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Research Article

Consumer Perception and Acceptability of Genetically Modified (GM) Foods in Nigeria: a case study of Abuja Metropolis

Iroh Emmanuel* , **Maruf Sanni[1], Ayo-Lawal Ronke[2] and Emmanuel-Iroh O. Dora[2]**

[1]*National Centre for Technology Management (NACETEM), Federal Ministry of Science and Technology, North Central Office, Abuja*

[2]*National Identity Management Commission (NIMC), Abuja*

ABSTRACT

Genetically Modified (GM) foods today have generated wide controversies, concerns, interest and debate both in developed and developing Nations of the world with fairly sufficient food supplies. Consumers now display misconceptions, limited knowledge, and even unfamiliarity with GM food products. Hence, this study was aimed at assessing consumer's perception and acceptability of genetically modified (GM) foods in Nigeria: a case study of Abuja metropolis. Using Taro Yamane (Yamane, 1973) formula with 95% confidence level, a total number of 385 questionnaires were distributed to the Federal Civil Servants within the Federal Capital Territory, Abuja. Stratified sampling was adopted to ensure that civil servants (Upper, Middle and Lower Cadre employees) were proportionally represented. About 65.5% (252) of the questionnaires distributed were retrieved. Data was analyzed using the Statistical Package for Social Sciences (SPSS) and presented using descriptive statistical tools (bar charts, tables, histograms).Results showed that there is a relatively low level of awareness of GM foods amongst residents of the Federal Capital Territory, Abuja with only 46.03% of the respondents agreeing to have at least some knowledge or information about GMOs or GM Foods. The survey also showed that even though more than half of the respondents (56.75%) vehemently claimed they were not aware of any side effects of GM food to human health, yet they believe that GM foods are harmful to health and environment when continuously consumed. It was also observed that majority of the respondents within the study area would willingly prefer and purchase genetically modified foods based on their nutritional value, environmental benefits and low cost of GM foods irrespective of how much they earn monthly. It was concluded and recommended that owing to the poor level of consumer's knowledge about GMOs and GMF in FCT-Abuja, the government (policy makers and regulatory agencies), environmental agencies, media, agribusiness dealers and NGOs should intensify awareness and organize training/enlightenment programmes on GMOs and GM foods.

INTRODUCTION

The future projection of the world's population by the year 2050 will no doubt grow beyond 9.8billion (United Nations, 2017). And this will eventually lead to a high demand of food globally; high level of malnutrition and also pose a threat of satisfying public demand of food (FAO, 2017). This condition is worsened by incessant climate change leading to extreme weather conditions such as droughts, high temperatures and so on (Habibi, 2018).

The world food programme (WFP) of the United Nations, in presenting a global food security update reported that "twenty three (23) million people require food assistance in Southern Africa, an estimate of 4.8 million people (40 per cent of the population) would face severe food insecurity in South Sudan.

***Correspondence to:** Iroh Emmanuel, National Centre for Technology Management (NACETEM), Federal Ministry of Science and Technology, North Central Office, Abuja, Tel: +2348037332509, E-mail: emmanuel.iroh@gmail.com

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Even though Nigeria is regarded as the giant of Africa, yet; it is one of the food-deficit countries in sub-Saharan Africa today (Ojo, 2012). An estimate of about two million and five hundred thousand children suffers from very severe acute malnutrition in Nigeria (UNICEF, 2016). Furthermore, an estimate of 49,000 children in Borno State of Nigeria are likely to die if they do not urgently receive adequate food assistance, over 14 million people are in crisis or emergency owing to increase in food prices resulting from currency devaluation and insecurity in Yemen and many other countries of the world" (WFP, 2016) .

Although the government of Nigeria has consistently formulated policies and executed policies to boost the Agricultural sector, yet none of these policies produced the desired output (Iwuchukwu & Igbokwe 2012; Olaoye, 2010; Osamebo, 1992).

However, Olomola (2015) reported that introducing Agricultural Transformation Agenda in 2011 brought about a significant improvement in domestic food production within the country. In line with a research conducted by International Food Policy Research Institute (IFPRI) in 2016, it was reported that although the Global Hunger Index indicated satisfactory availability of food in Nigeria, yet there are so much hunger, malnourishment and food insecurity within the country (IFPRI 2017).

