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A blueprint for agricultural development in Nigeria

[1]Adeola, A.O[1] and [*2]Oluwafemi, R.A

[1]College of Agriculture, Joseph Ayo Babalola University, Arakeji – Ilesa, Osun State, Nigeria. [2]Department of Animal Science, Faculty of Agriculture, University of Abuja, Nigeria.

[*]Corresponding author Email: oluwbs@gmail.com

Abstract

Food is central to man's development and its production at sustainable level must therefore be the pre-occupation of Governments in all nations. In Nigeria, several attempts have been made to address food and nutrition insecurity through such programmes like the National Accelerated Food Production Programme (NAFPP), Operation Feed the Nation (OFN), Green Revolution and the Directorate of Food, Roads and Rural Infrastructure (DFRRI) among others. The authors observed that in spite of the enormous prospects for agricultural development and food security in Nigeria, these intervention programmes have recorded little or no success considering the current rate of hunger, malnutrition, poverty and poor rural livelihood. With vast land area of about 98.3 million ha out of which 74 million ha is good for farming, Nigeria has very great potential for producing optimally in all aspects of agriculture including Crops, Livestock, forestry, Fisheries and wildlife. Yet in Nigeria today, there is pending food crisis tending towards famine, threat of hunger and poverty with a large proportion of the populace (70%) living on less than US1.00 a day, high youth unemployment as university graduates leave the system and find no work, rice and other food commodities are imported and the food production system is still largely peasantry with over 60% of the farmers working on small tracts of farmland (0.2 – 1 ha) in an inefficient manner. The question therefore is whether we still have hope for future agricultural production that will address and solve these issues. Measures suggested by the authors as sustainable solution include among others the effective utilisation of research findings which are locked up in many institutions, transformation and utilisation of agricultural education and extension services, increased budgetary allocation to agriculture, improved livestock and agricultural production strategies, provision of incentives to farmers, provision of Storage, Processing and irrigation technology, farmers accessibility to inputs and Micro Credit Schemes, establishment or reorganisation of Agricultural Trust Fund as well as the exposure of farmers to both local and foreign markets.

Keywords: Agriculture, production challenges, livelihood, national development

Introduction

Food is central to man's development. Abraham Maslow had emphasised this when he put food as the most basic of human needs (Fig. 1)1. Its production at sustainable level must therefore be the pre-occupation of Governments in all nations. In Nigeria, there had been several slogans for food production - National Accelerated Food Production Programme (NAFPP), Operation Feed the Nation (OFN), (Punch, June 13, 2008), Green Revolution, Back to Land Programme, Directorate of Food,

Roads and Rural Infrastructure (DFRRI), Family Support Programme (FSP). Since the recent Civilian administration in Nigeria (1999), there had also been several agendas for Food Production at state and Federal levels. These programmes have not been successful in spite of the enormous prospects for agricultural development in Nigeria because according to Anon (2013), the number of Nigerians living in poverty was increasing too rapidly as it represents about 67 per cent of the entire population.

These prospects include the vast land area of the country (98.3 million ha) out of which 74 million ha is good for farming, a teeming population of over 140 million (Adeola, 2007) out of which about 70% are engaged in one farming activity or the other and a fairly high contribution of agriculture to Gross National Production (41.5%). Oji-Okoro (2011) investigated the contribution of agricultural sector on the Nigerian economic development and revealed that foreign direct investment on agriculture contributed the most (56.43), this means that for every unit of change in FDI on agriculture, there is a corresponding change of 56.43 unit in GDP in Nigeria. While in another research, Suleiman and Aminu (2010) compared the contributions of agriculture, petroleum and manufacturing sectors of the Nigerian economy and found out that agricultural sector is contributing higher than both petroleum and manufacturing sectors. The paper reveals that agriculture is contributing 1.7978 units to GDP while petroleum is contributing 1.14 units to GDP which is less than the contribution of agriculture.

