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ACTIVISTS AS "ALTERNATIVE" SCIENCE COMMUNICATORS

Activists as strategic science communicators on the adoption of GMOs in Uganda

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Abstract

This commentary uses a case study of Uganda and the country's attempts to adopt genetically modified organisms (GMOs) to demonstrate how activists have become communicators of scientific knowledge in the digital age. The digital age allows activists to share their information and collaborate with those who can push their agenda. I argue that anti-GMO activists have positioned themselves as influencers in a debate where weight-of-scientific evidence seems to have been overshadowed by perceptions, largely driven by socio-democratic considerations that require participation in technological uptake.

Keywords

Public engagement with science and technology; Public understanding of science and technology; Science and media

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This commentary uses a case study of Uganda and the country's attempts to adopt genetically modified organisms (GMOs) to demonstrate how activists have become communicators of scientific knowledge in the digital age. The digital age allows activists to share their information and collaborate with those who can push their agenda. I argue that anti-GMO activists have positioned themselves as influencers in a debate where weight-of-scientific evidence seems to have been overshadowed by perceptions, largely driven by socio-democratic considerations that require participation in technological uptake.

The Ugandan government has been unable to agree on a law to provide for the use of GMOs since 2012. The failure to pass The National Biotechnology and Biosafety Bill 2012, commonly known as the GMO Bill can be attributed to the positive and negative emotions the Bill draws from those who feel they have a stake in this decision. On one side of the disagreement are crop biotechnologists and their associates, who research and generate GMOs in government, universities and private laboratories who contend that the technology is safe. On the other side are

anti-GMO activists, mainly farmers' groups, environmentalists, trade organisations and individuals, who argue that GMOs are inappropriate technology for the country. Activists have been unable to effectively respond to science in Uganda because established "institutions and processes are tailored towards eventual endorsement of these technologies" [Schnurr and Gore, 2015, p. 55]. Without their own research to balance available scientific evidence supporting the use of GMOs, activists have, instead, focused on targeting sympathetic communities and polarising the debate.

Uganda's biotechnologists have reasoned that genetic engineering techniques are necessary if the country is to improve its food security[1] by increasing food quantity and quality in the face of intensifying pests, diseases, drought, and other natural calamities triggered by climate change. They suggest that such engineering can also improve the taste of food varieties. They argue that traditional methods are slow in solving the problems, making GMOs good for many developing countries, including Uganda [Masiga, 2015; Roberts, 2018].

However, activists have questioned[2] Uganda's readiness for GMOs as the use of the technology would interfere with agricultural sovereignty thereby necessitating farmers to buy seeds every season as a result of patent rights. Patents would make it illegal for farmers to plant certain seeds without getting the permission of multinational companies, such as Beyer which recently acquired Monsanto), Syngenta, Pioneer (Corteva) and Pannar that sponsor the breeding of seeds. Moreover, based on (perception) studies from other countries [Busscher et al., 2020; Rzymski and Królczyk, 2016], activists have also argued that GMOs do not necessarily increase yield [Dowd-Uribe and Schnurr, 2016], but can lead to increased cases of cancer [Singh, 2018]. Further, activists contend that GMOs can lead to contamination of other gardens, since, in the case of Uganda, in densely populated areas, the gardens are so congested that it is hard to tell whether the gardens belong to an individual or several individuals due to the prevalence of subsistence farming. Other arguments border on bioterrorism as a consequence of unscrupulous scientists using genes to harm others and GMOs increasing allergies [Ahteensuu, 2017; Mueller, 2019; Naeem, Sohail and Iftikhar, 2019]. No studies have been carried out in Uganda to ascertain these claims, but the arguments are based on ideas diffusing from the West and Asia. Moreover, their interaction with other activist groups, politicians, media, internet, academics, and (peer-reviewed) journals enables activists to access scientific information to use in their advocacy even though they may not be scientists themselves [Fähnrich, 2018]. Yearley [2008] contends that such information helps activists to cast doubt on GMOs as a contentious technology in opportunistic ways that make campaigners key science communication actors.

Activists often move beyond the agenda of whether GMOs are good or dangerous to human health, the environment and the economy, to focus on political aspects i.e. the failure of politicians to set up irrigation systems[3] to minimise the effects of drought on farming or their failure to set up silos to manage agricultural produce

[1] https://allianceforscience.cornell.edu/blog/2019/11/uganda-faces-heavy-losses-without-gmo-banana-economist-warns/.