In spite of this development of genetically modified (GM) technology around the world, the controversies of GM technology among all sectors of society have intensified. Consumer acceptance of the GM foods plays a key role in the controversies. There is a broad dispute over the use of foods produced from genetically modified organisms in terms of key scientific researches, their impact on health and eco-systems, food safety and food security, labeling and regulations. Given these controversies, this study set out to critically examine public perception and acceptability of genetically modified (GM) foods in Abuja Metropolis of Nigeria.

The study seeks answer to the following questions:

- Is there any evidence of Genetically Modified Food within Nigeria?
- What is the awareness level on GMO foods in Nigeria?
- What are public opinions about the consumption of GM foods
- What factors influences the consumer's perception of GM foods?

LITERATURE REVIEW

The growing world population is posing serious challenges ranging from increased food consumption, inadequate land for agriculture practices, lack of water for proper irrigation, climate change, diseases and health concerns, terrorism to unemployment. These challenges are especially critical in low-income, food-deficient countries of Sub-Saharan Africa where an estimated 70% of the population comprises of small scale farmers living on small family gardens where soils have over the years become impoverished, in environments that are prone to drought, soil erosion, famine and epidemics of pests and diseases (Nang'ayo, 2006). These issues have stirred growing attention to GMF. However, Zimmer (2013) also posits that due to the consistent genetic modification of organisms/foods by humans for over three decades now, innovators who are motivated by some of the world's most critical challenges, now pave the way for GMOs — a path that leads to an unimaginable display of benefits, but also raises extremely important questions (Rangel & Maurer, 2015)

Most major advancement in technology has a targeted solution to an existing challenge. Genetically Modified Foods (GMFs) are potential tools to combat many of the world's hunger and malnutrition problems (Ogbadu, 2015). Their importance far out-weighs the risks perceived or anticipated by the consumers. Some benefits of GM crops include: production of pest resistant crops, herbicide resistance crops, disease resistance crops, cold tolerance crops, drought tolerance crops, salinity tolerance crops and increased nutrition crops.

In 2006, the International Food Policy Research Institute (IFPRI) vehemently maintained a position that biotechnology/genetic modification offers a potential way to quickly improve the characteristics of crops in terms of yield, resistance or herbicide tolerance to a degree not often possible with traditional/natural methods (Eneh, 2016).

OVERVIEW OF GENETICALLY MODIFIED FOODS

Genetically Modified Organisms are microorganisms (bacteria, fungi, and viruses), plants and animals and the most widened genetically modified plants are soybean, maize, cotton, oilseed followed by pumpkins, papaya, alfalfa and rice.

Genetically modified foods (GMF) are also known as bio-engineered or genetically engineered foods. They are food products usually commercially produced for public consumption that have been altered with the genetic material from another organism. The organism that is donating its genetic material may be an animal, a plant or a microorganism. GM crops can survive severe conditions as compared to native varieties that may take many generations of evolution to achieve the same level of resistance (Eneh et al., 2016).

While biotechnological accomplishments in the field of industry and medicine are often widely accepted, its applications in agriculture and food production are debated and mostly opposed (Asgarova, 2013).

BENEFITS OF GENETICALLY MODIFIED FOODS

The way people or the public perceived risks and benefits of a product or technology are major driver on how they react or respond to that technology (Peterson et al., 2000). And this is applicable to genetically modified foods (Poortinga, 2004).

The benefits of GM foods are very enormous ranging from reduction in pesticides which could lead to a greater conservation of beneficial insects (Aktar et al., 2009) to reduction in tillage which helps to mitigate soil erosion and environmental pollution (Wesseler et al., 2011). Most GM crops

are also beneficial for the reduction of water pollution through pesticide and fertilizer runoff (Christos & Ilias, 2011). GM technology can also be adopted to generate genes that are tolerant to extreme heat, drought, extreme cold, salinity and even aluminium. It is also beneficial in facilitating the remediation of polluted soils and making lands become more productive (Czako, Feng, He, Liang, & Marton, 2005; Uchida et al., 2005). The future expectation of boosting the productivity of lands for agriculture with less environmental impact is another benefit of GM technology (FAO, 2004).

PERCEIVED RISKS OF GENETICALLY MODIFIED FOODS

It is most likely and possible that respondents who consider the technology risky are more likely to reject GM food and vice versa. Again, when certain benefit as expected from the public is absent, it could lead to reluctance to identifying and accepting GM food. Several concerns for the preservation of species integrity and biodiversity have placed biotechnology at the forefront of public debate (Dimitrov, 2002). Public fears ranges from the potential unknown human health effects - especially forms of genetic modification like transgenic transfers across species boundaries, such as moving genes from fish into fruit - to the potential environmental risks from the release of genetically modified plants which could cross to wild populations (Pollak, 2003).

