, such as the National Bureau of Statistics (NBS), the Central Bank of Nigeria (CBN) Annual Bulletin, Food and Agricultural Organisation Year Book (FAO), and the International Institute for Tropical Agriculture (IITA), Ibadan, Nigeria. The data obtained were analysed using descriptive and inferential statistics such as percentages, graphical illustrations, as well as, Pearson Moment Correlation which is an inferential statistics used to show relationship between the population figures and the crop yields per kilogramme /Hectares where applicable, especially the trend analysis. Afterwards, the data will be encoded in Statistics Software/Application (SPSS). This will be used to test the hypothesis and to measure the level of significance and relationship between the variables.

1.4 Results and discussion

1.4. 1 Trend analysis of the temporal variation in crop yield over 20 years in Nigeria

The objective which is to establish the trend in cassava, maize (ordinary), maize (green) , rice, yam, cocoa, coffee and groundnut yield in Kg/Ha in Nigeria over 20 years period from 1997 to 2017. Results obtained are depicted in Table 1 and Figures 1 to 8.

Table 1: Crop yields PER Kg/Ha in Nigeria between 1997 to 2017

Year	Cassava (Kg/Ha)	Maize (Ordinary)	Maize (Green)	Rice	Yam	Cocoa	Coffee	Groundnut
1997	118818	12510	33958	15957	110476	4303	10743	11241
1998	107461	13200	34197	16023	94354	4980	11213	9729
1999	95998	15998	34442	14957	99016	3022	11981	15003
2000	97000	13001	34662	14998	98984	3499	12006	15000
2001	96012	13999	34882	13000	97990	3520	11994	15500
2002	99013	14899	35776	13400	99896	3515	12312	15202
2003	104023	14999	35370	14100	105011	3842	12316	15300
2004	110011	16002	35549	14199	112006	3879	13017	15498
2005	109902	16598	35697	14302	114981	3678	13597	15903
2006	120003	18182	35617	14833	120988	4393	14394	17199
2007	112026	17049	35631	12999	99699	2652	12600	12927
2008	118004	19571	36312	17544	114998	2720	14286	12296
2009	117679	21961	36544	19306	104797	2684	11333	11265
2010	122155	18502	36774	18386	130109	3137	12063	13621
2011	112108	16271	37000	20325	74037	3150	13001	12587
2012	79585	15118	38250	18971	72013	3024	12767	12458
2013	70323	14616	37616	16454	70001	2960	12811	9055
2014	87217	15850	37782	19478	84651	2909	12855	12141
2015	92727	15599	37699	20042	84748	2857	12899	12376
2016	96846	17495	37846	20233	84239	2806	12942	13365
2017	87578	15933	37994	20079	80917	2754	12986	8582

Source: National Bureau of Statistics (2018).

1.4.2 Trends in cassava yield in Kg/Ha

The result for the trend analysis for cassava revealed that the highest yield in Kg/Ha was recorded in 2006 with 120, 003Kg/Ha while the lowest was recorded in 2013 with 70, 323 Kg/ Ha (see table 1). The trend shows a downturn in the yield from 1997, which later picked up in 2006 and later reduced to the lowest in 2013 and later rose in 2015 to 2016 but subsequently dropped in 2017 (see figure 1).

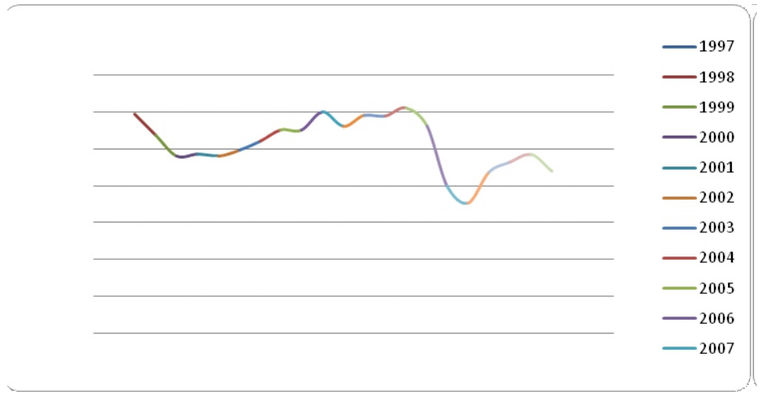

Figure 1: Nigeria Cassava Production (Kg/Ha) Trend from 1997 to 2017
Source: Author's (2020)

1.4.3 Trends in maize (ordinary) yield in Kg/Ha

For Maize (ordinary), the trend is such that the highest was recorded in year 2008 with 19571 Kg/Ha with the lowest yield recorded in year 1997 with 12510 Kg/Ha. The trend shows a fluctuating pattern from but rising pattern since 1997 till 2005 when it had an upward increase which later reached the peak in 2008 (see figure 2). On the other hand, maize (green), showed a trend that revealed the highest yield recorded in year 2012 with 38250 Kg/Ha while the lowest yield was recorded in year 1997 with 33958 Kg/Ha. The pattern shows a consistent upward growth in the yield from 1997 till 2012 when it reached the highest then revealed a downward pattern but did not get so low to reach the lowest (see figure 3).