Nigeria has very great potential for producing optimally in all aspects of agriculture including Crops, Livestock, forestry, Fisheries and wildlife. Yet in Nigeria today, there is pending food crisis tending towards famine. In December 2007, famine Early warning System Network had informed the world of low market stocks of food within and outside Nigeria and that the demands for food were pushing the price of major staple foods higher, threatening food security in the Savanna and beyond (Khan, 2007). There is threat of hunger and poverty with a large proportion of the populace (70%) living on less than US$1.00 a day (Okolo, 2006). Fuel prices are going up thereby making food transportation more expensive and creating high rate of inflation. Youth unemployment is very high as university graduates leave the system and find no work. Rice and other food commodities are imported and the food production system is still largely peasantry. Asogwa *et al* (2014) in their study revealed that 55.83% of this class of farmers had farms sizes ranging between 1 and less than 3 Hectares. According to Adesina (2013), Nigeria has been a major consumer and importer of rice in Africa spending over N356 billion on yearly importation of rice, out of which about N1 billion is used per day.

The question therefore is whether we still have hope for future agricultural production that will address and solve these issues.

Nigeria's Food Supply and Demand Situation

Okolo (2006) opined that Nigeria's food supply has gradually fallen short of

demand, creating deficits which had been met through importation or starvation. In the period between 1994 and 2001 the domestic food production of Nigeria moved from 89.25 million metric tons to 103.86 million metric tons in 2001. Food demands moved from 87.23 million metric tons in 1994 to 110.37 million metric tons in 2001 (Table 1)1. According to Adesina (2011), Nigeria spent N98 trillion ($628 billion) between 2007 and 2010 on importation of food into the country. This translates to N24 trillion yearly. The report further stated that in 2010 alone, Nigeria spent N632 billion on wheat; N356 billion on rice; N217 billion on sugar and N97 billion on fish.

While it produces only 500,000 metric tons of rice, Nigeria consumes 2.5? metric tons. Hence, it spends about N1 billion per day on rice alone. Estimated annual fish demand for Nigeria is about 2.66 metric tons, yet, the 2009 annual domestic production was about 0.78 metric tons with a supply-demand gap of about 1.88 metric tons. In the same vein, livestock output in the country has been growing at six to seven per cent annually, it is unable to match the growth of demand due to poor nutrition, disease and poor breed according to the Minister of Agriculture.

In his own presentation at the World Food Day Celebration in 2011, Governor Olusegum Mimiko of Ondo State described the situation as a clear departure from the reality of Nigeria in the 1960s when agriculture provided the main source of employment, income and foreign exchange earnings for Nigeria. He further explained that the advent of commercial oil exploitation in the mid 1970s, no doubt, heralded an era of decay for agricultural output in Nigeria.

With a Gross Domestic Product (GDP) of over $40 billion, Nigeria is African's second largest economy, yet, over two thirds of the population (100 million) live below the poverty line of US$1.00 per day. According to Nigeria's National Bureau of Statistics, the number of poor is rising; in 2004, 55% of people were living in absolute poverty. By 2010, this had risen to 61%. The situation is particularly bad in northern states where over three-quarters of the population live in absolute poverty. The FAO in the latest edition of its food warning to the international community warned that nations should prepare for harder times ahead unless, production of major food crops increases in 2011 (Anon, 2010). It is pertinent to remember that the developing nations especially those importing food like Nigeria, will be the worst hit by any global food recession. According to Anon (2013) crop damage from 2012 flooding in Nigeria was more severe than initially reported. As a result, 2012/13 staple food production may be as much as 12 percent lower than November 2012 estimates.

Table 1 Food supply and demand (1994-2001 million mt.)

DESCRIPTION / YEAR	1994	1995	1996	1997	1998	1999	2000	2001
Production	86.70	89.25	93.35	95.04	98.74	11.41	102.12	103.96
Food Demand	87.23	89.55	96.26	99.03	10.87	101.87	107.46	110.39
Deficit / surplus	(0.53)	(0.30)	(2.91)	(3.43)	(3.13)	(1.46)	(5.46)	(6.51)

Source: Okolo (2006)

The report stated that cereal prices were anticipated to remain high compared to their five-year average levels but generally follow seasonal trends, increasing moderately by 1 to 4 percent per month through September 2013. However, the current marketing conditions in Nigeria are expected to put upward pressure on staple food prices across West Africa between March and the end of the 2013 lean season in August/September, particularly for maize, millet, and tubers. Exacerbating factors include: increased demand for cereals from populations usually reliant on tubers, growing demand for maize by the Nigerian industrial and poultry sectors (though this demand is not likely to achieve the high levels experienced in 2005); and structurally high millet prices across the region, likely due to significant declines in Nigerian millet production since 2007/08. Markets that rely heavily on cross-border trade from Nigeria, such as those in south-eastern Niger, may be most affected.

