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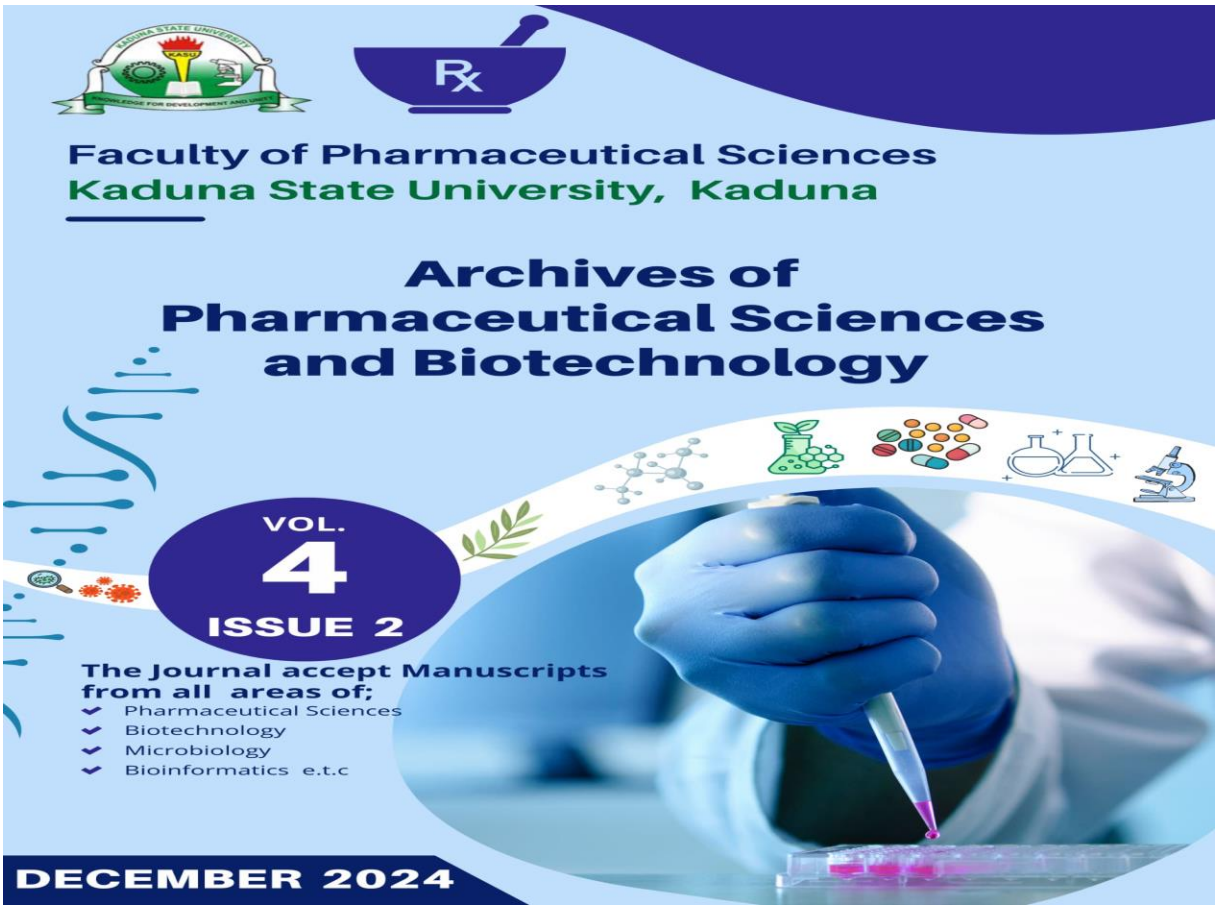

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COMMUNICATING BIOSAFETY: THE NIGERIAN EXPERIENCE

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ABSTRACT

Background: The effective communication of biosafety issues is paramount to fostering public understanding, acceptance, and trust in agricultural biotechnology. In Nigeria, the National Biosafety Management Agency (NBMA) has been instrumental in ensuring the safe development and utilization of genetically modified organisms (GMOs) through stringent regulatory frameworks.

Aim: This article explores the Nigerian experience in communicating biosafety, emphasizing the importance of engaging diverse stakeholders, including policymakers, scientists, the media, and the general public.

Method: NBMA employs a multifaceted approach to biosafety communication, organizing workshops, public awareness campaigns, and stakeholder forums. The agency collaborates with opinion influencers and engages with traditional and social media platforms to disseminate accurate information to a broader audience.

Results: The proactive communication strategies implemented by the NBMA have significantly enhanced public understanding and acceptance of GMOs in Nigeria. These efforts have built trust among stakeholders and mitigated the spread of misinformation. The inclusive communication strategies have also improved the credibility and impact of biosafety initiatives.

Conclusion: The Nigerian experience in biosafety communication provides valuable insights into the challenges and successes of engaging diverse stakeholders in biotechnology adoption. The lessons learned from Nigeria can serve as a model for other countries navigating similar complexities in communicating biosafety.

