



The Case Against GMOs: Cautionary Tales From Uganda

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The official introduction of genetically modified organisms (GMOs) in Uganda has been delayed yet again as President Yoweri Museveni declines to assent to the National Biotechnology and Biosafety Bill, first passed by Parliament in October 2017. President Museveni sent the Biosafety Act back to Parliament in December 2017, citing a number of concerns he had with it, which he said were “inimical to our future”.

Nearly two years later, he states that Parliament has not addressed those issues to his satisfaction in the reviewed legislation now called the Genetic Engineering Regulatory Act (GERA) passed in August 2019. His second rejection has reopened the GMO debate. The name change signals a new understanding of the paramount need to regulate the technology if its promotion is to serve its purpose and achieve its ends.

In January 2018, the issues were that the National Biotechnology and Biosafety Act should provide for:

- Preservation of biodiversity in indigenous crops by construction of a gene bank;
- Clarification of the ownership of patents for GMOs;
- Identifiability of GMOs by compulsory and regulated labeling;

- Provisions for isolation of GMOs from indigenous seeds, including protecting the environment from pollen and effluent from GMO farms;
- Explicit prohibition of the use of biotechnology in human genetic engineering; and
- Penalties for non-compliance.

Protection of biodiversity

The over-arching question is whether Uganda has a regulatory environment capable of protecting the country's biodiversity and commercial interests. A good illustration of the importance of sound internal control as a basis for major financial and development decisions is the rehabilitation and development programmes of the 1990s. Before agreeing to replace multiple independent and uncoordinated projects with direct budget support through the Treasury, stakeholders (lenders and grant-makers) insisted on audits of the control (regulatory) environment. When it was found to be weak, steps were taken to strengthen it. Those projects went ahead, the perceived urgency of many overriding due diligence. Looking back at the outcomes of the Universal Primary Education programme, or the District Health Scheme in delivering the National Minimum Healthcare Package, one can only conclude that a lot of resources, including time, were lost by introducing them into a weak environment. Commercial activities with an environmental impact, such as sand mining, have been as damaging as they have because of similar weaknesses in the regulatory environment.

As it is, the statutory National Seed Testing Laboratory (required under Section 11 of the Agricultural Seed and Plant Act, 1994) was unable to prevent the invasion of the armyworm in 2017. It is suspected to have been imported in American produce, yet the Auditor General reported in that year "lack of adequate laboratories for the [post-entry quarantine station] department exposes the whole agricultural sector to risks of inferior crop varieties being imported into the country including failure to control the new invading pests".

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Biodiversity is an asset that is vulnerable to commodification. Abandonment of or damage to biodiversity will lead to dependency on GMOs. Dependency on imported seeds that have to be bought every season with a currency that is weaker each year is not a viable solution to hunger.

As with the lake and river beds and wetlands nominally protected by the Constitution, the protection of biodiversity can be waived for a "license fee". The destruction of many wetlands has been achieved under licence from the National Environment Management Authority (NEMA). Where unlicensed, it has happened under NEMA's watch. The Wetland Management Department has neither demarcated nor gazetted the wetlands and only 0.3 per cent of the targeted restorations having been implemented. It is unlikely to achieve the target of restoring 12 per cent of those destroyed wetlands by 2020. Yet the same administration is expected to gazette and preserve indigenous plants in a gene bank (distributed across different locations).

In the case of GMOs, an audit trail based on labelling is expected to be maintained so that the origin of specific GMOs can be traced back to the developer/patent-holder, allowing them to be held to account for any undesirable outcomes. It is a beginning, but how capable is the control environment in September 2019?

A key requirement for maintaining an audit trail is labeling; of firms, individuals, seeds, other planting materials and chemicals. Just reviewing our recent performance in the agricultural sector we that find 50 per cent of hybrid maize on the market is [fake](#). The Economic Policy Research Centre

says [counterfeits are putting livelihoods at risk](#). This is the environment in which GMO labels are going to be relied on.

