

BIO SAFETY

— IS NO —



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INTRODUCTION

African countries have historically been very concerned on biosafety matters. They played key roles in the negotiations and preparation of the United Nations Convention on Biological Diversity (CBD). There were serious concerns over the threats of GMOs on the conservation and sustainable use of biological diversity when the convention was adopted in 1992. When the Cartagena Protocol on Biosafety was eventually adopted in 2000, the concerns also included the “impacts of GMOs on the conservation of and sustainable use of biological diversity, especially with regard to the value of biological diversity to indigenous and local communities.”

To underscore the concerns of African nations, the Organisation of African Unity (OAU), which later on became the African Union (AU), drew up the African Model Law on Biosafety in Biotechnology. The importance of this model law was clearly laid out in a paper by one of Africa’s foremost biosafety campaigners, Mariam Mayet in these words:

“The adoption of this Law will provide a unique opportunity for governments in Africa to introduce national biosafety regulations that adhere to a broader and unified continental framework. The regulatory framework utilises the discretion given by the Cartagena Protocol on Biosafety for countries to adopt more protective measures than the agreed minimum set out in the Protocol. These provisions are therefore far more comprehensive than that required by the Biosafety Protocol and seek to give recognition to the importance of Africa as both a centre of origin and a centre of diversity with regard to food and other crops. The Model Law also embraces the precautionary principle and recognises the sovereign right of every country to require a rigorous risk assessment of any GMO for any use before any decision regarding the GMO is made. It captures extensively, the essential elements for a liability and redress regime, which should be incorporated into domestic biosafety legislation. Stricter controls regarding the introduction and use of genetically modified food as food aid can also be introduced through the adoption of the Model Law.”ⁱ

We quote the above at length because it captures the essence of what Africa has lost due to the willingness of a new breed of African biosafety regulators who wholly shallow the assurances of international biosafety promoters that GMOs are needed to meet the food needs of Africans. It shows that through

the non-utilisation of the Model Law individual nations have been cajoled to accept national laws largely drafted or heavily guided by the biotech industry and powerful countries backing them.

From 2016 when the first formal approvals were issued by the National Biosafety Management Agency (NBMA), Nigeria has turned out to be the gaping hole through which the flood of GMOs are dumped, threatening the entire continent. Besides the crops approved for field testing, commercial release, or use for food and feed processing, several products pass on to our market shelves through the porous hands of regulatory agencies.

Genetically Modified Organisms (GMOs) are organisms that have had their genetic material-deoxyribonucleic acid (DNA) altered or modified in some way through genetic engineering. In first generation genetic engineering, scientists remove one or more genes from DNA of an organism, such as bacterium, virus, animal or plant and “recombine” them into the DNA of another organism. For instance, genetic scientists have transferred genes from a bacterium known as *Bacillus thuringiensis* (Bt) into the DNA of crops. Recently, gene editing techniques allow for an organism’s genetic sequence to be edited within itself.

Staple crops such as cassava, maize and cowpea are targeted, and the public is yet to see any evidence that any application has been turned down in Nigeria. There is also no evidence that objections to advertised applications sent by consumers and the general public are considered. While research shows no comparative advantage of genetically modified crops over natural and conventional varieties, the myth continues to be peddled that because they are engineered in the laboratory, they have higher yields and are more nutritious. The false arguments are backed up years of colonial brainwashing that whatever big industry and big capital present must be accepted without question.

Today, there are lessons to be learned from several litigations in the USA over cancers believed to be caused by the chemical components of herbicides to which some GM crops are designed to resist. Today the world is reeling in a pandemic with several pointers to the destruction of habitats and biological diversity as the cause. Today we also know that virulent microorganisms can be genetically engineered for use as biological weapons. Today it is also known that biological diversity is the key to environmental and human health, prosperity and wellbeing. Biodiversity supports cultural diversity and the erosion of one erodes the other. The implications are deep and include loss of cultural memory and knowledge.

This compilation (of articles written between 2016 and 2020) is prepared as a popular reader to contribute to the debate on the implications of letting our

biosafety guards down in a tricky moment in history. We hope that readers will come up with questions and also decide on which side they will stand, with nature or with entities who care for nothing but profit.

Nnimmo Bassey

Director, HOMEF

June 2020

1. HOW SAFE ARE MONSANTO'S GMOS?ⁱⁱ



We have read with interest Monsanto's defence of NBMAⁱⁱⁱ in its response to Premium Time's report^{iv} highlighting NBMA's surreptitious granting of permits to them to bring their GMOs and glyphosate into Nigeria. We restate here that Monsanto's applications were approved without due diligence and that the law setting up NBMA is extremely flawed in that it gives individuals in the agency the latitude to toy with the health of Nigerians, our environment and food systems. Contrary to Monsanto's claims, the International Agency for Research on Cancer (IARC) concluded that there was strong evidence of genotoxicity and oxidative stress from glyphosate as can be seen in publicly available research, including findings of DNA damage in the peripheral blood of exposed humans.

May we be reminded once again that NBMA signed the permits on a Sunday – a public holiday, when government offices were closed and just one month and a few days after the applications were opened to the public for comments. NBMA says it was "convinced that there are no known adverse impacts to the conservation and sustainable use of biodiversity taking into account risk to human health." However, it is instructive to note that the Bt cotton application

submitted or rather recycled in Nigeria by Monsanto is a replica of the Bt Cotton application that it had submitted in Malawi in 2014. That application in Malawi was opposed on scientific, legal and socio-economic grounds. That application has not been approved as at the time of this writing. We oppose the application on similar grounds.

Monsanto argues that their GMOs and weed killers are safe. The truth is that the company is good at avoiding liability while exploiting the agencies that ought to regulate them. They claim, “A big part of that confidence comes from knowing that independent experts who’ve looked at GMOs have concluded that they’re as safe as other foods. That includes groups like the American Medical Association and the World Health Organization, as well as government agencies like the FDA.”

This is an interesting argument. We quote two statements^v, one from Monsanto and the other from FDA and leave the public to read between the lines.

Philip Angell, a Monsanto’s director of corporate communications said: “Monsanto should not have to vouchsafe the safety of biotech food. Our interest is in selling as much of it as possible. Assuring its safety is the FDA’s job.”

From the US Food and Drug Administration (FDA) “Ultimately, it is the food producer who is responsible for assuring safety.”

When Monsanto and FDA make statements like these, the reading is that consumers are left to literally stew in their soups.

In the words of David Schubert, Professor and Head of Cellular Neurobiology Laboratory at the Salk Institute of Biological Studies, La Jolla, California,

“One thing that surprised us is that US regulators rely almost exclusively on information provided by the biotech crop developer, and those data are not published in journals or subjected to peer review... The picture that emerges from our study of US regulation of GM foods is a rubber-stamp ‘approval process’ designed to increase public confidence in, but not ensure the safety of, genetically engineered foods.”

This is exactly what is happening in Nigeria today, unfortunately. We have an agency that disrespects the voices of the people, ignores national interests and blatantly promotes the interests of biotech corporations. The relationship between National Biosafety Agency (NBMA), National Biotechnology Development Agency (NABDA) and Monsanto is rife with conflict of interest against the Nigerian people. How is it that the regulated is so influential on the regulator? The evidence in leaked Wikileaks^{vi} cables is clear. How can we have

NABDA sit on the Board of NBMA, be a co-applicant with Monsanto and then sit to approve the same application? This should fit into the definition of corruption in this season of Change.

Monsanto has been desperate to tell the world that their weed killer laced with the ingredient known as glyphosate is safe. The debate about the safety of glyphosate has been interesting with Monsanto in this response to Premium Times claiming that “glyphosate poses no unreasonable risks to humans or the environment when used according to label instructions.”

The above claim says two or more things. First that glyphosate poses risks. Secondly that these risks can be tolerated when the chemical is used according to label instructions. Thirdly, when something goes wrong, Monsanto will absolve itself of culpability by claiming that the chemical was not used “according to label instructions.”

The scientific debate over whether glyphosate causes cancer continues but based on research, several countries have banned the use of the chemical. The very fact that there is no consensus on the safety of glyphosate is the reason why Nigeria must apply the precautionary principle. It is interesting that Monsanto accuses IARC of selective interpretation of scientific data. This is a case of a kettle calling a pot black. We doubt if there is any other corporation that engages in selective interpretation of data more than Monsanto.

Despite Monsanto’s claims that glyphosate is safe, French Minister for Health, Marisol Touraine has said that France will ban Glyphosate – whether or not the EU decides this week to renew the authorisation of the chemical. According to her “the studies we have show it’s an endocrine disruptor.”^{vii}

Earlier this year, a poll by the international market research firm YouGov found that two-thirds of Europeans want the chemical banned. According to the survey of more than 7,000 people across the EU’s five biggest states, the banning of glyphosate was supported by 75% of Italians, 70% of Germans, 60% of French and 56% of Britons. It is clear so many people around the globe do not want Monsanto’s modified crops or toxic chemicals. So why are they still aggressively pushing and promoting them around the world; dismissing environmental, health, socio-economic concerns and circumventing government regulations?

Talking about research, a high court in Paris punished a high ranking official representing Monsanto’s interests for deceitfully covering up research data which proves that Monsanto was hiding toxicity of its own corn.^{viii}

Another report revealed that Monsanto marketed its potent weed killer glyphosate, a key element in their Roundup, and the corn and soybeans

genetically engineered to withstand it by claiming that it would replace other, more toxic weed killers such as atrazine on American farmland. It didn't happen. Recent scientific research suggests that both atrazine and glyphosate are more harmful than scientists once thought. For instance, several studies have shown that frequent exposure to glyphosate doubles a person's risk^{ix} of developing a blood cancer known as Non-Hodgkin lymphoma. "In light of new evidence on the dangers of glyphosate, European Union nations failed to pass^x a short-term extension of glyphosate's license for agricultural use when they voted on this on June 6, 2016. The pesticide could be barred in the EU^{xi} as soon as next month."

