

A quantitative study by the Alliance for Science

A vibrant, abstract illustration with a collage-like style. In the center, a figure holds a green sign with the word "FACTS" in white capital letters. To the right, a person is being held back by others, with a blue sign featuring a red "X" over a green plant icon. Below this, a computer monitor shows a line graph with a downward trend. In the bottom right, a blue speech bubble contains the letters "GMO". The background is filled with stylized green foliage, a blue sky with a white cloud, and various geometric shapes and patterns in bright colors like yellow, orange, and purple. The overall composition suggests a theme of environmental activism or food safety concerns.

Summary

In a study of GMO media articles published by Kenyan media published between October 2022 and January 2023 we found **151 out of a total of 376 articles contained unchallenged negative misinformation about GMOs**. This equates to 40% of media coverage by volume in Kenya promoting negative misinformation about GMOs. Only 3% of articles contained pro-GMO misinformation.

- ▶ The vast majority of the misinformation 'conversation' in the Kenyan media (over 80%) concerned the topic of human health, with the issue of the scientific consensus on GMO safety the second-biggest topic with 10% of mentions.
- ▶ Misinformation primarily originated in the form of quotes from prominent Kenyan politicians, in particular opposition leader Raila Odinga, trade cabinet secretary Moses Kuria and Roots party leader George Wajackoyah. Misinformation also originated from anti-GMO campaign groups like the Kenyan Peasants League. All these sources made scientifically unfounded claims about negative health effects of GMOs which were repeated unchallenged by media outlets.
- ▶ These very high rates of misinformation are perhaps among the worst in the world, and will make it very difficult for Kenyan citizens and policymakers to make informed decisions about GMOs in the face of such a storm of misinformation. In order for the country to have a productive debate on the contribution GMOs can make to food and nutrition security, media will need to make a special effort not to repeat quotes, even from prominent people, which contain misinformation without rebuttal. Scientists will need to become better communicators, and media will need to devote space to authoritative scientific voices on this controversial topic.



Introduction

An earlier study by the Alliance for Science found worryingly high levels of misinformation about genetically modified food and crops (so-called 'GMOs') in the African print and online media. While the overall rate of misinformation in the global media on GMOs from 2019-2021 was 9%, in Africa a fifth (20%) of media coverage contained unchallenged misinformation on the topic.

This study aimed to better understand the rate of GMO media misinformation in a single country, Kenya. We chose a period during which the GMO conversation overall saw a big increase due to the new administration of President William Ruto's decision to overturn a long-standing ban on GMO imports.

Our aim was to quantify the rate of misinformation in Kenyan media coverage of GMOs in order to assist the scientific community to better communicate the science about this topic, and for policymakers to better understand the scientific realities: what is known and what is not known about genetically modified crops and foods.

Misinformation can be damaging to society because it means that people make decisions based on inadequate or false information. An example is that people who choose not to vaccinate themselves expose themselves and others to preventable diseases. Likewise, those who do not believe climate change exists will not support efforts to reduce rates of carbon emissions.

The Alliance for Science believes that more effective scientific communication would reduce the rate of misinformation and thus enable society to make better-informed choices about new technologies and scientific controversies. It is important to combat misinformers and to assist media and journalists to reduce the airtime given to those promoting myths and misinformation.

About the Alliance for Science

The Alliance seeks a future where science and innovation is shared and supported to help bring about a world without poverty, where people everywhere can flourish on an ecologically protected and restored planet.

Our primary focus areas are: climate change, global health, misinformation, and food and nutrition security. We have previously published studies:

- ▶ Quantifying the COVID misinformation debate
- ▶ Understanding the level of vaccines misinformation in the media
- ▶ Quantifying the scientific consensus on climate change in the scientific literature
- ▶ Summarising the media trends on GMO coverage over a 3-year period
- ▶ Analysing GMO misinformation in the global media

See allianceforscience.org/research



Methods

We searched 14 top-tier Kenyan media outlets during the date range 1 October 2022 to 31 January 2023. The search and initial analysis was conducted by our partners Cision, who used the keywords “GMO” in the text body and/or the headline, and used internal software to code the articles by misinformation subject and sentiment. This was followed by human validation, with all articles read and checked for misinformation by at least two people. For transparency our entire database is available as an Excel spreadsheet on request. We subjected articles to automated sentiment categorisation, validated by human analysis, which assigns terms ‘positive’, ‘neutral’, ‘negative’ and ‘mixed’ according to the tone of the piece in the sense of how it will likely leave the reader feeling about the subject.

