Communicating About Agricultural Biotechnology in APEC Economies: A Best Practices Guide

Asia-Pacific
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Agricultural Technical Cooperation Working Group

This document was prepared by the Canadian Food Inspection Agency on behalf of the Research, Development, and Extension of Agricultural Biotechnology Working Group.

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FOREWORD

In the area of agricultural biotechnology APEC economies are facing growing needs for communication among various stakeholders. This document, *Communicating About Agricultural Biotechnology in APEC Economies: A Best Practice Guide*, was developed in order to assist member economies to establish individual communication strategies. It shows the examples of best practices in communication made in APEC economies.

Developing the guide was recommended by the third Biotechnology Workshop of the APEC/Agricultural Technical Cooperation Expert Group (ATCEG) held November 1998 in Kuala Lumpur, Malaysia. In addition, the *Report to Trade Ministers on APEC Biotechnology Activities*, submitted in June 2000, designated its completion as one of the main activities in ATCEG work program. With the initiative of Canada, the drafting group on the guide developed the draft. The draft was initially approved by the fourth APEC/ATCEG Biotechnology Workshop held in October 2000, in Vancouver, Canada, and finally approved by the ATCWG. I believe that this guide will be a useful tool for member economies to build public understanding in the field of agricultural biotechnology.

Thanks to the members of the drafting group for their hard work, this guide has become a major deliverable from the ATCWG. I would like to thank particularly the Government of Canada for its strong initiative.

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This document, *Communicating About Agricultural Biotechnology in APEC Economies: A Best Practices Guide*, was prepared for the October 2000 meeting of the APEC Sub-Working Group on Research, Development and Extension of Agricultural Biotechnology. Specific examples of best practices in communication are referred to throughout this document and are compiled in the binder accompanying this publication.

Thanks go to the APEC Drafting Group on the Best Practices Guide for their identification of example documents and for their valuable comments on the text. Special thanks go to Dr. Doug Powell, University of Guelph and to JoAnn Myer and Catherine Italiano of the Canadian Food Inspection Agency for their valuable assistance in reviewing this document and for their suggestions for improvements. Recognition also goes to Kendra Leek for her enthusiasm and hard work in preparing the first draft of this material, and to Shari Haas for her help in pulling the material together and in managing the production of this document.

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INTRODUCTION

Developments in agricultural biotechnology have increased significantly world-wide in the 1990s. Countries currently vary as to their stage of development, ranging from research and development, to field trials, to the presence of products on their markets.

Communication with the public, producers, and other stakeholders, as demonstrated through numerous studies and workshops, is critical in providing accurate and balanced information about the role of governments, particularly with respect to the regulation of agricultural and food products of biotechnology.

Increasing awareness about agricultural biotechnology has resulted in the need for more information in order to respond to questions about:

- technology;
- its oversight;
- agricultural systems;

and often, to respond to misinformation.

To effectively address demands for more information, and to respond to questions raised about agricultural biotechnology, communications professionals should be called upon to work with technical and regulatory specialists in developing and producing communications materials.

This document, *Communicating About Agricultural Biotechnology in APEC Economies: A Best Practices Guide*, provides information and examples of effective communications materials in order to:

- illustrate "best practices" in each medium;
- give insight into approaches used to develop effective communication tools;
- enhance current communication strategies on biotechnology in Asia-Pacific Economic Co-operation (APEC) economies;
- facilitate improved communication on biotechnology between governments and consumers;
- improve confidence in the regulatory systems for agricultural products of biotechnology;
- promote informed public decision-making with respect to products of biotechnology; and
- identify consumer and stakeholder questions that will lead to enhanced regulatory oversight and effective risk management.