From the antecedents of Monsanto when it comes to cutting corners in the area of risk assessments, we have no inclination to give it any benefit doubt.

There was a time when scientists insisted that cigarettes do not cause cancer. Today that has been exposed as a lie. Monsanto claims that their liability over PCB is over a historical misdemeanour. This is another problem with Nigeria's Biosafety Act. If problems emerge in future over toxic chemicals introduced into the Nigerian environment today, Monsanto will go free because the law does not have provisions for strict liability. Meanwhile we remind ourselves that if toxic PCB is in history, so is Monsanto's Agent Orange, the defoliant used in the Vietnam war and the toxic template on which the company continues the business of killing biodiversity.

GMOs are basically regulated because their safety is in doubt. The approval granted Monsanto to conduct field trials of genetically modified maize requires that these crops should keep a distance of 20m from non-GMO farms. That is absolute nonsense and is designed to ensure that our natural maize varieties are contaminated. It is known that pollen grains travel several kilometres. Contamination has been one key tool used by Monsanto in countries like USA and Canada to chase after non-GMO farmers that actually are the victims of this companies polluting activities.

Our agricultural systems, eating habits and cultural requirements are not the same as those of Americans, for example, and bringing these crops into our country will expose us to unimaginable health impacts.

We would also be closing markets against ourselves. A case in point is a recent refusal of Brazil to buy corn from the USA, due to GMO concerns,^{xii} even in the face of shortage of corn needed in chicken feed. Note that Brazil is a country already with other varieties of GMOs!

Finally, we ask, are we so stupid that a genetically modified crop, Bt Cotton, that just failed in neighbouring Burkina Faso, (and the farmers are making claims

from Monsanto) is what we are glibly opening our country to? Are we having regulators or GMO traders making decisions over our destiny?

Monsanto should note that it's We the People of Nigeria, not Corporations and agrochemical Companies like Monsanto that will dictate the food system we want.

We restate our stand that the permits issued to Monsanto to introduce GMOs into Nigeria should be overturned and the Biosafety law itself should be repealed. We also call on the National Assembly to urgently investigate the process leading to the granting of the permit on Sunday, 1st May 2016 to assure Nigerians that we are not pawns in a commercial game to open Africa to toxic technologies.

2. GMOS THREATEN OUR FOOD SECURITY AND FOOD SOVEREIGNTY^{xiii}

Some of the comments made by Rose Gidado as reported under the title, Nigeria Not At Crossroads Over Food Security – Agency Chief (published in The Guardian on 8th July 2016) must have been based on questions that were not accurately posed to her. It could also be that her comments were based on faulty notes she took at the conference she referred to. She came to the conference although no invitation was extended to her by the main hosts, Health of Mother Earth Foundation (HOMEF) and African Faith and Justice Network (AFJN).

As an Assistant Director at National Biotechnology Development Agency (NABDA) and coordinator of Open Forum for Biotechnology (OFAB) in Nigeria, she has links to two institutions that have as their mandate the promotion of GMOs and placement of their products in the Nigerian market and on the dining tables of citizens of this country. Some of us have queried the place and role of NABDA on the Governing Board of the National Biosafety Management Agency (NBMA) – an agency set up to regulate the activities of GMO promoters in the country. The place of GMO promoters on the board of a regulatory agency raises questions of conflict of interest as already evidenced by their teaming up with Monsanto Agriculture Nigeria Ltd to apply for a permit for confined field trials of Monsanto's GMO maize, to which assent was given in record time of less than two months from the date the application was advertised for comments from the public.

The comment at the conference under reference was that modern biotechnology can be compared to a cowboy technology. This was an allusion to the use of “gene guns” in the process of insertion of the genetic materials that the technologists may have prepared. As with any shooting activity, it does happen that at times the genetic engineers shoot off target. At other times when they hit their desired target, they cannot really be so sure of what the outcome would be. One top GMOs promoter said recently that GM cotton failed in Burkina Faso because of insertion of the genetic material in a wrong germplasm. This was said on television and confirms that genetic engineering is not as precise as the biotech industry would want us to believe. It is a technology searching for problems and feeding fat on false promises and hype.

It should also be noted that the insertion of genetic materials from fish into GM tomato is not a fictional tale. A biotech company, DNA Plant Technology

of Oakland, California, actually put the fish gene in a tomato. The use of the GM tomato was discontinued because of the public uproar that followed its creation. See the story: *The Monsanto GMO Story: Adding a Fish Gene Into Tomatoes*.^{xiv}

The notion that GMOs are part of a safe technology “needed to achieve developmental strides in economic diversification, food security, improved health systems, cleaner energy, job creation, wealth generation and poverty reduction, Nigeria” is contestable. Agricultural modern biotechnology poses peculiar problems to any environment. No wonder the industry survives largely through their political clout and by the open-door policy they have with regulators that are at the same time promoters.

The fact that tampering with nature has impacts on religious, social and cultural sensibilities cannot be denied. Neither should it be described as unfortunate. It is the reality. Applied science must be alive to these sensibilities because science must be in the interest of society. And, in any case, we cannot be bullied into silence by the claim that science is neutral.

Science may be right when it says that every living thing can ultimately be broken down to carbon, for instance. Perhaps the basic building blocks of our bodies are similar across species. But some persons may not feel happy to have genes from a pig inserted in rice, for instance.

The fact that science is often not neutral is very much illustrated by goings on in research on genetic engineering, including new areas such as synthetic biology, gene editing and gene drives. Critical scientists continue to be hounded out of jobs or into silence. Those who dance to the tunes of the biotech industry and their political backers flourish on the other hand.

The GM cotton and maize varieties for which permits have been issued with the active support of NABDA and OFAB pose special risks to our environment. One reason we worry is that the crops are all engineered by Monsanto to withstand their weed killer - Roundup with its key constituent chemical known as glyphosate. Just like debates raged on whether other toxic chemicals were safe, the debate is on concerning glyphosate. The World Health Organisation (WHO) said that glyphosate is probably a carcinogen, based on research carried out by its (WHO's) research arm. This later became more ambivalent although the researchers affirm that they stand by their findings.

GMOs do not necessarily yield higher than natural crops. They promote monocultures and will promote land grabbing and thus displace and impoverish small scale farmers. GMOs depend on toxic agrochemicals that are not friendly to soils and ecosystems. They are a clear threat to food security.

No matter what NABDA, OFAB and NBMA say, Nigerians have solid reasons to worry about the opening of the doors of our agriculture and food systems to risky technologies.

3. WHAT THE NIGERIAN NATIONAL CONFAB AGREED ON BIOSAFETY AND GMOS^{xv}



During the 2014 Nigerian National Conference (Confab), three committees made recommendations with regard to handling of Biosafety in Nigeria and with particular reference to Genetically Modified Organisms (GMOs). As at the time of the Confab, the National Biosafety Management Agency Act 2015 (simply known as Biosafety Act 2015) had not yet been enacted. The Confab committees that considered Biosafety matters were the Agriculture and Water Resources Committee; the Environment Committee; and the Science, Technology & Development Committee.

The Biosafety Act came into force in April 2015 after former President Goodluck Jonathan assented to the Biosafety Bill. Within a year of the Act, two permits have been issued to Monsanto Agriculture Nigeria Ltd for commercial release of Bt Cotton and for confined field trials of GM maize.

Modern biotechnology in agriculture should be restricted to laboratories – and a regime of strict liability and redress should be in place in case of accidents; – Confab Environment Committee

Farmers, consumers, faith-based organisations, media, community groups and other civil society groups, including Health of Mother Earth Foundation (HOMEF) have expressed their rejection of the introduction of GMOs into Nigeria. The reasons for objecting to this development is that these crops would lead to a massive introduction of toxic chemicals into our environment, erode our biodiversity and entrap hapless farmers in the grip of the biotech industry.

We are encouraged that the Federal Ministry of Environment is considering a holistic look at the Biosafety situation in Nigeria, including the Biosafety Act itself. The recommendations of the Confab committees on biosafety matters are weighty and it is germane for us to remind ourselves of what these committees recommended with regard to our biosafety and the matter of GMOs in Nigeria.

Here are the Sections of the Confab report referred to:

A. Agriculture and Water Resources Committee

5.1.7 BIO-TECHNOLOGY (pages 72-73 of the Confab Report)

1. Conference resolved as follows:

- a. That adequate funding should be devoted to biotechnological research, especially those that do not involve cross-species genetic manipulations; and
- b. That action should be expedited on the passage of the Biosafety Bill to regulate trans-boundary movement of genetically modified agricultural products and encourage development of improved varieties and breeds under ethical research environment.
- c. That the Bio-safety Bill should be reviewed to include the following:
 - i. Public participation: It should be obligatory to ensure public participation when applications to introduce GMOs are being considered;
 - ii. The Bill should specify clearly how large-scale field trials would be contained and regulated to avoid contamination of surroundings or farms;
 - iii. Besides Environmental NGOs, Farmer organizations should be represented on the Governing Board;
 - iv. Risk Assessment: The Bill should state criteria for risk assessment and such assessments must be carried out in Nigeria and not offshore;
 - v. Liability and Redress should be included in the Bill, bearing in mind that this is a key part to implementing the Nagoya-Kuala Lumpur Supplementary Protocol to the Cartagena Protocol on Biosafety adopted in October 2010; and

- vi. Precautionary principle: The Bill should include the implementation of the precautionary principle that entitles our government to decide against approval or for restriction in cases of incomplete or controversial knowledge.