We assign different categories to the occurrence of misinformation on GMOs in the Kenyan media.

- ▶ **Factual:** Content designated “factual” and is strictly news based. If an article contains quotes, it is factual if the article is balanced in positioning and unlikely to sway readers to either side.
- ▶ **Unchallenged Misinformation:** Content containing anti-GMO misinformation (as defined by current understanding of international scientific consensus) that is not fact-checked or countered within the article text. Includes articles that contain quotes that contain misinformation and are not challenged by the article text in any way.
- ▶ **Challenged Misinformation:** Articles that contain misinformation that is challenged with opposing viewpoints, context, or fact-checking by the author.
- ▶ **Fact Checking:** Articles that are specifically written to fact-check misinformation within the GMO conversation. Identified by “fact-checking” descriptors or explicit intent.
- ▶ **Pro-GMO Misinformation:** Contains unchallenged misinformation from a pro-GMO position.
- ▶ **Both:** Contains unchecked misinformation from “pro” and “anti” GMO position.

We term a statement ‘misinformation’ if it conveys information which is not supported by the consensus of scientific opinion. There is strong international agreement in the expert community that the techniques of breeding new crops via transgenic methods is not per se more risky than conventional breeding, while the resulting crops and foods need to be assessed on a case by case basis as do all novel foods.

The position of the scientific community was summarised at a meeting 28 November 2022 of the Network of African Science Academies (NASAC) in partnership with the Kenya National Academy of Sciences (KNAS) by KNAS Honorary Secretary Prof. Ratemo Michieka, who said:

“Scientific authorities around the world such as U.S National Academy of Sciences, United Nations Food and Agriculture Organization, World Health Organization, American Medical Association for the Advancement of Science, have analyzed thousands of scientific studies and concluded that GM food crops do not pose any risks to people, animals or the environment.”

On behalf of NASAC President Prof. Norbert Hounkonnou said: “The Science Academies in Africa recommend adoption and commercialization of approved crops as one of the sustainable options in addressing food insecurity and providing livelihoods of the population”.

