USING FOOD PROCESSING AND FOOD STORAGE IN ACHIEVING MILLENNIUM DEVELOPMENT GOALS IN NIGERIA

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ABSTRACT
*Eradication of poverty and extreme hunger was identified as one of the Millennium Development Goals **(MDG's)**, hence the hunger and poverty status of Nigerians was reviewed. Poverty was found to be very prevalent in Nigeria and was linked with hunger. Hunger was in turn linked to food production and more to food losses due to lack of adequate attention to provision of food processing and storage facilities. Apart from fighting hunger, food processing and storage could also help in provision of employment, reducing rural-urban migration and also increase income earnings thereby alleviating poverty. Other constraints to the advancement of food processing and food storage in Nigeria were identified. It was obvious that the Millennium Development Goals (connected to poverty and extreme hunger) can be achieved in Nigeria if food processing and storage challenges are addressed. Other useful suggestions were made.*

INTRODUCTION
The Millennium Development Goals (MDGs) are eight International Development goals to assists impoverished nations more aggressively. The United Nations member states adopted the targets in New-York to enhance development and improvement of poorest countries. They derive from earlier international development targets where all world leaders present officially adopted the United Nations millennium declaration, from which the eight goals were promulgated (Rosegrant, 2006).

The problem of development has occupied the attention of scholars, activists, politicians, and development workers, local and international organizations for many years with an increased tempo in the last decade. Even though there are different perspectives to development, there is a general consensus that development could help to lead to good changes manifested by increased capacity of people to have control over material assets, intellectual resources and ideology and obtain physical necessities of life, for example, food, clothing, shelter, employment, equality, participation in government, political and economic independence, adequate education, gender equality, sustainable development and peace. This is why some people have argued that the purpose of development is to improve people's lives by expanding their choices, freedom and dignity. However, the reality of the world is that many countries are under developed (Igbuzor 2006).

The declarations of eight MDGs cover the following issues:

(1) To eradicate extreme poverty and hunger.
(2) To achieve universal primary (Basic) Education.
(3) To promote gender equality and women empowerment.
(4) To reduce child mortality.
(5) To improve maternal health.
(6) To combat HIV/AIDS, malaria and other diseases.
(7) To ensure environmental sustainability.
(8) To develop a global partnership for development.

Richard (1978) opined that the problems associated with poverty in Nigeria are multi faceted. Nigeria has no reason to be a poor country because of the vast economic potentials and human resources that it is endowed with. In Nigeria, especially after the ephemeral oil boom of the mid-1970s, poverty pervaded the population, poverty is still noticeable and its eradication is a daunting task for the government. The eradication of poverty is a significant objective in policy formulation and implementation in the emancipation of humans (UNDP, 2004). The incidence of poverty is more acute in the rural than in the urban areas. Migration from rural areas to urban areas is very high due to lack of job opportunities in the

rural areas. The high level of unemployment has immensely contributed to poverty in Nigeria. Apart from poverty, malnutrition is a silent emergency in Nigeria.

Nigeria is still characterized by high reliance on food imports, malnutrition is wide spread in the country and rural areas are especially vulnerable to chronic food shortage, malnutrition, unbalanced nutrition, erratic electric power supply, poor quality foods, high food costs and even total lack of food. Akunyele (2009) stated that the phenomenon cuts across all age groups and categories of individuals in the rural areas. There is a high level of malnutrition among children in rural Nigeria, the problem of food and Nutrition security in Nigeria has not been adequately and critically analyzed despite various approaches at addressing the challenge. The enormous amount of money spent in attempting to assure food security of Nigeria without success calls for fundamental review of the past approaches and achievements to see what lessons can be learned to re-strategize and develop an approach that will ensured that better progress is made toward achieving first millennium development goals.

Robertson, (2006) opined that Households should have access to good food and nutrition for healthy living. The population should be healthy to create national wealth. Domestic food production is not enough to meet national food demand. Post harvest losses are 20 – 40% because harvesting, processing/storage techniques are inefficient. Increased food production, availability of food supply and access are crucial to achieving major nutritional improvements, but Sanni (1999) believed that Nigeria can feed its teaming population if all the foods produced are not wasted during the lush season but are rather processed and stored to reach the consumers. The first target of MDG is to eradicate extreme poverty and hunger as a necessity. A hungry man is an angry man, a hungry Nation is an angry Nation. Food is a necessity for the development of a nation. Food contains nutrients that aid growth and bring good health to the body. It can reduce the risks of some diseases. A healthy Nation is a wealthy Nation. One of the problems of Nigeria is lack of food processing and food storage. Agricultural products are being wasted due to lack of adequate food processing and food storage practices. Food processing can prolong shelf life of Agricultural product and also reduce poverty by providing job opportunities to our youths, thereby reducing poverty and crime rate. Thus, to attain the first millennium target, which is to eradicate poverty and hunger. There is need to pay attention to food processing and food storage.