B. Environment Committee

5.7.3 Policy Resolutions (Pages 151 & 156 of the Confab Report)

1. Resolutions on Institutional Framework and Enforcement

- d. There must be policy and action coherence between and within government agencies to ensure synergy in tackling our environmental challenges;
- e. Environmental Impact Assessments (EIA) are not project planning approval documents but veritable tools for environmental protection. Accordingly, EIAs must be conducted for all major projects as stipulated in the EIA Act. Moreover, there should be detailed post project assessment requirements and approved decommissioning plans;
- f. The Precautionary Principle of the Cartagena Protocol of the Convention on Biological Diversity (CBD) prevails in discussions of modern biotechnology in agriculture and foods. Nigeria must be kept free of genetically modified organisms (GMOs) as a key way to avoid biodiversity erosion and seeds colonization by agri-businesses;
- g. Modern biotechnology in agriculture should be restricted to laboratories – and a regime of strict liability and redress should be in place in case of accidents;

8. Biodiversity (Page156)

- h. Identify biodiversity hotspots, like the wetlands and forests which have very high concentrations of native species, and which are rapidly losing habitat and species, as primary targets for conservation.
- i. Ensure strict bio safety laws and particularly reject acts that could lead to invasion of alien species and resultant colonisation and biodiversity erosion;
- j. Ensure strict liability and redress in bio-safety matters and bar untested and unregulated technologies including those related to genetically modified organisms (GMOs), geoengineering, nanotechnology in foods and agriculture and synthetic biology;

C. Science, Technology and Development Committee (pages 352-353 of the Confab Report)

5.19.6 Biodiversity and Biotechnology, Transfer, Diffusion, Reverse Engineering, Standardization and Quality Assurance.

1. Biodiversity and Biotechnology Conference resolved that:

- k. A National Biodiversity Conservation Authority be established. State Biodiversity Board and Local Government Biodiversity Task Forces should be created;
- l. Government should discourage the use of foreign plants for afforestation, so that indigenous flora ecosystem is protected from extinction and disease;
- m. Government should fast-track the passage of the Bill establishing the National Biotechnology Development Agency into Law (NABDA);
- n. There is need to fast-track the passage of the bill on BIOSAFETY, with the inclusion of provisions to cover potentially pathogenic and deleterious microorganisms. In doing so, there is a need to ensure the independence of the Biosafety Agency to guarantee its efficacy;
- o. Biotechnology and Bio – Safety Bills should be amended to include “strict liability” provisions;
- p. Biodiversity conservation and sustainable use of bio resources should be incorporated in the school curriculum;
- q. There should be adequate and consistent funding to NABDA to enable it make the impact it should nationwide;
- r. Deliberate steps should be taken to recruit staff with required expertise, who can add value to the Agency;
- s. Clear incentives, conducive environment and staff welfare, should be maintained to ensure that staff remain productive and free of concerns which inhibit productive and innovative research and work;
- t. States should be involved in biotechnology development, as well as the private sector to cut cost and also give the students the needed relevant experience;
- u. There should be increased and improved training and retraining facilities and international exposure;

4. ABUJA DECLARATION ON THE RELEASE OF GENETICALLY MODIFIED ORGANISMS (GMOS) IN NIGERIA^{xvi}



At the conclusion of the conference on Just Governance: The Nigerian Bio-Safety Law, GMOs, and Implications for Nigeria and Africa held at Reiz Continental Hotel, Abuja, on May 23-25, 2016; we, the participants from diverse religious and faith based bodies, communities and civil society organizations (CSOs) from Nigeria, Africa and other parts of the world, affirm that organic foods are healthy, nutritious and remain a vital aspect of human rights to food and food security.

Informed by the robust, structured and eye-opening presentations by specialists and panellists and spontaneous contributions by the participants, we strongly object to the release of Genetically Modified Organisms (GMOs) in Nigeria, convinced that GMOs are not the solution to hunger.

Nigeria's fertile land guarantees the nation food sovereignty. Consequently, hunger is due to bad governance, poor infrastructure for preservation and

distribution of food and lack of adequate all-round support to small holder farmers who constitute over 70% of the farmers in Nigeria. We, therefore, strongly recommend to the Nigerian Government to invest more in agriculture.

The Nigerian Bio-Safety Law, in its present form, is a recipe for the destruction of Nigeria's ecosystem, food cultures and systems. The process leading to its passage was devoid of critical input and public participation that would have enabled Nigerians to significantly determine and protect their food cultures and systems. It lacks legal safeguards for protecting their rights.

We observe that the public hearing at the National Assembly did not meet an acceptable, minimum, global standard and best practices in a democratic society. The hearing was just a formality to create the semblance of a democratic process and skewed in favour of the GMOs Trans-National Corporations. The Government should not only introduce appropriate mechanisms but repeal the laws seeking to legalise and adopt GMO seedlings and food products and consequently marginalize Nigerian farmers.

Furthermore, the Nigerian Bio-Safety Law is not in the interest of Nigerian farmers and the wider public because it facilitates the introduction of Genetically Modified Organisms (GMOs) on a massive scale that violates the precautionary principle, which forms the basis of the African Union's revised African Model Law on Biodiversity, to which Nigeria is a signatory.

We adopt the comments of Health of Mother Earth Foundation and Environmental Rights Action/Friends of the Earth Nigeria on the relevant sections of the Bio-Safety Law and strongly suggest their incorporation into the Nigerian Law to safeguard the rights of Nigerian citizens and protect Nigeria's ecosystem.

The potential socio-economic, cultural and ethical impacts of GMOs are enormous and diminish the positive impacts of small holder farmers who are feeding the country; promoting cultural practices, community well-being, traditional crops and varieties; reducing rural unemployment; engendering trade; raising the quality of life of indigenous peoples; and re-affirming food security.

Aware that the UN recognizes socio-economic consideration as a key element in biosafety negotiations and decision-making processes (Protocol on Socio-Economic Considerations; Article 26), we, therefore, appeal to the Federal Government to conduct a socio-economic impact assessment of GMOs before the Government takes measures that destroy Nigeria's agricultural sector.

The concern about Genetically Modified Organisms (GMOs) is not only about safety for consumers. We are equally concerned about the more damaging

systematic appropriation of the rights to seeds by the Trans-National Corporations that deprives farmers of their traditional rights to seeds, in favor of patents by multinational corporations (South–South Dialogue Conference).

There has been intensive and sustained propaganda on the positive contributions of GMOs to food security questions. Very little has been done to draw attention to the inherent risks and hazards of industrial mono-cropping and consumption of GMOs such as loss of biodiversity, destruction of livestock, land grabbing, land and environmental degradation, communal conflicts over land and loss of rights. Therefore, there is an urgent need to present the true and full picture to Nigerians.

Industrial agriculture has no real contribution to national food sovereignty of Nigeria. It is part of the western development and capitalist economic regime bent on making Africa remain a cheap resource continent and market for finished products. More fundamentally, the GMOs project is anti-creational. It disturbs, contradicts and destroys the ecosystem. God created every plant and vegetable with its seed in it.

We implore our policy makers to learn from the experience of Burkina Faso and a host of other countries that are rejecting the GMOs and their false gospel of agricultural development. We maintain that Nigeria's food sovereignty lies in investing aggressively in agriculture, empowering small holder farmers, and practicing agroecology that is sustainable and environment friendly.

Signed:

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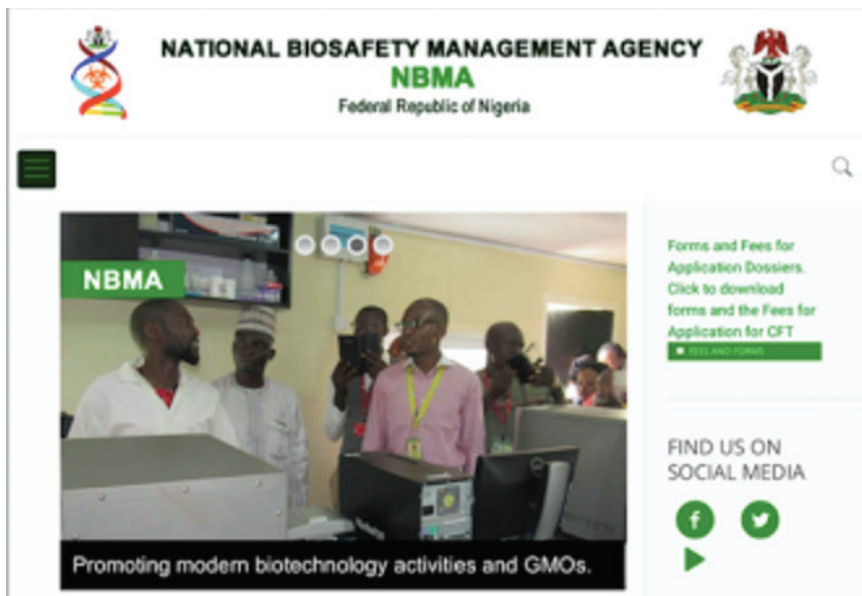
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5. BIOSAFETY. BIOSECURITY. FOOD SAFETY^{xvii}



Screenshot: NBMA website 31.12.2017

Do Nigerians know what the safety level of foods on their dining tables would be in 2018? That is a trillion Naira question. The short answer is no. We give two quick reasons for this. A reading of the body language of the permitting National Biosafety Management Agency (NBMA) reveals that, besides approving virtually every application that comes before it, the agency appears to be concerned with having those that had illegally imported GM materials simply formalise^{xviii} their stocks by registering with the agency. Unfortunately, in 2018 when GM beans are unleashed on Nigerians, the roadside akara seller would not know or say that she is selling akara made from genetically engineered beans. The roasted corn seller would not know that what is being roasted is genetically modified corn imported or smuggled into the country. In sum, our major staple crops – maize, cassava, beans, rice, sorghum are at risk.