The major staple crops of Nigeria are basically ten – cassava, yam, maize, millet, rice, beans, groundnuts, plantain, cocoyam and sorghum. Available data (Table 2)2 show that cassava and yam had the highest tonnage of these staple crops. In spite of the annual production increases recorded by these crops including some tree crops, their aggregates were inadequate to meet annual demands. This means in effect, that the nutritional needs of Nigerians may not be met in view of these shortages. Food will therefore continue to be imported at an increasingly alarming rate unless production arrangements are quickly put in place. As the cost of importation gets higher and higher, the prices of such food items become too high to be afforded by the populace. The Nigerian takes in less calorie and protein compared with the world health standards. FAO (1999) recommended 2500kg calories and 65 grams/day but according to Adetunji *et al.* (2011), the average per capita protein intake in Nigeria was 51.7g from which only 8.6g came from animal sources, where as in developed countries, the average per capita protein intake was over 70g with more than 55g of animal protein. This is a very serious short fall which must be of concern to the Government. Protein malnutrition is considered the most important health problem in Nigeria causing growth failure in children and loss of weight in adults among others.

As imports grow, the foreign exchange needed for purchases increase and may gradually become unaffordable. Yet the nation's population grows by 3.1% annually; the recent census population puts it at 140 million people (NPC, 2007). The food production growth rate is about 1.7%

which is lower than the growth rate of the population (3.1%). Food produced is therefore not enough to feed the excess population. If this trend continues, the issue of inadequate nutrition will heighten. In Nigeria as at 2000, the total population estimate stood at 123,337,800 million people, this number increased to 170,123,700 in the year 2012, which shows a growth rate of 3.8% between 2000 to 2012 (Mundi index, 2012). This figure provides an indication that Nigerian population is among the fastest growing population in the world; on the other hand food production increases marginally at a rate lower than population growth rate. With this growing rate, can Nigeria sustain its population food demand, by providing sufficient quantity and quality of food for all at relatively lower price?

Table 2: Output of major agricultural crops (million mt) 1994-2000

Crop	1994	1995	1996	1997	1998	1999	2000
Cassava	31.00	3.40	32.95	33.51	34.90	35.98	36.75
Yam	23.15	22.81	23.92	24.71	25.10	26.00	26.42
Maize	6.90	6.93	6.21	6.28	6.43	6.51	6.49
Millet	4.75	5.56	5.58	5.99	6.32	6.42	9.74
Rice	2.42	3.20	3.12	3.23	3.48	3.52	3.84
Beans	1.54	1.75	1.84	1.95	2.05	2.10	2.26
Groundnut	1.45	1.57	2.07	2.10	2.22	2.30	2.39
Plantain	1.66	1.63	1.68	1.75	1.80	1.84	1.99
Cocoyam	1.12	1.18	1.29	1.38	1.45	1.49	1.59
Sorghum	0.19	6.99	7.51	7.95	8.40	8.50	8.82
Palm oil	0.83	0.68	0.77	0.78	0.79	0.82	0.86
Cocoa	0.32	0.20	0.32	0.32	0.34	0.16	0.17
Rubber	0.23	0.25	0.24	0.25	0.25	0.26	0.27

Source: CBN statistical Bulletin, vol 11 No 2 , 2000

Table 3 Population and Output of major Agricultural Commodities (2000-2012)

Year	Population (000)	Output (000 tons)
2000	123,337.8	117,876.0
2001	126,635.6	103,635.0
2002	129,934.9	107,572.5
2003	133,881.7	115,304.1
2004	137,253.1	125,084.9
2005	128,772.0	121,173.5
2006	131,859.7	130,574.5
2007	135,031.2	139,315.1
2008	146,255.3	149,442.2
2009	149,229.1	158,679.3
2010	155,215.6	167,795.6
2011	155,215.6	143,273.3
2012	170,123.7	152,700.6

Source: C.B.N. Annual Bulletin 2005 and 2010, Faostat 2011

Impacts of food importation

Food deficit and importation figures are given on Table 44. While importations were only 0.67 million metric tons in 1994, it had increased by over 800% in 2001 (6.91 metric tons). Cost of food importation in 2001 was about N95 billion (Table 5)5. In 2010, N991 billion was used for importation of only two items – wheat and rice. The total amount used for food importation may have reached N4 trillion according to the Chairman House Committee on Agriculture. The percentage of food importation costs relative to total budget rose from 8.7% (1990) to 55.6% (2001) and more than half of the nation's budget in 1995. This situation is very worrisome as Nigeria depends on commercial food import to fill the gap indeficit supply.

