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CHAPTER 13

GENETICALLY MODIFIED FOODS AS PANACEA TO THE CHALLENGES OF FOOD INADEQUACY IN NIGERIA

By

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INTRODUCTION

Western media reports have on different occasions cited that most Nigerian families live on less than one dollar per day. An AL.Jazeera's report aired during the national strike on January, 2012, occasioned by the removal of subsidy on premium motor spirits (petrol) in Nigeria supported the above assertion and regretted that the purchasing capacity of Nigerians would further be made worse by the present disposition of the central government. The above reports presuppose that availability and access to quality nourishing foods at affordable costs would further drift beyond the reach of most families and more would precipitate beyond the poverty line. Food inadequacy is used in this paper to mean a condition in which families are not able to afford foodstuff for balanced diets in their right mix.

The farming enterprise in Nigeria has been witnessing tremendous setback in terms of availability of farm inputs, impoverished farm lands, floods, poor yielding ideotypes as well as the incidence of pests and diseases. The combination of high population rate and low productivity of the agricultural sector in Nigeria has led to a widening gap between the supply and demand for food (Ayinde, 2002). Oyejide, (1984) and Dike, (1991) have identified among others, poor and confused agricultural programs, continuous utilization of traditional and obsolete agricultural production technologies, lack of proven commitment and seriousness on the part of successive government in the formulation and

policy implementation and continued dependence on the small scale farmers who account for over 90 percent of the annual agricultural production to be responsible for low agricultural production in Nigeria. In view of these and other factors, crop yield have been comparatively poor and in some cases the farmers are merely able to obtain subsistent harvests with marginal recovery of their investments. The farmers' problems are further compounded by lack of good roads and affordable transport facilities to convey farm produce to retail outlets, causing most foodstuff to spoil on the farms. Storage facilities where available are either inadequate, non-functional and totally absent in most cases. It is estimated that about 2.5% or more of the world's food production is lost after harvesting (Okaka and Awan 1985), while 30% of fruits are lost during the rains (Akintunde, Akintunde and Adejumo 2004). Giweze and Okeh-Ikwu (2011) observed that food losses are comparatively higher in developing economies where storage facilities are inadequate or non-existent.

Crop Improvement Programs in Nigeria.

The Nigerian governments have been striving to place food production in the country on a scientific threshold. This is attestable from the empowerment of several research institutes with the mandate to study the ecological viability of the Nigerian landscape with a view to generating germplasm that would do well and produce optimally which could be distributed or sold to the farmers. Example of such institutes include the International Institute for Tropical Agriculture (IITA), National Institute for Oil Palm Research (NIFOR), Rubber Research Institute, Iyanomo, Cocoa Research Institute of Nigeria (CRIN), National Cereals and Root Crop Research Institute. Primarily they have all focused on the improvement of germplasm and consequently, have produced crops with pest and disease resistance, high yield

and early maturity. However, the research endeavours of these institutions have not positively imparted on the overall improvement of crop yield in the farms to provide cheaper foods on the tables of over 150 million Nigerians. For instance, over the years the IITA has gathered a collection of 15,000 cowpea accessions of cultivated varieties from over 100 countries and 560 accessions of wild cowpeas, all of which have been characterized and evaluated for desirable traits and being preserved and used in breeding programs (Ng and Singh 1997, Singh 2005). Yet the bulk of cowpeas in the Nigerian markets come from the peasant Hausa Fulani farmers in Northern Nigeria.

What is Genetic Modification? Genetic modification is a special set of technologies that is used to change the genetic makeup of organisms such as animals, plants or bacteria. The art of combining genes from different organisms is known as recombinant DNA technology. Any organism that has been so genetically modified is said to have been genetically engineered or transgenic. Foods produced through this process are called genetically modified (GM) foods.

Crop Improvement through Genetic Modification.

The science of genetic modification is alien to Africa, except South Africa which recorded 1% of global production of transgenic crops in 2006. The process of genetic modification begins through genome sequencing through which maps of different genes are produced and those with desirable traits are identified and selected. The genes of crops of interest are then 'mixed' in a process known as DNA hybridization Technology. The offspring thereof will carry genes from different sources. The Office of Science, (2008), stated that 252 million acres of transgenic crops were planted in the year 2006 in 22 countries by 10.3 million

farmers. In all, the following countries grew 97% of transgenic crops globally:

United States	-	53%
Argentina	-	17%
Brazil	-	11%
Canada	-	6%
India	-	4%
China	-	3%
Paraguay	-	2%
South Africa	-	1%

The transgenic crops planted were herbicide and insect-resistant soybeans, corn, and cotton. Other crops grown commercially or field tested are a sweet potato resistant to a virus that could reduce most of the African harvest, rice with increased iron and vitamins that may alleviate chronic malnutrition in developing countries as well as other varieties of plants that are able to withstand weather stress. Also, fish that mature more quickly, animals with increased resistance, high productivity and feed conversion, better yields of meat, eggs and milk, improved animal health for instance cows that are resistant to mad cow disease (**bovine spongiform encephalopathy**) have all been hybridized.

Constraints for Genetically Modified Foods.

Despite the dramatic potentials of GM foods for meeting the country's food challenges, there are some possible risks associated with them. For instance gene transfer many constitute potential health risk such as transfer of allergens, and antibiotic resistance markers. Food production in the world would be dominated by a few biotechnology companies, thereby increasing dependency of developing economies on industrialized countries.

On ethically grounds, gene violating of natural organism's intrinsic values and tampering with nature by mixing genes among species. Furthermore, Religious or moral objections to consuming animal genes in plants and vice versa could also arise. In addition, locating genes for certain important traits often constitute major problems.

Conclusion

For the empty stomachs yearning to be filled in Nigeria there is a ray of hope as the technologies for genetically modifying foods offer positive prospects for meeting one of the greatest challenges facing Nigeria and other developing countries.

Genetically modified products are environmentally friendly and conserve the ecosystem balance and will surely provide the desired food securities needed by the large populations of developing economies

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