One of the cases with grave implications for biosafety administration in Nigeria is the one that hit headline news in October 2017 that unauthorised genetically modified maize^{xix} worth about \$9.8 million had been impounded at Lagos sea

ports. Nigerians were elated by the vigilance of the regulatory agency and officers of the Nigerian Customs Service to intercept the illegal imports by WACOT Ltd^{xx} – a firm that is best known for dealing in cotton and rice. Another company implicated in the illegal importation of the GM maize is the Olam Group, a conglomerate that deals mostly in rice, including the widely sold Mama’s Pride brand.

To underscore the seriousness of the biosafety infringement, the Director General of the National Biosafety Management Agency (NBMA), stated in a press conference held in Abuja on September 13, 2017 that the Agency got notice of the importation through an intelligence report and had set in motion necessary machineries to track the importers and bring them to book.

According to the National Biosafety Management Agency (NBMA) Act 2015, “Any person, institution or body who wishes to import, export, transit or otherwise carry out a contained field trial, multi-locational trial or commercial release of genetically modified organism shall apply to the Director General of the Agency not less than 270 days to the date of import, export, transit or the commencement of such activity.” (Our emphasis)

An air of seriousness that our food systems could be protected was further raised when the Federal Executive Council was notified of the decision to repatriate the illegal genetically modified maize to Argentina, its country of origin and also when the National Assembly held a public hearing on the illegal importation.

However, hopes that biosafety is important to the government have been dashed because the noise over the impounding of the illegal GM Maize may have been nothing other than mere noise. Why do we say this?

Barely a week after the NBMA announced^{xxi} that together with the Nigerian Customs Service they would ensure the repatriation of the illegal GM maize, the same NBMA issued a public advertisement announcing the application for importation of GM maize by WACOT Ltd.

The announcement stated: “In accordance with the National Biosafety Management Agency Act, 2015, requiring public display of any Biosafety application, for permit to intentionally release genetically modified organisms (GMOs), for comments from interested members of the public, the National Biosafety Management Agency (NBMA) hereby announces a twenty- one (21) day display of an application dossier submitted by WACOT Ltd for the importation of genetically modified maize for feed processing. The display is with effect from 22th November to 12th of December 2017 to enable the public to make input that would facilitate informed decision on the application.”

Information from credible sources suggest that the application has since been approved by NBMA and the applicant may have received the green light to take delivery of the impounded illegal import and to further import genetically modified maize at will into Nigeria over the next three years. At the time of this writing, the permit is neither on the website of NBMA, nor on that of the United Nations Biosafety Clearing House. We need to know if the NBMA has permitted the release of the maize that the Federal Executive Council and Nigerians at large had been told were to be repatriated. We need to know if the application was made 270 days before the importation as required by law. If the maize has been repatriated, we need to know.

Some of us have on many occasions called for a radical review of the NBMA Act 2015. We have also made a clause-by-clause analysis of the Act^{xxiii} and suggested needed changes. The composition of the NBMA Governing Board has inbuilt conflict of interest and the fact that members may sit on issues where their interests are concerned is banal. We also note that the National Biosafety Committee that determines which GM applications to approve is set up on an ad-hoc basis and at the whims of the Director General of the NBMA without any higher authority providing oversight.

A situation where we cannot trust a board made up of representatives (not below the rank of Directors) from the ministries of Environment, Agriculture, Science and Technology, Trade and Investment and Health to protect our biodiversity, environment and health is deeply worrisome. Others on the board include representatives of the Nigerian Customs Service and the National Agency for Food and Drug Administration and Control (NAFDAC).

Here we are in 2018 and the prospect of genetically modified crops and food products flooding our markets is real. If the situation arises that GMOs imported illegally can be retroactively certified and released provided the importers pay prescribed fees, that will spell a death knell to our biosecurity. This is a good time for the Federal Government to make it clear to NBMA that it was not set up to promote GMOs contrary to what they (NBMA) proclaim on the streaming photo on their website where it stated at that time “– Promoting modern biotechnology activities and GMOs.”

The task of promoting modern biotechnology and GMOs is that of the National Biotechnology Development Agency (NABDA).

In a post on its website^{xxiv} on 18 December 2017, NMBA “warned those involved in and/or intend to be involved in the handling, importation or transfer of genetically modified organisms (GMOs) to seek clarification and authorization from the Agency before doing so. They cited NBMA Act, Part VII which states that

“no person, institution or body shall import, export, transit or commercialize any genetically modified organism or a product intended for direct use as food or feed, or for processing unless with the approval of the Agency.”

“The NBMA is by this Act empowered to sanction any erring party for importing or releasing unauthorized genetically modified products, be it grain or any kind of seed as the case may be.”

He noted that the Act made it clear that any person, institution or body who wishes to import, export, transit or otherwise carry out contained activities, confined field trial, multi-locational trial or commercial release of a GMO shall apply to the Director General of NBMA prior to such activity.”

Nigerians need to be assured that in 2018 the Federal Government will be concerned about our biosafety. Nigeria needs to put a halt to the circus of publishing applications, calling for comments, ignoring comments from the public and approving whatever application is thrown at the regulating agency. Let there be CHANGE in 2018. Let there be HOPE!

Recently, President Muhammadu Buhari expressed a desire that besides becoming food sufficient, Nigeria should regain her place as a food exporting country. The president noted that productivity was on the rise for crops like beans and rice. We note that Nigeria is planning to release genetically modified beans into the market from 2018. Where would the GM beans be exported to? Certainly not the USA or the EU. The dream of being a food exporter will definitely be dimmed by our needless GMOs gambits.

President Buhari is a farmer,^{xxv} but we have not heard him express views on what the rabid promotion of GMOs in Nigeria could mean to our food and health.

President Yoweri Museveni of Uganda is a farmer. He vigorously pressed the Ugandan parliament to pass their Biosafety Bill designed to pave the way for the introduction of GMOs in that country. After the parliament passed the bill and sent it to him to append his signature and turn it into law, the president balked.

In his December 21 letter to Speaker of Parliament^{xxvi} the president outlined why he was returning the bill to the parliament. He reportedly raised issues with the title of the bill, patent rights of indigenous farmers and sanctions for scientists who mix GMOs with indigenous crops and animals. He queried why the bill was called a “Biosafety Bill” rather than a “Genetic Engineering Bill.” He argued that although genetic engineering may make it possible to add additional qualities – such as drought resistance, quick maturity, disease resistance, but, “this law apparently talks of giving monopoly of patent rights to its holder and forgets

about the communities that developed the original material.” He saw this as patently wrong as it ignored the roles of the local farmers who had preserved the original seeds over the years.

The Ugandan president was quoted to have said that he had been informed that there are, “some crops and livestock with unique genetic configuration like millet, sorghum, beans, Ankole cattle, Ugandan chicken, enkoromoijo cattle, which have a specific genetic makeup which our people have developed for millennia through selection (kutorana for seeds), kubikira (selecting good bulls), enimi or empaya (he-goats).”

Raising concerns over the safety of GMOs, President Museveni cautioned that “to be on the safe side, GMO seeds should never be randomly mixed with our indigenous seeds just in case they turn out to have a problem.”

What President Museveni has done must be applauded. It takes boldness for him to question a thing that he had so loudly promoted. His action underscores the need for leaders to hear both sides of the debate. African nations cannot simply throw their doors open to technologies that pose extreme risks to our environment, biodiversity, health and trade. It is time for President Buhari to take a look at the National Biosafety Management Act and the biosafety management architecture in our country before it is too late.

6. BIOSAFETY IS NO GAMBLE^{xxvii}

Biosafety is No Gamble: Dead people cannot speak against judicial or other decisions. Likewise, dead people cannot be compensated if their demise was triggered by some poison they unknowingly ingested. These and several other considerations are markers on the pathways of justice. They underscore why we cannot shut our eyes to the laws that leave yawning gaps for transgressions. They illustrate the reasons why we cannot and should not stomach permissive laws that endanger our food and agricultural systems.

The Nigerian Biosafety Management Agency (NBMA) Act came into force on 18th April 2015 after the then President Goodluck Jonathan put his signature on it. On Thursday 28th April 2016, NBMA wrote a letter to HOMEF and ERA/FoEN (Ref: NBMA/ODG/050/1/68), acknowledging receipt of our copious objections to the applications from Monsanto and the National Biotechnology Development Agency (NABDA) to conduct confined field trials of two maize events and to another application from Monsanto for commercial release and placement in the environment of GM cotton. In the letter of acknowledgement of receipt of our objections NBMA said they have “noted” our objections and pledged to “review the application holistically and take the best decision in the interest of Nigeria, to avoid risks to human health, biodiversity conservation and sustainable use of biodiversity. The socio-economic impacts would also be well considered before taking final decision on the application.” The agency then thanked us for our views.

Two days later, on Sunday, 1st May 2016, NBMA issued permits for the two applications made by Monsanto and its government agency partner. It is clear to us that our objections were not considered.