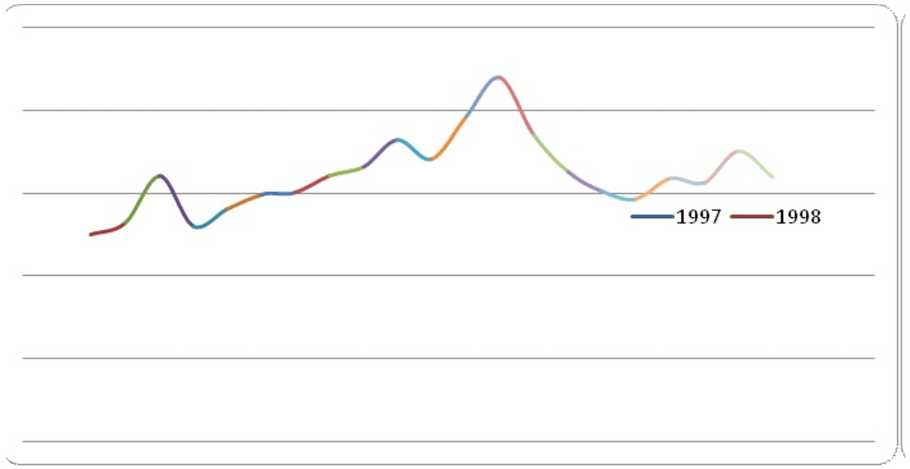

Figure 2: Nigeria Maize (ordinary) Production (Kg/Ha) Trend from 1997 to 2017
Source: Author's (2020)

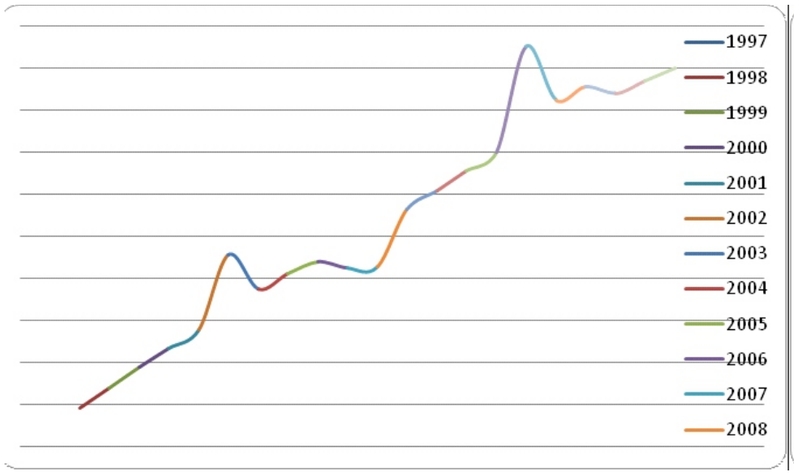

Figure 3: Nigeria Maize (green) Production (Kg/Ha) Trend from 1997 to 2017
Source: Author's (2020)

1.4.4 Trends in rice yield in Kg/Ha

For rice production, the statistics revealed that the highest yield was recorded in year 2011 with 20325 Kg/Ha while the lowest was recorded in year 2007 with 12999 Kg/Ha. The pattern shows a consistent but gentle fluctuation in yield over the period under review (see figure 4).

