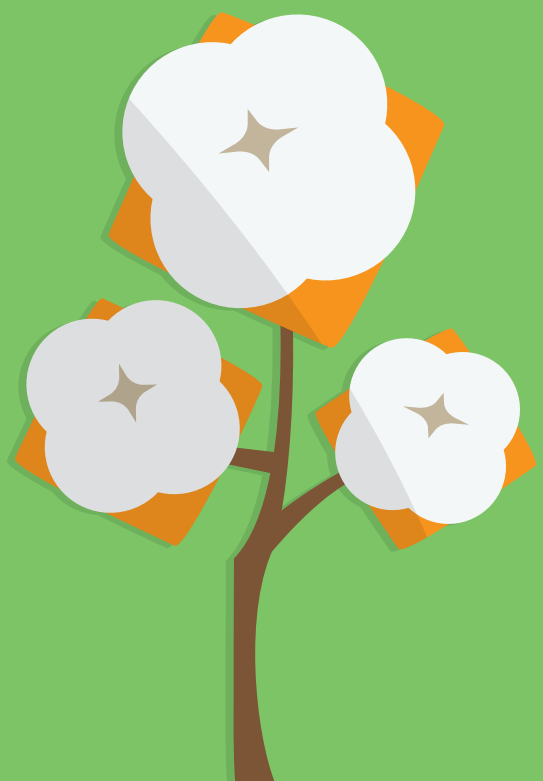
Food and Agriculture Organization of the United Nations

Information toolkit on food biotechnologies with a focus on food safety

Handbook - Using the information toolkit



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Handbook - Using the information toolkit

Food and Agriculture Organization of the United Nations
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Executive summary

A number of questions and concerns about food biotechnologies have been raised, and governments are expected to address them in an effective and timely manner. However, providing science-based but easy-to-digest answers requires a certain level of understanding of the subject and good communication skill sets, therefore preparedness is key. How can complexity and clarity be balanced to formulate easy-to-understand and correct messages? How can questions about food biotechnologies be addressed to communicate effectively about them? This is one of the challenges that many competent authorities in food safety and biosafety are facing.

During the Global Community Meeting of the FAO GM Foods Platform in 2019, the strong need for a set of science-based information materials was expressed at a global level to support the generation of communication strategies and materials which could help to address the public communication challenges surrounding food biotechnologies at a national level. The request to develop such materials was made to the Food and Agriculture Organization of the United Nations (FAO).

The present FAO Information toolkit on food biotechnologies with a focus on food safety serves as a basis to assist countries in addressing the general public's concerns on food biotechnology and food safety, to support them in raising awareness of the science of food biotechnologies and food safety and to inform discussions and decisions. It consists of one handbook providing an instruction manual for the whole set of documents and ten booklets, referred to as tools, and which cover background information, general information on the scientific aspects of food biotechnologies and food safety, the rationale behind the potential benefits of genetically modified (GM) foods, GM food safety assessments and regulations. The tools also touch upon aspects related to human health and the environment, the practical uses and applications, the recent developments and innovations, possibilities to engage with the public. The contents of the FAO Information toolkit on food biotechnologies with a focus on food safety were agreed by consensus by 24 international experts in the area of food safety, biotechnology, biosafety and science communication.

Contents

Acknowledgements

FAO would like to express its appreciation to the many people who contributed to this information toolkit. Preparation of the toolkit was coordinated by Kosuke Shiraishi through the biosafety project managed by Masami Takeuchi under the overall direction provided by Markus Lipp.

FAO is grateful to the international experts who participated in the series of technical consultations held throughout 2020 for their interest and commitment, for their input on communications experience and for their valuable contributions to greatly improve the toolkit during the review process. Experts and officers from a total of 179 countries have provided the initial inputs on the existing materials on biotechnologies from which the examples provided in this document were elaborated. The list of materials is available in the document called "Stock-taking report: food biotechnology communication materials in the world" available at http://www.fao.org/3/cb1394en/cb1394en.pdf. FAO tried to minimise the modifications to the original texts.

Twenty-four experts have provided substantial inputs to develop and finalize the toolkit. Those experts are Brian Abook, Anita Anthonysamy, Martin Bundi, Sharmi Das, Isabelle Dépault, Jason Dietz, Nathalie Doré, Jambay Dorji, Alejandra Ferenczi, Kathryn Forrester, Hennie Groenewald, Jhill Johns, Sandra Lombe, Josphat Muchiri, Theophilus Mutui, Julia Njagi, Ritu Nalubola, Nehemiah Ngetich, Dorington Ogoyi, Matthew Ramon, Christopher Simuntala, Sasha Tait, Simon Terry and Eugenia Urruty.

The inputs from various FAO colleagues are gratefully recognized, including of those from the Office of Communications; the Office of Chief-Scientist; the Plant Production and Protection Division; the Office of Climate Change, Biodiversity and Environment; the Commission on Genetic Resources for Food and Agriculture; the Joint FAO/WHO Centre (Codex Food Standards and Zoonotic Diseases); and the Food Systems and Food Safety Division, in particular, those from Mia Rowan, Isabella Apruzzese and Shan Chen have been valuable.

FAO would also like to thank Kenya's National Biosafety Authority, which provided both technical and administrative support during the development process of the toolkit. FAO gratefully acknowledges the financial contributions made by the Government of Canada which allowed for the development of this document.

The toolkit has been designed by Roberto Magini and Joanne Morgante.