FOOD PROCESSING

The Bureau of labour statutes (2009) agreed that food processing is not only a method used to transform raw ingredients into food for human consumption which enhance the availability of foods in our society, but it also provides job opportunities that enables the youth to be employed. Food processing industries whether cottage or large ones employ different types of workers such as skilled workers, less skilled, machine operators and labourers which can reduce crime rate and insecurity in Nigeria. Olatunji (1984) and Iwe (2004) stated that food processing is the set of methods and techniques used to transform raw ingredients into food or to transform food into other forms for consumption by humans or animals either in the home or by the food processing industry. Processing convert harvested or raw foods into forms that are more easily stored and consumed and sometimes converted into a form that may be more desirable. For example, wheat is processed into flour which is used to make cake, biscuit, and so on. Workers in the food manufacturing industry link farmers and other agricultural producers with consumers. They do this by processing new fruits, vegetables, meats and dairy products into finished goods ready for the wholesaler to sell to households, restaurants or institutional food services. Food manufacturing workers perform tasks as varied as the many foods we eat, for example they slaughter and dress meat or poultry, process milk, cheese, and other dairy products, cakes and other bakery products, manufacture sugar and candy and other confectionery products; margarine and other fat and oils, packed sea food, coffee, potato and corn chips are examples of processed food.

Chigbo (2009) opined that Nigeria losses significant value of between 15 to 40 percent of its products because it is unable to process most of its production on account of probabilities cost i.e costs of procuring and installing processing equipments.

Most of fruits and vegetables are seasonal and perishable in nature. During the harvest period, there may be a local glut, particularly of fruits, but because of insufficient transportation facilities, lack of good roads and poor availability of packing materials, the surplus cannot be taken quickly enough to the natural markets in urban areas. Moreover, the surplus often cannot be stored for sale in the off-season

because of inadequate local cold storage facilities. Thus the cultivators do not obtain a good price for their produce because of the glut and some of them spoil resulting in complete loss (Uko-Aviomoh and Salami 2011).

Foods are fresh at their optimum quality at the time of their harvest or slaughter. To maintain this quality in foods that will be consumed later, foods need to be stored and preserved. Joshi (2005) stated that foods undergo spoilage or deterioration during improper storage due to the actions of microorganisms and enzymes present in the foods. These foods begin to deteriorate rapidly after harvesting; deterioration may be accompanied by production of poisonous substances. Others may cause loss in the nutritive value of food or aesthetic spoilage, making the food unacceptable. The following are storage losses opined by Hayman (2003).

(i) Losses during improper storage
(ii) Loss in quality through biting damage, insects, and rodent excrement and fungus growth.
(iii) Losses in weight due to insects, rodents or birds eating the grain.
(iv) Decline in germination capacity of stored seed.

Two factors determine the choice for the best storage method.

(a) The moisture content of the product when it comes from the field.
(b) The relative humidity of the outside air during the storage period.

Products can be stored in many different kinds of storage containers varying from earthen gourds, baskets, cribs, big metal or cement silos, depending on financial possibilities, available materials and external circumstances (climate). One can choose from the storage methods, mentioned. During storage, container no matter what it looks like or what it is made of, should keep the product dry and cool, and protect it against insects, fungi, rodents, domestic animals and thieves. A small part which is infested by insects or fungi or has too high moisture content may spoil the whole amount. Hayman (2003) believed that the story for providing storage facilities in the country for food crops especially perishable ones like tomatoes and fruits is tragic. This resulted in off season food crops with high price. Post harvest losses are one of the reasons for limiting food production and farmers are totally discouraged.

ATTAINMENT OF MILLENNIUM DEVELOPMENT GOALS IN NIGERIA THROUGH FOOD PROCESSING AND FOOD STORAGE

Fresh food crops are the raw materials used for processing into finished products. The quality of the raw materials determines the quality of the finished (processed) products. The target of any serious food processor is to produce foods of high nutrient density for the consumers. This can only be achieved through proper handling of the fresh food crops from the farm gate to the processing unit. The following steps can be taken to ensure proper handling of food crops meant for processing to ensure nutrient conservation thereby attaining the millennium development goal.

(i) On farm temperature management:- Food crops continue to respire and perspire after harvest which can lead to temperature build up especially when they are heaped together in collection centres (on farm) and during on-farm storage. Shades should be provided by the farmers to protect the food crops from direct rays of the sun. Also, the food crops should not be tightly heaped to avoid temperature build up packing should be carefully done to ensure free movement of air around the food crops to help reduce temperature build up around the food crops. If the temperature is not properly managed, heat could build up and trigger the growth and multiplication of spoilage organisms that could cause spoilage resulting mild to heavy losses depending on the nature of the food crop and the intensity of heat (Uko-Aviomoh and Okoh 2005).

(ii) Creation/Expansion of cold storage facilities:- This is an herculean task but can be achieved through determination. The farmers are poor and may not be able to meet this target individually. Farmers can form cooperatives and obtain soft loans from micro finance banks to acquire cold storage facilities for their food crops. In this way, the food crops could remain fresh for a long period. This will reduce post harvest food losses and will also ensure food supply through out the year especially when processed into finished products.