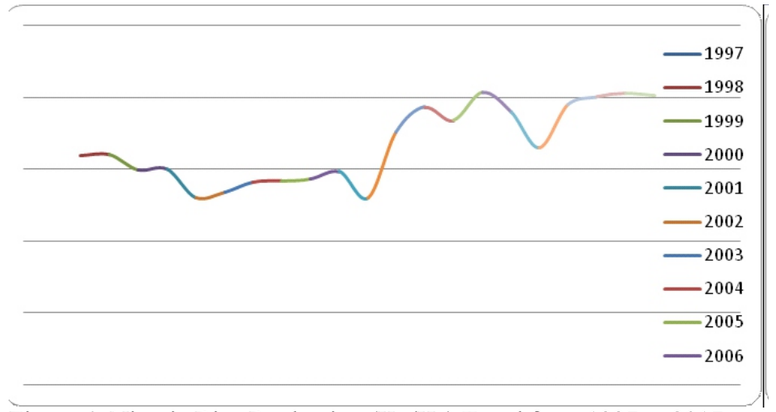

Figure 4: Nigeria Rice Production (Kg/Ha) Trend from 1997 to 2017.
Source: Author's (2020)

1.4.5 Trends in yam yield in Kg/Ha

Yam production was revealed to be highest in Nigeria in terms of its production per Kg/Ha basis and the statistics revealed that the highest yield was recorded in year 2010 with 130109Kg/Ha while the least was recorded in year 2013 with 70001Kg/ Ha. The trend shows spiral and very steep pattern in terms of its fluctuation.

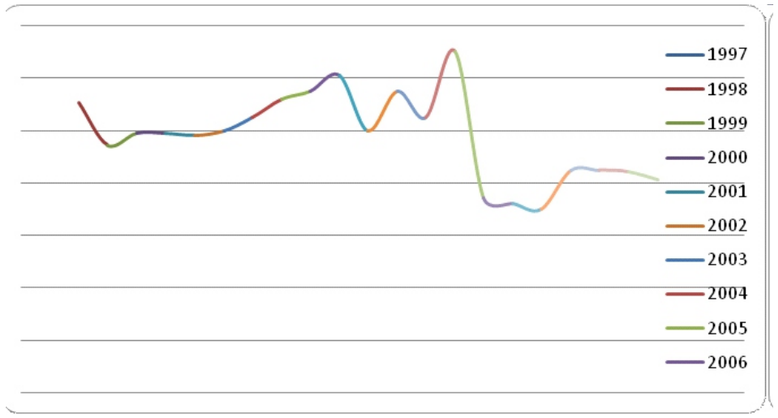

Figure 5: Nigeria Yam Production (Kg/Ha) Trend from 1997 to 2017.
Source: Author's (2020)

1.4.6 Trends in Cash crop (Cocoa and Coffee) yield in Kg/Ha

Cocoa and coffee productions, which are cash crops that are mainly grown in Southern parts and the Northern parts of the country respectively, revealed that the highest was recorded in year 1998 and 2006 with 4980 Kg/Ha and 14394 Kg/Ha respectively while the lowest were also recorded in year 2006 with 14394 and 1997 with 10743 Kg/Ha respectively. The pattern of fluctuation for the two cash crops revealed a continuous but steady upward and downward fluctuation in yield over time .

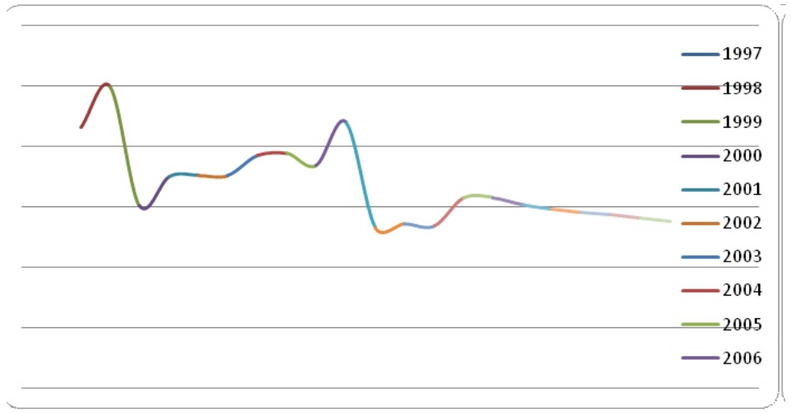

Figure 6: Nigeria Cocoa Production (Kg/Ha) Trend from 1997 to 2017.
Source: Author's (2020)