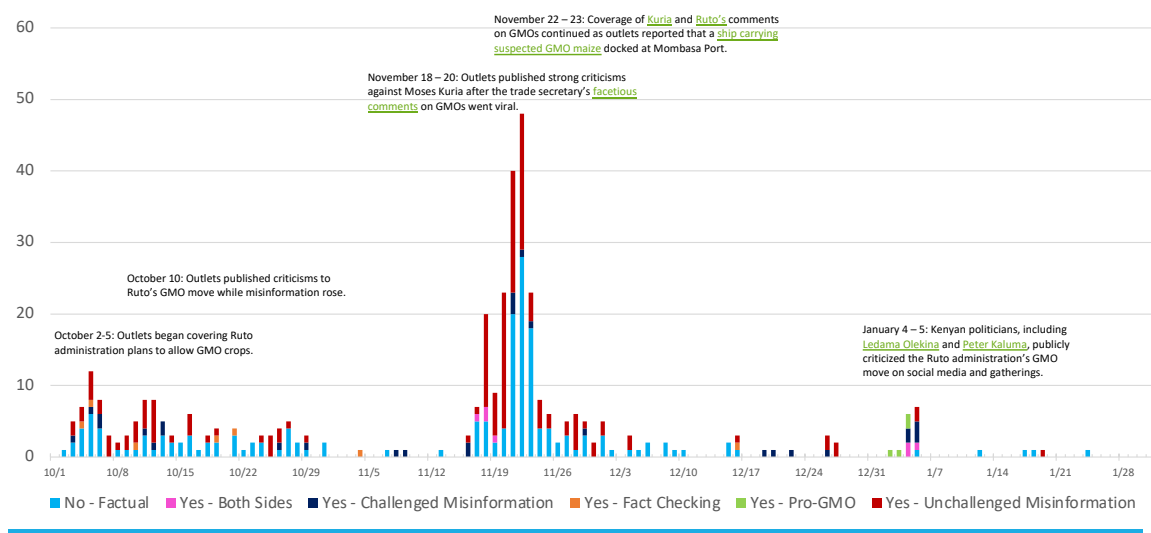
Results

Themes of GMO misinformation were found in just over half of media coverage (52%), with 40% of anti-GMO misinformation by volume going unchallenged. Only 3% of articles contained pro-GMO misinformation.

In addition, 16 articles contained misleading images (such as a syringe injecting coloured liquid into corn/fruit), although several of these were tagged 'positive', suggesting a disconnect between choice of stock images and article tone.

The vast majority of the misinformation 'conversation' in the Kenyan media (over 80%) concerned the topic of human health, with the issue of the scientific consensus on GMO safety the second-biggest topic with 10% of mentions. The image belows shows the conversation on a timeline with all the GMO articles during the three-month sequence.

Volume of All Articles with GMO Keywords



Quantitative results

Total Articles: 376

- ▶ Articles with no misinformation: **178 (47%)**
- ▶ Articles with unchallenged misinformation: **151 (40%)**
- ▶ Articles that challenged misinformation: **29 (8%)**
- ▶ Fact-checking articles: **7 (2%)**
- ▶ Articles containing misleading images: **16 (4%)**

Misinformation breakdown of full conversation by pro/anti positioning:

- ▶ Anti-GMO: **151 (40%)**
- ▶ Both: **7 (2%)**
- ▶ Pro-GMO: **4 (1%)**

Misinformation Volume by Topic

- ▶ Human Health: **168 (83%)**
- ▶ Scientific Consensus: **20 (10%)**
- ▶ Consumer Access: **9 (4%)**
- ▶ Pesticides, Herbicides, and Soil Health: **5 (3%)**

Misinformation primarily originated in the form of quotes from prominent Kenyan politicians, in particular opposition leader Raila Odinga, trade cabinet secretary Moses Kuria and Roots party leader George Wajackoyah. Many of these were reports of verbatim tweets by these and other prominent persons, appearing without sufficient context or without clarification from any scientific authority.

Kuria's statements were unusual in that he is a member of the government which has lifted the GMO ban and is promoting the use of genetically modified crops in accordance with the science. While it is clear from the initial reporting and videos that Kuria was joking in saying that GMOs could kill Kenyans, much of the subsequent reporting and furore took his comments literally, and was thus tagged as misinformation.

George Wajackoyah's comments that GMO consumers in Mexico had suffered physical changes with 500 men growing breasts and women growing beards were particularly extreme, but were reported verbatim and without rebuttal from scientists by many media outlets.

Misinformation also originated from anti-GMO campaign groups like the Kenyan Peasants League and the Food Rights Alliance. All these sources made scientifically unfounded claims about negative health effects of GMOs which were repeated unchallenged by media outlets, for example a claim by the latter (see below) that GMOs caused breast cancer.

Pro-GMO misinformation came in the form of exaggeration, for example with President Ruto claiming that the US and South Africa consume 100% GMO foods or Bill Gates asserting that all the wheat he has eaten is GMO. Technically all food is indeed genetically modified in the sense that domesticated crop varieties have seen extensive genetic changes as compared to their wild relatives, but this is not how these comments are likely to have been understood by their audiences.

Misinformation examples

"You don't feed people poison in the pretext of saving their lives," the politician said in a statement on Twitter Saturday.

'Resist GMOs, it's slow death – Ekuru Aukot' - The Star, 19 November 2022

Kenya Peasants League and lawyer Paul Mwangi filed a lawsuit arguing that GM food poses a health risk to poor Kenyans.

'GMO Ban Extended: Court Slams Brakes on Govt's Plan to Import GM Food' - Tuko, 16 December 2022

Azimio leaders yesterday warned against the planned importation of genetically modified foods, saying President William Ruto's government was subjecting Kenyans to associated health risks.

