

Monsanto's Maize and BT Cotton Applications in Nigeria - Regional Implications

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- @ Just Governance: The Nigerian Biosafety Act and GMOs - Implications for Nigerians and Africa
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BT Cotton

- **Bt cotton** is a genetically modified (GM) **cotton** variety produced by Monsanto. **It produces an insecticide to bollworm.**
- **The Application From Monsanto Agricultural Nigeria Limited is on behalf of Monsanto Company, 800 North Lindberg Boulevard, St. Louis, Missouri 63167, USA to the National Biosafety Management Agency (NABMA), Abuja, Nigeria, for the release of Genetically Modified Cotton MON 15985 and all cotton varieties derived from this event in Zaria and some towns around it.**

Public Display of Application

- The application was hurriedly uploaded onto NABMA's website only after stakeholders had complained that it was not uploaded with the files for the maize application.
- The Public **Notice was published on 25th March** 2016 but had two different display dates in the same advert: **29 Feb - 28 March** and **22nd Feb – 15th March 2016.**

Application

- The notice for the genetically modified MON 15985 cotton is for an environmental release and placing on the market.
- This is coming so close after the dismal failures of Bt cotton in Burkina Faso and the Malawian Government's dismissal of an application for the same Bt Cotton.
- Already at the commercial release stage in Nigeria.
What legislation was used to authorise the field trials? Data?

Implications

- This notice is a significant event for Nigeria, the west African sub region and indeed the continent because to date very few African governments have permitted the cultivation of GM crops.
- This is the first time Nigerians are being notified of an applications such as this



Concerns: Socio-economic

- The application shows **no concern** for needs of
 - organic growers;
 - protection of Nigeria's biodiversity and natural resources;
 - promotion of sustainable agriculture and economic development;
 - promotion of gender equality and equity in biotechnology undertakings;
 - promotion of traditional crops, animal genotypes and indigenous knowledge
 - No cost-benefit analysis to show it would benefit cotton growers in the Northern cotton zone and elsewhere in Nigeria

Concerns: Technical & Administrative

- Application was displayed only at 2 places: Abuja and Zaria for 170 million Nigerians
- Posting of the dossier on the website of NABMA also inadequate as many Nigerians do not have access to the Internet.
- Submission of objection/comments had to be done through one free goooglemail
- The capacity of the National Biosafety Technical Committee
- Field trial records not public

Concerns: Molecular

- MON 15985 contains genes referred to as *cry2Ab2* and *cry1Ac*, which produce Bt toxins. These genes have been synthetically manufactured with no history of safe use in nature
- Potential transfer of antibiotic resistance to other living organisms from the insertion of the *aadA* antibiotic resistant marker gene (ARMG).



Concerns: Safety Assessment

- There is no baseline data regarding the quantity, spread and use of cottonseed meal/cakes/ oil used for human or animal consumption in Nigeria, and therefore no foundation for the assessment of food and feed safety.
- Research has also shown that when assessed using a 6-amino acid segment, both Cry1Ac and Cry2Ab toxins have shown similarities to known allergenic proteins. Further evidence is required to show that the two toxins, both separate and combined, will not cause allergenic effects

Environmental Risk Assessment

- Superficial treatment of the **potential effects on non-target organisms** (organisms other than the target pests) in the application ...contrary to what has been demonstrated in the literature.
- **Exposure pathways** are diverse but are given very superficial treatment in the application. → exposure and potential transfer of toxicity include: **consumption** of lower-order organisms by higher-order organisms, **wind dispersal** of GM pollen, **washing of plant matter into aquatic ecosystems**, **leaching of transgenic materials into the soil**, leaching from root systems through fecal matter or through the release of decaying plant and animal matter

Secondary Pests and Insect Resistance

- Insect resistance to Bt toxins has been documented in various parts of the world, including in Africa.
 - Insect resistance to **Bollgard I** has already rendered it ineffective in several countries, and as such is not marketed commercially anymore;
 - the applicant's request for the approval of **Bollgard II** in Nigeria.
 - **Bollgard III**, incorporating a third toxin, is already seeking application for use in some countries.
 - **Very little training envisioned regarding local farmers' use of resistance management measures and refuges.**

Caution!