Keywords: biosafety, Cartagena protocol, Communication, competent authority, genetically modified organisms (GMOs), modern biotechnology.

INTRODUCTION

Biosafety has become more prominent in Nigeria in recent years and this is because of the country's increasing engagement with agricultural biotechnology. Effective communication of biosafety issues is essential to foster public understanding, acceptance, and trust in biotechnological advancements. In Nigeria, the National Biosafety Management Agency (NBMA) plays a crucial role in ensuring the safe development and utilization of genetically modified organisms (GMOs) by adhering to stringent regulatory frameworks [1].

Historically, the adoption of GMOs in Nigeria has been met with both enthusiasm and skepticism. Public perception is often shaped by misinformation and fear-mongering propagated by anti-GMO organizations. As highlighted by Adeleke

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and Adetunji [2], there is a critical need for clear, evidence-based communication strategies to counteract these negative narratives and promote scientific literacy among the populace.

The Nigerian experience demonstrates the importance of engaging various stakeholders, including policymakers, scientists, social influencers, and the general public, in the discourse on biosafety. According to Olatunji [3], inclusive communication efforts that address the concerns and interests of different groups can significantly enhance the credibility and impact of biosafety initiatives.

Furthermore, the NBMA's proactive approach in organizing workshops, public awareness campaigns, and stakeholder forums underscores the Agency's commitment to transparent and effective communication [1]. These efforts aim to reassure the public about the safety of approved GMOs and highlight the benefits of the application of biotechnology for food security, economic development, and environmental sustainability.

The Nigerian experience in communicating biosafety offers valuable lessons in navigating the complexities of public perception and regulatory compliance. By fostering a culture of scientific literacy and open dialogue, Nigeria is paving the way for a more informed and supportive environment for biotechnology.

Concept of Biosafety Communication

Biosafety refers to the measures, policies, and protocols implemented to ensure the safe use of biological agents, particularly those that could pose risks to human health and the environment. In the context of agricultural biotechnology, biosafety involves the assessment and management of potential risks associated with genetically modified organisms (GMOs) and other biotechnological innovations used in agriculture. The aim is to prevent any adverse effects that these biotechnological products might have on the environment, food security, and human health [2].

Biosafety regulations encompass a wide range of activities, including risk assessment, monitoring, and oversight of GMO development, field trials, and commercialization [4]. These measures are essential to ensure that biotechnological advancements contribute to sustainable agricultural practices without compromising safety [1].

Communication in the context of agricultural biotechnology involves the strategic dissemination of information about biotechnological advancements in agriculture, their benefits, limitations and their regulatory frameworks to various stakeholders. This includes the general public, policymakers, scientists, farmers, and opinion influencers. Therefore, effective communication aims to promote understanding to ensure acceptance and informed decision-making regarding the use and regulation of genetically modified organisms (GMOs) and other biotechnological products in agriculture [3].

Such communication strategies encompass a range of activities, from public awareness campaigns and educational initiatives to stakeholder engagement forums and media outreach. By providing accurate, clear, and accessible information, communicators can counteract misinformation, build public trust, and support the development of policies that are based on sound scientific principles [2].

Communication is a critical part of the development, evaluation, and acceptance of any new technology. It is considered as part of the biosafety decision-making process and is

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included in the Cartagena Protocol on Biosafety to the Convention on Biological Diversity (CBD) [5], specifically in Article 23. Effective Biosafety communication is an integral component of Biosafety Risk analysis. Biosafety communication is the 'culture, processes and structures to communicate and consult with stakeholders about biosafety'. Such exchanges may not relate exclusively to risk but may also consist of the expression of concerns, opinions, or reactions to socioeconomic impact and risk messages or to legal or institutional arrangements for risk management.

Public Understanding of Biosafety

While science offers innovative solutions to human welfare challenges, public trust in modern biotechnology is waning. Concerns surrounding genetic modification (GM) technology are widespread. Among the key issues are the competition with natural species, increased selection pressure on both target and non-target organisms, and the risk of genetic contamination. As a result, many argue that GM technology should be kept out of the food chain.

Nigeria's Biosafety System as a Case Study: Importance of Effective Communication

The NBMA upholds and demonstrates its commitment to active biosafety communication about the release of any GM product, either imported for food, feed, or processing, or commercial release in the country[6]. Through its communication channels, NBMA ensures that information is transparent, factual and timely and these communication channels help to strengthen the regulatory process. The Agency's communication extends to a broad range of stakeholders: Applicant/permit holder, Ministries, Departments and Agencies, Federal regulatory bodies and the public. The overall essence of this communication is to inform, engage and build trust, especially the end consumers.

