

Review

Experiences in effective communication on transgenic technology in Africa – the case of the insect resistant maize for Africa (IRMA) project

A. Wangalachi^{1*}, D. Poland², S. Mugo¹, S. T. Gichuki³, D. Ouya⁴, G. Kimani³ and J. Rabar¹

¹International Maize and Wheat Improvement Centre (CIMMYT), P.O. Box 1041 - 00621 Nairobi, Kenya.

²PATH Malaria Vaccine Initiative, 7500 Old Georgetown Rd., Suite 1200. Bethesda, MD 20814 USA.

³Kenya Agricultural Research Institute (KARI), P. O. Box 57811 – 00200 Nairobi, Kenya.

⁴International AIDS Vaccine Initiative (IAVI), P. O. Box 340 – 00202 Nairobi, Kenya.

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The Insect Resistant Maize for Africa (IRMA) Project, aimed to improve food security through developing and deploying locally adapted stem borer resistant maize varieties using both conventional and biotechnology mediated methods, especially Bt technology. This technology uses a gene from the soil bacterium *Bacillus thuringiensis* (Bt) to create transgenic maize varieties. Transgenic technologies have been a controversial and emotive topic in recent years, and the IRMA project was launched against this backdrop. To ensure widespread acceptance of the IRMA project and its Bt technology, the project carefully planned and implemented its communication and public awareness strategy. Following its public launch in March 2000, the project promoted an open communication environment and continuously engaged with stakeholders to update them on progress. The project achieved this through targeted and diverse communications products such as media articles and broadcast news pieces, newsletters, websites, videos and reports. To complement these, the project conducted annual stakeholders' meetings, and specialized training for frontline project staff and collaborators, especially extension agents. This paper reviews the IRMA Project's public awareness and communication strategy and analyzes its effectiveness.

Key words: Transgenic technology, *Bacillus thuringiensis* (Bt) maize technology, communication, public awareness, insect resistant maize for Africa (IRMA) project.

INTRODUCTION

Transgenic technologies, also referred to as "genetic modification", "genetic engineering" or "genetic enhancement", have attracted considerable and emotive debate. The emotion is associated with perceived loss of economic, human and environmental safety. It is also associated with perceived adverse behavioral and physiological effects such as impotence (Juma, 2003; Keech, 2010). Both proponents and opponents have been effective in their communications and outreach efforts, based on the fact that the general public is now more informed about genetically modified organisms or

'GMOs', as they are commonly referred to. Globally, this communication has had both negative and positive effects. Both parties have disseminated information into the public domain, nevertheless, the facts may not always hold true. The Insect Resistant Maize for Africa (IRMA) project considered monitoring of the local, regional, and international media to be critical. This would help in assessing the credibility of news sources, and sift reports based on fact from those that were alarmist or sensationalist.

This paper explores the communication activities undertaken by the IRMA project, and their impact on public acceptance. The goal of the IRMA project was to increase maize production and improve food security through the development and deployment of insect resistant maize to reduce losses due to stem borers. Using

*Corresponding author. E-mail: awangalachi@cgiar.org. Tel: +254 (0) 20 722 4619.

both conventional and biotechnology breeding techniques, the project combined the best available science to achieve its aims. As it dealt with a controversial product, genetically modified insect resistant maize containing a gene from *Bacillus thuriengiensis* (Bt), there was a lot of interest in this novel project and its end product.

Before the launch of the IRMA project, Centro Internacional de Mejoramiento de Maíz y Trigo (CIMMYT) and the project donor, the Novartis Foundation, considered Kenya and Zimbabwe as likely sites. After due consideration, it was determined to base the IRMA project in Kenya, making it the only sub-Saharan African country aside from South Africa to undertake such research. This project would serve as a reference point for other countries in the eastern Africa region in defining the scientific, regulatory, and communication issues in order to proceed effectively in establishing biosafety protocols and regulations. Establishing an effective communications strategy at diverse levels was also considered a priority.

Communication was accorded a prominent role since the earliest discussions about the project among the donor, International Maize and Wheat Improvement Center commonly called by its Spanish acronym CIMMYT for Centro Internacional de Mejoramiento de Maíz y Trigo and Kenya Agricultural Research Institute (KARI). This can be traced directly to the public relations difficulties related to genetically modified (GM) crops encountered in Europe and to a lesser extent, the United States, and the forceful opposition to them by powerful anti-GM organizations. It was not thought that introduction of GM crops in sub-Saharan Africa would be immune to such controversies and attacks, and so communication was considered a key thematic area for the IRMA project and guiding principles were discussed and established early on Mugo et al. (2003). This was the thematic area: "Communication to raise awareness on the technology, promotion to raise awareness on the insect resistant maize varieties, and capacity building through training of personnel in biotechnology, and the establishment of biosafety facilities and other infrastructure necessary for development and use of insect resistance maize varieties" (Mugo et al., 2003).