There is a high degree of media propaganda all over the world on the effects of GMFs on health due to the perceived long term risks of pesticides, herbicides and chemicals used in the genetic modification process. This to a great extent has created fears and negative public perception and opinion about GM foods.

The fact that most genetically modified foods in the market today are not properly differentiated from the natural foods could also be another source of concern for consumers. Several debates have been put up regarding genetically modified foods in the world today. While some countries have rejected, banned or refused to embrace the GM technology and advancement, many others have put in place solid policies that supports the growing and commercialization of genetically modified foods (Schnurr and Stuart, 2016).

PUBLIC AWARENESS OF GENETICALLY MODIFIED FOODS IN NIGERIA

A survey conducted on knowledge and perception of genetically modified foods among Agricultural Scientists in Nigeria showed that about twenty percent (one in five Nigerians) of Nigerians are aware that genetically modified food products are currently on sale in supermarkets (Alarima, 2011).

In another study to estimating the level of awareness of GMFs among food consumers in Enugu-Nigeria, result showed that approximately twenty seven percent (26.67%) of the sampled food consumers were aware of GMFs (Eneh, 2016).

Olatunji & Adekunle, (2007) examine awareness of biotechnology and the attitudes of the public towards products and services derived from Genetically Modified Organisms in Southwest Nigeria and observed that although the respondents within the study area had some level of awareness for biotechnology techniques, yet; there was little awareness about GM crops/foods. In spite of the huge benefits of GM foods in agriculture, health and the environment, many citizens of Nigeria seems to maintain a low level of awareness towards GM Foods as buttressed by the literatures above.

PUBLIC ATTITUDE TOWARDS ACCEPTANCE OF GENETICALLY MODIFIED FOODS

Worldwide consumer response toward food products made from genetically modified (GM) ingredients has been largely negative (Curtis et al., 2004). Public attitude towards the cultivation and commercialization of GM foods relatively varies from one person to another depending on their factors of preference for the products. Before now, various studies carried out by researchers showed that the attitudes of the public were both negative and positive depending on the factors influencing them per time.

In a study carried out to examine the perspectives of undergraduate medical and dental students of the college of medicine, university of Lagos on GMFs, it was revealed that the poor knowledge of the respondents about GMFs influenced their perceptions and resulted to negative attitudes towards the acceptance of GM Foods. And this in turn influenced their preferences for traditional foods over genetically modified products (Olufunke & Onime, 2012).

CONSUMERS PERCEPTION OF GENETICALLY MODIFIED FOODS

The theory of consumer perception is an attempt to explain consumer behavior or analyze motivations for buying or not buying a particular item. People tend to develop like or dislike for a particular product based on some personally conceived factors or reasons.

Van der Walt (1991) posits that a person's frame of reference or preference is absolutely unique and special to him and it is made up of several characteristics including his previous experiences, beliefs, likes, dislikes, habits, prejudices, feelings and other psychological reactions of unknown origin. Consumers in Africa have a negative perception towards GMO products (Eric et al., 2014).

In a study conducted to assess the consumer perception of genetically modified tomato at Kenyatta University. It was observed that three components which are consumers GM foods purchasing decisions, consumers moral values and consumer awareness explain consumer perception of GM tomatoes at Kenyatta University. They further discovered that consumer's perception of the GM tomatoes had a correlation with the attributes of the GM tomatoes (Eric et al., 2014).

GENETIC MODIFICATION OF FOODS IN NIGERIA

Nigeria indeed is the giant of the African continent in terms of population growth, economy growth and development yet drags her foot in issues related to genetic modification development (Ottuh, 2015). But according to Ojo (2015), a giant step was taken by the Nigerian government to sign/enact into law the National Biosafety Act (2015) for the establishment of the National Biosafety Management Agency (NBMA) with the mandate to manage modern biotechnology activities, including research, development, introduction and the use of the products of modern biotechnology–genetically modified organisms (GMOs).