Media Strategies

The role of traditional and social media in biosafety communication cannot be overemphasized. NBMA has effectively utilized these platforms to reach a broader audience, addressing misconceptions and providing factual information. Initiatives such as live Q&A sessions, educational videos, and informational posts have proven to be effective in enhancing public understanding and trust [1]. Additionally, collaboration with opinion influencers has amplified the Agency's message, making it more relatable and accessible to the general public [2]. One of the key strategies employed by the NBMA involves collaborating with opinion influencers to disseminate accurate information about biosafety and biotechnology. By leveraging the reach and influence of these individuals, the Agency has been able to penetrate various segments of society, fostering a more informed and public perception of the technologies [2]

The NBMA also engages with policymakers and legislators to ensure that biosafety regulations are based on sound scientific principles. This approach not only strengthens the regulatory framework but also builds political support for biotechnology initiatives [3]

Communication Strategy

Strategies by NBMA are designed to ensure effective Biosafety Communication, as it serves as an integral component of Biosafety Risk analysis. This strategy ensures that stakeholders are carried along in the chain of

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communication by equipping them with a good knowledge and understanding of the issues so that none is left out.

Table 1: Field Data from Researcher: NBMA's Communication Processes in Permit Application Process

S/N	Biosafety Processes	Communication Strategy	Channels
1	Submission of an application to the NBMA	Applicant and NBMA	Physical Interaction
2	Acknowledgement of application by NBMA	NBMA and Applicant	Letters, Emails
3	Check the listing of Application / Internal review	NBMA Staff (Head of Enforcement and staff)	Internal memo; circulars; emails, physical meetings
4	Public view and display of the application in 3 national dailies	NBMA and the Public	Newspaper publications, press statements, media briefings, notices
5	Collation of public responses by NBMA	NBMA Staff	Physical Meetings/Respondent Sheet
6	Constitution of the National Biosafety Committee (NBC) and the National Biosafety Technical Subcommittee for review	NBMA and NBC/NBTs	Letters; Emails; Physical meetings
7	NBTS/ NBCs recommendation is submitted to the NBMA	NBC/NBTs and NBMA	Physical interaction and remarks
8	The decision document (DD) is prepared and communicated to the Applicant within 270 days	NBMA and the applicant	Letters; Emails; Physical meeting
9	Decision posted into the Biosafety Clearing House and the NBMA website	NBMA and the Public	Website: Biosafety Clearing House (BCH)

Challenges in Communicating Biosafety

Despite NBMA's communication and outreach efforts, the Agency faces several challenges, including resistance from anti-GMO groups and the spread of misinformation. Addressing these challenges requires a multifaceted approach that includes continuous public education, transparent communication, and evidence-based advocacy. According to Olatunji [3], fostering a culture of scientific literacy and critical thinking is essential to counteract misinformation and build public trust. Some of the challenges in communicating biosafety erupts due to the following:

- Ignorance of the Legislation
- Anti-GMO propaganda

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- Judicial disputes
- Ignorance of politicians
- Wrong media releases, fake news, and media attacks
- Delayed funding
- Inability to differentiate between regulatory and promotional (finding the balance so as not to appear biased) by the community
- Courage, competence, and Knowledge
- Communicators not being in tune with government perspectives
- Not being in tune with emerging aspects of modern biotechnology and biosafety
- Slow mainstreaming of Biosafety into the national information/communication system.

Lessons Learned and Way Forward

NBMA upholds and demonstrates its commitment to active biosafety communication through a transparent, factual and timely information delivery to stakeholders and the public, which helps to build trust and earn the confidence of the Nigerian public. The channels used help to strengthen the regulatory processes that improve the general understanding of the thoroughness of safety assessments for the products and the effectiveness of the national biosafety framework.

There is, however, a need for more publications to help increase awareness of the permit application processes and the means of receiving responses concerning the application. There is also a need to carry the media along during the entire process. Intensified collaboration with other stakeholders, leveraging on other MDAs events, capacity building/sensitization workshops for lawyers and journalists, motivational tour, sponsored adverts/documentary films on GMOs, Journal publications and online interactive sessions.

Effective communication of biosafety issues has far-reaching impacts on public perception and policy-making. By providing accurate information and fostering an open dialogue, NBMA has been able to reassure the public about the safety and benefits of GMOs. This, in turn, has contributed to increased acceptance and support for biotechnological innovations [1]. Furthermore, the Agency's efforts have influenced policy decisions, ensuring that regulatory frameworks are based on sound scientific principles and international best practices [2].

CONCLUSION

The Nigerian experience in communicating biosafety offers valuable lessons in navigating the complexities of public perception and regulatory compliance. By fostering a culture of scientific literacy and open dialogue, Nigeria is paving the way for a more informed and supportive environment for biotechnology. NBMA's proactive approach in engaging stakeholders, utilizing media strategies, and addressing challenges has been instrumental in promoting biosafety and the acceptance of GMOs in Nigeria. If correctly utilized, effective biosafety communication can ensure a smoother implementation of biosafety regulation and contribute to greater stakeholders' buy-in and wider public acceptance of biosafety-related decisions.

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