- The **Precautionary Principle** supplies NABMA with a tool to halt further introduction of genetically modified crops.
- Moreover Nigeria can not be blindfolded to adopt a failure. As the saying goes, it is unreasonable to expect a differet outcome by repeating the same thing you had been doing.



GMO MAIZE

- **MONSANTO'S APPLICATION FOR CONFINED FIELD TRIALS WITH (1) NK603 AND (2) MON89034 X NK603 MAIZE IN NIGERIA (MULTI-SEASON)**



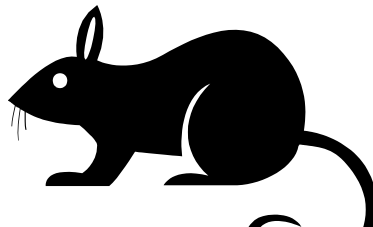
Conflict of Interest

- Moreover, NABDA is a member of the Governing Board of NABMA and this may also raise indirect conflict of interest issues.
- National Biotechnology Development Agency (NABDA) and her officers, the former a flagship agency saddled with the responsibility of developing biotechnology. NABDA partners with Monsanto in this application



Vested Interest!!

- NADMA Act, 2015 in Part IX - Risk Assessment and Management, Section 32 states that 'No person, shall be involved in a risk assessment review by the Agency in respect of a subject matter in which:
 - (a) he has direct or indirect interest of any kind; or
 - (b) there is likely to be conflict of interest as a result of his participation in the risk assessment process.'



Herbicides



- Should commercialization be eventually granted → increase in the use of **glyphosate** in Nigeria, a chemical that the World Health Organization's (WHO) International Agency for Research on Cancer in 2015 has classified as a “probable human carcinogen”.
- Glyphosate linked to health effects such as **degeneration of the liver and kidney, and non-Hodgkin lymphoma.**

Old Claims → cover up

- **References** used in support of claims made by Monsanto are **old and none referred to the two GM maize events specifically**. Used general references for normal maize research.
- **No details of feeding studies** whatsoever
- **No data is given on the safety of the chemicals** to which the events are resistant, namely glyphosate and glyphosate-based herbicides (GBHs)

Concerns

- Scanty information on gene flow. Other
- No detailed information on genetic modification of the single events NK603 and combined event MON89034 x NK603 and resultant phenotypic modifications





False Claims



- **Monsanto claims that** →
 - Bt proteins present in these GM maize varieties have “no structural similarities to known toxin or other biologically active proteins that could cause adverse effects in humans or animals, and that the Bt proteins themselves are not toxic to humans, animals or non-target organisms.”

Bad Science



- Two out of the four trial purposes are on glyphosate selectivity.
 - **BUT** no information is given on environmental or health effects of glyphosate is provided.

Nigeria → the Gateway

- **Guinea Pigs: Cry2Ab2 has previously been used in Bt cotton, but – as far as we know – not in plants that are mainly used for food and feed production**
- **Glysofphate**: Hearing in US congress over problems
 - Why are we trying to prove right in Nigeria what has already been declared wrong even in the country of origin of the product? If the US Congress conducts a hearing on a matter, is it not enough for Nigeria with our limited capacity to be watchful and stay away from it?
 - Why try in Nigeria what has failed in other places?

THINK!

THREAT LEVEL

SEVERE

HIGH

ELEVATED

GUARDED

LOW

- This application has failed to adequately show that NK603 and MON89034 x NK603 are safe for human, animal and environmental health
 - In all areas of the country where glyphosate has been applied for the past three years spear grasses no longer exist, for example (Aguoru, et al. 2015)
 - Our biodiversity is our strength. Introduction of these GM crops will not just lower their quality but eventually eliminate them.

**Poor Applications + Poor Law =
poor governance**



We shall not be Silent

The Challenge
And Threat Of Genetic
Engineering For
Organic Agriculture

Fine
print of the
food wars

**GMOs:
A Costly
Distraction**

NO GMOs!



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