

Viewpoint: 10 claims by anti-GMO African campaigners on why crop biotechnology advances should be rejected – and why they are wrong

Over 20 years, Africa's foray into genetic modification (GM) crop development has faced stiff resistance from anti-GMO lobby groups that have doggedly campaigned against adoption of the technology.

From making wild claims about alleged disease-causing properties of GMOs to equating genetically modified crops to neo-colonialism, advocacy groups have persistently labeled GMOs as an unwanted and unnecessary imposition on African farming systems. Many of the arguments fronted by anti-GMO campaigners, however, fall short on scientific and rational grounds. Here are 10 such claims and how they bend the truth:

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1. GMOs are not safe for human consumption

The charge that GMOs pose a risk to human health has been prominently used by anti-GMO brigades in many parts of the globe, and Africa has not been spared.

One of the earliest cases in which lobbyists spread this canard across the continent was in the early 2000s in southern Africa. At that time, that region faced widespread famine that saw some [14 million people](#) suffer extreme food shortages.

In efforts to mitigate the crisis, various governments and organizations pledged humanitarian assistance in the form of food aid. But some non-governmental advocacy groups were vocal in their opposition, and some governments sided with and even some countries were resistant on grounds that some of the food donations contained GMOs. Yet their rejectionist stance was adopted by many politicians and even some countries

Such hard-line stances put millions at risk of starvation. In a [statement issued in August 2002](#) the UN moved to quell concerns with an assurance that the food consignments containing GMOs were safe for human consumption:

Based on national information from a variety of sources and current scientific knowledge, FAO, WHO and WFP hold the view that the consumption of foods containing GMOs now being provided as food aid in southern Africa is not likely to present human health risk. Therefore, these foods may be eaten. The Organizations confirm that to date they are not aware of scientifically documented cases in which the consumption of these foods has had negative human health effects.

The biotechnology rejectionist movement sprung to life again in 2012 with the publication of a study by French scientist Prof Gilles-Eric

Séralini' that linked cancer in rats to the consumption of GM foods. It [influenced the Kenyan](#) government to ban the importation and production of GM imports and products in the country. Various scientific voices and regulatory bodies roundly [discredited](#) the study, leading to its [retraction](#).

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But Kenya remained locked in for another decade in its opposition to GM technology. Finally, in October 2022, the Kenyan government lifted its 2012 ban on GMO imports and cultivation. The decision was informed by various expert and technical reports on the adoption of biotechnology, including reports from Kenya's National Biosafety Authority (NBA).

Globally, Kenya is now aligned with the Food and Agriculture Organization (FAO), United States of America's Food and Drug Administration (FDA), the European Food Safety Authority (EFSA) and the World Health Organization (WHO) in vouching for the safety of GMO foods, [noting that they undergo rigorous safety assessments](#).

GM foods currently available on the international market have passed safety assessments and are not likely to present risks for human health. In addition, no effects on human health have been shown as a

result of the consumption of such foods by the general population in the countries where they have been approved.

2. GMOs come with increased pesticide use

Claiming adverse health complications has been a common complaint. In a [recent incident](#), a Kenyan senator berated the government's recent move to lift the decade-long ban on GMO cultivation and imports, saying that GMOs need more herbicides than conventional crops.

Do GM crops (necessarily) increase pesticide use? This is a polarizing question with no easy answer. "The problem with these sweeping statements is that "pesticides" is a broad category that includes herbicides (pesticides used to destroy weeds), insecticides (pesticides used to repel insects), and more," said Eva Greenthal, a Senior Science Policy Associate at the Washington, DC-based Center for Science in the Public Interest (CSPI). There are other nuances as well:

[D]ifferent GE crops are engineered with different traits and are designed to interact with specific herbicides or insecticides in different ways. Crops engineered with herbicide tolerance allow farmers to spray those specific herbicides to kill the weeds around a plant, but enable the plant to survive. Crops engineered with insect resistance produce their own biological pesticides which are toxic to insects but (ideally) not to humans. The details matter. And so, a case-by-case consideration of each product is necessary.

In fact, planting genetically modified seeds in some cases been shown to reduce pesticide poisoning among farmers as many GM crops, especially those that are insect resistant, require far less pesticides than other conventional or organic farmers need to use — that according to [a report](#) released in September 2021 by the UK government's Regulatory Horizons Council.

The report cites India as a case in point. A 50-to-70 percent reduction in pesticide applications on insect-resistant GM (Bt) cotton has been recorded, leading to significant health benefits. "It has been estimated that this GM crop helps to avoid several million cases of pesticide poisoning per year (in India)," the report asserts.

Closer to home, the adoption of Bt cotton significantly reduced pesticide application in Burkina Faso. Farmers [went from](#) spraying their conventional cotton fields 15 times per season to control bollworm to spraying only twice.

