Why accurate info matters in agri-food and climate change

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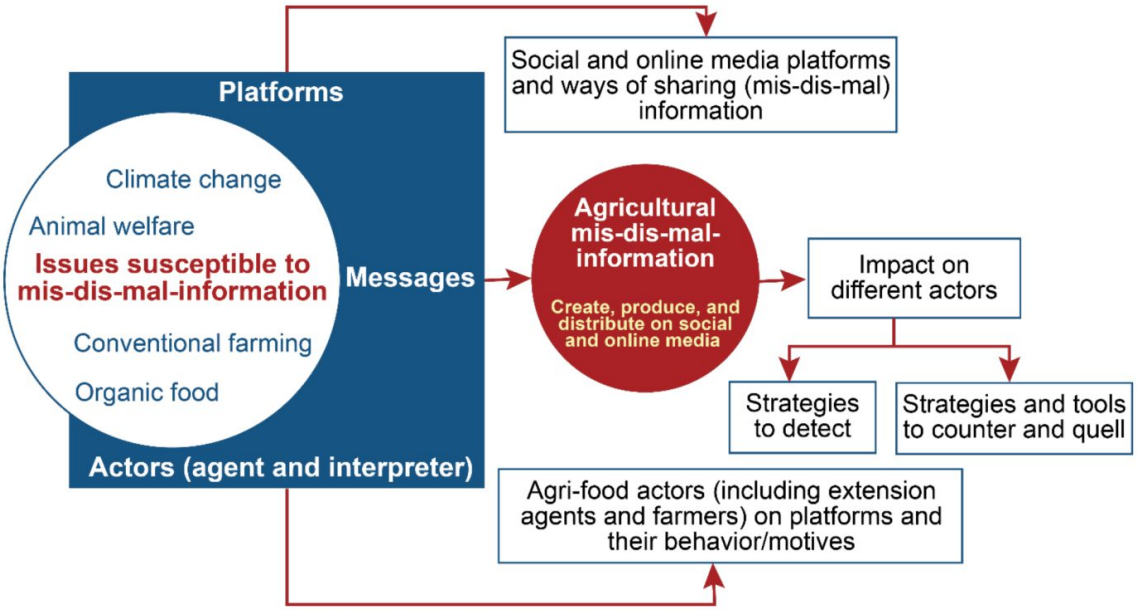

Figure 1: A framework for analyzing and understanding agri-food misinformation Source: Chowdhury et al (2023)

Dr Ataharul Chowdhury from the School of Environmental Design & Rural Development explores the importance of an agri-food, climate change, and rural misinformation research platform to combat information disorder and facilitate agri-food innovation and sustainable development

While information is an essential element for facilitating innovation and sustainable development, it is also evident that information can be politicized and used intentionally to favor ideology, values, and support groups as well as benefit economically. This creates many challenges for inclusive, sustainable, and climate-resilient food systems. The intentional nature of information has been evident since the early stages of civilization. The intentional nature of information creates division among nations, fuels wars and conflicts, and impedes development – some recent examples include the Middle Eastern war, Ukraine wars, and COVID-19.

Information disorder

Wardle and Derakhshan (2017) introduced the term ‘information disorder’ to avoid the politicization of various terms, such as ‘misinformation,’ ‘disinformation,’ and ‘malinformation,’ and to encompass all forms of false or misleading information that are spread through social and online media, regardless of the intent behind their dissemination.

With rapid digital development, sophisticated technologies such as algorithms or recently generative Artificial Intelligence can be used to track user engagement and prioritize what is shown. However, they tend to favor content that spurs negative emotions like anger and outrage. We witnessed that confirmation bias and prior beliefs, social anxieties, and ambiguities influence people to increasingly align in ‘eco-chambers’ in social media and spread the risk of information disorder.

Why agri-food, climate change, and rural misinformation research platforms?

While digital development amplifies the risks of information disorder, it is important to recognize that it has always existed in the agri-food domain. Historically, there is ample evidence of the existence of agri-food misinformation. For instance, the Villejuif Leaflet, a notorious example from the 1970s and 1980s, spread fear among Europeans through leaflets and flyers about the presence of toxic and cancer-causing substances in various foods and drinks, especially for children (Kapferer, 2013).