Approved seeds must be registered in a national seed catalogue. Inclusion in the seed catalogue is the country's only protection from seeds deemed undesirable for scientific or commercial reasons. Oversight of the registration function – just like oversight over preserving sovereignty immunity in loan negotiations, and oversight over licencing forests, lakes and rivers for commercial use – is not a function in the public domain. As a result, the regulatory environment depends almost exclusively on post-mortem reports by the Auditor General. Abuses cannot be interrupted as they occur. They can only be reported once the (irreversible) damage is done, as with the wetlands. For example, the Auditor General's report of 2017 queries the unsystematic manner in which tax-waivers are distributed among investors, often to the detriment of the economy. Without public scrutiny, such abuses continue to be pervasive in every area of enterprise.

To avoid extinction by contamination, or what is called “co-mingling”, isolation measures will need to be devised and enforced; there must be distances between indigenous plants and nearby GMOs that could likely contaminate them. The stipulated distances may constitute the entire area available to the average smallholder farmer, the smallholder possibly being prohibited from growing his indigenous plants in the vicinity of his larger commercial GMO neighbour and thus edged out of the industry. If the commercial neighbour happens to be a foreign investor, it goes without saying who would win that turf war.

Some patented planting material may be tied to certain ancillary products like fertilizers. If failure to adhere to those conditions doesn't exclude produce from the international market altogether, the price may be affected, meaning that the benefit of the larger harvest will be eroded by lower prices.

In 2017/2018 there was talk of a plant gene bank to preserve indigenous varieties. It is surprising that Parliament is attempting to push the legislation through a second time without educating and assuring the public of the existence of the gene bank. The gene bank, which may comprise of plant beds in situ, in vitro-specimens or cryogenically frozen material preserved in labs, remains elusive although there are claims that it exists. It is unclear whether the gene bank is complete and meets international standards. Whether it was possible in this country to create a plant gene bank in the eighteen months that have elapsed since it was first mooted is doubtful.

Enquiries from a scientist on social media produced the response that there are germplasm collection sites in Uganda in Kawanda and Mbarara as well as in selected farmer fields. One can only hope that Northern and Eastern produce, such as *malakwang* and *moyaa* (shea butter), will also be preserved.

A legal regime is proposed to make the patent-holder and importer of GMOs strictly liable for any harm caused by their use, thus putting the onus for their safe use on the patent-holder/importer and protecting farmers from potential negligent or reckless commercial activities. This is another potential internal control weakness – an opportunity for rent-seeking by public officials. As they do with regard to tax-holidays and free land and other incentives, investors may stipulate they will only “help” (investment is seen as aid in Uganda) if they are given indemnity from prosecution, in addition to the usual incentives. (Note that tax-holidays were abolished by the Ministry of Finance in the 1990s but have continued to exist.)

Food security, whose business is it?

Who is responsible for a nation's food security? “Development partners” (DPs), the international community, philanthropists, World Economic Forum groupies, random anonymous foreigners on

Twitter, or the State and its citizens? When food security is being discussed at the World Economic Forum why is Bill Gates there and not independent scientists and maybe smallholder farmers from food-insecure countries? Does it matter that some of those attending are investors in GMOs?

The impression created is that people other than Ugandans have a greater stake in their food security than Ugandans do. From the standpoint of the Ugandan in to whose territory GMOs are about to be introduced, the debate is about food and survival. Attempting to exclude sections of stakeholders on the basis that the industry and scientists know and care more about their well-being than ordinary Ugandans themselves is not a useful approach to promoting the technology. In Uganda, if the GERA becomes law, the official custodian of food security is likely to be the proposed National Genetic Engineering Council under the Office of the President.

Given our lack of effective irrigation (only 1 per cent of potentially irrigable arable land is under irrigation, according to BMAU Briefing Paper, 6/18 May 2018) and the increasing incidence of drought owing to global warming, it is to be expected that the main rationale adopted for the “urgent” need to legalise GMO use is to ensure food security, to end hunger, and to bring prosperity (Note: There were only three serious droughts in the 60 years between 1910 and 1970 but eight between the 40 years between 1970 and 2010.)