This “Information toolkit on food biotechnologies with a focus on food safety” is a publication consisting of one handbook and ten booklets, referred to as tools. It is strongly recommended to read through the whole set before using the information it contains.

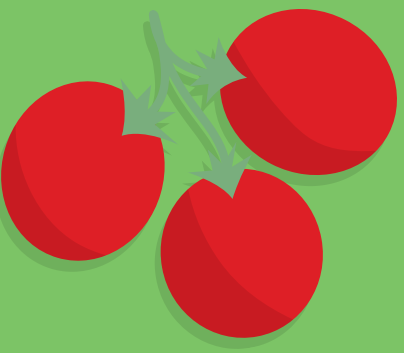
Contents of the information toolkit on food biotechnologies with a focus on food safety

Terminology

Biosafety	Set of measures or actions addressing the safely aspects related to the application of biotechnologies and to the release into the environment of transgenic plants and other organisms, particularly microorganisms, that could negatively affect plant genetic resources, plant, animal or human health, or the environment (FAO, 2001).
Biotechnology	Any technological application that uses biological systems, living organisms, or derivatives thereof, to make or modify products or processes for a specific use. In this document, the words "food biotechnology" are used when biotechnology is applied to make or modify foods for human consumption (FAO, 2001).
Conventional counterpart	A related organism/variety, its components and/or products for which there is experience of establishing safety based on common use as food (FAO and WHO, 2009).
Deoxyribonucleic acid	Deoxyribonucleic acid (DNA) is a long chain polymer of deoxyribonucleotides. DNA constitutes the genetic material of most known organisms and organelles, and is usually in the form of a double helix, although some viral genomes consist of a single strand of DNA, and others of a single- or a double-stranded ribonucleic acid (RNA) (FAO, 2001).
Gene	The unit of heredity transmitted from generation to generation during sexual or asexual reproduction. More generally, the term is used in relation to the transmission and inheritance of particular identifiable traits. The simplest gene consists of a segment of nucleic acid that encodes an individual protein or RNA (FAO, 2001).
Genome editing	Techniques utilized by scientists to correct or to introduce specific mutations at a particular site (locus) within the DNA of an organism. The techniques used to accomplish these site-specific corrections or directed mutations (base substitution, addition or deletion) include living modified organism (LMO) genome editing and transcription activator-like effector nucleases (TALEN). The term gene editing may be used interchangeably (FAO, 2019).
Genetic modification	Altering the genetic material of cells or organisms with the intention of making them capable of producing new substances or performing new functions (FAO, 2020a). The term genetic engineering may be used interchangeably.
Genetically modified food	Food produced for human consumption and derived from organisms whose genetic material (DNA) has been modified in a way that does not occur naturally, e.g. through introducing a gene from a different organism (FAO, 2020a).
Genetically modified organism	An organism that has been transformed by inserting one or more transgenes (FAO, 2001).
Living modified organism	A living organism that possesses a novel combination of genetic material obtained through the use of modern biotechnology. It is a synonym of GMO, but is restricted to organisms that can endanger biological diversity (FAO, 2001).
Modern biotechnology	Application of: i) *In vitro* nucleic acid techniques, including r-DNA and direct injection of nucleic acid into cells or organelles, or ii) fusion of cells beyond the taxonomic family that overcome natural physiological reproductive or recombinant barriers and that are not techniques used in traditional breeding and selection (FAO, 2001).

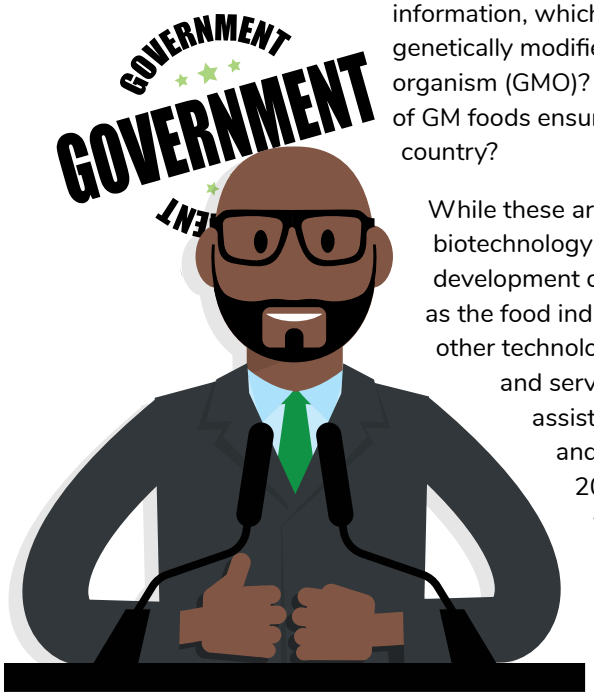
Acronyms and abbreviations

DNA	deoxyribonucleic acid
FAO	Food and Agriculture Organization of the United Nations
FAQ	frequently asked questions
GMO	genetically modified organism
HTML	hypertext mark-up language
LMO	living modified organism
RNA	ribonucleic acid