A report by Cerier (2017), shows that a confined field tests are being conducted for four genetically modified crops (insect resistant (Bacillus thuringiensis) Bt cotton, Bt cowpea (a legume), iron, zinc, protein and vitamin A fortified and nitrogen-efficient sorghum, and salt-tolerant and water-efficient rice) in Nigeria. He further established a fact that although the International Institute of Tropical Agriculture (IITA) and the National Root Crop Research Institute of Nigeria (NRCRI) are conducting research on yet another GM crop, vitamin A and disease-resistant cassava, the federal government of Nigeria has recently approved the confined trials of Bt corn for commercial production within few years.

In a Frequently Asked Questions put together by the National Biosafety Management Agency (NBMA) in Nigeria, it was established that a good number of GMO Permits have been approved in Nigeria some of which are:

- Bio-fortified Cassava (Confined Field Trial (CFT)) at NRCRI, Umudike, Abia State.
- Pod-borer resistant cowpea (CFT) at IAR, Zaria.
- Africa Bio-fortified Sorghum (CFT) at IAR, Zaria.
- GM Cassava Mosaic Virus and Brown Streak resistant virus at NRCRI, Umudike, Abia State.
- Nitrogen-Use Efficient, Water-Use Efficient and Salt Tolerant (NEWEST) Rice (CFT) at NCRI, Badeggi, and Niger State.
- Herbicide Tolerant/Insect Resistant Maize (CFT) Monsanto Agriculture Nigeria Limited
- Insect resistant cotton (Commercial Release (CR)) Monsanto Company Nigeria Limited (NBMA, 2017).

The Agency also officially affirmed that, there are no GMOs in Nigeria presently, except those on trials. However, a couple of GM foods have eventually found their way into our markets and the country at large through importation.

RESEARCH METHODOLOGY

This study was carried out in the Federal Capital Territory, FCT-Abuja which is located at the Centre of Nigeria. It is the capital city of the Federal Republic of Nigeria. It has a land area of 8,000 square Kilometres, falls within latitude 7 45' and 7 39' and bounded on the north by Kaduna state, on the west by Niger state, on the east and south-east by Nasarawa state and on the south-west by Kogi state.

The study population for this study covers the Federal Civil Servants in Abuja. This is because of my curiosity of the view of civil servants on GM foods/Technology and also to contribute to the existing pull of knowledge. Population size (N) = Approximately 10,000 (IPPIS), 2018.

SAMPLE SIZE

In order to get the sample size for the study, the Taro Yamane (Yamane, 1973) formula with 95% confidence level formula was used. The formular is presented as follows:

$$n = \frac{N}{1+N(e)^2}$$

Where n= sample size

N= total population

e= degree of error

1=unit [a constant figure]

Using the appropriate formula above to get the sample size to ensure that the population of the study is adequately presented. Based on this established data, [n] was computed thus;

N= 10,000 (Ten thousand)

e= 0.05 (we desire a 95% confidence level and ±5% precision)

Therefore

$$n = \frac{10{,}000}{1+10{,}000(0.05)^2}$$

$$= \frac{10{,}000}{26}$$

$$=384.6 \text{ approximately } 385$$

$$n=385$$

RESEARCH DESIGN

In this study, both primary and secondary data (internet, publishes journals etc.) were used and the method of data collection was by a structured questionnaire administered to Federal Civil Servants within Abuja metropolis. The study population comprised of 10000 civil servants and the sample was selected through stratified random sampling. Stratified sampling was adopted to ensure that civil servants in each subgroup were proportionally represented. Besides, it fully considered the proportions of upper, middle and lower cadre/employee level as the strata on which sampling was based. A total of 385 questionnaires were administered. The questionnaires upon return from respondents, were numbered, coded, recorded and statistically analyzed using descriptive statistics such as frequency, tables and percentage distribution.

RESULTS AND DISCUSSIONS

Out of the 385 questionnaire distributed, 252 (65.5%) were returned and valid for analysis. The bulk of the questionnaire was administered to staff of the federal ministry of Agriculture and Science and Technology because of their presumed background on the subject matter. Data was presented with bar charts, tables and histograms and analyzed with SPSS (Statistical Package for Social Sciences) using correlation analysis.

SOCIOECONOMIC CHARACTERISTICS OF RESPONDENTS

The results in Table 1 show that 53.6% of the respondents were female while 46.4% were males. The educational qualification of the respondents was dominated by those who have tertiary education (69%) followed by 31% of respondents who holds either a postgraduate diploma (PGD) certificates, master's (MSc) degree certificate or a Ph.D. Result also showed that 40.9% of the respondents were within the upper cadre position (semi-management/management level), 41.3% of the respondents were at the middle cadre while 17.9% of the respondents were of the lower cadre.