(iii) Use of refrigerated trucks for transportation of perishable food crops: Food marketing and distribution is carried out mainly by middlemen in Nigeria (Uko-Aviomoh and Isibor 2011). The food crops are heaped in rickety lorries or buses with no air circulation and sometimes receiving direct

rays of the sun. The temperature builds up as a result of heat generated by the perishable crops (through respiration and perspiration) coupled with the heat from the sun. There is need to regulate the activities of middlemen to ensure proper handling of food crops so as to ensure conservation of nutrients. This is very important because the quality of the raw materials determines the quality of processed food products of Middlemen should be encouraged to pull their resources together and acquire refrigerated trucks for transportation of fruits and vegetables.

(iv) Establishment of cottage food industries: Cottage food industries are small scale food industries that consist of people working in hames. It requires simple low cost food processing equipments. It is a program that could promote food processing in rural areas. Locally fabricated and affordable equipments are required in setting up a cottage industry Oyakhilome (2000) had earlier suggested the use of cottage industries to augment food processing in Nigeria and add value to our food crops. Also, Uko-Aviomoh and Salami (2011) further stressed that the citing of cottage industries will not only help to process our food crops but it will go a long way to improve food diversity, create employment opportunities, alleviate rural-urban drift, stimulate the growth of other supporting industries (e.g local food equipment fabricating industries) and improve income earnings.

(v) Food handling Education:- All food handlers from the farm gate to the food processing and food storage stage should be exposed to food handling education to conserve the nutrient content of foods. Such food handling education should include food hygiene, temperature management-on farm, during transportation, on-farm food storage and in the food processing store of the food processing industry (Uko-Aviomoh and Nwabah 2009). Protection of food from contaminants including saliva and excrements of pest, rodents and birds which can be sources of micro-organisms. Other contaminants include domestic animals and thieves.

(vi) Harvesting of food crops at the correct stage of maturity:- Food crops should be harvested at the correct stage of maturity. It implies that every farmer should be familiar with the quality attributes of a matured food crop. When grains are harvested at a higher moisture content then required (higher than 12 – 13% moisture) it is likely to support microbial growth or might sprout on storage. This is undesirable and could result in heavy food crop losses and a drain to the farming family's finances.

(vii) Provision of Silos and food Storage education:- Farmers should pull their resources together and construct small (capacity) silos for grain storage. The government in turn should provide silos in every state that produces grains in large quantities. This can act as national grain reserve for all year distribution thereby enhancing household food security. In addition farmers should be educated by agricultural extension agents on how to keep out moisture and also manage the relative humidity of the food crop environment to their advantage. Fruits and vegetables need a high relative humidity environment. Farmers should be taught how to simulate such an environment. Also, other food storage education should include:

   i. Sorting and grading
   ii. Quick marketing of broken and injured food crops
   iii. Trimming (where necessary)
   iv. Regular inspection of food store for spillage, sprouting or leakages
   v. Storing of food crops away from the wall and on damages

(viii) Provision of Regular Electric Power Supply:- Availability of regular electric power supply of correct voltage has been found by Uko-Aviomoh, Omatseye and Ajayi (2007) to be a major challenge to food processing and storage in Nigeria. The cost of food processing and storage is very high partly due to unavailability of regular electric power supply of correct voltage. Many food industries find it difficult to survive as the cost of running generators are very high. Also, consumers in Nigeria are paying dearly for processed foods as the bills are passed down to them. The normal pattern in Nigeria is that when there is any increase in price of petrol or diesel, the price of processed foods increase. There may be a limit to the trend if electric power supply is steady.

(ix) Linkage Between Research Institutes, the Farmers and the Industry:- Research findings on food processing and storage are hardly publicized or made available to end users, Universities and Research institutes should make available current developed technologies on food processing storage to the food industries and the farmers who are the main end users of such information.

Improvement in dissemination of research findings will help to improve food processing and food storage in Nigeria thereby helping towards meeting the millennium development goal.

(x) Government Policies and Food Processing and Storage:- Nigeria Government is not known to formulate food policies that promote food processing and storage. The trend is glaring when one takes counts of government establish food processing and storage industries in Nigeria from independence till date. Over the years, more emphasis has been on increased food production with little or no attention to food processing and storage. Poverty and unemployment could be eradicated if every government regime builds one food processing and storage industry per state of the federation.

CONCLUSION

The first millennium development goal which is to eradicate poverty and hunger can be achieved if Federal Government pay more attention to food processing and food storage. It will add value to food, create food diversity and improve shelf life of agricultural products. It can also create more job opportunities for the youths which can reduce crime rate and joblessness. It there is adequate facility and knowledge for storage and food processing, there will be reduction of food spoilage-meaning, more food will be available for consumption, thereby increasing household food security in Nigeria.

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