Effective aspects of the IRMA communications and public awareness included the use of a multiple stakeholder approach, continuous stakeholder engagement, fostering public understanding, balanced media coverage and input into the policy development process. Among the communication strategies employed by the project were, annual stakeholders' meetings, project documents, a road show and monitoring of the media.

THE CONTROVERSY OVER TRANSGENICS

Opponents of biotechnology, and specifically transgenics,

nics, appear to use sensationalism to further their cause. They have spread fear, warning consumers of alleged adverse effects on health, loss of biodiversity in the environment, and loss of markets for agricultural products (Karembu, 2009; Keech, 2010). Consequently, fields sown to genetically modified crops have been raided and demonstrations held against the production of genetically modified crops. In addition, there have been attempts to block passage of biosafety legislation (Karembu, 2009). The media have had some attention-grabbing headlines, for example, Reuters quoted Prince Charles, in an interview with the *Daily Telegraph*, saying "... the widespread use of genetically modified crops would be the biggest environmental disaster of all time". This story was headlined 'Prince Charles says GMO crops will be "disaster"' (Randall, 2008). Among the organizations that have strongly supported such claims are GreenPeace, the Canadian-based GM Free Consumers Network, and organic farmers worldwide.

Some headlines, however, have indicated government support for the technology with *The EastAfrican* boldly stating 'Kenya govt wants to impose GMOs 'by force'" (Mbaria, 2008). *The Times* (UK) had a headline suggesting that those against GMOs had ulterior motives. Under the title 'Green activists 'are keeping Africa poor'', a leading British scientist accuses the west of impoverishing Africa by promoting traditional farming at the expense of modern scientific agriculture (Henderson, 2008). The development of GM crops has however not reached its full potential due to limited resources for research, low levels of awareness among consumers, and expensive and cumbersome regulatory processes (De Groot, forthcoming).

In Africa, there have been several successful initiatives, spokespersons and media outlets that have fostered positive communications on transgenics, mainly in South Africa and Kenya. Such public awareness initiatives and organizations include the Africa-Bio, Open Forum on African Biotechnology (OFAB), the Insect Resistant Maize for Africa (IRMA) project, the International Service for the Acquisition of Agri-biotech Applications (ISAAA)-AfriCenter, African Biotechnology Stakeholders Forum (ABSf), CropLife, African Agricultural Technology Foundation (AATF), and AfricaBio. Others include the development and launch of the Biotechnology Awareness Strategy for Kenya (BioAWARE) in the lead up to the passage of Kenya's Biosafety Law, and the first ever All Africa Congress on Biotechnology.

Some of these initiatives have been specifically geared towards informing and influencing key decision and policy-makers such as the 2008 meeting in Kampala, Uganda for members of parliament supported by SciDev.Net, and Gatsby Trust; and awareness and support for the Biosafety Bill 2008 by various stakeholders in Kenya. Media outlets have included newsletters (print and electronic), and science pullouts

and features in local and international dailies. Scientific publications such as the African Journal of Biotechnology have contributed to creating a critical body of credible biotechnology information. Other initiatives have included training of journalists, scientists and extension workers on effectively communicating the science and benefits of agricultural biotechnology.

KEY ASPECTS IN IRMA COMMUNICATIONS

Targeting communication efforts

For communication to be effective, it needs to be targeted. In the case of communications on transgenic technologies it additionally needs to strive for balanced media coverage, foster public understanding, be a continuous activity, provide public input into the policy development process, communicate the benefits and not just the science, periodically survey public opinion, use a multi-stakeholder approach and provide information proactively (Keech, 2010).

Initial activities included forecasting the project's information needs and how these would be met; understanding Kenyan audiences and their information requirements and preparing for stakeholders' meetings, which were deemed an integral part of the project's communications efforts.

From the onset, transparency and openness were objectives of the IRMA project's communication efforts. Indeed, communication was one of the five themes in IRMA I and IRMA II. This was in part to counter anticipated attacks from anti-GM organizations, but even more as an approach to encourage stakeholder and media involvement. Because the project leadership accepted the science in support of development of transgenic maize, the project embraced increasing awareness about it.

A key trait of the IRMA communications strategy was to keep the messages simple and to develop diverse products for the various audience segments—the educated lay public, journalists, non-governmental organizations, farmers, policymakers and project partners. A second key feature of the strategy was to create a sense of ownership among Kenyan partners and stakeholders by giving the project an African voice and face. This was accomplished through media training of scientists and project administrators. Later in the project, with the inquiries on transgenic maize received by KARI field agents and Ministry of Agriculture (MoA) extension officers, a third plank was added, aimed at training personnel at grassroots level.