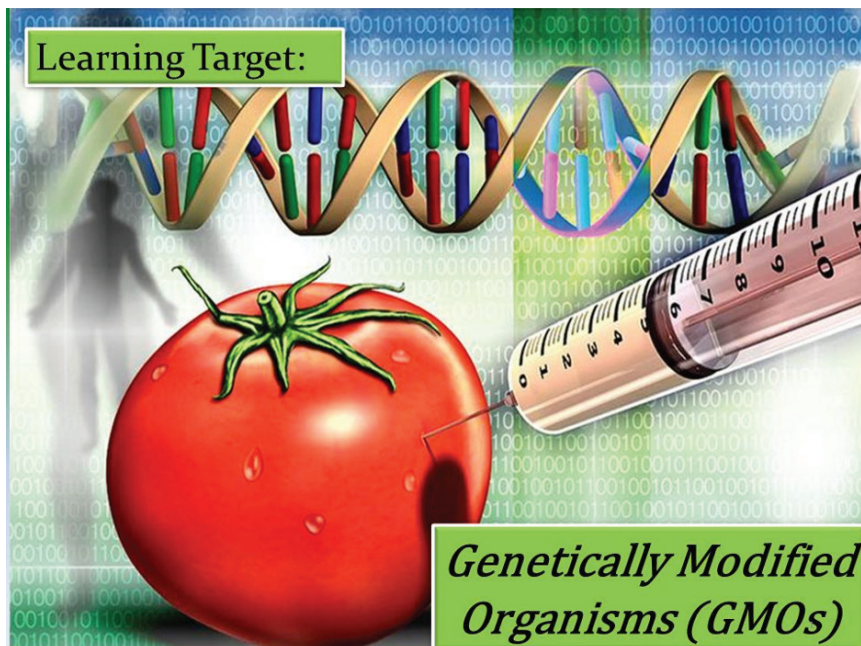
Two things. We have an agency that approved applications for introduction of GMOs into Nigeria in less than a year of its being constituted. The speed with which the new agency approved Monsanto’s application breaks all records of similar processes anywhere in the world. The speed of approval raises questions over the readiness of the agency to tackle the delicate and serious issue of modern agricultural biotechnology – a contentious technology that has foisted tales of woes on citizens as well as farmers in other climes, a technology that opposes the basic tenets of our agricultural and food systems. Secondly, the speed shows a disdain for public consultation and participation in the serious approval processes.

As we discuss the issues surrounding biosafety, we hope you will focus particularly on the NBMA Act 2015 and see if the Agency as constituted is wired to serve the best biosafety interests of Nigeria or if it should be dramatically reviewed or even repealed. In particular, we hope that you, as legal experts, consider if there are issues of conflict of interest in a setting such as that of NBMA where board members are promoters of the risky technology and are also applicants that have benefited from the very first application to have come before the Agency. We wish to be advised if such a construct does not obstruct avenues for justice, fairness, probity and equity in our collective struggle for a food regime that ensures that we are not turned into guinea pigs by those pushing to colonise our food systems and expose us to avoidable risks.

Let us all keep in mind that this matter has implications that are intergenerational, and lapses have consequences for Nigerians yet unborn. Laws are not cast in concrete. The right to safe and nutritious food is a universal right. GMOs challenge that right with its creation of novel organisms, dependence on toxic chemicals and abridgement of the rights of farmers to preserve and share seeds and to stay free from contamination by genetically engineered seeds.

A defective law cannot provide justice. It cannot protect our biodiversity, ensure biosecurity or secure our very life. We cannot gamble with our biosafety and biosecurity.

7. OF GENETICALLY MODIFIED COTTON AND THE TORTOISE PRINCIPLE^{xxviii}



There is a folktale about a time a Lion was sick and declared that all the animals in the kingdom should pay him a get-well-soon visit. After several animals had heeded the call it was Mr Tortoise's turn. On arrival at the gate of Mr Lion's home, Mr Tortoise noticed that all footprints were in one direction, all going into the house with none coming out or going in the other direction. On careful reflection on the import of this observation, Mr Tortoise turned back and decided not to go into Mr Lion's house. Did Mr Tortoise decide to avoid Mr Lion's house out of fear?

Our submission is that the decision to not enter a house from which no visitor emerged was not predicated on fear but on sound judgement.

Our application of this tale relates to the forced release and endorsement of genetically modified (GMO) crops and products into Nigeria without due consideration of clear failures elsewhere and with a cavalier attitude to the grave danger that these artificial crops and products portend to the health of our peoples and environment.

At a recent press conference organised by the ministers in charge of Agriculture and Science in partnership with Bayer-Monsanto to celebrate Monsanto's release of genetically engineered cotton into the Nigerian market and environment, the Nigerian Minister of Agriculture declared that although he was not a scientist, he saw no reason for not accepting genetically engineered crops. He went on to say that Africans are too fearful of "new things." On his part, the minister of Science repeated myths peddled by the biotech industry and their cohorts – that genetically engineered crops yield more than natural varieties and require less pesticides (because some of them are pesticides) and make farmers rich.

The positions of the ministers raise serious questions about their willingness to dispassionately consider issues related to these technologies. The position that GMOs are rejected out of fear does violence to the integrity of scientists and governments who fought hard to ensure that the Precautionary Principle is a cardinal element of United Nation's Convention on Biodiversity (CBD). Indeed, because of the knowledge of the harms related to release of genetically modified engineered organisms into the environment and in food, the African Union (then known as the Organisation of African Unity) produced the African Model Law on biosafety. That model law was to provide African governments a basic scaffold on which to build sound Biosafety regulatory frameworks.

At that time, African governments knew the importance of biodiversity in securing nutritious food and building resilience of local agriculture to the vagaries of weather and pest infestations. African research institutes had scientists that were engaged in promoting crop and animal species that were suitable to the local environment and yielded products that suited the local cultures, tastes and had acceptable levels of storability. The coming of Structural Adjustment Programmes of the international financial institutions in the 1980s ensured wholesale adoption of neoliberal conditionalities and policies that brought about the destruction of local agricultural support systems. They also destroyed social safety nets and made our countries dumping grounds for all sorts of products which today appear in the form of untested GMOs originating from corporate laboratories that are not in the least concerned with our interest.

Today the framework that would have protected our environment is being shredded, and Nigeria is leading the pack in this ignominious degradation. This reverse leadership is very visible at the ongoing CBD Conference of Parties (COP24) with Nigeria and South Africa as the main negotiators. The most contentious items at the negotiation include what to do with extreme genetic engineering including synthetic biology (Synbio) and gene drives organisms (GDOs). These are technologies that have dire socio-economic and ecological consequences for Africa. Reports from the COP show serious opposition to gene

drives with a number of countries demanding a moratorium on the technology. Opposing countries include Bolivia, El Salvador, Grenada and Egypt. Shockingly, most African countries at the COP have become advocates for gene drives probably with the hope of attracting grants and other pecuniary benefits to their governments.

Observers believe that the inexplicable enthusiasm of a group of African nations, including Nigeria, to reject a moratorium on gene drives and to promote their release may be connected to the Gates Foundation's funding for the production and release of gene drive mosquitoes in Burkina Faso by an organisation called Target Malaria.

Gene drives is a new gene-editing technology that makes it possible to have species-wide genetic engineering through the aggressive spreading of genetic changes through the wild. Analysts posit that gene drives have a high potential for unpredictable, and even uncontrollable, impacts on biodiversity, wildlife and ecosystems.

The products that the synthetic biology industry is bringing into market include a vanilla flavour produced using synthetically modified yeast and some special oils used in soaps and detergents derived from synthetically modified algae. The replacement of natural vanilla with a synthetic variety has implications for millions of farmers, many of them Africans, who depend on this product for livelihoods. They also have social and cultural implications. In addition, scientists warn that genetically modified algae and yeast could have unpredictable health effects and ecological impacts if they escape into the environment.

As the world edges towards unleashing unregulated technologies that have the capacity to wipe out whole species, and can readily be made into biological weapons, we have a duty to review how we regulate our foods and environment. Our governments should fund this endeavour and not depend on external grants from any quarters. A situation where the most vulnerable continent, with scant capacity to regulate and contain basic genetic engineering, cheers on the merchants of risky technologies, spells nothing but trouble.

8. WHY PERMIT FOR COMMERCIAL RELEASE OF BT COWPEA IN NIGERIA SHOULD BE REVOKED^{xxix}

Currently, Nigeria and indeed Africa as a whole suffers pressure to accept modern biotechnology as the solution to agricultural problems and the technology is portrayed as the silver bullet to the challenge of food security. Recently, Nigeria's National Biosafety Management Agency (NBMA) issued permit^{xxx} to Institute for Agricultural Research (IAR), Zaria for commercial release of Bt (*Bacillus thuringiensis*) cowpea which is said to be resistant to the Maruca insect pest.

Cowpea (popularly known as beans) is an indigenous African crop and a major source of protein for the Nigerian populace where it is prepared and eaten in various forms either as ewaagoin, akara or moimoi. It is a staple food crop and an important source of income. The crop is also very essential for animal feed.

Nigeria is known as the prime producer of cowpea in the world and we have had a yearly average production of about 2.7 million metric tons over the last ten years. Ironically, Nigeria is also the largest importer of cowpea^{xxxi} in Africa. Clearly, the economic challenges for farmers or the unavailability of food is not solely a problem of production.

This article serves as a call on the Nigerian populace to pay attention to the issues with agricultural biotechnology; to speak out against it and on the government to be circumspect about profit-driven technologies that aim to contaminate our natural varieties, destroy our agricultural systems; our socio-economic fabric and assert unbridled control over our food system. Here are a few reasons why the commercial release of genetically modified beans is an erroneous move.

Bt cowpea is linked to severe health implications

Bt cowpea contains aCry1Ab gene developed by Monsanto (now Bayer) and it is the same as in Bt maize event, MON810 manufactured by the company. Bt Cowpea has not yet been commercialized anywhere in the world. However, Current in-vitro experiments on that maize event have revealed that protein produced by the Cry1Abgene has toxic effects^{xxxii} on human liver cells. Researchers in Italy in November 2008 resolved that the consumption of the Bt maize induced alterations in intestinal and peripheral immune response in mice. Another study^{xxxiii} with different investigative process showed that effects (seen in blood cells, adrenal glands, kidney weights etc.) linked with the Bt maize are generally detected after about 4 months of consumption. Additional long-term (up to 2 years) animal feeding studies were recommended.