[2] https://www.newvision.co.ug/news/1465455/uganda-ready-gmos.

[3] https://www.pri.org/stories/2017-12-29/amid-drought-and-pests-can-gmos-save-ugandas-farmers.

to minimise wastage during seasons of bumper harvest. Based on the anticipated impact of GMOs on the economy, a risk-management consultant opined in a newspaper that scientists should overcome the silo[4] mentality and think about the potential dangers of GMOs on other sectors. He urged scientists to consider especially the medical, environmental and the trade negotiations Ugandan leaders would have to engage in to allow the country's products on the international market. The demands from the activists form a stringent legal landscape for scientific innovation.

At the centre of the argument are two entities — the media and the Government of Uganda. Media platforms, both traditional and online, drive the debate by sharing information from both the biotechnologists and the activists. The government, executive and the parliament, are lobbied by both sides to have a law passed in their favour. On several occasions, biotechnologists have engaged the Members of Parliament, including meeting with the science and technology committee and hosting[5] the Speaker of Parliament at the National Crops Resources Research Centre in Namulonge. The President of Uganda is on record[6] promising scientists that the law allowing their scientific innovations to be commercialised would be passed. Indeed, Uganda has GMO maize, bananas, cassava, cotton and other products ready for release to farmers, but cannot do so because the Cartagena Protocol[7] of 2000 only allows release of such material when a country has an enabling law. Yet the President has twice turned down signing the Bill into law, first demanding that gene banks be established to protect native species, and later requiring that GMOs should only be grown in greenhouses to prevent contamination. The President's response is partly in line with what the activists want — making it hard for GMOs to be commercialised in Uganda.

Through stifling the commercialisation of GMOs, activists are indirectly supporting the aims of pro-organic groups, who want to dominate the market. Although the definition of organic is not at the centre of this piece, the arguments from activists seem to point to organic in the context of non-GMOs, not chemical-free farming, since use of pesticides is a common practice for many farmers. On the other hand, the scientists seem to be supporting the aims of pro-GMO multinationals who want to control the same market. Consequently, several commercial, social and political interests are at stake in this debate. One scholar has asserted that the use of public relations to protect corporate interests associated with commercialisation of science often incites NGOs to "contest and reframe scientific knowledge by aiming at instigating epistemic shifts in institutionalised science conceptions and discursive changes in social values underlying science" [Maeseele, 2009, p. 55].

The controversy surrounding the Bill has caused changes in name over the years. In 2017, Parliament passed the Biosafety Bill and scientists celebrated because the law was facilitating their work. The President refused to agree to it, demanding that there should be patents on indigenous seed varieties and provisions to punish scientists who mix GMOs with indigenous products. In 2018, the same Bill was

[4] https://www.monitor.co.ug/OpEd/Commentary/-Uganda-GMO-scientists-need-to-overcome-the-silo-mentality/689364-5288358-dkg76d/index.html.

[5] http://www.sunrise.ug/news/201902/kadaga-lends-support-to-agricultural-scientists.html.

[6] https://allianceforscience.cornell.edu/blog/2020/03/ugandan-president-wants-gmo-bill-passed/.

[7] https://www.cbd.int/doc/legal/cartagena-protocol-en.pdf.

passed[8] as the Genetic Engineering Regulatory Bill with provisions for protecting gene banks of indigenous varieties. While the farmers' groups, civil society, women and trade policy organisations and environmentalists celebrated[9] and issued a joint communique' appreciating Parliament for passing the law with liability clauses to take care of any dangers that may arise as a result of using the new technology, scientists were distressed [Bendana, 2020]. GMO projects were deemed to fail as they would be viewed as unviable and perhaps not worth funding. As a result of this dilemma,[10] the President had not yet signed the regulatory Bill by the time this commentary was written, leaving activists in confusion.

This debate has been captured by journalists who quote scientists and scientific publications in reporting or in opinions pieces where biotechnologists or their institutions push for the adoption of GMOs. Science journalists in Uganda have tended to side with biotechnologists. However, journalists covering general news tend to give more space to activists, because of the controversy involved. Such journalists also cover Parliamentary proceedings on the Bill, and biotechnologists or activists addressing farmer groups, or a member of the clergy commenting about the technology, without considering the principle of weight-of-experts [Dunwoody and Kohl, 2017], in balancing stories.