'Seeds of discord: Azimio warns of GMO health risks' - People's Daily, 12 October 2022

"You are being told about GMOs. Mexico rejected the foods after research, about 500 men developed breasts and women grew beards"

'GMOs will make Kenyan men grow breasts and women grow beards – Prof WAJACKOYAH says' - Daily Post, 27 December 2022

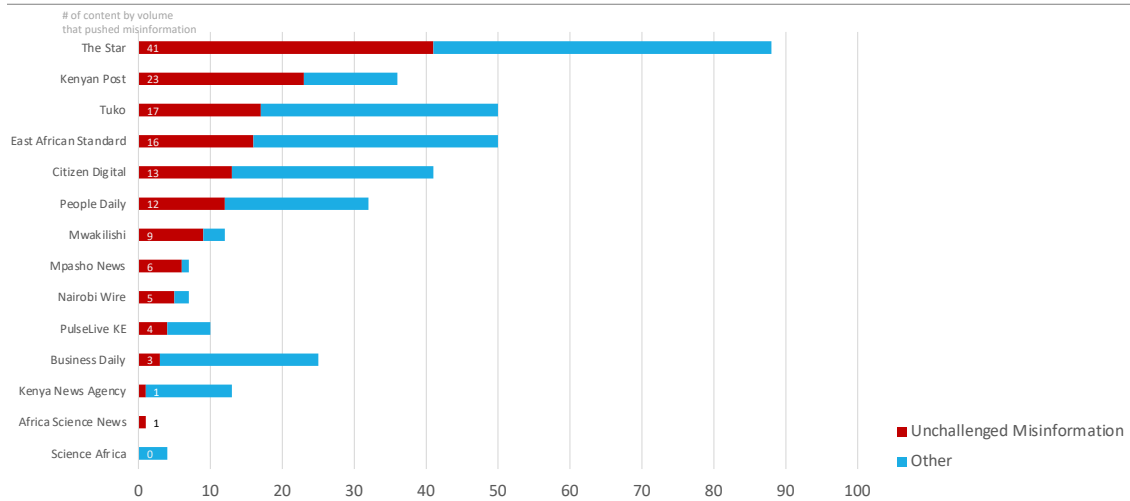
Speaking separately on Tuesday, Azimio party leader Raila Odinga and his Wiper counterpart Kalonzo Musyoka slammed Ruto's move stating that the cons of GM maize far outweigh their costs and nutrition benefits especially since some health experts believe that the biotech foods carry a number of health risks.

'Raila, Kalonzo Slam President Ruto's Decision On GM Maize, Insist It Is Harmful' - Citizen Digital, 11 October 2022

Dr. Daniel Maingi of the Food Rights Alliance... stated that GMO technology contributes to cancer especially breast cancer thus insisted on non-GMO food.

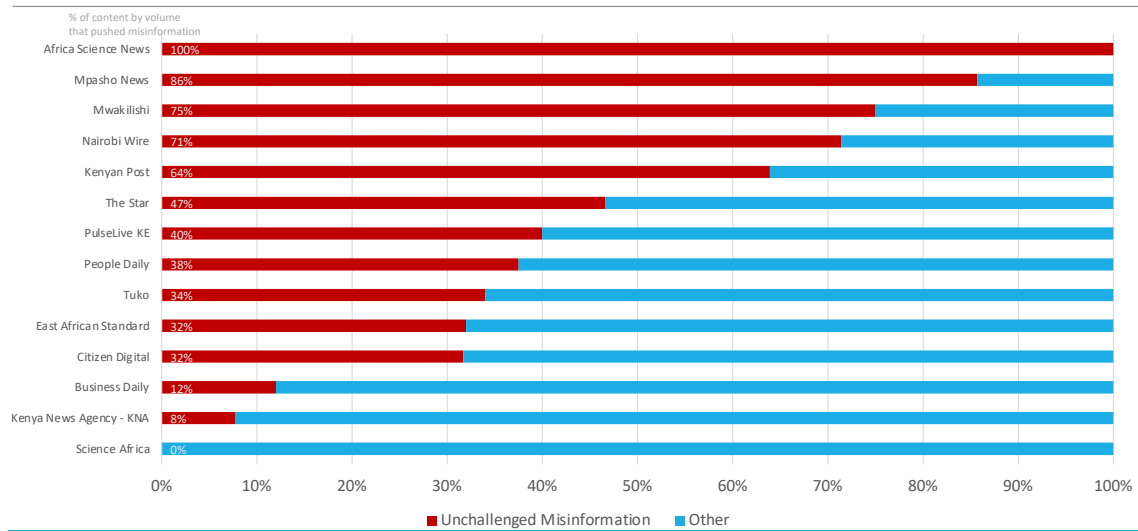
'GMO Maize is harmful to your health, Kenyans warned!' - Africa Science News, 18 November 2022