Undernourishment rose by an average one percentage point a year between 2006 and 2011 and accelerated to an average two percentage points plus every year from 2011 to 2017, according to the World Bank.. Statistics from the GMO industry show that harvests can be tripled for some crops; pests can be resisted and droughts can be survived by GMO seeds. Coupled with statistics relating to the country’s population growth of 3.3 per cent per year and the 42 million mouths to feed, it is easy to make the case for legalisation as soon as possible. Add the promise that the law will recognise citizens as proprietors of the country’s biodiversity and ensure that they are guaranteed a share in biotechnology developed from it and you have a totally seductive package.

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Yet in many ways, food security is the least convincing argument for GMOs, especially when it comes in intemperate interventions by foreigners with undisclosed interests. Logically, if there were genuine concerns about ending hunger, by now development partners would have adopted simpler solutions, such as irrigation and fairer Economic Partnership Agreements (EPAs) with Europe. Non-tariff trade barriers would have been dismantled. However, that has not happened; Ugandan and other African farmers continue to be unable to meet technical requirements for exports designed to limit their market penetration.

Value-addition to commodities remains a distant dream under the EPAs. Although they are said to be geared to the mutual benefit of the parties and to “contribute, through trade and investment, to sustainable development and poverty reduction” and to transform African, Caribbean and Pacific countries from commodities exporters to exporters of services and goods with added value, trade with Europe follows the colonial pattern and is mainly in unprocessed [commodities](#).

It is only because of the Brexit crisis that the truth about EPAs was officially acknowledged in a debate in the British Parliament aimed at finding post-Brexit markets.

“Apparently, EPA deals had been struck behind closed doors by professional and highly skilled negotiators from the EU, which the best efforts of their African counterparts just could not match.

There was little or no input from the Parliaments they were dealing with, and no public debate. Apparently, the conditions imposed in the EPAs were not scrutinised, and there was no analysis of the long-term impact that their restrictions would have on the economies of the countries they were dealing with. (Chidgey, November 2017)

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If that is the current case with EPAs, how much more or less prepared is Uganda to negotiate GMO agreements?

President Museveni's letter points out that the introduction of GMOs has implications for Uganda's sovereignty. Yet his own government has ensured loss of sovereignty through bilateral loan treaties for infrastructure development under which the State's immunity from prosecution by commercial interests was waived and arbitration will take place under lender-country laws by arbitrators appointed by the lender (Auditor General, 2018). In the health sector, all the risks related to the investment in Lubowa Hospital are borne by the government, which provided 100 per cent of the financing and all of the land, and yet the contractor was able to bar a parliamentary committee from carrying out a spot inspection when the project went awry.

EPAs and trade barriers will remain tools at the disposal of both genuine and predatory investors in GMOs. For example, GMO planting material will come with strict usage instructions. Failure - through ignorance or poverty - to employ the approved regimen, such as fertilizers, could reduce or nullify their export value. In that way, farmers could be locked into patented seed and ancillary products.

Furthermore, any liability for harm to humans or damage to the environment could be side-stepped simply by stating that incorrect methods were used. Yet it is clear from the start that very few farmers will be able to implement the isolation requirements, for example. Just going on the experience of the tea industry regeneration scheme (in which only 20 per cent of seedlings were planted in the correct topography) or rice production (which fell by 72 per cent under the scheme), or coffee (which has only a 42% germination rate) - all failing due to lack of effective extension support - it is folly to assume that introducing GMOs is a matter of reading the instructions on the tin (assuming you can understand the language and are able to read 9-point text on a grey background).

Extension support is essential for the successful introduction of any crop, but there is an almost total absence of government agricultural extension services since the early 1990s when they were retrenched. (The military deployed under Operation Wealth Creation is not an effective substitute.) It was expected that the private sector would fill the gap but the Kenyan experience is instructive. Organic farmers in [Machakos](#) reported that seed sellers deploy salesmen under the guise of extension workers - hardly impartial advice. In Zambia some years ago, GMO salesmen were suspected to have [co-opted public officials](#), stymying the GM debate in that country.