It impacts on domestic food supply as household consumption and demand patterns now depend on people's taste for foreign foods e.g. foreign rice, fruit juice, wheat etc . There is also the growing dislike for some local foods like gari, cocoyam etc. This leads to lower farm gate prices for local food items hence a big reduction in local income. This is a disincentive to production. Many farmers have left farming as a result of lowered profits. Young people are no longer interested in farming while the aged farmers who are left in the business become poorer and hungry with low social self-worth, lowered resistance to diseases reduced capacity to work and unable to meet daily needs with severe effects on children's education.

Nutrition becomes very poor and inadequate with people developing very strong inclination. Nigeria lacks capacity for building foreign exchange reserve but it attracts internal transport and storage costs, heightens inflation and also weakens the local currency. It is pertinent therefore to explore the potentials that Nigeria has for food production, put this into practice and

become exporters rather than importers of food. What is spent on foreign exchange to import food with local substitutes could be used in direct investment in agriculture to achieve higher results. Food import bills are made higher by declining foreign exchange rates. The exchange rate remains unstable, at a time, the US1.00 exchanges for ₦161 while it was under ₦150 three months earlier. Situations like this increase local inflation.

Table 4: Food shortfall and import, million mt.(1994-2001)

	1994	1995	1996	1997	1998	1999	2000	2001
Shortfall (deficit)	0.53	0.30	2.91	3.34	3.13	4.22	5.34	6.51
Food Import	0.67	0.58	2.95	3.47	3.24	4.48	5.59	6.91

Source: FOS review of the Nigeria economy, various issues

Table 5 : Food import cost, total import cost and national budget (1990 – 2001) N Billion)

Year	Total budget	Nigeria import cost	Food import	% of food import cost Total import cost	% of food import bill to total budget
1990	39.76	45.72	3.47	7.6	8.7
1991	38.67	87.02	7.79	8.9	20.1
1992	52.04	145.91	11.74	8.0	22.5
1993	112.10	166.10	13.95	8.4	12.4
1994	110.20	162.79	16.77	10.3	15.2
1995	153.5	755.13	88.35	11.7	55.6
1996	337.22	562.63	75.95	12.5	22.5
1997	428.22	845.72	100.64	11.9	23.5
1998	487.11	837.15	102.17	12.2	21.0
1999	947.69	862.53	103.49	12.0	10.9
2000	701.06	591.33	120.05	20.3	17.1
2001	11018025	877.30	195.81	22.3	19.2

Sources: i. CBN : statistical Bulletin and Annual Report
ii. CBN: Annual Report and statement of Account, 2000

The importation of food is already a global phenomenon. Nigeria, as an agriculturally endowed nation, can turn itself around from an importer of food to a very big exporter of various food items. This was the case in the 1950's - 70's. The advent of oil and gas caused this partly as people were now interested in quick bulk money with less work. In addition to the poor food production status in Nigeria, there is the

problem of inadequate processing and storage of food products which contribute to the unstable nature of food supply. A lot of losses are therefore incurred on farm and off-farm during post-harvest periods. Okolo (2006) estimates this loss as between 20 – 40% annually. Such wastages have serious impact on food security in the country.

Access of households to desired food has remained a pressing issue in Nigeria (Adeola, 2008). High rates of inflation, food price instability and relatively low wages of income earners have made the average Nigerian liable to food insecurity.

The effective purchasing power of the household income has been gradually reduced by inflation and high prices in spite of increases in nominal wages. These situations have contributed to the poor food intake levels and nutritional well-being of Nigerian household. The groups most affected include pregnant women, children and the poor. Aromolaran (2001) confirmed that Nigeria is still struggling to meet up with the minimum food and nutrient requirements. The evidence of poor nutrition is reflected particularly amongst low income groups. It has been estimated that 7,300 children die of malnutrition annually in Nigeria, before they reach the age of four years; while 73,000 to 84,000 infants born every year suffer from malnutrition. The pre-school children are not left out of the ill wind of malnutrition blowing in Nigeria (Ajayi and Chukwu, 2008). Given the scenario described above, one can infer that Nigerian's food insecurity problem is very pronounced. The situation may have been worsened by the country's over dependence on oil (CBN 2002) as a lot of farmers in both the North and South are off the land in search of petroleum money ("Petronaira"). Yet a nation that cannot feed itself is hardy recognised in the community of Nations. Nigeria has all the resources and expertise to reverse this situation if can only develop the political will to do so.