Introduction

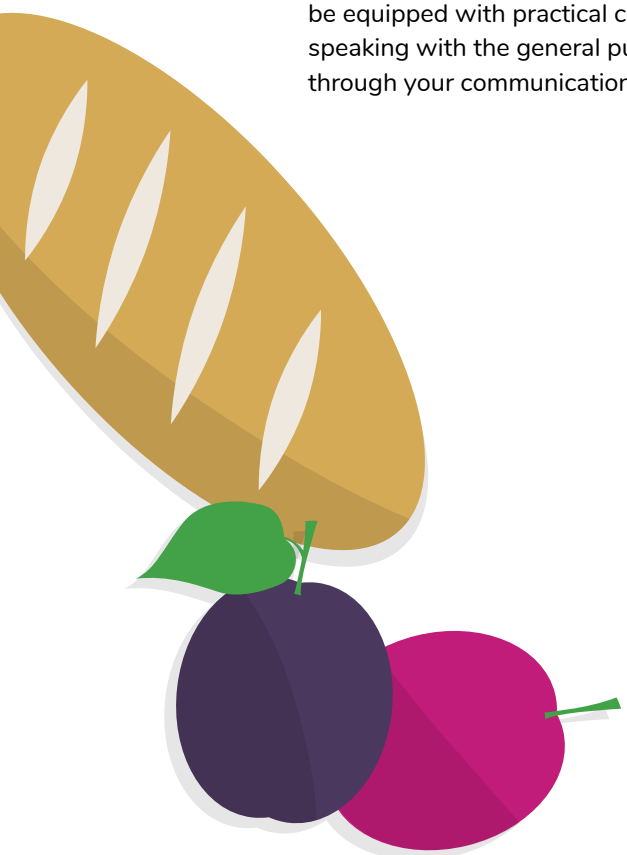
The public raises a number of questions and concerns about food biotechnologies and governments are expected to address them in an effective and timely manner. However, providing answers to these questions can be challenging, as they would require different layers of information, which may result unclear and confusing. What does genetically modified (GM) mean? What is a genetically modified organism (GMO)? Are GM foods safe to eat? How is the safety of GM foods ensured? Are any GMOs already produced in my country?

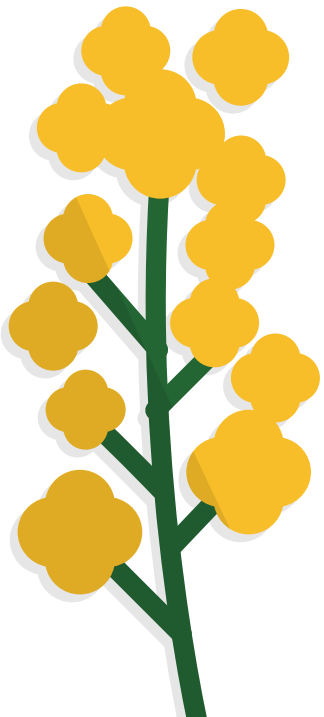


While these are important questions, it is acknowledged that biotechnology provides powerful tools for the sustainable development of agriculture, fisheries and forestry, as well as the food industry. When appropriately integrated with other technologies for producing food, agricultural products and services, biotechnology can be of significant assistance in meeting the needs of an expanding and increasingly urbanized population (FAO, 2000). There is a wide array of biotechnologies with different techniques and applications. The Convention on Biological Diversity (CBD) defines biotechnology as “any technological application that uses biological systems, living organisms, or derivatives thereof, to make or modify products or processes for

specific use" (CBD, 1992), and the Food and Agriculture Organization of the United Nations (FAO) follows this definition.

Ad hoc responses provided sporadically may not always lead to successful results. Audiences may have limited knowledge of the subject or a limited background in science. You may not have the latest information or may not consider yourself to be sufficiently trained to explain food biotechnologies in simple, clear terms and with ease. Public communication may become particularly challenging when it comes to the scientific basics and methods, e.g. what deoxyribonucleic acid (DNA) is and how GMOs are created. Therefore, it is important to be well prepared for such questions and concerns and to be equipped with practical communication materials that are developed for speaking with the general public. Materials could also be shared proactively through your communication channels.





The toolkit

Why do we need a toolkit?

The global community meeting on the FAO GM Foods Platform, held in September 2019 (FAO, 2020b), underlined the need for a set of impartial and science-based information materials at a global level that would address the public communication challenges around food biotechnologies with a focus on food safety, at a national level. Following to it, a stock-taking analysis of communication materials produced worldwide (FAO, 2020c) and technical expert consultations on developing the toolkit (FAO, 2020d) revealed the content gaps and highlighted ways that communication on food biotechnology and food safety could be improved. This information toolkit was produced to support regulatory agencies to communicate effectively about food biotechnologies and food safety, and to make sure their information is up-to-date.

Successful dialogue between regulators, scientists and the public is always a vital element when developing and introducing any new technologies. Governments and intergovernmental organizations like FAO have been communicating about food and agricultural biotechnologies and food safety since the early 2000s. Such organizations have provided information about GM food safety assessments and regulatory frameworks, and they have demonstrated the science behind the biotechnologies. Various means of

Example:

"DNA is made up of four nitrogenous bases called adenine, thymine, ..." could sound boring to audiences who do not see how that relates to them and the food they buy and eat. Instead, consider a simpler description such as: "DNA carries the instructions for life. It makes my banana yellow, my apple sweet and my watermelon round".

communication, e.g. email, newsletters, public seminars and videos, have been used to reach out to a large number of people. However, many of the same questions asked when the first GM foods were marketed, are still asked today, and it is important that discussions are based on scientific evidence.

Today, an overwhelming amount of information is accessible from anywhere at any time, and everyone has an opportunity to express opinions online. The array of sources available can make it difficult to recognize accurate and reliable information.