The IRMA project's communications activities were diverse, but coordinated. A focal point for communicating transparently with the public was organizing the annual stakeholders meeting. In addition to directly engaging key

stakeholders on the communications front, this entailed developing joint press releases, drafting position statements, and actively engaging the media in either a panel format or with one-on-one interviews. In addition, IRMA would take advantage of events conducted by other organizations such as ABSF and ISAAA to conduct media outreach—both to Kenyan and international media.

For general outreach, the communications team also produced a Frequently Asked Questions (FAQs) document, a project brochure, and fact sheets, as well as articles in the CIMMYT annual report. For stakeholder and internal use, the communications team developed and produced the IRMA Updates quarterly newsletter, project annual reports, and an "issues management" matrix. IRMA also sought to take its information and messages directly to key audiences. It reached out to farmers and other stakeholders through participating in the popular national agricultural shows. Other initiatives included training of journalists and key extension officers (Mugo et al., 2005a).

For the external officers, the project undertook an innovative "road show" of workshops in July 2005, traveling across Kenya to improve the effectiveness of frontline MoA extension staff and to receive input into the project's public awareness strategy. Five information sharing workshops were conducted at Mtwapa, Katumani, Embu, Kakamega and Kitale. In total, 120 resource persons and extension agents participated in the workshops, enabling them to better convey accurate information about Bt technology and the IRMA project. In addition, the roadshow team identified good communicators among the extension staff, and effective messages, suitable for video and radio productions, to reach farmers. To identify particularly effective messengers and messages, the project conducted a 'Star Search' exercise—a talent search for the best extension agent; this would be the person who had the ability to spread, most effectively and convincingly, key IRMA information and messages to farmer audiences in Kiswahili (the most widely spoken local language in Kenya) (Mugo et al., 2005b). In the years that followed, the IRMA project and the MoA collaboratively conducted workshops on biotechnology and biosafety for farmer organizations, to share information and harmonize use of limited resources (KARI and CIMMYT, 2007).

Monitoring of the global media was useful in providing a context for the position statements and FAQs, synthesizing media trends and advising the IRMA project steering committee on implications for information efforts and developing an archive of information for use in presentations and publications. A clipping service was contracted out to Picasso Productions, a Kenyan media house, to monitor the Kenyan media. The report given in 2002 documented about 100 articles and 30 editorials related to agricultural biotechnology, mostly maize, that

appeared in the major Kenyan newspapers. The service monitored features by the key words 'GM crops', 'Bt maize', 'KARI', and 'IRMA project'.

Use of a multiple stakeholder approach

The stakeholders to whom the IRMA project reached out included farmers, project partners, non governmental organizations (NGOs), other biotechnology organizations, seed companies, maize processors, Ministry of Agriculture officers, extension agents, donor agencies, journalists, scientists, and policy makers. The project developed targeted communications products and messages for each of these groups, and this was useful in taking the IRMA message further. For example, by ensuring that farmers, extension agents and journalists received the correct and appropriate messages on the GM technologies and the IRMA project, the project achieved mostly positive and balanced media coverage; additionally in a consumer survey on GM issues, respondents cited newspapers as being an important source of information (Kimenju et al., 2005).

CONTINUOUS STAKEHOLDER ENGAGEMENT AND FOSTERING PUBLIC UNDERSTANDING

The IRMA project succeeded in engaging stakeholders throughout its project lifetime—first during its public launch and subsequently through the annual stakeholder meetings (Mugo et al., 2003). This was useful in three ways; it kept the project partners and other stakeholders updated on the project's progress, it improved the sense of ownership and inclusion by stakeholders and it engendered openness and provided a channel for stakeholders to highlight areas of the project research they wished to be included, further enriching the usefulness and relevance of the IRMA project and its products to the target community. The effectiveness of these initiatives was captured by participants' questions during the question-and-answer sessions of various stakeholder meetings. For instance, in 2002, these questions were on the stewardship of the Bt maize technology. This indicated that the IRMA project had by then communicated effectively on the technology, which was well understood by the stakeholders' representatives (Mugo et al., 2003). Questions shifted from the safety of the technology to demand for the technology.

The IRMA project was commended by Kenya's Agricultural Secretary at the time for its comprehensive information and communication strategies, and for not leaving the public and the stakeholders behind, in the development of its technology. He praised the project for "keeping stakeholders engaged through diverse ways including (these) annual stakeholders' meetings..." (Mugo

et al., 2005a; Mugo et al., 2008; Mugo et al., 2005b; Mugo et al., 2003).