Misinformation by Volume for Outlets that Published Unchallenged Misinformation



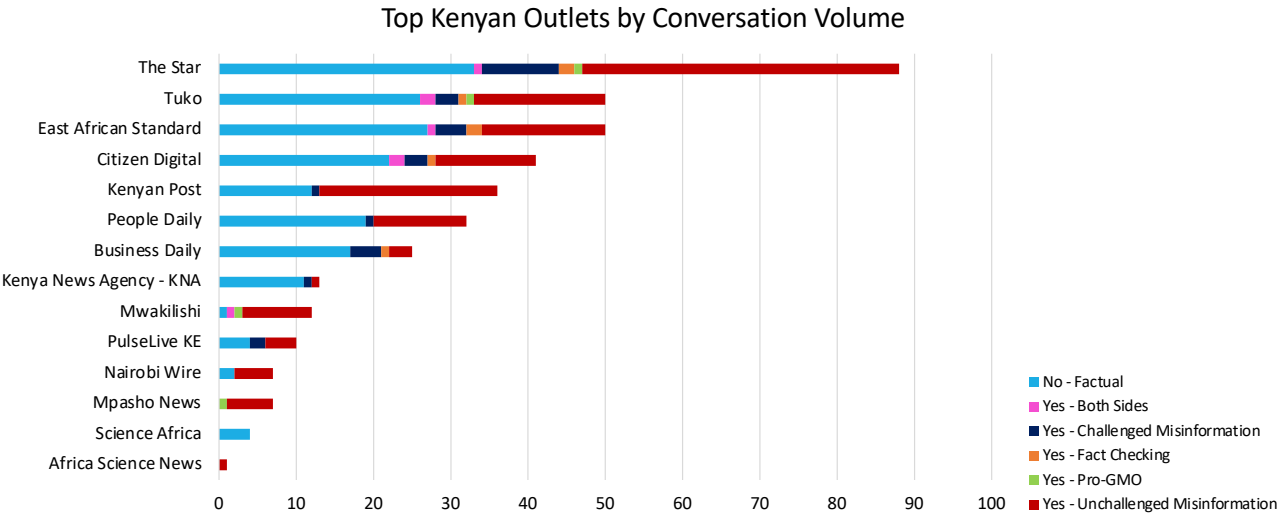
The image above shows the number of stories by volume produced by each media outlet and which contained unchallenged misinformation. Given that different outlets produced different numbers of articles, this same data are shown proportionally below:

Share of Misinformation by Volume for Outlets that Published Unchallenged Misinformation