3. The claim that African countries lack regulatory capacity on GMOs

For some reason, anti-GMO activists find it fashionable to downplay the capacity of local regulatory authorities to effectively oversee technological innovations and put in place the necessary safeguards to ensure the safety of GMOs. They argue that national regulatory bodies are ill-equipped and lack the infrastructure to execute their mandates.

In Nigeria, activist Nnimmo Bassey [claimed](#) a "non-effective regulatory system" among numerous grounds for rejection of GMOs by various civil groups. Scientists vehemently disagree. Nigeria's Director-general of

the National Biosafety Management Agency (NBMA), Dr. Rufus Ebegba, says without hesitation that his country has the capacity to deploy safe biotechnology products for agricultural development and environmental safety.

Ebegba explained that Nigeria has both the institutional capacity and policy framework to ensure the application of modern technology, especially on agricultural production, adding that with the establishment of the NBDA, Nigeria is equipped with the requisite knowledge to deploy GMOs.

Across the continent in East Africa, BIBA Kenya, an anti-biotechnology lobby group has [filed a petition](#) which includes an item alleging that the country's National Biosafety Authority lacks the capacity to regulate GMOs.

The African Union Development Agency (AUDA-NEPAD) further assures that all biosafety regulatory bodies in African countries involved in biotechnology have scientific advisory committees comprised of highly qualified scientists trained in relevant areas of biotechnology and biosafety in renowned universities in Africa and overseas.

"These committees review all biotech applications in their countries and make recommendations for the regulatory bodies to make informed decisions," [states](#) AUDA-NEPAD. It also notes that numerous African countries have laboratories and equipment for safe production of GM products such as Bt seeds.

4. Burkina Faso case with Bt cotton

Burkina Faso's experience with Bt cotton has provided spectacular fodder for building a case against GMOs in the continent.

The country introduced Bt cotton farming in 2008 but abandoned the crop in 2015 due to concerns over the quality and fiber length of the lint, which fetched lower prices. The technical problems were real; developers had chosen to modify a variety not suited to widespread production.

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But the technology itself proved viable as volume soared, farmers' incomes increased and [pesticide pollution](#) was dramatically cut, facts that even anti-GMO activists [concede](#).

The effects of the move to phase out Bt cotton were particularly felt by farmers, who had enjoyed the higher production margins and revenues realized under the GMO cotton cultivation.

"All farmers who have experience with Bt cotton are regretting the shift from Bt to conventional cotton... but they are helpless and hope that the government will listen to their plea," [said](#) Francois Traore, president of the Union of Cotton Producers in Burkina Faso.

Experts note that there are other Bt cotton varieties that have excellent fiber quality that equals or exceeds conventional varieties, and the failure in Burkina Faso arose because the Bt seeds were not backcrossed enough before commercial release.

"The Bt trait was not incorporated into the very best lines, [notes](#) AUDA-NEPAD. "The National Seed Company and Monsanto [now Bayer are aware of the issue and are working to fix this.

Countries like Kenya recognized that Burkina Faso's failed attempt resulted from choices made in that country, and have adopted a Kenyan version of commercial Bt cotton with [resounding success](#).

5. GMOs are a form of neo-colonialism and imperial seed control

It is almost certain that in every engagement with anti-GMO activists in Africa, the charge that GMOs infringe on national and regional food sovereignty arises. GMOs, they assert, would impose a stranglehold on local food production systems and deprive local farmers of their long-held and cherished control of seeds. They would become hostage to 'devious forces' in the West, stripped of local control and forced to kowtow to demands dictated by corporate producers of GMO seeds.

"Peasant farmers who have been banking and sharing seeds for centuries will now be forced to buy seeds every season, monocrop, and use expensive and potentially carcinogenic herbicides that come with the GMO package," [claims](#) activist group Review of African Political Economy (ROAPE).

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Credit: Flickr/Global Food Justice

That's just not true. Key GM crops, such as Bt insect resistant varieties, actually cut down on the amount of pesticides used by both conventional and organic farmers. Moreover, countries freely choose to adopt or not adopt GMOs. And even in those African countries that have allowed GM production, farmers are never compelled to grow GM crops. It's a free choice, and those who prefer to grow conventional varieties have the leeway to make the decision.