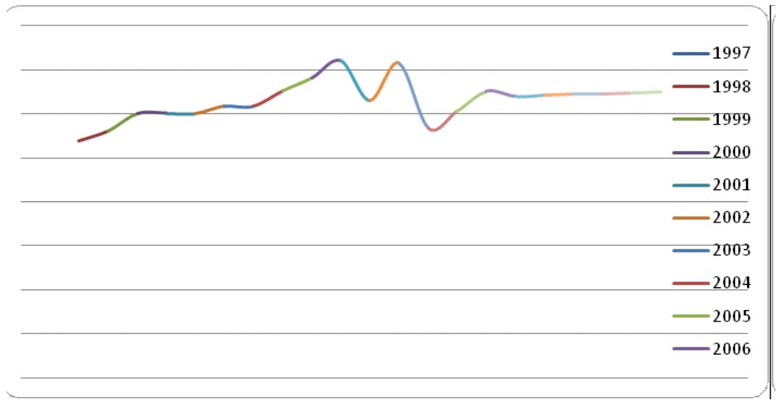

Figure 7: Nigeria Coffee Production (Kg/Ha) Trend from 1997 to 2017.
Source: Author's (2020)

1.4.7 Trends in groundnut yield in Kg/Ha

Lastly, the trend in groundnut production revealed that the highest yield was recorded in year 2006 with 17199 Kg/Ha and 2017 with 8582Kg/Ha. The pattern of fluctuation of groundnut revealed a continuous but steady upward and downward fluctuation in yield over time (see figure 8).

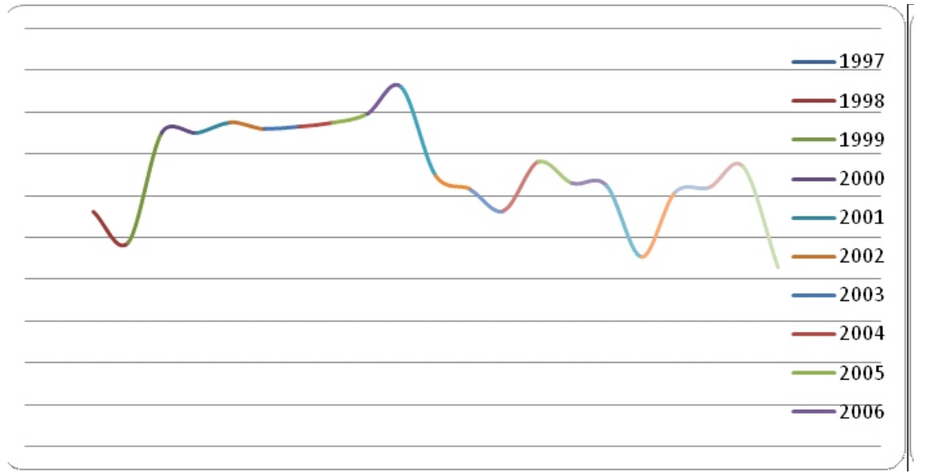

Figure 8: Nigeria Coffee Production (Kg/Ha) Trend from 1997 to 2017.
Source: Author's (2020)

1.4.8 Trend analysis of the temporal variation in population over 20 years in Nigeria

The table below (table 2) shows the statistics of population of Nigeria from 1997-2017.

Table 2: Population statistics for Nigeria between 1997 to 2017

S/N	Year	Nigeria Population
1.	1997	113,457,700
2.	1998	116,319,800
3.	1999	119,260,100
4.	2000	122,283,800
5.	2001	125,394,000
6.	2002	128,596,100
7.	2003	131,900,600
8.	2004	135,320,400
9.	2005	138,865,000
10.	2006	142,538,300
11.	2007	146,340,000
12.	2008	150,269,600
13.	2009	154,324,900
14.	2010	158,503,200
15.	2011	162,805,100
15.	2012	167,228,800
16.	2013	171,765,800
17.	2014	176,404,900
18.	2015	181,137,400
19.	2016	185,960,300
20.	2017	190,873,300

Source: National Bureau of Statistics (2018).

1.4.8 Population Trend in Nigeria between 1997 to 2017

The result of the analysis reveals that population is rising at a very fast rate without fluctuations. From the figure below (figure 9), the blue line moves in the upward direction indicating that every year, the population of the country increases uniformly and steadily with an addition of approximately 3,000,000 (3 million) people annually. In 1997, the population of Nigeria was 113,457,700 and by 1998 it has increased to 116,319,800 with an increase of 2,862,100 people and by 1999, there was an additional increase of 2,940,300 persons making the population to sum up to 119,260,100. Also, according to estimations, there is always an increase in the number of people added to the pervious population. In 2011, the population recorded was 162,805,100 and by 2012, it increased to 167,228,800 i.e. an increase of 4,423,700 was recorded. By the end of 2017, the population already jumped to 190,873,300.