Nigeria has vast land for agricultural production. It is therefore painful that the country had declined from its past food production processes put in place by the colonial masters to the extent that food deficits are now met through food importation. The staggering amount spent on rice importation is wasteful as rice production to meet the nation's needs can be done in two seasons. The nation's food reserve today can hardly sustain Nigeria for two to three months in times of emergencies. It is only recently that a grain reserve policy has been developed in that 15% of the total annual grown harvest will be held as strategic grain reserve. The National Food Reserve Agency (NFRA) will hold 5% as a core. Strategic grain reserve and individual states are to hold another 10% as so-called "state buffer stocks". This policy initiative has already been backed by significant investments. In 2011, NFRA may have completed the construction of steel silo storage capacity for over one million tonnes of grain, primarily maize, sorghum and millet at 10 sites in key production areas. Existing NFRA storage capacity was 325,000 tonnes. More of these silos must be built to store all farm produce which hitherto had been wasted as there were no proper preservation/storage mechanisms to

harvest wastages and use them in the process of National development programmes (Thisday, May 24, 2011).

In Nigeria, the agricultural sector has a lot of potential for future economic development having played a very dominant role in the nation's past history. The following strategies are therefore suggested as a stimulus for food production in Nigeria.

Table 6a : Budgetary allocation to agriculture (1990 – 2002) (N Billion)

Year	Total budget	Allocation to Agriculture	% of Agric to Total
1990	39.76	1.96	4.95
1991	38.66	0.67	1.74
1992	52.03	0.92	1.78
1993	112.10	2.83	2.53
1994	110.20	3.71	3.37
1995	153.49	6.92	4.51
1996	337.21	5.71	1.69
1997	428.21	8.66	2.02
1998	487.11	9.04	1.86
1999	747.69	12.15	1.28
2000	701,05	13.60	1.94
2001	1018.15	64.94	6.38
2002	1018.15	44.84	4.40

Table 6b: Budgetary allocation to agriculture (2011–2014) (N Billion)

Year	National Budget	Agriculture	Percentage of National Budget
2011	₦ 4.07 trillion	₦81.2 billion	1.81
2012	₦ 4.69 trillion	₦78.9 billion	1.66
2013	₦ 4.92 trillion	₦81.4 billion	1.77
2014	₦ 4.6 trillion	₦66.6 billion	1.47

Budgetary Allocation

This is a very essential part in any Nation's development. Sectorial allocation of funds dictates the priority of a government. Since the advent of oil in Nigeria's economy, agricultural production has been relegated in National issues as can be seen in the sequence of budgetary allocation between 1990 and 2002 as well as 2011 and 2014 (Tables 6a & b)6. Allocation to agriculture has hovered around 1.25% - 6.38% with the average allocation in 13 years being 2.96%. This is very low compared with 10% allocation advocated in the Maputo agreement of 2003 (McKee, 2012). World –grain. Com, May, 24, 2011). Allocation to Agriculture in the 2012 budget is only N78.98 billion

out of a total sum of N4.749 trillion. Sectors like Security, Power, Works, Education, Health got N921.91 billion, N161.42 billion, N80.8 billion, N400.15 billion and N282.77 billion respectively. The security allocation is outrageous taking as much as 11.8 times the amount allocated to agriculture and almost one-quarter of the entire budget of the Nation of all the sectors mentioned. Agriculture is the best employer of labour and it is one sector where jobs can easily be created to absorb the teeming unemployed youths of Nigeria.

Ironically, this sector is the one that can easily reduce security problems in Nigeria as a hungry man is an angry man. As the Yoruba proverb says "once the issue of hunger is resolved, poverty is reduced to a minimum". Poverty is one of the most important issues in the Millennium. Millennium Development Goals (MDG) and a properly developed Agricultural Policy/sector will help to reduce it to it's bearest minimum. More than half of the funds allocated to security should be given to the agricultural sector to produce enough food to feed the teeming millions of Nigerians. The actual amount released of the budgeted fund is usually about 40%. Onikoyi (2011) asserted that over the past 10 years since the new advent of democracy, only on very few occasions has over 40% of the total budgeted allocation been spent. This is capable of disrupting any plans made for production. As part of this Blueprint, it is suggested that at least 10% of the country's budget be allocated to agriculture and all of it released on time so that planning can be effective. For the 2012, an allocation of N475 billion would be equivalent to 10% of the nation's budget.