Bt cowpea will contaminate natural varieties of the crop

Cultivation of a GM variety of cowpea will bring about an irrevocable contamination of the natural and indigenous varieties which have been nurtured over the years by farmers. Study^{xxxiv} of pollinator characteristics of the natural West African wild cowpea populations shows that the Bt-gene can pass from the genetically modified lines to non-modified lines resulting to natural cowpea and indeed other plants taking up the resistance trait and causing ecological imbalance.

Bt cowpea/genetically modified crops will not ensure economic stability for farmers

Genetically modified crops favor industrial agriculture which encourages land grabs for monocultures. Small-scale farmers usually intercrop cowpea with other cereals, mostly staple crops such as maize, millet and sorghum. Also, the high cost of GM seeds and the inability of farmers to reuse GM seeds present serious threat to farmers. Again, Nigeria's cowpea is presently under a ban from the EU because of quality and residual chemicals issues and majority of the EU locals reject GMOs. Where will the export market for this Bt cowpea be?

Bt cowpea is not the solution to agricultural problems

The pro-GMO gangs present the technology as a means to increase production and cater to the increasing populations. How about the fact that the world currently produces double the amount of food we consume but most of it is wasted due to poor storage and processing facilities or access to markets? This Bt solution responds only to one of the challenges of production that is the pod borer pest and apart from the pod borer (*Maruca vitrata*), other pests disturb cowpea which are not controlled by the Bt toxin. Biological methods^{xxxv} (e.g. plant or fungal based bio-pesticides) exists which are effective against the *Maruca* insect as well as other pests.

Use of this Cry1Ab Bt gene was discontinued in South Africa because cultivation of the maize modified with it led to enormous pest infestation. This is very instructive as Nigerians are made to believe that this Bt cowpea will bring about the reduction in pesticide use and increase yield by a paltry projected 20 percent.

In place of the Bt solution which presents risks to health, ecosystems and which may lead to more intense pest invasions, Nigeria can focus on biological control and augment with governmental action towards provision of needed infrastructure and other necessities such as credit schemes, access to land and extension services to farmers for enhanced productivity and food security/food sovereignty.

We shouldn't be used for experiments

Nigeria will be the first country to commercialize cultivation of this genetically modified crop. Field trials have been ongoing in Burkina Faso, Ghana and Malawi and there has been strong opposition to its release. This resistance across African countries buttresses the enormity of the threat genetic modification of food crops poses to our lives and agricultural systems.

The risks with Bt cowpea/genetically modified food crops are numerous. Scientists generally observe unexpected impacts in and from genetically modified crops and we are faced with intergenerational consequences. This move by the Nigerian government goes against the precautionary principle (a major principle of the Cartagena Protocol to which Nigeria is signatory) which advises governments to take precaution in the face of uncertainty of safety of GMOs in terms of human and environmental health.

9. WE CANNOT FEED ON MYTHS^{xxxvi}



Myths don't feed anyone. Small-scale farmers provide 80 percent of global food supply using a mere 25 percent of the resources in the food production sector. Industrial agriculture provides less than 20 percent of the global food supply using 75 percent of cultivated land. These stark statistics are from the Food and Agriculture Organisation (FAO), not from some angry civil society group, and state the simple truth of the situation. Nevertheless, the world is gripped by the myth that small scale farmers cannot feed the world. How is that?

Industrial agriculture thrives on monocultures, pervert diversity and has inexorably forced humans to develop monocultures of the mind, to borrow the phrase from Dr Vandana Shiva. A handful of corporations have cornered the seed and agricultural inputs market and so concentrated power in their control that governments, multilateral and research institutions find it difficult to stand up to them. To be clear, the corporate mafia has not cultivated the minds of policy drafters and makers through mere propaganda, they have achieved this through arm twisting, bribery and diverse devious ways.

Thus, you would hear otherwise respectable persons wave off small scale farmers as being incapable of feeding Nigerians, Africans and the world. We

hear so much excuses for not supporting the hoes and sickles that feed us. They are dismissed as primitive, burdensome and not modern. Industrial agriculture offers the world well packaged foods, and these are hailed as what is feeding the world. The mafia is so powerful that even when in 2008, over 400 scientists and development experts under the United Nations-World Bank-sponsored International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD) called for the revitalization of public sector agricultural research, small farmer-oriented, low-input agroecology, governments endorsed the report and quickly ignored it.

Today, the world denigrates agriculture that is aligned with nature and celebrates the propaganda from companies whose products can be traced to death sciences and who are now pushing products into the market under a false façade of being promoters of life sciences. How could chemicals that wipe out beneficial organisms, not just in soils but in our guts, be the product of life sciences?

Makers and promoters of genetically modified organisms (GMOs) have been hard pressed to sell their artificial and unnatural crops and animals. They have achieved the spread currently attained through all manner of approaches: political pressure and blackmail, illegal introductions through irreversible contaminations and through basket-case biosafety regulatory systems.

If we agree to the FAO findings, then it should be self evident that GMOs are unnecessary. The arguments for introducing them are untenable except for those who prefer to swallow whatever is offered as food. Our small-scale farmers require support, including through extension services, rural infrastructure, storage facilities and access to markets. Agriculture is a highly subsidized business in many countries. Why is it a taboo to support our small-scale farmers? Is it not clear that those who insist that there should be no subsidies in the agricultural sector, and no critical support except through wasteful and harmful fertilizer distributions, are actually sabotaging our food system?

Matters got worse for Nigeria because somehow the nation set up an institution whose mandate is to develop biotechnology before making a law to regulate the sector. Once the biotech foot was in the door, it became the duty of the promoter to facilitate the development of the regulatory framework. This explains the porous regulatory system as well as the incestuous relationship between the promoters and the regulators. They simply find it impossible to stand apart. And, so you find the regulator spending a bulk of their time talking about the safety GMOs.

We are told that GMOs yield higher than natural varieties. This has been shown through scientific studies to be a false claim. Another claim is that with GMOs,

farmers will use less chemicals because some of the crops are engineered to act as pesticides. We are also told that the GMOs designed to tolerate certain herbicides reduce the application of the chemicals in farms. Both claims are not only patently false, they have been shown to try to conceal harmful repercussions of dependence on the pesticidal crops and chemicals.

First, the herbicide tolerant crops may actually withstand the chemicals, such as Monsanto's Roundup Ready which is all over the Nigerian market. However, the weeds they try to kill have been known to build resistance and become super weeds, requiring higher doses of the lethal poisons. These chemicals don't only kill weeds, they kill other beneficial organisms in the soil and in waters where they may be washed into. We should state here that Roundup Ready has glyphosate as a major component and this is a carcinogen. Thousands of cases have been instituted against Monsanto (and Bayer who bought the company) over the deadly health effects suffered by users of the chemical. That chemical is all over our markets, complete with NAFDAC numbers.

Second, some of the GMOs, such as Bt cotton and Bt beans, are designed to kill target pests. They are created by genetically altering their genome to express a microbial protein from the bacterium *Bacillus thuringiensis*. The argument is that the bacterium is found in soils, is safe and should be no cause for concern. The inconvenient truth is that the naturally occurring Bt is not exactly the same as the genetically engineered Bt. The natural Bt has a shorter half life when exposed to sunlight, but the biotech variant persists with implications and consequences, including for our gut organisms. Bt Cotton was trumpeted as dramatically reducing the use of pesticides on the crop as they were supposed to kill the target bollworm pests. The crop has failed to kill off bollworms in India and farmers have had to use more pesticides and suffered economic woes as a result of the failure. Cotton farmers in Burkina Faso complained of this failure, besides the fact of poor-quality fibers. It is that failure that is being celebrated in Nigeria.

In many countries there are strong demands for labeling of GMOs so that consumers would have a choice of whether to eat such foods or not. The issue should not even arise in Nigeria because the way we package, sell and consume many of our foods simply make it impossible to label them. Who would label genetically modified *ogi*, *akara*, *eko*, *moi moi*, *garri*, *epa* and the rest?

As we interrogate GMOs today, we have to keep an eye on the new extremes variants that have emerged. These ones do not involve transference of genetic materials between species. Whereas old school GMOs tried to reduce the need to weed frequently or to kill off pests, the new variants, among other things, are essentially extinction GMOs. They also try to upturn nature, are prone to being

weaponised and introduce traits with unpredictable and dire consequences for the future.

If the earlier GMOs had inputs from a war or poison mindset, and lead to erosion of biodiversity, the new ones aim to completely annihilate our understanding of agriculture and the care for Nature and her children. They herald a system of greed before life and an age of warfare without gunpowder. False claims continue to swirl wherever we look. It is time for us to wake up. Enough of these myths. Myths never fed anyone!

10. CHALLENGE OF POISONED CIVILISATION^{xxxvii}

The planet is on the sick bed. With up to one million species gone extinct and many of the remaining ones under threat, it is clear that things have gone terribly wrong. While it is known that humans are largely responsible for the harm brought on the planet, we do not seem to care about halting the predatory relationship with other beings, simply because business as usual is so profitable to the drivers of the destruction.

Civilisation ought to mean progress, sophistication, advancement and refinement, but is that where we are today? If advancement means oppression, militarisation, violence, destruction and a reign of intergenerational injustices, then humans are living in a state of willing delusion. In a time when it is clear that species are being wiped out in droves, humans insist that progress means entrenching agricultural modes steeped in poison.