It may not only be the means of communication but the content of the messages that needs to be improved. Many explanations of GM food safety assessments and regulatory frameworks have been long, text-oriented descriptions that take time to understand. Demonstrations of the science behind the technologies might have been complicated and not held the attention of the public. More and more people, younger generations in particular, prefer to receive immediate information with visuals that is easy to scan without reading through a long text.

It is important to learn from experiences and feedback. Science-based information can be provided in a more immediate fashion with eye-catching visuals to facilitate understanding among non-experts. Scientific jargon should be avoided as much as possible

to strike a balance between accuracy and simplicity to convey information. A collaborative approach with other credible and neutral agencies and stakeholders, can be more effective when reaching out to target audiences. Public communication should be conducted with appropriate and adequate information, not too much or too little.

It can be difficult to correct inaccurate information once it has begun circulating. Therefore, it is important that trusted organizations routinely provide accurate and science-based information in a way that is accessible and relatable. Recent advances in biotechnology provide an opportunity for timely messaging. A new technique called genome editing has been developed and is expected to be used more frequently in various sectors, including food and agriculture. Effective communication will be important to increase public understanding of this technology and of the food safety assessments that all food, including those created using new biotechnologies are subject to.

Target audience

The primary target audiences for this toolkit are the food safety and biosafety competent authorities. The toolkit can be used in its entirety or in parts to fit national strategies and requirements to work in synergy with other programmes. For example, food safety authorities may want to use Tool 4 , which is about GM food safety assessment. The toolkit may also be useful for scientists in research institutes and academia where they conduct didactic activities on food biotechnologies and food safety.

The target audience for communications materials created using this information toolkit is the general public. For this reason, the examples have been produced in clear and friendly language with illustrations that allow the materials to be understood and appreciated by a broad audience.

Objectives

The toolkit is intended to assist competent authorities to be able to:

- communicate with the public more easily;
- answer questions and concerns that the public may have on food biotechnologies with a focus on food safety; and
- improve public knowledge of the topic, clear up misunderstandings and enable consumers to make informed decisions.

What's inside

The toolkit is composed of this handbook and the following nine tools (Figure 1). The handbook serves as a guide to using the tools; it describes how to promote key messages and provides a compilation of good practices. Communication approaches must be tailored to fit an individual country's needs and the population's knowledge, attitude and perceptions on this topic. Useful links to additional resources are also included for more information about the topic.

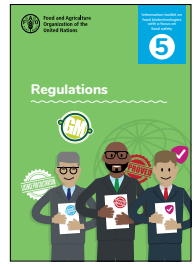
FIGURE 1: Ten tools of the toolkit

Tool 1: Background and guidance (FAO, 2021a)

Tool 2: Fundamentals (FAO, 2021b)

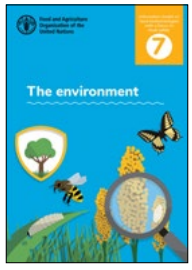
Tool 3: Rationale for potential benefits (FAO, 2021c)

Tool 4: GM food safety assessments (FAO, 2021d)



Tool 5: Regulations (FAO, 2021e)

Tool 6: Human health (FAO, 2021f)



Tool 7: The environment (FAO, 2021g)

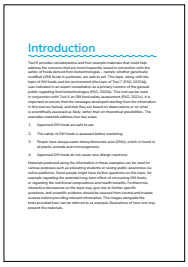
Tool 8: Practical uses and applications (FAO, 2021h)

Tool 9: Current innovations (FAO, 2021i)

Tool 10: Public engagement (FAO, 2021j)

Each tool includes some brief information, guidance and examples on how to generate answers to commonly asked questions regarding food biotechnologies and GMOs. Figure 2 shows the contents of tool 6, which looks at the topic of human health. The examples have been produced as references for users to make materials that are appropriate for their own contexts. The examples are based on existing communication materials available in various countries. Twenty-four international experts agreed to utilise those messages as an example. Users are welcome to utilize the illustration elements in the examples to produce their own communication materials to address different needs. Practical instructions on how to produce communication materials using the illustration elements are provided in this handbook.

FIGURE 2: Contents of tool 6, examples on the topic of human health



Brief guidance

Example 1

Example 2

Example 3

Example 4

Scope

The scope of the toolkit covers background information for communication on food biotechnologies with a focus on food safety. A strong need for producing communication materials about modern biotechnologies, in particular genetic modification, was identified through the stock-taking analysis (FAO, 2020c) and expert technical consultation meetings (FAO, 2020d). Therefore, the toolkit focuses on information and examples around those specific aspects of biotechnology, while also encompassing a wide range of traditional technologies. There may be requests or requirements to talk more about conventional breeding, gene editing or other issues – users can tailor the examples to meet the needs of the audience and context.

Elements of effective communication

This toolkit should be used as part of a wider comprehensive communication strategy on food biotechnologies. This section includes tips to consider when modifying the examples as well as developing new materials. It concludes with suggestions on disseminating messages and evaluating your communications outcomes. Some country experiences and general recommendations are included, to reflect those shared during the expert consultation meetings.

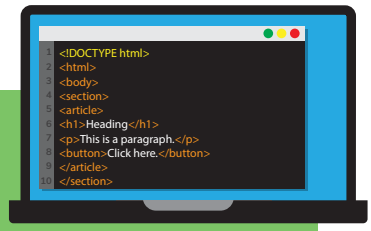
Understand the public's needs

Public surveys can be conducted, or authorities can review national research/data as available, in order to understand and assess the current range of public understanding of food biotechnologies and food safety, as well as what kinds of questions and concerns the public has about the topic.

While online platforms have been used in many parts of the world for decades, devices and access vary from one place to another.