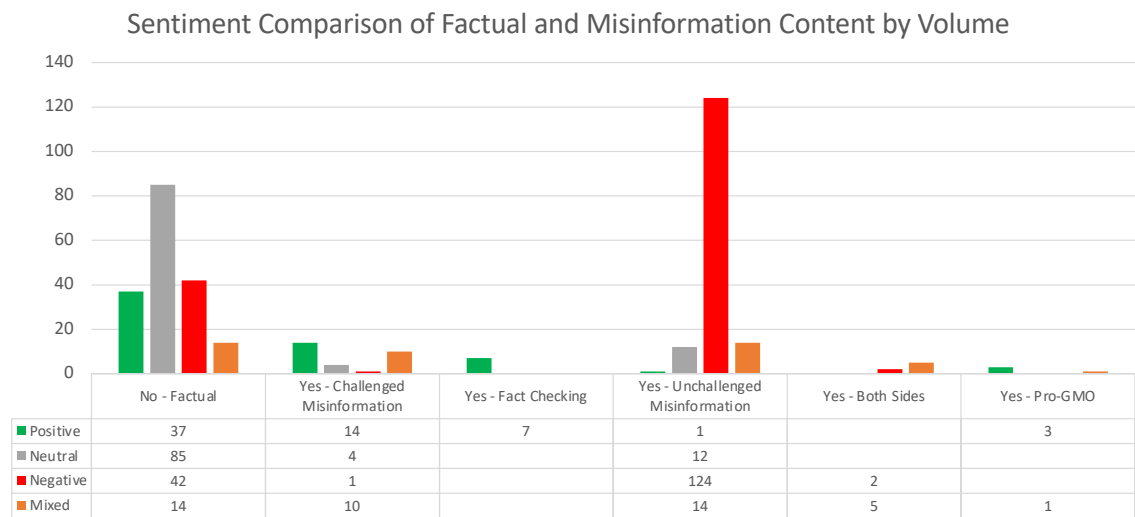
We show the number of articles in all categories below:

Kenyan Outlets by Volume



We also subjected the articles to sentiment analysis, and assigned terms accordingly, as shown below. We found that the majority of the unchallenged anti-GMO misinformation had a negative sentiment, while the majority of factual coverage had a neutral tone. Challenged misinformation and fact-checking articles largely took a positive tone.

Sentiment Overview



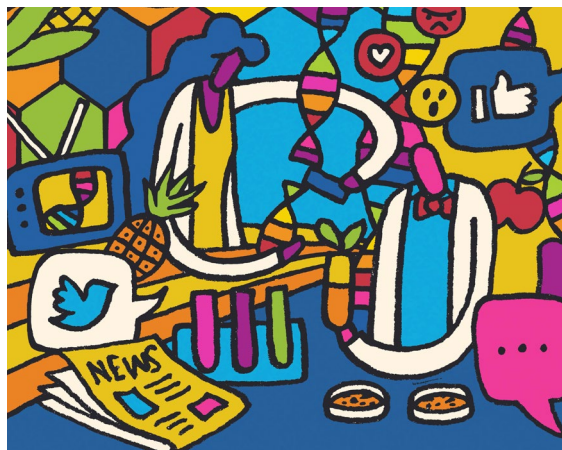
Discussion and conclusions

We believe that the misinformation surrounding the use of genetically modified crops and food in Kenya may be among the worst in the world on a volumetric basis. Certainly it far outweighs misinformation promulgated by opponents of climate change science or the use of vaccinations. It would appear that the scientific community has largely lost control of the public communications landscape, which is being dominated by unscrupulous politicians and NGOs which have an ideological interest in opposing new innovations in science and technology. The result is that it will be very difficult for Kenyan citizens and policymakers to make informed choices in the face of such a storm of misinformation.

We strongly recommend that media houses should make a special effort not to repeat quotes, even from prominent people, which contain misinformation without rebuttal, in order for the country to have a productive debate on the contribution GMOs can make to food and nutrition security. Just as how false statements about vaccines should not be reported verbatim without clear rebuttal from experts because of the obvious harm this reporting might cause, misinformation about GMOs should not be reported without clear fact-checking context and rebuttal.

We appreciate it is challenging for journalists to publish rebuttals when comments are made by prominent people in society: an earlier study by the Alliance for Science, for example, found that then-President Trump was the main driver of COVID misinformation during the pandemic. However, it is incumbent on media to separate fact from fiction, not to simply report what is said without providing readers the ability to separate fact from falsehood.

Scientists will need to become better communicators, and media will need to devote space to authoritative scientific voices on this controversial topic. With the recent establishment of the Science Media Centre Africa in Nairobi, we hope that journalists will be better able to source scientific expertise and factual statements to rebut questionable claims made by politicians and anti-science NGOs. Kenyans deserve better from their media than to be the recipients of a flood of misinformation on GMOs conveyed without context on a matter of great importance for food and nutrition security.



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