Furthermore, about 20.6% of the respondents confirmed their monthly earning capacity to be N100,000 and above, 40.9% of them earn between N80,000 to N100,000 per month, 25.4% earn between N50,000 and N80,000, 12.3% earn between N20,000 and N50,000 while just 8% of the respondents earn ≤ N20,000 per month.

AWARENESS LEVEL OF THE STUDY AREA ON GM FOODS

Even though Nigeria is not yet a commercial cultivator and distributor of GM foods, yet a lot of the products are available and smuggled into her markets. From the data presented in the course of this work, about 40.03% (< 50%) of the respondents agreed to have some knowledge about GM Foods while 53.97% strongly affirmed the fact that they were never aware of genetically modified foods. This scenario was said to have resulted from the low understanding level of Nigerians on GM foods and has the possibilities of affecting the consumer's acceptance and perception of GM food. The study of Oladele & Akinsorotan (2007) agrees with these findings, which asserted that perception of the respondents was highly affected by their low awareness status on GM foods.

ACCEPTABILITY LEVEL OF GM FOODS AND TECHNOLOGY AMONGST RESIDENTS OF THE STUDY AREA

In agriculture, GMOs can potentially lead to an increase in food and agricultural production by making use of less area of land for cultivation, enhance the quality of soil and reduce soil erosion level, increase water retention, reduce the levels of nutrient run offs and increase tolerance to specific herbicides. But how much are these appreciated by the respondents? During data presentation, the respondents were assessed on their ratings of GM technology and its application. From the analysis, it is clear that about 1.19% of the respondents had the highest percentage of acceptance of the technology, followed by 5.95% of the respondents with 75% acceptance, 13.49% of them with 55% acceptance, 62.30% of them with 35% acceptance and lastly, 17.06% of them maintained about15% level of acceptance. A larger percentage of the respondents rated the technology at 35% of the total acceptance rating level which is just a liitle lower than average. It can be infered that this low level of acceptance of GM technology, GM foods and its application by the respondents is attributed to the low level of awareness of genetically modified technology and food. Apparently, these findings were not surprising as they corroborated those of (Hsin-Yi and Wen, 2002) studies which showed that the high risk perception of GM foods by the public as a result of the low awareness level of the respondents could also affect their acceptance rate of GM foods.

EXAMINING PUBLIC PERCEPTION ON GM FOODS WITHIN THE STUDY AREA

Various parameters were examined to confirm the public's perception of genetically modified foods, and it was observed that about 67.46% of the respondents perceived genetically modified foods as generally harmful to human health when consumed while 32.54% of them consistently maintained their opinion and perception that genetically modified foods are not harmful in any way to the human system. Furthermore, 51.98% of the respondents opined that the consumption of GM foods poses a high risk of allergic reactions to humans,18.25% of them believed that GM foods are quite toxic to the human body, 12.30% of them also were of the opinion that the consumption of GM foods could result to antibiotics resistance while 17.46% of the respondents believed that the consumption of GM foods either in the short term or long term could cause certain risks such as allergic reactions, toxicity and antibiotics resistance (Wen, Kyrre, Nobuhiro and Tsu, 2002). Several of them also believed the controversy that GM foods are characterised by more disadvantages than benefits. 21.4 % of the respondents were of the opinion that the effects of GM foods to the environment are more of a concern than any other issue. About 29% of them were so much concerned about their health and vehemently frowned at the potential effects of GM foods to human health while 49.6% of them perhaps were more concerned about the future effect of GM foods against the consumption of indigenous crops/foods.

IDENTIFYING FACTORS THAT INFLUENCES CONSUMERS ACCEPTANCE AND PURCHASING WILL OF GM FOODS

Beyond natural instincts, there are factors that may possibly influence consumer's choice or purchase of a particular technology or product. The belief system or opinion strength of a consumer has a way of affecting his/her decision to buy or

accept a product or food. From the data presented above, it was observed that about 73.45 of the respondents strongly confirmed that their willingness or choice to purchase GM foods were influenced by the perceived nutrients embedded in the foods while 26.6% of them never considered nutritional value as a yardstick to purchase GM foods. They perhaps could go for non-GM foods or probably buy GM foods irrespective of what believe others may have. In addition, respondents were accessed on their most important factor of preference for GM foods amongst taste, nutrition and safety. 13.1% of the respondents preferred to consume GM foods due to their improved taste compared to the traditional foods available. 66.3% of them preferred GM foods on the basis of their nutritional value as against taste and safety while 20.6% of them were most influenced by their perceived level of safety for consumption as against any side effect.