Production

The blueprint is advocating support for an aggressive planting of arable/tree crops in all the ecological zones of the country. There should be a focused investment in the production of the country's staple crops like cassava, yam, maize, millet, rice, beans, groundnuts, plantain, sorghum, palm oil, cocoa, rubber. In two seasons the country can produce enough rice (for example) to feed itself and also export. Incentives can be given to farmers to encourage production of these crops. National targets of production are made while incentives are provided to drive such policies or targets. Improved livestock breeds/poultry should be used to drive production in the livestock/poultry industry to ensure that there is enough meat and eggs in the Nation. Every Nigerian should feed at the acceptable calorie/protein level of the World Health Organisation. Grazing reserve for cattle should be developed while improved breeds are used all over the cattle industry. More hatcheries should be provided for the production of fingerlings while more farmers are encouraged to grow fish in small holdings all through the nation. Farmers who show interest should be given only high quality and fast growing fingerlings for their reservoirs, dams, lakes or small backyard ponds. Trees (indigenous and exotic) should be grown in forest reserves and in free areas where the secondary forests available have been creamed beyond recognition. The government should drive a policy of forest

development for environmental protection and land resuscitation. All forest reserves must be recovered from encroachers and planted up with useful indigenous/exotic tree species. Nigeria can become an exporter of wood once more or gain foreign exchange from carbon credits.

Research

There are a lot of research findings locked up in the country's Agricultural and Forest Research Institutes. These must be re-written in languages that the farmers can understand and made available for field tests and adoption. Improved seeds/trees that are easily adaptable in this era of climate change should be researched and quickly introduced. Attempts at plant improvement at the genetic level must be given a big boost in order to ensure better production of goods and services. All Research Institutes in Agriculture and Forestry should be revamped and restructured for this leap in production. They should be adequately funded for them to play their roles. Agricultural biotechnology has the potential to be useful to address hunger and food security needs of the developing nations. Through biotechnology, new and improved cultivars can be designed to give higher yields, be pest resistant and contain enhanced nutritional values. Specific breeding targets in improving agronomic grants can be encouraged.

Education and Extension

Education at all levels in the nation should be geared toward accelerated food production. The agricultural curriculum of the primary, secondary and tertiary institutions in Nigeria should be restructured to include a hands-on training base. All schools, at all levels should be made to have farms (just like the past) where both arable farming and animal husbandry are to be practiced. The Local Government Authorities must be compelled to source at least one hectare of farmland per primary school and three hectares of farmland per secondary school in every Local Government Area. This will immediately put over 500,000 hectares into cultivation. All tertiary institution should be made to have farms. In fact, the National Universities Commission should create a 3 unit (compulsory) course (GNS) which must be taken at 100 level or 200 level for every student in the university.

The course should be production driven i.e. over 50% of the grade should go to production from their individual plots. Farmers must be trained from time to time in new skills/technology. The extension programme of the country was almost dead until the creation of the ADPs. Even now, the extension process is still sick. An integrated extension scheme was initiated at a stage. This involved an agricultural extension agent carrying all subject skills to the farmer (crop, livestock, pests', trees etc). As expected this scheme failed. This blueprint is suggesting some educated farmers to be trained in different skills for each zone. These farmers would serve as trainers for their various zones to push new skills and technologies. Such farmers should be trained and retrained from time to time. The government would provide incentives such as motor cycles, spray pumps etc. for them. They are to complement the efforts of subject matter

specialists who must still go to the fields to see farmers. Subject matter specialists in the extension farm of government should look into the research Institutes for new developments and translate them into extension pamphlets which can be used on the field. There are many discoveries hidden in the researcher's shelves in many Agricultural Institutes in Nigeria. The extensionist must be empowered by government financially to carry out this task.

The government should use integrated settlements (Farm settlements) to test extension results. Government should map out areas of 400 ha each in several parts of the country and encourage farmers to settle in such schemes. Infrastructure and all necessary things needed for production should put in place in such 400 ha plots. All extension skills should be tested with such farmers before they are extended to all other farmers round the country. The extensionist must be properly kitted and remunerated for this job of reaching all farmers. A ratio of 1:1000 extensionist/farmer is suggested.