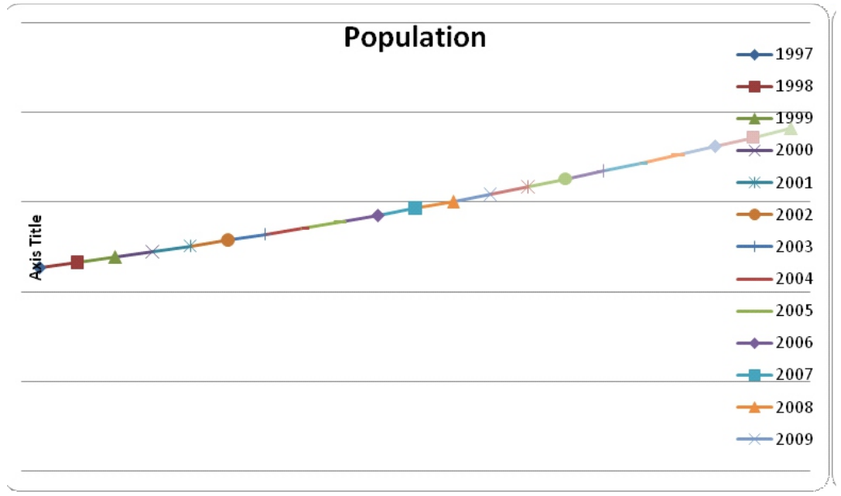

Figure 9: Nigeria's Population Trend from 1997 to 2017.
Source: Author's compilation (2020)

1.4.9Relationship between crop yield and population over 20 years in Nigeria

Table 3: ***Table 2: Population (1000 per persons) Crop yields PER Kg/Ha in Nigeria between 1997 to 2017***

Years	Population (1000 per persons)	Cassava (Kg/Ha)	Maize (Ordinary)	Maize (Green)	Rice	Yam	Cocoa	Coffee	Groundnut
1997	113457.7	118818	12510	33958	15957	110476	4303	10743	11241
1998	116319.7	107461	13200	34197	16023	94354	4980	11213	9729
1999	119260.1	95998	15998	34442	14957	99016	3022	11981	15003
2000	122283.8	97000	13001	34662	14998	98984	3499	12006	15000
2001	125394	96012	13999	34882	13000	97990	3520	11994	15500
2002	128596.1	99013	14899	35776	13400	99896	3515	12312	15202
2003	131900.6	104023	14999	35370	14100	105011	3842	12316	15300
2004	135320.4	110011	16002	35549	14199	112006	3879	13017	15498
2005	138865	109902	16598	35697	14302	114981	3678	13597	15903
2006	142538.3	120003	18182	35617	14833	120988	4393	14394	17199
2007	146340	112026	17049	35631	12999	99699	2652	12600	12927
2008	150269.6	118004	19571	36312	17544	114998	2720	14286	12296
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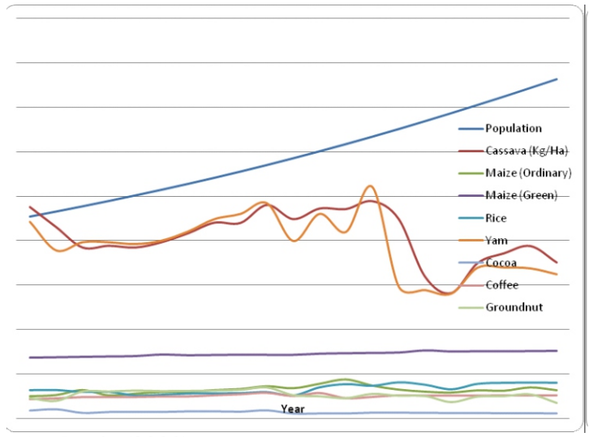
2016	185960.3	96846	17495	37846	20233	84239	2806	12942	13365
2017	190873.3	87578	15933	37994	20079	80917	2754	12986	8582

Source: Author's (2020)

As shown in figure 10: the line showing the population distribution of Nigeria shows a steady and uniform increase over the years where the population recorded in 1997 was 113457.7 (per thousand persons) while by the end of 2017 about 190,873.3 per thousand persons was recorded as the total number of people in Nigeria unlike food and cash crop yield. There is a clear fluctuation in Cassava yield where there is a steady rise in yield from 1997 (12510 kg/Ha) to 1999 (15998 kg/Ha), and then a sharp drop to 13,000 kg/Ha in 2000.It then rose over the years till 21,961 was recorded in 2009 and then a steady decline in yield till 15,933 kg/Ha was recorded in 2017. Furthermore, other crops too followed the same pattern where there were rise and fall in yield over the years. From the result presented, it could be observed that the Malthusian theory which says that "population is rising at a geometric progression while food production is rising at an arithmetic progression is justifiable. Some certain factors could be said to be the reason for the fluctuation of crop yield.Factors like climate change (rainfall fluctuation, increased temperature etc), lack of accessibility to improved and modern farming machineries, lack of fertilizer etc.