Thus, in Uganda, both biotechnologists and activists use media outlets to extend their respective agendas. Proponents from both sides of the debate invite journalists for media tours. Reporters meet scientists to discuss what happens in the laboratories and field experiment sites. Biotechnologists also write for the newspapers, are invited for broadcast talk shows, and often attend agricultural shows where they meet policymakers and farmers to explain the advantages of using GMOs. Anti-GM organisations such as Route to Food Initiative, Participatory Ecological Land Use Movement (Pelum) Uganda, Food Rights Alliance, Action Aid and some academics also use press conferences, write letters in the press, and Members of Parliament and organic farmers to push the anti-GMO agenda. Many of the pro- and anti- opinions are carried by both traditional and new media. Moreover, the Internet allows both groups to borrow ideas from other countries and contextualise them to Uganda thereby making such ideas relevant in the local situation. For instance, the biotechnology research organisations have been engaging Parliament, local government leaders, and the media as a way of sensitising the public about GMOs and considering products on a case-by-case basis to minimise the effects of the products, if they are later found defective. The activists have been engaging politicians to ensure that liability clauses are inserted in the law, if GMOs are to be adopted in Uganda. Social media platforms tend to amplify the agenda of the activists by helping them makeup for their being under-resourced and to overcome political constraints. Platforms such as Facebook, Whatsapp, and Twitter allow activists to express themselves in a fairly unregulated environment. Such space permits them to publish their concerns, often ignored by mainstream media, such as high pesticide usage in growing GMOs causing infertility, asthma, Parkinson's disease, attention disorder, depression and anxiety,[11] and the potential for contaminating other plants. Use of relevant ideas

[8] https://observer.ug/businessnews/59356-parliament-passes-gmo-bill.
[9] https://www.monitor.co.ug/uganda/news/national/activists-back-museveni-on-gmo-bill-1846206.
[10] https://www.independent.co.ug/musevenis-gmo-law-dilemma/.
[11] http://farmandranchfreedom.org/gmo-multiple-chronic-disease/.

draws public attention to both the biotechnologists and the anti-GMO alike.

Despite positive news coverage, research organisations are setting up their own public relations projects to promote the benefits of GMOs. For instance, the National Agricultural Research Organisation (NARO) set up a Uganda Biosciences Information Centre (UBIC) at its station in Namulonge, with aim of sharing information on biosciences, including GMOs, using both traditional platforms, a website and social media. Activists have also set up websites[12] supporting an anti-GM agenda, where they share information not captured by mainstream media outlets. In cases where journalists are not interested in writing stories on GMOs, both scientists and activists use the Op-ed pages in newspapers to share their opinions. They can also buy airtime on radio and television to communicate their views.

Alliances and collaborations have been key to the success of both groups. Every time an event promoting GMOs in Uganda takes place, the International Service for Acquisition of Agric-biotech Applications captures the development on its "Crop Biotech Updates"[13] site, Alliance for Science[14] coordinated by Cornell University and the Genetic Literacy Project[15] and publish to the global audience. Activists such as Food Rights Alliance,[16] Pelum Uganda,[17] Southern and Eastern African Trade Information and Negotiations Institute (SEATINI)[18] and Advocates Coalition for Development and Environment (ACODE)[19] use their own websites and are also helped by partner organisations to publish their content. Activists have particularly argued that the use of Roundup, a pesticide that contains glyphosate — a chemical linked to cancer [Busscher et al., 2020], reduces Uganda's competitiveness in international trade, and exposes unsuspecting consumers to health and environmental hazards.[20] Scientists have used social media to counter the activists. For instance, UBIC runs a social media[21] site where scientists or the public relations arm of NARO can share pro-GMO content. This means that, even if media outlets do not cooperate with either the scientists or the activists, they still have platforms to publish their content.