The information in this document is divided into eight sections. Section 1, Effective Communications, deals with the importance of effective communications and the need to establish responsibility and resources for communications. Ensuring credibility and trust and delivering fair and responsible information are also discussed. Section 2, discusses some of the mechanisms government can employ to meet the demand for information about agricultural biotechnology. These include: communicating with stakeholders and the general public about new legislation; supplying information about specific government bodies working in this area; developing reports for international fora; and participating in workshops and consultations with stakeholder groups. Section 3 outlines how fact sheets can be used to provide information to target audiences. This section provides insight into fact sheet design, as well as examples of government and non-government fact sheets. Section 4 details the use of the Internet as an effective communications medium. Key attributes for internet web sites are provided to aid readers who are interested in developing their own websites. Section 5 discusses the role surveying plays in the communications process. Section 6 deals with the elements of effective newsletters, along with examples of newsletters targetted to the consumer as well as a specialized newsletter. Section 7 deals with the use of food labels for communicating product information. Policy development and communications issues related to labelling are addressed in this section. Section 8 looks at a variety of multimedia approaches which are effective in providing information about agricultural biotechnology. These include: citizens' consensus conferences; videos, CD-ROMs, and demonstration laboratories.

Section 1:

Effective Communication

"Effective communication is a two-way activity based on mutual respect, trust, and the open exchange of information"

– Covello et al. (1989).

To consumers, new innovations can often be intimidating due to a lack of information. This not only makes consumers reluctant to adopt new technologies, but raises questions about the technology itself, especially when applied to food (FCPMC and OMAFRA 1997). Engaging interested consumers and stakeholders will:

- raise the level of understanding with regard to the relevant issues pertaining to the innovation,
- help satisfy consumers that they are being adequately informed within the limits of available knowledge, and
- encourage public input on the use and application of the technology (U.S. National Research Council 1989).

1.1 Risk Communications

Risk communications, as defined by the U.S. National Research Council, Committee on Risk Perception and Communication, is "an interactive process of exchange of information and opinion among individuals, groups and institutions. It involves multiple messages about the nature of risk and other messages, not strictly about risk, that express concerns, opinions, or reactions to risk messages or to legal and institutional arrangements for risk management."

"The current state of risk management and communication research suggests that those responsible for food safety risk management must be seen to be reducing, mitigating or minimizing a particular risk. Those responsible must be able to effectively communicate their efforts and they must be able to prove they are actually reducing levels of risk," (Powell, 1999).

The May 1999 report to the U.S Food and Drug Administration Commission, titled, *Managing the Risks from Medical Product Use, Creating a Risk Management Framework*, outlines options for providing "primary risk managers and consumers with the right information, at the right time, in the right form." To do so, would require "the infrastructure to identify the important risks, target information to those who need it, and make sure it is available in usable form. It also means that the effectiveness of these strategies would have to be continuously monitored."

1.2 Responsibility and Resources

The practice of effective communication is a responsibility of those who develop, promote, encourage or regulate new technology (Hrudey and Leiss 1998). For effective communication to take place, organizations must assume responsibility, provide sufficient resources, have credibility and trust, and provide fair and responsible information (Hrudey and Leiss 1998).

Assuming responsibility for, and devoting adequate resources to the task of effective communication is a critical, primary step in developing communication strategies (Hrudey and Leiss 1998).

For communications to be effective, resources must be in place to ensure that communicators are able to:

- stay involved with the communication for the entire duration of the integration of a technology (Powell and Leiss 1997)
- plan the communication strategy carefully
- develop professional communications products
- evaluate performance (Covello and Allen 1998).

1.3 Understanding the Audience

In order to communicate effectively, it is important to understand the audience (Covello et al. 1989). Gathering empirical information in the form of surveys, focus groups, and media audits (Covello 1999), helps in the understanding of how people perceive the technology and the questions they have so that relevant issues can be addressed. The public is not a single entity; there are many different segments, each with its own interests, information needs, concerns and priorities (Covello et al. 1989). "Key to effective message development is the recognition that individuals are unique and that each is going to respond to a message using their own filters of knowledge and experience" (Powell 1999).