The war against insects gave rise to the production of chemical insecticides. The war against unwanted plants gave rise to the production of herbicides. Profit-driven industrial agriculture continues to poison the species on the planet and yet, the push is to carpet the world with more of the toxic broths.

A recent report by the Inter-Governmental Panel on Biodiversity and Ecosystem Services (IPBES) warned that “Rapid expansion and unsustainable management of croplands and grazing lands is the most extensive global direct driver of land degradation, causing significant loss of biodiversity and ecosystem services – food security, water purification, the provision of energy and other contributions of nature essential to people. This has reached ‘critical’ levels in many parts of the world.”

The IPBES report also warned that, “with negative impacts on the well-being of at least, 3.2 billion people, the degradation of the earth’s land surface through human activities is pushing the planet towards a sixth mass species extinction.”

The war on insects is a war on other species. It is known, for example, that much of our food production depends on the agency of insects who facilitate production through pollination. The effect of the use of poisons in agriculture is already known to have greatly decimated the population of bees in the world. It is so bad in some places that farmers have to rent beehives in order to enjoy the services of the creatures and ensure good harvests on their farms.

Today, humans do not only dump insecticides or poisons on croplands but crops are genetically engineered to be insecticides themselves, killing intended and

unintended insects. Today, crops are genetically engineered to withstand specific poisons labelled herbicides ostensibly to eliminate the drudgery of weeding on farms, reduce competition with unwanted plants and increase the harvest for farmers and investors. Humans have advanced to the point when extinction is actually being engineered in the laboratory in a technology known as gene drives.

The extinction or exterminator technology, for example, aims to deliberately drive or force a genetic trait through entire species in such a way that reproduction ends up yielding off springs of a particular sex, for example and over a period of time, wipe out that specie. Experiments are being cooked up against mosquitoes and will be unleashed in Burkina Faso, Mali, Uganda and Cote d'Ivoire. No one loves mosquitoes, especially the malaria parasite carrying ones, but these experiments are simply a foot in the door towards teasing out the efficacy of a technology that can easily disrupt ecological balances and can rapidly be weaponised.

Let us return to the horrors of farming with deadly poisons. Landmark legal decisions are being made in the United States of America (USA) over the impact of Bayer-Monsanto's famous herbicide, Roundup. A few days ago, a jury awarded \$2 billion in damages against the company for cancer suffered by a couple who were exposed to the herbicide in that country. Court findings suggested that the presence of glyphosate, a major ingredient in the herbicide, roundup, in food supply has a link to increased level of more severe cases of non-alcoholic fatty liver disease (NAFLD) in the USA. In the course of the legal tussle, lawyers showed members of the jury heaps of materials said to show how the manufacturers of the herbicide are manipulating scientific literature, ghost-writing scientific review papers and getting them published and cited as authoritative by policy making agencies like the Environmental Protection Agency (EPA) of that country. In the midst of the legal fights, the EPA issued a new approval for the deadly herbicide.

Nigerians should be worried about the prevalence of the herbicide, roundup, in our markets. We should also worry that approvals for field trails of crops genetically engineered to withstand this same herbicide are ongoing in our country. Monsanto-Bayer claims that the chemical is safe when applied as prescribed by them. The right way to apply the chemical includes being suited up as though you were headed for a space flight. With lax industrial practices, our farmers are not following those prescriptions. Even with the best adherence to the prescriptions in the USA, the results are now out that farmers and others that are exposed to the poison are not safe.

The war against weeds is a war that requires delicate consideration. What is termed a weed in one community may actually be food elsewhere. The same applies to pests. Where an insect is a threat to a plant, it may be food for humans and other predators.

Science decorated with corporate interests must not be allowed to trump good sense. The fear mongering by proponents of genetically modified organisms (GMOs) that we cannot feed ourselves without their dangerous products and that those opposed to their trade are anti-development, anti-science and anti-national interests must be discountenanced as blatant nonsense. The unfolding guilty verdicts in the courts of the USA should be early warning signs to us all.

11. GMOS, HERBICIDES – AMBUSH IN THE NIGHT^{xxxviii}

The tide of GMOs and deadly herbicides creeps on unsuspected consumers as they are literally being ambushed in the night. Twenty countries, including Togo and Malawi, have placed a ban on the use of glyphosate containing herbicides based on health and environmental concerns. Togo recently joined the ranks^{xxxix} of countries that have banned the herbicides after two years of intense debates. According to that country's minister of Agriculture, such herbicides already in the country must be used up or destroyed within 12 months.

While we regret that the ban didn't mean an immediate halt to the use of the herbicides, we believe there is a lesson to be learned here by Nigerian authorities. Glyphosate, as an active ingredient in herbicides such as Monsanto's Roundup Ready which is widely used as a weed killer around the world, have been named a cancer-causing agent. Thousands of plaintiffs have sued the makers of these herbicides due to impacts suffered through exposure to them. Probably the most well-known case is that of Dewayne Johnson who was awarded US\$289 million that was later reduced to US\$78million for harms suffered.

In many of the cases, the key arguments include that the manufacturers of the harmful herbicides did not adequately warn consumers and users of the associated cancer risks. Concerns raised in Nigeria as NBMA opened the avalanche of GMOs approvals was initially met with the explanation from Monsanto that the chemicals are safe if used according to specifications. It can readily be seen that the caveat was given with the knowledge that the average Nigerian farmer is not likely to read the fine letters on the packages or to wear space suits before spraying their farms with the poisons.

While Togo has declared a total ban of herbicides with glyphosate, such herbicides are quite commonplace in Nigeria. They are freely sold and some even have certification from NAFDAC.

Nigerians should worry because certain crops approved in Nigeria are genetically engineered for the application of the cancer-causing herbicides.

Ministers of Agriculture appear to be stepping up to the challenge concerning the threats posed by harmful chemicals and the genetically engineered crops necessitating their production. The position of the Togolese minister and the government on these glyphosate-based chemicals must be applauded. The position will not only protect farmers who are bound to be directly exposed to the chemicals but will also protect consumers who would eat crops with the residues of the chemicals.

The other minister that stepped the plate is that of Ghana. With a bold headline, “National well-being wins over foreign interests as gov’t ditches GMOs”, a report announced that the government of Ghana, through the Minister of Food and Agriculture was terminating the imposition of GMOs on farmers in the country. The minister was paraphrased to have said that “the nation has capable scientists who could use traditional breeding methods to produce high yielding varieties and disease resistant plants for cultivation by farmers and no need for GMOs in the next 100 years in Ghana.”

The Ghanaian government rejected the use of their people as guinea pigs in an unnecessary experimentation. Today they will probably rest easy that the Nigerian government has taken the lead in using her citizens as guinea pigs for this sad experiment.

Peasant farmers and civil society groups responded^{xi} to the declaration by urging institutions, persons and groups “benefiting from proceeds from Monsanto to promote GMOs in Ghana to rather join Ghanaian scientists and farmers to promote the local seed industry”

While Ghanaians celebrated the “defeat” of GMOs in their country, a major civil society group in the country, Food Sovereignty Ghana, cautioned that the battle is not yet over. They hinged this position on the fact that government is still defending^{xii} the impending release of Bt cowpea, GM rice and Bt cotton in court. The next hearing on the case comes up on 30 January 2020. Food Sovereignty Ghana and others had sued the government of Ghana represented by the Ministry of Environment, Science, Technology and Innovation; the Ministry of Food and Agriculture; the National Biosafety Authority and the Attorney-General’s Department in order to stop the commercial release of these crops.

When the case against the release of the genetically engineered cowpea (beans) first went to court in Ghana in 2015, no country in the world had authorized the release of the variety for human consumption. The promoters of the GM beans declare that they cannot be visually distinguished from their natural counterpart and point to this as a mark of substantial equivalence. It is not rocket science to know that things may look alike without being the same. They may indeed have special genetic characteristics that makes them patentable as unique, as the situation with the GM beans is.

Promises of labelling is trash when we consider our socio-cultural context, especially in terms of processing, storage, marketing and consumption of local foods. Selling the idea of labelling GM beans and other local crops can be compared to accepting to be ambushed in the night (apologies to Bob Marley^{xiii}).

12. TECHNOFIXES AND THE STATE OF OUR BIOSAFETY^{xliii}

A time like this demands and permits only sober consideration of where we are coming from, where we are and where we are heading. The world is virtually shut down due to the ravages of a virus. This is no time for grandstanding or for anyone to claim that they have anything under control.

Interestingly, the virus is not a new organism. It has been around.

It appears the consternation is one of many new variants that have emerged. If the new variant has jumped to humans from bats, the virus would serve as a strong rebuke for the reckless ways that humans have degraded habitats of other organisms on the planet. If it has emerged from some biological weapons laboratory, then the virus shows the evil genius of humans and warns us that the distance between riding a tiger's back and being devoured by the mouth of the beast is short.

We are in precarious times.

Things Can Go Deeply Wrong

While scenario planners may have foreseen a pandemic of the scale that coronavirus has provoked, it comes as a total surprise to the average person. We can use analysis of the state of our biosafety and agricultural technofixes as a template to consider the current situation in our world and balance the unpredictability of what could happen next.

We have had fair warning that things can go deeply wrong if humans continue to toy with the genetic makeup of living organisms – especially in efforts to concentrate power and profit. Nature is alive and active. She is not dormant, and she always responds to the manipulations of men. And so, when humans engineer crops to make them act as pesticides, Nature offers super pests or superbugs. When toxic herbicides are produced to kill all other crops except the ones genetically engineered to withstand them, Nature responds by offering superweeds.