Example:

The government of Zambia uses local radio programmes to communicate with the public, allowing them to reach out to local citizens.



Tip:

It is important that the webpages are accessible to all audiences including visually-impaired users. Many such users access webpages using screen readers. Screen readers analyse the hypertext mark-up language (HTML) of your webpage and read the contents out loud, responding to commands to navigate around the page, and take actions such as clicking on a link, typing in an input field or submitting a form. Key messages will need to be tailored to various means of communications from infographics to websites, radio, video and other platforms so that visually-impaired individuals can also benefit from these products.

While it makes sense for some to use the latest technology to reach out, other communities may find it more feasible to connect through means such as radio programmes, email and face-to-face meetings.

Design your communication strategy

The information toolkit can be used as a whole or in part to complement a national communication strategy on food biotechnology focusing on food safety.

A communication strategy is essential to ensure that efforts achieve the expected outcomes and are coordinated effectively. A strategy should clarify what staff, time and resources are needed and how best to use them. As part of any communication strategy it is important to identify and analyse target audiences, define objectives, decide the key messages to convey, select the channels to use to reach target audiences and create a workplan. Once carried out, communication activities should be evaluated (FAO, 2011). One-off or ad hoc efforts do not produce meaningful outcomes in most cases. Therefore, it is important to sustain communication efforts. Sustained communications using educational and informative messages can raise public awareness and understanding. Strategic efforts and plans will have a greater impact than a reactive and ad hoc approach in the long-run.

Make it clear

The general public is not necessarily knowledgeable about the science behind food biotechnologies and food safety. In order for relevant authorities to continue to keep people informed in a timely and effective manner, it is critical to avoid scientific jargon and use simple language accompanied by appropriate visuals, such as infographics and pictures.

Tip:

Messages that are clear to the authors may not be to the audience. It may be a good idea to test the messaging with non-scientist colleagues and friends before sharing it.

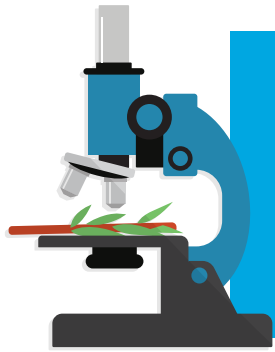
Find a good balance

Any text needs to be clear and simple, as the general public may only quickly scan the information and may not read everything carefully. However, messages that are oversimplified may convey inaccurate information. Structuring information in a manner that is balanced - both accurate and concise - is important in public communications. Layering information can be helpful, starting with a succinct point and providing links to more in-depth information for those who may be interested in learning more.

Tip:

A captivating title may help get people's attention and lead them to read the materials more thoroughly.

Neutrality



Unbiased information from governments is crucial. Messages which appear to promote a specific technology or product can negatively affect credibility. Communication materials about food biotechnologies, their products and food safety may generate debate or meet with negative feedback from the general public. It is important for competent authorities to listen to that feedback to understand how best to continue providing science-based information to inform discussions and decisions without promoting a specific technology or product.

Example:

Sticking to the science has helped the European Food Safety Authority build public trust in communicating about this subject.

Target the audience

People are diverse and have different ways of consuming information. It can be more effective to focus interventions towards specific audiences. Audience segmentation entails tailoring information for target groups to ensure relevance, interest and clarity. The examples in the Tools contain broad key messages, however, how each user conveys those messages should be based on assessment of local target audience's knowledge, attitude, practices, cultural context, and available communication technology. It is key to share local examples so that the audience understands how the information relates to them.

Example:

In Uruguay, cards and puzzles explaining biotechnologies and how GM foods are generated were developed for school children. The communication materials were received positively and evaluated as clear and useful. The government provides instructions and explanations on how to use the materials for school teachers and leaves the materials for schools to use as they deem most effective.

Authenticity

Food safety authorities and other government agencies are encouraged to talk about food biotechnologies and food safety in ways that are factual and informational. The polarized debate around certain biotechnologies often disrupts meaningful conversations about the variety of biotechnologies and their potential benefits. Benefits were found to be one of the aspects of food biotechnologies least covered by existing communication materials (FAO, 2020c).

Engage all

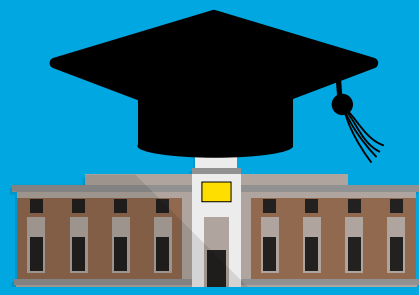
A collaborative approach with other credible and neutral stakeholders, in your country or community, can be effective for outreach purposes. It can help food safety authorities to distribute information widely and help ensure maximum transparency and accountability in their work. Engagement could include educational institutions from primary schools to post-graduate programmes, health care professionals and community leaders. There is a general agreement from the expert consultation meetings that it seems that educational institutions value online materials that are freely accessible from government websites (FAO, 2020d).

Build trust

Communication is most effective when the audience trusts the communicator and when there is a sense of shared values between the communicator and the audience. It should be recognized, too, that building and maintaining trust is a continuous endeavour requiring sustained communication.

Example:

Together with other collaborative agencies, Kenya's National Biosafety Authority has been providing information to post-graduate programmes in various universities, so that students have the opportunity to learn about regulations and coordination efforts around biotechnologies and food safety at the global, regional and national levels in their university courses.