6. GMOs have failed to improve food security in South Africa

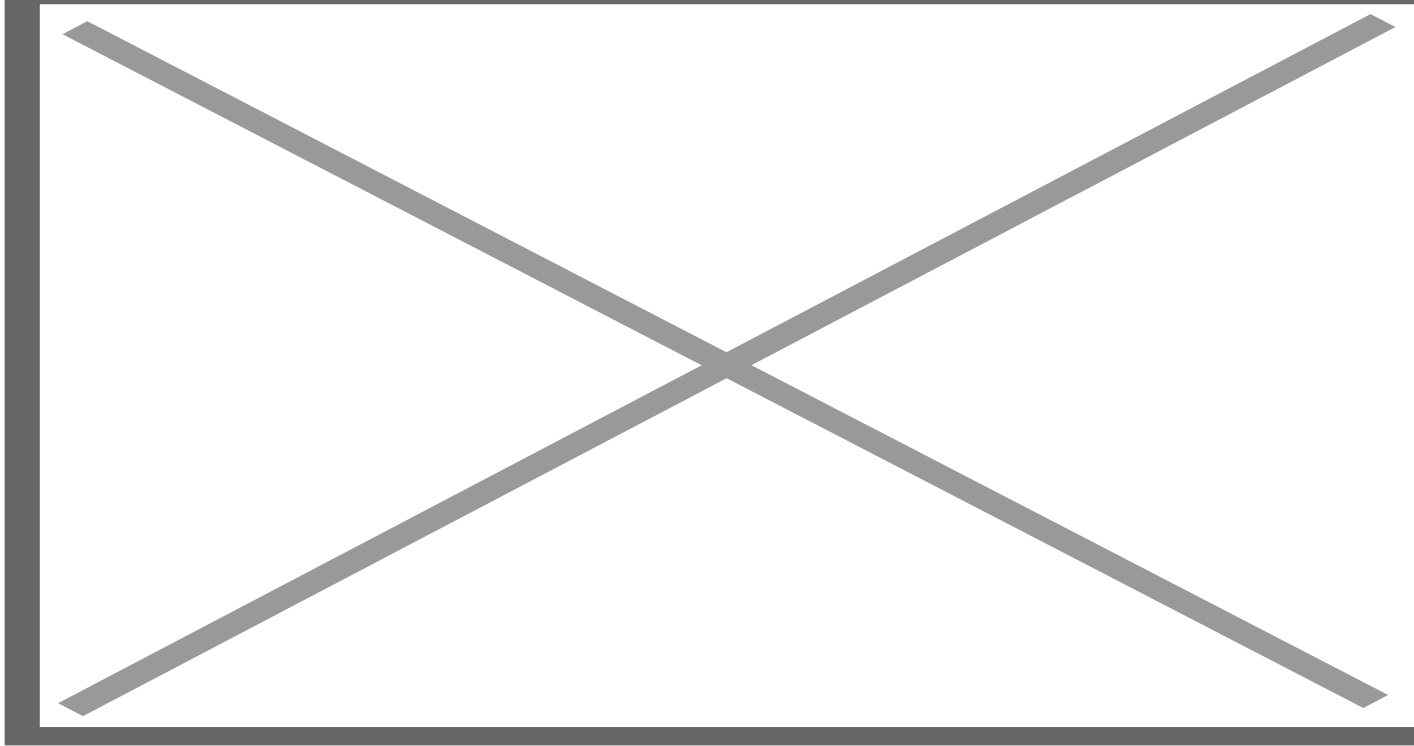
GMO rejectionist groups such as Alliance for Food Sovereignty in Africa (AFSA) have [juxtaposed](#) South Africa's food security situation against the country's status as Africa's pioneering nation in cultivating GMOs for food.

They cite an assortment of challenges facing the country —from incidences of stunting to obesity —and deploy these crises to disparage GMOs, saying they have failed to provide much-needed food security.

The charge disparages GMOs but misses the target by failing to demonstrate how GMOs are at all responsible for massive, societal-wide issues. While the country may be grappling with food insecurity, this cannot be linked with the tiny volume of GMO crops grown in South Africa. It does not negate the fact that GMOs have consistently produced more than conventional varieties.

The facts speak for themselves, and numbers don't lie. Let's take the case of GM maize production. A study titled "Economic and ecosystem impacts of GM maize in South Africa" published in the journal [Science Direct](#) documented food security benefits amounting to 4.6 million additional white maize rations annually attributable to GM Bt white maize. South Africa approved Bt maize in 2001–2002, making it the first GM subsistence crop producer in the world. Between 2001 and 2018, GM white maize adoption contributed 83.5 million additional rations of maize. It may be convenient to cite the country's levels of stunting, but facts are stubborn.

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Courtesy: BBC, Getty Images

7. GMOs are a way of dumping failed technology in Africa

It's a rather confounding line, but it has been [zealously proclaimed](#) during several anti-GMO campaigns nevertheless. Activists assert that Africa is being used as an unwitting dumping round for sub-standard technologies that have been rejected in other places, and, by implication, in the developed world.