In either case, humans get trapped in needless and unwinnable battles against Nature. Today many farmers in the United States are suing Monsanto/Bayer over their exposure to one of the most notorious of these herbicides, Roundup Ready. They are suing because they claim the glyphosate in the herbicide caused them

to suffer from cancers. These herbicides are freely available for our farmers in Nigeria without any warnings.

Toying with Nature

Extinction technologies are also entering the fold. As genetic engineering has progressed to the point of being able to edit the genetic makeup of organisms without having to engage in the trans-species transfer of genetic materials, the focus has turned to killing off undesirable species and clearing the way for preferred species to thrive. For example, it has been proposed that gene drive[i] mosquitoes be released in Burkina Faso and possibly Uganda.

While modern biotechnology promoters like the National Biotechnology Development Agency (NABDA) and the regulator, National Biosafety Management Agency (NBMA), feel confident that they can handle any sort of technicalities in both the mainstream and new fields of extreme technofixes, we are deeply concerned that their grandstanding would not stop the purveyors of these technologies from weaponizing them.

The NBMA in its short lifespan (2015 to date) has authorized 11 field trials of genetically modified (GM) crop varieties including those of regional staples – beans, cassava and maize. So far there have been two commercial releases. There is also evidence to suggest that they are field-testing a variety of rice without any sign of formal authorization. The implications of these moves are disturbing not just for Nigeria, but for Africa.

The current pandemic has often been described as warfare. The subtle implication is that the virus could very well have origins as a biological weapon. Whether it is a biological weapon or just an anomaly in Nature, some of the governments most affected by the outbreak have had to rely on the armed forces because they are the only institutions that can mobilize the number of resources needed to tackle the scourge.

Do we have a military that can mobilize to tackle a biological attack or accident in Nigeria?

Mutual Support ... but Also Self-Preservation

We are in precarious times indeed. It is a time when fear and panic are freely being propagated among populations. We see the generosity of men on display as some donate needed medical supplies and as health workers expose themselves to great risk to help the sick. We hear calls of mutual support and care among nations.

In the midst of all that, though, we also see the drive for self-preservation that brings out an uncooperative side of peoples and nations. We see this through the closing of national borders and the promotion of national interests above all else. What we are seeing seems to say that when the tire hits the tarmac, it is everyone on his or her own.

For the few days that humans have been forced to be quarantined or restricted by lockdowns, Nature has begun measures of self-healing. The air is getting fresher in some cities and water bodies are becoming clean again. Aquatic ecosystems are coming back to life just because humans have been restrained to their habitats or homes.

Time to Rethink and Reimagine

Do we have to wait for a disaster before we rethink our ways? Do we need a total breakdown of our biosafety before we wake up to the fact that when disaster unfolds propaganda will not erase the challenge? These are some of the questions we need to ask ourselves.

Nigeria took the wrong step by setting up a biotechnology promoting agency before setting up a biosafety agency. Worse, the two entities are legally connected, and separating the two has become a herculean task. The truth is that this situation will only be resolved through legislation and through having a biosafety agency that is neutral, regards the opinion of citizens and accepts the basic biosafety plan of precautionary principle.

In the global north, genetically modified organisms (GMO) have been permitted under the condition that they are labelled. We have painstakingly explained that because of our socio-cultural setup it is impossible to effectively label GMOs in Nigeria. Genetically engineered beans have already been released into the environment. We know that no one will use GMO labelling on their products so citizens can make a choice between eating akara or moi moi made from this variety of beans.

Genetically modified cotton has already been introduced into the environment. Our people will eat cottonseed cakes and oils without the slightest inkling that they are consuming GMOs. Where is the choice? We have surveyed the markets for imported GMO products, and several have been found, proudly displaying National Agency for Food and Drug Administration and Control (NAFDAC) approval numbers. Did these products pass through the approval processes before they were sold to our people?

African biosafety regulators should humbly accept that they are not infallible and that humans do not have a full understanding of the intricate webs of Nature. Biological weapons facilities are sometimes forced to shut down for decontamination exercises when accidents occur before they dare to reopen. We cannot keep running blind-eyed to technologies that portend so much danger – especially when viable and proven alternatives exist.

13. GROUPS WARN AGAINST THE RELEASE OF GENETICALLY ENGINEERED MOSQUITOES IN NIGERIA^{xliv}



Over 75 Civil Society Organizations from Nigeria, Africa and other countries in the world have condemned moves to open the way for the release of genetically modified mosquitoes in Nigeria.

On Friday 6 June 2020, at a virtual meeting of the West African Integrated Vector Management Programme, Rufus Ebegba, who is the Vice Chairman of the Programme and Director of Nigeria's National Biosafety Management Agency (NBMA)^{xlv} stated "there is the need to accelerate the development of regulatory pathways for genetically based vector control methods such as transgenic mosquitoes."

On 30 June 2020, NBMA held a meeting to review the National Guidelines on the Regulation of Gene Editing where the Director of the agency stated that: "these guidelines are not to impede on the technology but to see how this technology is applied to enhance our economy and to assist the government..."

Reacting to the above, the groups in a press statement made available to the media on 7 July 2020 warn against introduction of the transgenic mosquitoes

(as well as other risky and unproven technologies) into Nigeria as such releases pose serious risks to humans, biodiversity and to ecosystem balance. The groups noted that presently there is no peer reviewed assessments for these transgenic mosquitos; no international protocols for evaluating their safety implications and the technology is dependent on and controlled by corporate bodies.

According to the Director of HOMEF, Nnimmo Bassey, the said regulatory pathways for genetically engineered vector control of mosquitoes are actually rigged pathways to make our environment the test ground for the risky and needless experimentation. “From our experience with genetically modified food crops in Nigeria, having the provisions in place to regulate the release of such organisms is equivalent to express permits for their introduction as the agency responsible for this regulation acts more like a promoter of the technology than a regulator. Nigeria must show leadership in the protection of African biodiversity and not allow an agency of government run amok with whatever technologies promoters suggest to it.”

Bassey added that tampering with genetic materials of living organisms is already creating problems in the world with the emergence and spread of zoonotic infections occasioned largely by loss of genetic diversity and habitat losses due to such manipulations.

The shortcoming of these transgenic mosquitoes is already evident from the experiments done in Brazil^{xlvi} and in Burkina Faso, stated Mariann Bassey-Orovwuje, Coordinator of the Food Sovereignty Program of Friends of the Earth, Nigeria and Africa. “The release of millions of genetically modified mosquitoes in Brazil between 2013 and 2015 by the biotech company, Oxitec with the plan to reduce the number of disease-carrying mosquitoes is shown to have resulted (in addition to the fact that the population of mosquitoes bounced back after a few months) to unexpected transfer^{xlvi} of genes from the gene-edited mosquitoes to the native insects which gave rise to tougher hybrid species”, she explained.

Further the statement noted: “In July 2019, the genetically modified mosquitoes were released in Bana village in Burkina Faso by the Target Malaria research consortium as an initial test run before the open releases of gene drive mosquitoes, with the aim to reduce population of Anopheles mosquitoes that causes malaria. The failure of this release include the incidental^{xlvi} release of some biting female mosquitoes during the experiments which puts the community people at risk.

Also, Target Malaria made claims of community acceptance for the project whereas testimonies from community people reveal that they have not been properly informed about the project or its potential risks. This is not different

from the experience we have had with genetically modified cowpea and cotton which have been approved for commercial release in Nigeria.

Third, there is no published environmental risk assessment¹, besides an incomprehensive one published by Target Malaria. Again this has been the case in Nigeria with acclaimed risk assessment done on genetically modified crops as results of such assessments are not made available to the public or subjected to open and transparent consultation. We have no confidence that the situation will be different with the transgenic mosquitoes or that requirements for liability and redress will be enforced.”

It was noted that the release of the GM mosquitoes in Burkina Faso is the first open release in Africa. Nigeria has reviewed (in 2019) its biosafety law to include definitions on extreme technologies including gene drives, so as to pave way for their adoption. This review was speedily proposed and approved despite strenuous objections sent by groups including HOMEF, whereas there have been calls over the years to review the law to close existing fundamental gaps which make it impossible for it to serve the interests of the people.

“While we appreciate that malaria is a problem in Nigeria and many other nations and that urgent measures to address it are needed, we believe that transgenic mosquitoes are not the solution. GM mosquitoes are a relatively new application of GM technology and present very different risks, and for which the international community has had virtually no risk assessment or regulatory experience. Nigeria does not need GMOs and no matter what their sponsors claim, we don’t have the capacity nor experience to dabble into this new, unfamiliar and risky technology.” The statement stressed.

The groups condemned any move to introduce the transgenic mosquitoes or any other gene edited organisms into Nigeria. They assert that our regulatory agencies should not sell us off as guinea pigs for risky technologies such as gene drives which have potential to wipe off whole populations of species and to be used as a biological weapon. Rather, let government support natural vector control measures which are safe and effective including by providing better sanitation and housing for underserved Nigerians.

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ABOUT HOMEF

HOMEF is an ecological think tank and an advocacy organization promoting environmental/climate justice and food sovereignty in Nigeria and Africa.

Our main thrust is examining the roots of exploitation of resources, peoples and nations. We nurture movements for the recovery of memory, dignity and harmonious living with Mother Earth.

HOMEF believes in the rights of Mother Earth, the need to equip communities to push back oppression and the need for justice for the environment, our food systems and natural cycles at every level of policy engagement.

HOMEF believes in contextual solutions over externally generated and imposed ideas and is firmly rooted in the ideals of solidarity and dignity.

Our Core Values: justice & equity in all circumstances, people and the planet in harmony and free from exploitation, dignity (respect), action (solidarity), and knowledge.

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- Community Dialogue Guide (Forest)
- Community Dialogue Guide (FishNet)
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- Community Dialogue Guide (Food and Farming Systems)
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