1.4 Credibility and Trust

The audience must trust the communicator in order to be comfortable with the information given and to make informed decisions (FCPMC and OMAFRA 1997). Organizations gain credibility by providing fair and responsible information to the public (Powell and Leiss 1997) and by providing access to a variety of additional sources (Natural Resources Canada 1993). Coordinating and collaborating with other credible sources (Covello and Allen 1992) helps reinforce and consolidate the information provided. Working with credible agencies and organizations can also provide special access to target audiences that might not be reached otherwise (Covello et al. 1989).

1.5 Fair and Responsible Information

It is critical to understanding that the public know and understand the questions and concerns involved (Hrudey and Leiss 1998). Providing fair and responsible information is a key attribute of effective communication. The objective is not to make the audience accept the new technology, but to provide accurate and balanced information that will in turn promote informed discussion (Hrudey and Leiss 1998). Fair and responsible information can be achieved if the communicator provides competent, accurate, balanced, clear, interactive, and accessible information throughout the various stages of the integration process (Brunk 1994) as detailed below:

1.5.1 Competent

Communicating competent scientific information requires:

- sourcing the best research available
- using a range of expertise, from ethical to technical experts, when compiling the information (Natural Resources Canada 1993)
- distributing additional information that communicates clearly the policies and procedures that have been adopted and implemented, the rationale behind them, and the processes by which decisions were made (Brunk 1994).

1.5.2 Accurate and Consistent

Developing accurate and comprehensive messages is one of the most difficult and time- consuming aspects of risk communication (Arkin 1989). Co-operation among government, and other non-government organizations helps to ensure consistent messaging; lessens confusion and mistrust of science; increases the probability of public understanding (Covello et al. 1989) and helps increase consumer confidence in the information (IFIC 1997). In case of scientific doubt, the public should be made aware of these doubts and all unknown factors and assumptions should be stated (Gutteling 1996).

1.5.3 Balanced

Communications must provide balanced information. While it is recognized that providing scientific information is an essential component of risk communications, it is also important to include information relating to ethical, social, economic, cultural and political views (United States Department of Agriculture 1992). Consumers need information on what they perceive to be most important, rather than what is most important or most interesting to the communicator. This includes information that addresses the public's views, values, interests, needs, concerns and preferences (Natural Resources Canada 1993).

1.5.4 Clear

Messages must convey information clearly to assure the public's ability to make informed personal choices and to limit the chances for misunderstanding (Covello et al. 1989). Clarity does not mean being simplistic. Recipients should not be left unsatisfied or offended by the information, by a failure to address their perceived needs (Covello et al. 1989). Rather, it requires using terminology and technical languages targetted to the audience (Natural Resources Canada 1993). It is suggested that a few (one to three) key messages repeatedly expressed can help focus an audience on the specific concepts presented. This technique clarifies the aim of the communication (Covello 1999).

1.5.5 Timely and Interactive

"Communication is an interactive exchange of information and opinion among individuals, groups and institutions"

– U.S. National Research Council (1989)

Effective communication is a two-way interactive process. Not only must it respond in a timely fashion in informing stakeholders about regulatory decisions, but it must also solicit input into various stages of the regulatory process (Brunk 1994). Information should be provided to allow for public participation, including for example, an address to solicit feedback or a toll free telephone line to handle requests for more detailed information (Natural Resources Canada 1993). It should be recognized that each stakeholder, i.e., government, public citizen, non-government organizations and industry, has something valid to contribute and that the insights and intelligence of all must be respected (Covello et al 1989).

1.5.6 Accessible

To be effective, communications must be accessible. Employing a range of media, for example, the Internet, pamphlets and videos, makes information accessible to a variety of audiences (Needleman 1987). Listing a return address, phone, fax, e-mail and Internet address on all communications tools is a way to link readers to other sources of information. Communications materials also should be made available in alternate formats, e.g., braille and talking books, in order to ensure accessibility to information for persons with disabilities. Lastly, distributing materials at locations frequented by target audiences, makes information more convenient to access (Government of Canada 1998).