Evaluate efficacy

Communication efforts and activities must be evaluated regularly and systematically determine their effectiveness and to inform improvements where needed. Outcome and achievement should be measured against communication objectives. Indicators may depend on the channels used for promotion, but could include:

- number of visitors to and time spent on a website;
- number of people engaging in discussions;
- number of people subscribing to a service (e.g. newsletters);
- number of educational institutions using the messaging (e.g. brochures);
- number of events where the messaging is used and distributed (e.g. conferences); and
- comparing the knowledge level of the general public through pre- and post-communication surveys. (this can also be a useful way of pre-testing the efficacy of communications products on a small group).

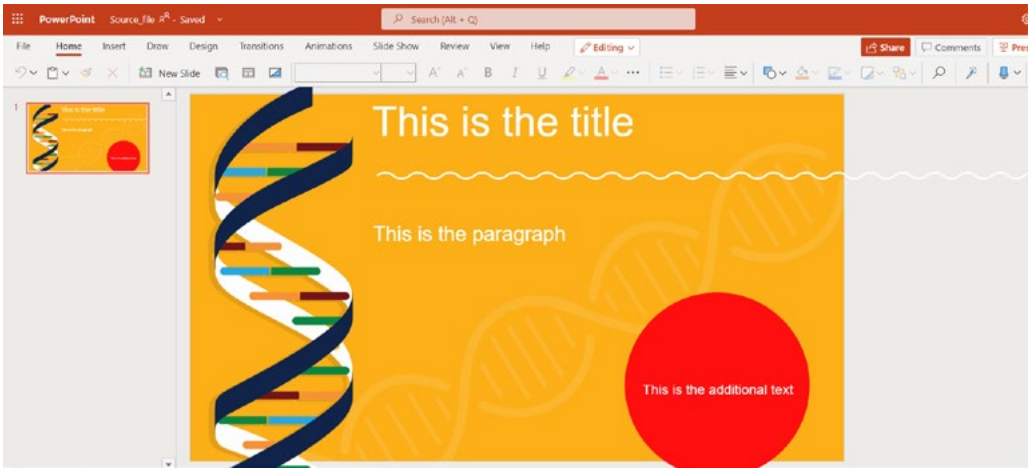
How to produce the materials: practical instruction

Instruction on how to produce materials in Power Point is provided below. Possible illustrations can be found in the resource page of the FAO GM Foods Platform (http://fao.org/gm-platform). It should be noted that the interface may appear differently in your device from those shown in figures 3 to 7 depending on the type of device used and the version of software installed.

Step 1: Add the text

The toolkit provide examples in English as an internationally used language, and the FAO terminology was used as standard (see the Terminology section in this document). The first step is to add a text in the element source file.

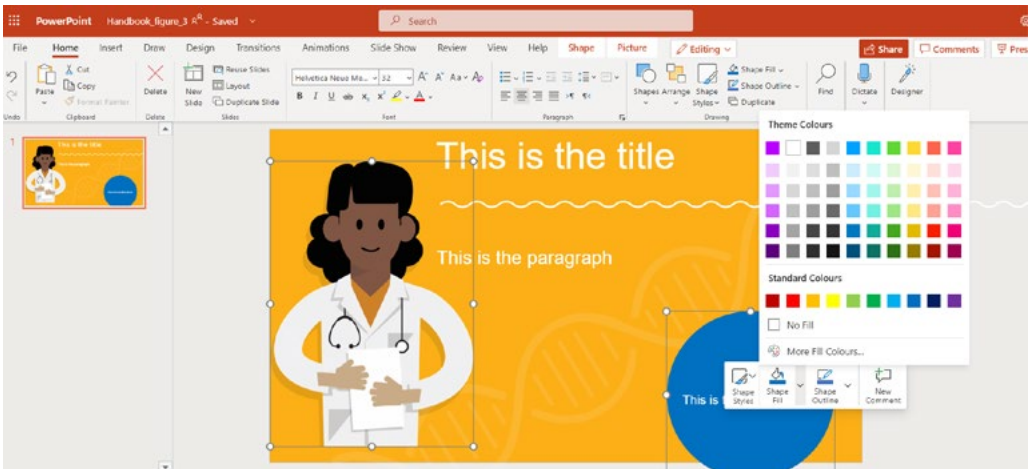
FIGURE 3. Adding a text in the element source file



Step 2: Customize the graphic design

It is important to customize the graphic design for particular contexts. For example, the GM foods available differ from one country to another and communicators may want to use a specific GM food illustration for a particular key message. Preference of the illustrations may also differ. To meet all these needs, slides can be modified using various illustrations. Figure 4 demonstrates that a DNA illustration has been replaced by a scientist. It was noted during the expert consultation meetings that some colours and figures might not be suitable for certain cultures. In addition to the designs, background colours can be modified.