During the 2007 stakeholder meeting, it was encouraging that participants' concerns centered on the project's implementation and when the Bt maize would be available to farmers rather than questioning the technology; this gave confirmation that consumers and stakeholders had gained acceptance of the technology as a result of adequately having their concerns addressed throughout the course of the project (Mugo et al., 2008).

STRIVING FOR BALANCED MEDIA COVERAGE

The IRMA project communications team did not set out to create a 'positive spin' on GM technologies, or on the IRMA project, its processes and products, but instead sought to achieve balanced media coverage. This was achieved through transparency, having effective spokespeople, being proactive in seeking and exploiting media opportunities as offered through the monitoring service or as they emerged, effectively supporting scientists before they gave media interviews, and reacting immediately to negative news. Through Picasso Productions and journalists invited to stakeholder meeting, the IRMA project was able to get its stories and features placed in the leading Kenyan papers, and television stations. In addition, the IRMA project had some significant media events, mostly around the many 'firsts' that the project had achieved. Two of these were the launch of the first biosafety greenhouse complex, in Africa, outside of South Africa, on 23 June 2004 and the first planting of the Bt maize on Kenyan soil in confined field trials at Kiboko on 27 May 2005 (Mugo et al., 2005a).

The official opening of the project's biosafety greenhouse complex in 2004 by Kenya's President (H.E. Mwai Kibaki) was a huge media draw in itself and was perceived as a presidential endorsement of genetic engineering for agricultural advancement in Kenya. This high visibility launch was not serendipity, but rather the result of a concerted effort in which KARI and project leadership persuaded the MoA of the historic aspects and impact of the biosafety greenhouse opening, which in turn relayed this to the Office of the President. The ripples from this event spread continent wide, with news of the *de facto* endorsement appearing extensively in major local, regional and international channels including Cable News Network (CNN) International and Africa (aired at least three times on the CNN World News Report).

The first planting of the Bt maize confined field trials was also well attended by local journalists and both the planting and the IRMA project were covered extensively on television, print and in electronic media. Coverage also extended to The New York Times, and The International Herald Tribune, Reuters wire service, and to

SciDev.Net, among numerous other global websites (Mugo et al., 2005b).

Despite unforeseen setbacks, such as the halting of the first Bt trial, CIMMYT and KARI partners openly engaged the media about the stoppage due to a technical error, where a systemic pesticide was inadvertently applied to plants already infested with stem borer larvae, obliging the scientists to repeat the experiment. This helped in building the credibility of the IRMA project, and the project went ahead with a reputation of having nothing to hide, thus establishing long-term trust in the eyes of the general public.

INPUT INTO THE POLICY DEVELOPMENT PROCESS

The IRMA project contributed to the development of the Kenyan biosafety policy through its various communications efforts, presentations by scientists at different fora, and collaboration with similar stakeholders, such as granting interviews for the Africa Harvest Biotech Foundation-commissioned video for use to drum up support for the Biotechnology Policy and Biosafety Bill, which came up for debate in 2008 in Kenya's parliament and was passed in 2009 (GoK, 2009). Through effective documentation of all the processes and progress of the IRMA project, useful information was captured that informed the design of similar transgenic maize technology projects, namely the Water Efficient Maize for Africa (WEMA) and Improved Maize for African Soils (IMAS) projects, both executed by CIMMYT together with other partners.

CONCLUSION

The IRMA Project has been described as having defined the course of biotechnology activities in Kenya. It has also served as a testing ground for national biosafety regulations and guidelines (Mugo et al., 2008). This paper has offered experiences from the first two phases of the IRMA project, showing the activities undertaken in disseminating information to the general public. The project was effective in communicating about its transgenic technology, and countered attacks from opponents of the technology, thus succeeding in gaining widespread stakeholder acceptance, and building the foundation for follow up agricultural biotechnology projects with a transgenic component. Reassurance, clarity, awareness and information are keys for any successful communication initiative. Thus, the IRMA project strives to provide accurate information to consumers, and to farmers, and this has led to the success of the project.

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ABBREVIATIONS

GMO, Genetically modified organisms; **IRMA**, Insect Resistant Maize for Africa; **CIMMYT**, Centro Internacional de Mejoramiento de Maíz y Trigo; **KARI**, Kenya Agricultural Research Institute; **OFAB**, Open Forum on African Biotechnology; **ISAAA**, International Service for the Acquisition of Agri-Biotech Applications; **ABSF**, African Biotechnology Stakeholders Forum; **MoA**, ministry of agriculture; **FAQs**, frequently asked questions; **NGOs**, Non-Governmental Organizations; **CNN**, Cable News Network; **AATF**, African Agricultural Technology Foundation; **BioAWARE**, Biotechnology Awareness Strategy for Kenya; **WEMA**, Water Efficient Maize for Africa; **IMAS**, Improved Maize for African Soils.

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