Activists' appeals are often picked by religious leaders who make this content part of their sermons. The clergy are in privileged positions, and able to appeal to members of their congregations against GMOs by quoting biblical scripture about not manipulating nature. Moreover, religious leaders meet their faithful on a weekly basis at no cost. Their views on GMOs are shared with their congregations, who also pass on these ideas to their families and friends, which can exacerbate community resentment towards such products. Uganda's Minister for Agriculture is aware of this and has already appealed to church leaders to support[22] genetic

[12] https://www.theelephant.info/features/2019/09/28/the-case-against-gmos-cautionary-tales-from-uganda/.
[13] http://www.isaaa.org/kc/cropbiotechupdate/.
[14] https://allianceforscience.cornell.edu/blog/2018/08/the-gmo-debate/.
[15] https://geneticliteracyproject.org/.
[16] https://fra.ug/.
[17] https://www.pelumuganda.org/.
[18] https://seatiniuganda.org/.
[19] https://www.acode-u.org/.
[20] https://www.newvision.co.ug/news/1278211/risks-gmos-agriculture-uganda.
[21] https://twitter.com/UgandaBIC.
[22] http://www.sunrise.ug/news/202003/minister-ssempijja-rallies-churches-to-embrace-modern-

engineering as a mechanism for improving agricultural productivity in Uganda. Because of the conservative nature of Ugandan society, Nobel Laureate Sir Richard Roberts, made the country his target and lobbied religious leaders and political leaders[23] to abandon the Greenpeace[24] agenda and accept GMOs as a way to provide economic justice for those who cannot access food.

In this more than a decade long debate, it appears that all actors in the equation are appealing to the taxpayers and development partners whose resources fund research. Indeed, most of the research in Uganda is funded[25] by government or donors. Activists use donations mobilised either locally or internationally. Politicians are paid from the consolidated fund to which taxpayers contribute. Food democracy demands that individuals should define their food policies, strategies, with respect to food security, sustainability, and use of natural resources through "consumer autonomy", often translating into labelling of ingredients in food [Herington, 2018, p. 85]. The scientists, activists and politicians are doing exactly that. Politicians, particularly, are not willing to sanction a technology whose application is not well documented as it is still new. In objecting to GMOs, activists are indirectly warning politicians to remember that the issue can turn political and cost them their offices, if they do not take precautions. Scientists also warn politicians that biotechnologists should not be blamed. If the country is affected by food shortage, then this issue can turn political. Unsure about what to do, the President, up until now, keeps the law a signature away from its application to give both groups hope. This situation validates the argument that controversial science often results in politicised science communication [Scheufele's 2014], and challenges the authority of science [Davis et al., 2018].

Activists as alternative science communicators

Although scientists and activists have obligations of accountability to taxpayers and donors, whose resources facilitate their work, the activities within these two groups are leading to a collision. As sources of information on GMOs, biotechnologists tend to focus on how genetic engineering can be used to produce GMOs that improve the quality of human life. Activists tend to focus on both the direct and indirect negative effects of commercialising GMOs, especially on human life and the environment. The media platforms that are meant to inform readers, listeners and viewers frame these issues as battlegrounds of ideology, which intensifies the controversy. Leaving decisions about GMOs to scientists is to assume that biotechnology is error free. Indeed, it would ignore the socio-cultural and political aspects associated with food. It would also be a mistake to assume that activists can take on decision making on the scientific aspects. Activists are key sources of information on the effects of GMOs in the scientific and policy areas, that are beyond the biotech laboratories. This debate demonstrates that policy makers need to pay attention to public sentiments, and that the development of scientific knowledge needs to follow democratic processes to minimise tensions that may accompany the development and application of scientific knowledge.

farming-it-comes-as-govt-makes-u-turn-on-gmos-opposed-by-the-church.html.

[23] https://www.forbes.com/sites/kavinsenapathy/2016/09/21/nobel-laureate-sir-richard-roberts-to-ask-religious-and-government-leaders-to-support-gmos/#22b057893c7a.

[24] https://www.greenpeace.org/international/.

[25] https://www.newvision.co.ug/news/1486970/govt-warned-reliance-donor-funding-research.

Conclusion

Accordingly, it would be an oversight to ignore the role of activists in the adoption of GMOs, although this debate does not follow the principle of weight-of-experts, and therefore evidence since activists rarely put scientific evidence on table. However, any communication strategy aimed at encouraging the Ugandan public to adopt GMOs will need to consider the potential role of activists as sources of information that may influence scientists to consider the social implications of their research. Therefore, a model where scientists and activists can meet to discuss the social aspects of GMOs, whether and how the science can be safely used in the food chain would be ideal in allowing public participation in technological uptake and exercising their "right to talk back to science" [Einsiedel, 2008, p. 176].

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