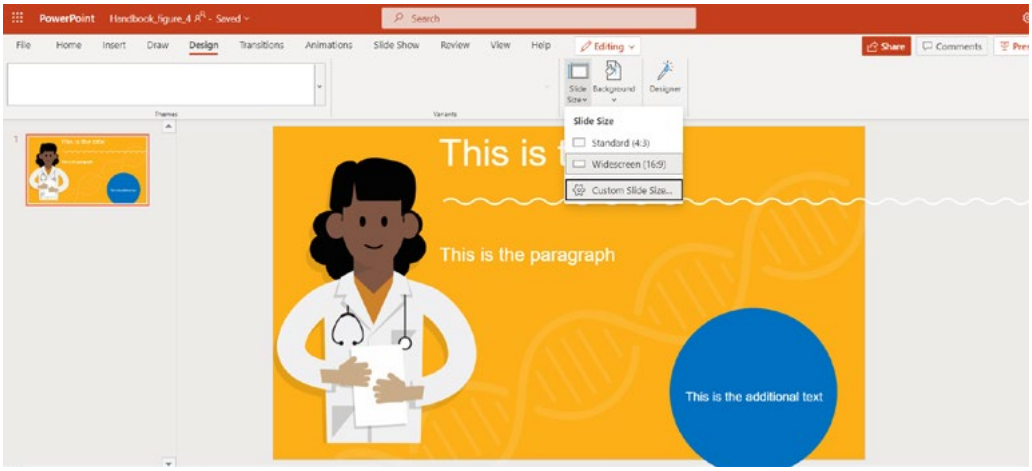
FIGURE 4. Replacing images



Step 3: Resizing

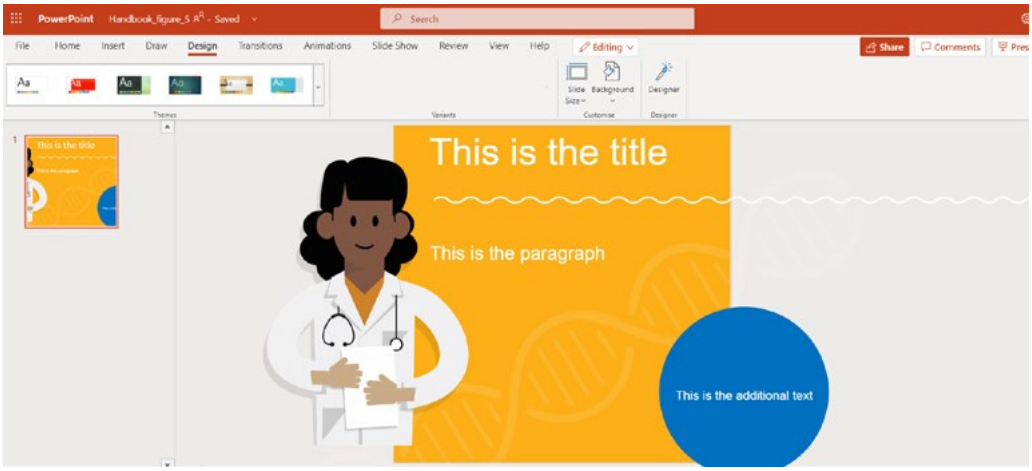
Once the text and design are customized, you may like to modify the size of the slides. The slide size can be changed using the “Slide Size” icon under the “Design” tab (Figure 5) in PowerPoint.

FIGURE 5. Locating of the slide size



Once a new size is applied, ensuring that it fits on the new slide, users of this toolkit may need to relocate and change the size of the texts and illustrations. Figure 6 shows the template slides after the size has been modified from the original setting. When formatting, users must be careful to produce readable materials.

FIGURE 6. Slide size modificated



After the slide(s) have been restructured in a way that is readable (Figure 7), they can be ready for export. It is recommended that these slides be exported in PNG, which creates good quality images even at low resolutions like 100KB (Figure 8).

FIGURE 7. Restructuring the text and illustrations.

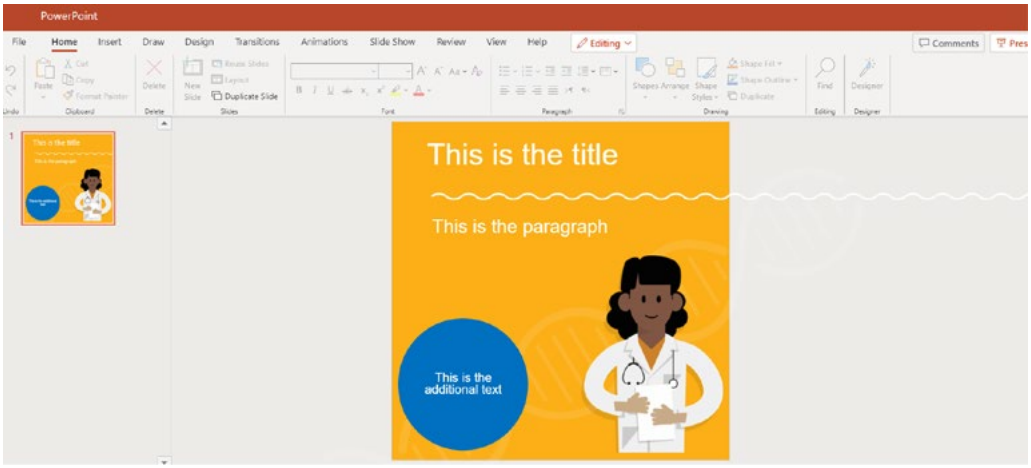
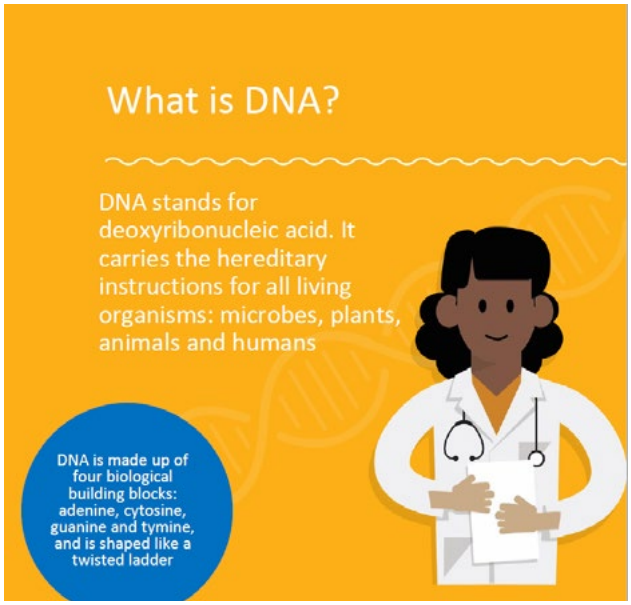