Soil Fertility

The major farming system adopted by farmers of the lowland humid tropics is the shifting cultivation system. Shifting cultivation in a variety of forms has been practiced successfully and safely for centuries, fully adapted to the specific climatic and edaphic conditions prevailing in a given forest region. However, because of increasing population densities and escalating land pressure, this is no longer the case in most of tropical Africa (FAO, 1983). Changes in the patterns of land use, both spontaneous and planned, have taken place in which forestry and forest trees have played a vital role; yet further changes must occur if Africa is to avoid fatal soil degradation and produce the food its inhabitants require. The ability of the system to recuperate the soils through the fallow period had been remarkable. However, due to population explosion, fallows are now shorter and trees/ shrubs can no longer grow to a point where effective nutrient recycling can take place. The result is that soil fertility is not fully restored before the farmer gets back to site. Yields are poorer and food security has become a problem in the zone due to soil infertility.

In Nigeria where the rain fed agricultural unit is part of this zone, the effect is very high. A lot of derelict lands have resulted from this. This calls for the use of inorganic fertilizers as yields will be extremely poor if such lands are left without imputs. Inorganic fertilizers must therefore the made available to farmers at very affordable prices. Government must subsidize these at the moment until the farmers can afford the total costs. The fertilizer factories should be made functional and more should be built. The delivery of fertilizers should be through private suppliers with government regulating prices. This way, it will reach the farmers, minimize racketeering and gradually prepare the farmers mind to buy at actual cost. The use of organic matter (like the shifting cultivation) can help reduce farmer's use of inorganic fertilizers. An alternate farming system to replace the shifting cultivation system must be encouraged in the zone. Farming practices

like improved fallows, alley farming, plantation crop combination, Home gardens and some others must be fully developed.

The nation should immediately put in place a land capability classification with a proper land use plan for use in the country. Recently, users of land cultivate land without knowing what they are capable of producing. This is why derelict lands that ought to be growing trees are still used for food production. Government must immediately make serious efforts to classify the nation's lands into various user categories – A, B, C, D etc. Class A lands will be very fertile, with gentle slope and very good for agriculture. Class D or E parcels of land will indicate derelict lands, or lands prone to erosion or land degradative processes. Such lands must revert to forestry for tree growth. Such lands, once recuperated can move to other uses. This way, land can move from one use to the other depending on its present state (Adeola, 2008).

An effective forest management system must also evolve as part of this overall scheme. Community based forest management system (Adeola, 2011) should be operated round the country so that communities can get involved with Government in the oversight functions of their lands. They can police the forest against illegal felling of trees, plant trees on their derelict lands and help Government oversee forest reserves and free areas. Parcels of land can move from A – D or E accordingly but all D/E lands should be reserved for tree planting. As pools of land in the country become organised, more land will become available to the farmer. A policy trust advocated by many researchers (land availability to farmers) would have become fulfilled and laid to rest.

Storage, Processing and Technology Including Irrigation

About 40% of the food produced in Nigeria today is spoilt on the farm. Vegetables like tomato, onion, pepper etc get spoilt on farm or in the process of transportation. Grains and tubers are also not left out. The country must encourage research into storage systems so that such items of food can be stored if not quickly sold. For grains, the building of steel silos must be intensified round the nation. Private entrepreneurs should be encouraged to come into processing and preservation of food. Tomatoes can be converted into puries and pepper, onion, tubers etc. into flours while fruits can be converted to juices. The country must encourage the use of modern farming technology in all areas of farming especially such technology that will reduce intensive labour without too much impact on fragile lands. Things like the injector planter, hand propelled fertilizer applicator, low level horse power tractors, harvesters and inter-row weeders should be developed for use in the country. The Leventis Foundation Agricultural School, Ilesa, Osun State, was using some of these to train its farmers in the past. Genetically improved seeds should be introduced.

Inputs and Micro Credit Schemes

Various imputs needed by farmers should be made available. Such imputs like fertilizers, improved seeds, agro

chemicals, and a range of products that will help the farmers to produce well. Such imput supply must be followed by proper training as regards their use. Some soils may require only doses of phosphorus. Such soil should not be given NPK. Types of chemicals to use for different occasions should be explained to the farmers.