Source: Author's (2020)

Figure 10: Trend Analysis showing the relationship between population (1000 per persons) and crop yield in Nigeria.

1.5 Correlations analysis of crop yield and population over 20 years in Nigeria

As presented in Table 4, there is no significant relationship between population and yam yield. There is no significant relationship between population growth and cassava (0.032) at 0.05 alpha level and a negative association (Pearson correlation, -0.412), population and ordinary maize (0.380) and green maize (0.000) at 5% and 1% alpha level respectively. There is also significant relationship between population and rice (0.000), Cocoa (0.000), Coffee (0.023) and Groundnut (0.022).

Table 4: ***Correlation analysis for Population (1000/persons) and Crop yields PER Kg/Ha in Nigeria between 1997 to 2017***

		Population	Cassava	Maize_Ordinary	Maize_Green	Rice	Yam	Cocoa	Coffee	Groundnut
Population	Pearson Correlation	1	-.412*	.380*	.965**	.786**	.107	-.679**	.440*	-.442*
	Sig. (1-tailed)		**.032**	**.044**	**.000**	**.000**	.322	**.000**	**.023**	**.022**
	N	21	21	21	21	21	21	21	21	21
*. Correlation is significant at the 0.05 level (1-tailed).										
**. Correlation is significant at the 0.01 level (1-tailed).										

1.6 Strategies and stratagems of alleviating hunger in Nigeria

In order to meet up with 2nd item of the 17 Sustainable Development Goals to transform our world is the Zero Hunger. The following strategies and stratagems are hereby recommended. There should be no hunger in the land.

1. Aggressive mechanized farming to replace the traditional farming in respect of the use of hoes and cutlasses.
2. Adequate training of farmers as was recently done in Kano, when some groups had trained about one hundred and twenty (120) farmers on post harvest loss of tomatoes.
3. The extreme hunger and poverty in Africa in general and Nigeria in particular can be solved by providing boats, fishing nets and trawlers, fishing gear to fishermen to replace the line and hook fishing methods to provide adequate protein for those that are being malnourished.
4. Researches into all aspects or spheres of Agriculture should be carried out in our Universities of Agriculture, Research Institutes and a host of others, to produce adequate and enough food for the masses.
5. There is need to improve and increase the storage facilities and methods as the Lagos State Government has proposed to deploy better storage methods in order to secure food.
6. The use of insecticides, pesticides, fertilisers, and new breed of plants and strains through hybridisation of plants and animals.
7. The several million of youths that are unemployed can be engaged in Agriculture.
8. Skipping of some meals as one of the methods to conserve food. In fact, some people, particularly students have resorted to skipping meals. This skipping has been given several codes number such as 001, 101, 011, and 111.
9. Another method to conserve food is by fasting as enshrined in the Islamic injunctions. The Christians as well as other religious adherents do fast too.
10. Introduction of new strains of seeds through crop multiplications.
11. The Green Revolution and School to land embarked upon by the Nigerian Government in the seventies and eighties (1970s and 1980s) should not be totally jettisoned.
12. Encourage the livestock farmers, such as poultry, piggery, and other conveniences that will attract or motivate these farmers to practise the profession they love to do best.
13. The issue of desertification and climate change must be tackled squarely to assist those regions that are prone to desertification, flooding, and other environmental challenges.
14. Government should endeavour to provide improved seedlings to farmers of all categories.
15. There is need to train the agricultural extension workers of the Ministry of Agriculture and Rural Development.
16. Government should by now develop/establish mechanised farming. This will allow more fields for cultivation.
17. The over 255 million youths that are not employable according to the International Labour Organisation (ILO) in which Nigeria is inclusive can be engaged in agriculture.

1.7 Conclusion

Let us come back to where we have started and that is another lyrical song by Jimmy Cliff on "Many Rivers to Cross." Nigeria needs to cross many rivers to be able to feed her teeming population of about 200 million.

Many Rivers to Cross.
But I can't seem to find my way over.
Pondering I am lost as I travel alone.
Many rivers to cross.
And it's only my will that keeps me alive.
I have nimbled wash up for years.
And I merely survive, because of my pride
And this loneliness won't leave me alone.
It is such as my woman left and didn't say why.

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