FIGURE 8. The slide is exported to PNG



References

FAO. 2000. FAO statement on biotechnology [online]. In: *Agricultural Biotechnologies*. Rome. http://www.fao.org/biotech/fao-statement-on-biotechnology/en/.

FAO. 2001. *Glossary of biotechnology for food and agriculture*. Rome, FAO (also available at http://www.fao.org/3/y2775e/y2775e00.htm#Contents).

FAO. 2011. *Food security communications toolkit*. Rome, FAO (also available at http://www.fao.org/3/i2195e/i2195e.pdf).

FAO. 2015. *FAO GM Foods Platform*. Highlights. Rome, FAO (also available at http://www.fao.org/3/a-i4937e.pdf).

FAO. 2019. *The Status of Application, Capacities and the Enabling Environment for Agricultural Biotechnologies in the Asia-Pacific Region*. Bangkok, FAO (also available at http://www.fao.org/3/ca4438en/ca4438en.pdf).

FAO. 2020a. FAO term portal [online]. In: *FAO Home*. Rome. [Cited 30 September 2020]. http://www.fao.org/faoterm/.

FAO. 2020b. *Global community meeting of the FAO GM Foods Platform: Towards effective risk-based food safety assessment and regulatory management*. Rome, FAO (also available at http://www.fao.org/3/ca8945en/CA8945EN.pdf).

FAO. 2020c. *Stock-taking analysis on food biotechnology communication materials in the world*. Rome, FAO (also available at http://www.fao.org/3/cb1394en/cb1394en.pdf).

FAO. 2020d. *Developing a communication toolkit on food biotechnologies: Proceedings of the technical consultation meetings 2020*. Rome, FAO (also available at http://www.fao.org/3/cb2022en/cb2022en.pdf).

FAO. 2021a. *Information toolkit on food biotechnologies with a focus on food safety - Tool 1: Background and guidance*. Rome, FAO.

FAO. 2021b. *Information toolkit on food biotechnologies with a focus on food safety - Tool 2: Fundamentals*. Rome, FAO.

FAO. 2021c. *Information toolkit on food biotechnologies with a focus on food safety - Tool 3: Rationale for potential benefits*. Rome, FAO.

FAO. 2021d. *Information toolkit on food biotechnologies with a focus on food safety - Tool 4: GM food safety assessment*. Rome, FAO.

FAO. 2021e. *Information toolkit on food biotechnologies with a focus on food safety - Tool 5 Regulations*. Rome, FAO.

FAO. 2021f. *Information toolkit on food biotechnologies with a focus on food safety - Tool 6: Human health*. Rome, FAO.

FAO. 2021g. *Information toolkit on food biotechnologies with a focus on food safety - Tool 7: Environment*. Rome, FAO.

FAO. 2021h. *Information toolkit on food biotechnologies with a focus on food safety - Tool 8: Practical uses and applications*. Rome, FAO.

FAO. 2021i. FAO. 2021h. *Information toolkit on food biotechnologies with a focus on food safety - Tool 9: Current innovations*. Rome, FAO.

FAO. 2021j. *Information toolkit on food biotechnologies with a focus on food safety - Tool 10: Public engagement*. Rome, FAO.

FAO. 2020k. FAO GM Foods Platform [online]. In: *FAO Food Safety and Quality Unit*. Rome. [Cited 30 May 2020]. http://fao.org/gm-platform.

FAO. 2020l. Biotechnology and food safety, FAO Food Safety and Quality [online]. In: *FAO Food Safety and Quality Unit*. Rome. [Cited 30 May 2020]. http://www.fao.org/food-safety/scientific-advice/crosscutting-and-emerging-issues/biotechnology/en/.

FAO & WHO. 2009. *Foods derived from modern biotechnology*. Second edition. Rome, FAO (also available at http://www.fao.org/3/a-a1554e.pdf).

Many countries have faced challenges from the public when communicating about the use of biotechnologies in food production, particularly over the issue of genetically modified organisms (GMO). Today's consumers still raise questions and concerns similar to those expressed when the first GMOs were introduced on the market more than 20 years ago. The ways in which people communicate with each other have changed considerably over the last two decades. Information has become more accessible and immediate. The biotechnological processes for producing foods have also advanced and are now used in many more countries and for more products.

Experts from 179 countries, meeting on the FAO GM Foods Platform in 2019–2020, put together this communication toolkit to share science-based information with audiences interested in knowing more about food produced using biotechnologies. In all, the packet comprises ten tools that cover different aspects of food biotechnologies and an overall guide that explains how to use the tools. The topics include human and environmental health, safety assessments, regulations, benefits, practical uses, recent innovations and public engagement.

The toolkit will help national authorities communicate with their audiences in ways that fit the current digital age and it will give consumers the opportunity to better understand biotechnologies. This publication will also help raise awareness of the potential for biotechnologies to contribute to a sufficiently strong food supply.

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