Recent developments in the agri-food sector, such as gene editing and climate change, have provided fertile ground for the spread of misinformation. The agri-food sector is also susceptible to misinformation on a wide range of topics, including nutrition, organic food, food labeling, food safety, animal welfare, Genetically Modified (GM) crops, and sustainable agriculture. These complex issues, often involving scientific concepts, are susceptible to misinterpretations and distortions. Moreover, the potential impacts of these issues on food production and consumption have heightened public interest, making them attractive targets for misinformation campaigns. Furthermore, there is slow progress in the adoption of climate-smart practices and agri-food communities in various parts of the world climate change denial (e.g., carbon/nitrogen emission). There are various reasons for climate change denial; for example, farmers perceive that climate change measures (e.g., emission reductions) will create an extra burden for their livelihoods, they do not realize the benefits, there is a lack of understanding of the science behind climate change, and the political and cultural belief that climate change is not accurate. All these social, political, and economic factors impeded their decision-making about climate-smart practices. Ultimately, the phenomenon of information disorder has a far- reaching impact on the adoption of technologies, and facilitation of innovation and sustainable development:

- Adoption of ineffective or harmful practices:
  It can lead farmers to adopt ineffective or even harmful agricultural practices.

- Reduced public trust in science and experts:
  It can erode public trust in science and agricultural experts, making it more difficult to address complex agricultural issues and promote sustainable practices.
- Health risks to consumers:
  Misinformation about food safety, nutrition, and food-related health concerns can lead to misinformed dietary choices, increasing the risk of foodborne illnesses, nutrition deficiencies, and other health issues.
- Economic impacts:
  Misinformation about genetically modified (GM) crops can have economic consequences for the agri-food sector, affecting consumer perceptions of food safety and agricultural practices and potentially undermining market access for certain products.
- Social divides:
  Misinformation can contribute to social divisions by fueling mistrust and conflict between different groups with differing perspectives on agricultural practices and food-related issues.

Current efforts to tackle misinformation and progress

Although the ‘integrity’ and ‘authenticity’ of information have always been important issues for facilitating technology adoption and innovation, agri-food misinformation is a new topic in our field of study. As a first step, we aim to raise awareness of this issue among the scientific community, policymakers, advisory professionals, farmers, and the general public. To achieve this goal, we have developed several frameworks (see Figure 1 for example) that graduate and post-doctoral students have used to study agri-food and climate change misinformation in different regions of the world, including Bangladesh, Canada, Iran, Ghana, Nigeria, Sri Lanka, Trinidad and Tobago.

The findings show that agri-food misinformation is rampant both online and offline. Social media platforms have a significant role in spreading misleading information related to agri-food. In the agricultural sector, we have also observed that peer farmers, extension agents, and traditional media contribute to disseminating misleading information. In some instances, such as the case of Sri Lanka’s misleading organic farming policy, the government introduced a biased policy to ban chemical fertilizers and encourage the adoption of organic farming.

In Canada, stakeholders witnessed issues of misinformation, especially given digital development and pluralistic advisory systems, which is a significant challenge to ensure an inclusive, sustainable, and climate-resilient food system (Chowdhury et al., 2024).

In addition to research, we have organized various knowledge mobilization activities, such as webinars and podcasts. We have also created a curated literature database on misinformation research and a database featuring renowned scholars in this field. Furthermore, we have initiated a database to debunk myths and misconceptions in the agri-food sector. We aim to create training resources to educate professionals who work

with farmers and the next generation of agri-food experts. All these initiatives are part of the research platform hosted by the School of Environmental Design and Rural Development at the Ontario Agricultural College, University of Guelph.

Future efforts to mitigate misinformation

In this platform, we will also aim to investigate new and emerging tools, such as ChatGPT, and how we can use them responsibly by minimizing the risks of misinformation and enhancing the authenticity and applicability of the information. In the future, we plan to expand this research initiative to many other related domains:

- Food misinformation, including value chain, processing, marketing, and consumption;
- Urban agriculture, vertical farming, and roof-top gardening;
- One health issue, including mitigation of health risks, such as vector-borne diseases, e.g., bird flu;
- Agriculture 4.0 and emerging issues, including Artificial Intelligence (AI), precision farming, and cellular protein; and
- Misinformation and disinformation influence equity, diversity, and inclusion in agri-food development.

A list of our current and future domains of efforts is available here, and we welcome research and development collaborations in any of these domains.

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