CONCLUSION AND RECOMMENDATIONS

In the course of this research work, it was observed that about 40.9% of the respondents were employees within the upper cadre, 41.3% were of the middle cadre while 17.9% were of the lower cadre. So, the main bulk of the respondents were civil servants at the middle level of their career, followed by those of the upper level and the lower level. There is every tendency that the middle level employees who of course fall within the age range of "between 30-50" should have some level of knowledge about genetically modified foods, especially because of their science, technology and agricultural background. But when the level of awareness of the respondents were assessed, it was established that only 46.03% of the respondents felt that they have at least some knowledge or information about GMOs or GM Foods while 53.97% of them vehemently and strongly affirmed the fact that they were never aware of genetically modified foods.

The status of awareness of the respondents towards the unexpected side effects of GM foods on the human health were also examined, and the survey showed that even though more than half of the respondents (56.75%) vehemently claimed they were not aware of any side effects of GM food to human health, yet they believe that genetically modified foods are harmful when continuously consumed, either to health, environment and the society.

Several factors believed to influence the public's perception of GM foods were considered and analyzed during this work, and it was observed that majority of the respondents within the study area would willingly prefer and purchase genetically modified foods based on their nutritional value, environmental benefits and if the GM foods are less expensive irrespective of how much they earn monthly (Kaneko and Chern, 2005)

Result also showed that there was a negative correlation between the respondent's perception and their willingness to purchase GM foods. In other words, their perception or opinion of genetically modified foods on the context of being harmful or not when consumed does not affect in any way their willingness to purchase GM foods. Hence, even though most of them perceive GM foods to be harmful when consumed yet, they are much more interested in the purchase of the product. Again, there was a weak positive relationship between the knowledge of the public on the potency of GM foods to combat diseases, pests and herbicides and the willingness (enthusiasm) of the public to patronize GM foods. ($r = 0.284$, $n = 252$, $p < 0.001$). Hence, the fact that people are aware of the potential significance of GM foods in the agricultural sector and food industry is motivation enough to want to purchase and consume more of GM foods and vice versa.

Observation also showed that there was a high possibility of the purchase intention or choice of the respondents for genetically modified foods to be influenced by the cost implication of GM foods. This was demonstrated when about 66.7% of the respondents agreed that their purchase strength of GM foods is majorly influenced by the price (cost) of GM products or foods while 33.3% of them strongly disagreed on that factor hence, they could buy GM foods at any given price provided the product is modified genetically. This inferred that more people would buy genetically modified foods within the study area when the prices for the food are much more affordable while fewer people would be willing at a higher cost of the product; and this follows the thought of (Jikun et al., 2006) that there is an increase in the percentage of consumers who are willing to buy GM foods at a reduced price.

RECOMMENDATIONS

Research has shown that there are public interest groups in developing countries like Nigeria whose energy has been channeled towards opposing the introduction of genetically modified foods or agro - biotechnology in their countries. More often than not, the masses tend to speak of the negative aspect of technological advancement without realizing its benefits. This study therefore, recommends that in spite of the various controversies surrounding the embrace of GM technology, countries like Nigeria should have a strong design to get access to these technologies in order to increase productivity, relieve the pressure on natural resource and stimulate economic growth.

Owing to the poor level of consumer's knowledge about GMOs and GMF in FCT, Abuja it is recommended that the government (policy makers), environmental agencies, media, agribusiness dealers and NGOs should intensify awareness and organize training / enlightenment programmes on GMOs and GM foods. It goes without much emphasis that if consumers or the public are adequately equipped with unbiased knowledge about GM foods they will obviously be better positioned to make informed decisions and opinions regarding consumption of GM foods. Even though Nigeria today have not started commercial production of GM foods, yet a large quantity of GM foods have found their way into the country through importation (Zachary, 2004). Hence, this study recommends that the government in order to ensure the safety of GM foods should checkmate illegal smuggling of these foods by establishing specific laws or policy that will guide against the use and importation of GM foods.

As a matter of urgency, this study also recommends that the Federal government of Nigeria should increase her budgetary allocation for research and workshops that would educate the people about the presence, importance and risks of GM foods in the market.

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