Curiously, the anti-GMO crusade hardly if ever [tenders any evidence](#) to back these claims of substandard crops, or provide evidence of the technology failing in another country. In one instance, protesters [charged](#) that Bt cowpea were “a known failed technology”.

Yet this “failed technology” has been wildly successful in [confer](#)ring an insect resistance trait that protects cowpea varieties from damage by the devastating *Maruca vitrata* infestation.

There is extensive documentation that farmers have been able to contain the insect pest Maruca pod borer which attacks cowpea plants and many legume crops in Africa. The damage from the pest affects the quantity of the leaves, flowers and the quantity and quality of grains leading to severe yield loss. Pesticides to control Maruca are expensive and are not always available, but the Bt technology has proven to work.

8. GMOs do not yield higher than conventional crops

As crazy as it sounds, this unsupported claim is [occasionally thrown](#) into the debate by GMO opponents despite overwhelming evidence to the contrary. The implication is that despite the efforts put into developing GM crops, their output more or less equals that of conventional crops and thus outweighs the overall benefits.

That's just not true. Examples abound throughout the continent showing that GMOs have in fact increased yields and improved livelihoods across value chains, from the increased cotton yields thanks to Bt cotton in Kenya to the increased rations realized through GM white maize cultivation in South Africa, among other examples. A meta-study released in 2017 analyzing more than 6,000 peer-reviewed studies covering 21 years of data found that GMO corn increased yields up to 25 percent and dramatically decreased dangerous food contaminants. The [study](#), published in Scientific Reports, analyzed field data from 1996, when the first GMO corn was planted, through 2016 in the United States, Europe, South America, Asia, Africa and Australia.

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Worldwide distribution of the field studies included in the meta-analysis. Area of GMO corn cultivation by country in 2016 is indicated in the map.

The study also reaffirmed the [scientific consensus](#) that genetically modified corn does not pose risks to human health. And as adverse climate conditions are increasing, GMOs have been put forward as one of the ways to protect a sustainable food supply as conventional methods record lower and more erratic yields. Kenya's ministerial cabinet noted it approved GMO crop cultivation because it is more climate change adaptable.

9. GMOs will harm Africa's biodiversity

GMOs have been persistently linked to the risk of biodiversity loss in Africa. Anti-GMO crusaders have intimated that GMOs will surely [lead to extinction](#) of the region's biodiversity, as Kenya's former vice president Kalonzo Musyoka alleged in a recent statement decrying the lifting of the ban on GMO imports.

Studies have in fact associated biotech crops, which include transgenics, with greater biodiversity sustainability. One such [study](#) revealed that globally, GM crops helped conserve biodiversity in the period 1996-2014 by saving 152 million hectares of land.

As noted in a [policy brief](#) by AUDA-NEPAD, extensive scientific research has led to systematic protocols to measure the potential risks posed by GM crops to the environment. The AU further [assures](#) that measures are put in place to ensure that the use, handling and transfer of GMOs does not pose any threat to biodiversity.

10. GMOs are a danger to the environment

This claim takes many variants, but its most preferred version is the contention that GMOs will lead to propagation of invasive species. For example, Claire Nasike who is a Food For Life Campaigner at Greenpeace Africa in Kenya, [has cautioned](#) that GMOs could interfere with the country's ecological balance, saying that GM crops "are likely to contaminate non-GM crops" through pollination which could lead to the loss of various indigenous varieties.

It is helpful, however, to put the claimed contamination in context. An AUDA-NEPAD [policy brief](#) states that cultivation of GM crops that do not have wild relatives in Africa does not pose environmental threats associated with gene flow to wild species, concluding:

... the wild relatives of maize are not found in Africa; therefore, pollen flow from GM maize to wild relatives is not an issue in Africa.

It is also instructive that biosafety experts have continuously [affirmed](#) that the country has an adequate biosafety framework that ensures that GMOs are safe to the environment.

Globally, studies [have shown](#) the positive impact of GM crop cultivation on the environment, citing variables such as decreased the environmental impact associated with herbicide and insecticide use on these crops, as well as reduction of carbon emissions.

Overall, claims alleging environmental damage by GMOs in Africa are largely speculative as there has been no documented serious environmental adversity attributable to transgenics recorded in the continent.

[According to](#) the International Service for the Acquisition of Agri-biotech Applications (ISAAA), GM crops are thoroughly evaluated for environmental effects before entering the marketplace, and the assessments is conducted by multiple stakeholders who include the developers of GM crops, regulatory bodies, and academic scientists.

The risk assessment addresses specific questions about unintentional effects such as: impact on non-target organisms in the environment, whether the modified crop might persist in the environment longer than usual or invade new habitats, as well as likelihood and consequences of a gene being transferred unintentionally from the modified crop to other species.

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