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Still on the domestic front, African governments failed to tackle transaction costs and post-harvest losses which, it is argued, if mitigated, [Africa could feed itself](#). These possibilities were not exhausted before the radical solution of GMOs was proposed.

Glyphosate and other hazardous chemicals

The introduction of GMOs has been accompanied by super weeds – giant weeds resistant to ordinary weed-killers that require more toxic chemicals to control. The GERA will, if the President's stipulations are followed, also govern (he says prohibit) the use of glyphosate, the ubiquitous herbicide owned by the largest purveyor of GMO seeds and under justified suspicion of causing cancer, and other potentially harmful chemicals until our own scientists have evaluated them. [Twenty-nine other jurisdictions in Europe, South America and Asia have banned or intend to ban glyphosate](#). Germany has just announced a ban by 2022. Unless specifically addressed, it could end up being dumped in Uganda (along with DDT) in an aid package as part of a requirement for use with their GMOs.

Phased-in introduction

It is argued that a case-by-case introduction of GMO plants may be feasible. Nothing could be more legally hazardous. A sound regulatory environment is a *prerequisite* for the legally safe adoption of GMOs. If, for example, a GMO investor sets up shop in Uganda and later the proposed Genetic Engineering Council develops regulations based on later research curtailing some of the investor's activities or banning dangerous ones, the Government of Uganda could – would – be liable for the investor's financial losses under the investor-state dispute settlement (ISDS) system. Under the ISDS, investors are able to challenge public welfare legislation in countries in which they invest. Regardless of outcomes (which are often unfavourable to the target State) the arbitration procedure is very costly. For the investor it would not be a bad deal; s/he would simply calculate how much s/he expected to profit and be compensated for that without even having done the work.

Unscrupulous investors have taken advantage of this legality in other countries where they invest in controversial areas and simply file a suit once the domestic government eventually curtails their activities by law.

Ugandan scientists' freedom to operate

But there are other interests, such as domestic scientists who desire and need freedom to operate. In his letter to Parliament, President Museveni highlights the need for domestic research. Domestic developers also have a GMO product. It is unfortunate that some Ugandan scientists receive warnings about GMOs as indictments of their ability to deliver domestically developed GMOs. Nothing could be further from the truth. It is appreciated that it would be a massive career opportunity to be able to roll out products that may have been under development for years. It is an opportunity for Uganda to invest in scientific research.

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If GMO solutions implemented were home-grown and the fruits of Uganda-funded research, there might be less suspicion and resistance. If the GERA provided *any* certainty that Ugandan GMOs would be protected and put into use ahead of imports (in the same way that the USA and Europe protect their own industries), the discussion would be different. It will be necessary to fight for the

rights of domestic scientists and to ensure their research is actually theirs and not commissioned by the GMO lobby.

Foreign players are the most vocal and aggressive in this matter because they stand to gain the most by dominating the market. They can also afford to pay for propaganda and, let's face it, bribes. A GMO film, *Food Evolution*, commissioned by the Institute for Food Technologists, was shot partly in Uganda. Food industry scientist Marion Nestle appeared in it for 10 seconds saying there was no evidence of harm in eating GMO produce. In her review of the film titled "[Food Politics](#)", she states she has tried to have the clip deleted because, according to her, her comments were edited out of context. She refers to an article in the *New York Times* in which it is claimed leaked email evidence shows the [GMO lobby pays researchers to front for it](#). Not surprising.

To quote Nestlé, "*Food Evolution* focuses exclusively on the safety of GMOs; it dismisses environmental issues out of hand. It extols the benefits of the virus-resistant Hawaiian papaya and African banana but says next to nothing about corn and soybean monoculture and the resulting weed resistance, and it denies the increase in use of toxic herbicides now needed to deal with resistant weeds. It says nothing about how this industry spends fortunes on lobbying and infighting labeling transparency." (Labelling transparency is one of the conditions Museveni has laid down for his assent to the Act.)

Nestlé adds that GMO lobbyists promote the view that anyone less than enthusiastic about them is "anti-science, ignorant, and stupid".

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