The policy thrust of Government should be to provide credit support for all range of farmers especially for small scale farmers. This group of farmers constitute about 70% of farmers in Nigeria producing over 80% of the food in the country. According to Amao *et al.* (2003) as reported by Asogwa *et al.* (2014), the agricultural sector has been an important component of the Nigerian economy with peasant farmers producing over 90% of available food in the country and 70% of the labour force relying on this sector. The nation should also try to develop medium scale farmers who will farm about 5 hectares each. The Leventis Scheme trains School Certificate holders for one year. The young farmers go out to their various communities' to be medium scale farmers who will settle down there and on the long run influence the politics of the area. The country should encourage such schemes and the young farmers will replace the ageing ones in the profession. Micro Credit Schemes should be made available to such graduates including graduates of agriculture from the Universities to enable them settle down. The micro credit scheme for farmers should carry interest on loan of no more than 2 – 3% and the supervision must be private sector driven to ensure success and repayment. To this end, the Agricultural Bank must be developed with full private sector participation. Disbursement from other commercial banks must follow Government policies for Agricultural Credits.

From time to time, the nation may encourage interest in particular crops e.g. rice and the farmers are given credits with other good incentives to produce such crops. Loans for such productions must be low (about 1 %) and government will help to purchase the harvest when ready.

Market

The farmers should be helped to prepare their products for market, both local and foreign. To this extent, harvesting and cleaning/processing facilities should be provided at affordable prices and accessible points to the farmers. The government can encourage the private sector to help in this but must regulate them to ensure that there is no exploitation of the farmers. Farmers must be trained on how to process their products for foreign market. As surplus for food begins to be produced, any excess is exported after enough has been stored. The farmers must therefore produce high grades of products that are of international standards.

Government should also help the farmers to develop overseas' markets for products. To this end, market information should be made available through commodity associations which farmers are encouraged to belong. The farmers' union will be a very good example for such informative outlets.

Agricultural Trust Fund

This has become very necessary in

other to ensure funding for agricultural production and management in Nigeria.The trust fund will get its money from all companies operating in Nigeria. Parastatals like NNPC, NPA etc should also be encouraged to donate 2% of their earnings (less budgetary allocation) to the trust fund. The funds collected will be spent on all areas of production and marketing including research and extensions. The trustees of the funds will be the stake holders of agriculture with the Head of State as Chairperson.

Conclusions

The policy thrust of the Nigerian Government in Agriculture is the attainment of self-sustaining growth in all the sub-sectors of agriculture. Specifically, it aims at self-sufficiency in basic food commodities, increased production of agricultural raw materials and exportable commodities, modernization of agricultural production and land improvement. This can only be achieved if programmes are properly implemented with all honesty in governance. The Blueprint discussed can only be pursued where there is the political will and the people trust the Government. There must be a change in the attitude of politicians to national development if such grand scheme is to succeed.

The estimated total population of Nigeria as at 2000 (Table 3) which was 123,337,800 million people, rose to 126, 635,600 million people in 2001 showing an increase of 3,297,800 million people within a year providing 2.6%. By the year 2005, 2006, and 2007 the estimated population rose to 128,772,000; 131,859,700 and 135,031,200 million people respectively. Similarly in 2010, 2011, and 2012 the estimated population stood at 155,217,300; 155,215,600 and 170,123,700 million people respectively. Between 2000 and 2012 Nigeria witnessed an increase of 46,785,900 million people, which is equivalent to 37.9% increase (Salmanulfarisi, 2013). The population issue must be addressed. Nigeria's population stands at about 140 million (NPC, 2007). It is projected to be growing at 3.1% per annum. At this rate the population should double in 23 years given the present scenario (Adeola, 2007). Such teeming population with an alarming growth rate is not good for resource development and use. The nation must, therefore, urgently begin the process of serious population control or else, the gains in the implementation of this blueprint for crisis free and sustainable food production may be eroded even before they are fully realized.

Suggestions for sustainable agricultural development

1. Government should carry out a Land/Soil capability classification of the agricultural land of the Nigeria,
2. Introduce a lost crop garden where disappearing crops can be planted for conservation,
3. Farm at least 20 - 30 ha of land to feed the University community,
4. Develop standard bee, fisheries and other micro-livestock production to produce for export and internally generated revenue,

5. Develop standard animal production unit for production of eggs, meat, milk, crops etc., Develop silos and encourage small scale processing of farm produce such as tomato puree, fruit canning and other similar production enterprises. This will generate income, provide employment and allow farmers to get value for their products and
6. Develop biotechnology laboratories across the country among others.

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