1.6 Conclusion

A comprehensive communication strategy relating to agricultural biotechnology should include:

- information to improve the scientific understanding of the health, safety and environmental impacts of biotechnology,
- key messages related to risks and benefits, legislation and regulations, alternatives, and social or cultural values.

Each of the participants in the risk communication process, including government agencies, food companies, industry groups, the media, scientists, professional organizations, public interest groups, and individual citizens, represents an important source of information and can assist in the effective communication of biotechnology (Covello et al. 1989). Effective communication can also facilitate discussion between governments and the public and motivate informed decision-making on biotechnology.

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Section 2:

Government

"The general public is interested in biotechnology more than ever before, and wants to know more about its risks and benefits."

– Covello (1999)

As the demand for knowledge increases, it is important that governments meet this demand (Powell and Leiss 1997). Increased information on government regulatory systems can help strengthen public confidence in the health, safety, and efficacy decisions related to product evaluations. It is important for government to communicate decisions in an open and transparent way to keep the public informed. Examples of government documents are under the following categories: legislation, governmental organizations, reports and workshop, and media relations.

2.1 Legislation[1]

Copies of legislation dealing with agricultural biotechnology, including acts, regulations and guidelines, are of specific interest to both the public and industry stakeholders directly affected by the legislation. These are a relatively cost-effective means of providing information already on hand. One illustration is the document *National Guidelines for the Release of Genetically Modified Organisms into the Environment* produced by the Ministry of Science, Technology and the Environment in Malaysia. A further example is illustrated in a series of three documents from Canada that lay out: the environmental assessment process for plants derived from biotechnology ("plants with novel traits"); the biology of particular plant species; and a document that fully describes how a final decision on an assessment of that plant was reached. These documents are titled *Assessment Criteria for Determining Environmental Safety of Plants with Novel Traits, The Biology of Zea mays L. (Corn/Maize)* and *Determination of the Safety of Pioneer Hi-Bred International Inc.'s European Corn Borer (ECB) Resistant Corn (Zea mays L.) Line MON809*.

Communications materials such as news releases and fact sheets regarding new legislation would be appropriate for informing the general public. These documents facilitate consumer confidence by providing insight into how the government is regulating biotech plants and illustrate how environmental, health and safety standards are met. In addition, their availability demonstrates transparency which builds trust and credibility and leads to increased acceptance of future messaging.

2.2 Governmental Organizations[1]

Along with communicating legislative initiatives, governments should supply information on the specific government bodies involved with biotechnology and its research, and include contacts for specific personnel within the government. Examples of effective communications materials on government organizations include:

[1] See example documents under tab 2: Government

- A brochure from Malaysia titled *Genetic Modification Advisory Committee: Terms of Reference*. This document provides a basic understanding of the committee's roles and responsibilities with respect to biotechnology.
- A document from Australia, *The Genetic Manipulation Advisory Committee Annual Report 1997-1998*, provides an more in-depth report on the activities of the committee.

It is important to inform the public about research and development activities, particularly those funded by the government. Examples of communications focussing on research and development include:

- *National Centre for Genetic Engineering and Biotechnology BIOTEC* and *Plant Genetic Engineering Unit Central Research and Service Laboratory in Plant Molecular Biology*, both from Thailand.
- an example, with a slightly different approach, originates from the Malaysian Ministry of Science, Technology and the Environment and is titled *National Biotechnology Directorate Strategic Plan 1996-2000*. It provides information about research and future objectives with respect to biotechnology.

2.3 Reports[1]

Country reports, such as those prepared for international inter-governmental meetings, can provide a concise summary of past, present and anticipated future status with respect to activities related to biotechnology. These reports can also serve as a useful communications tool. A good example is the report by Mexico, *Transgenic Plants Field Testing Regulation in Mexico*, which briefly relates its history of biotechnology, the regulatory assessments of foods derived through biotechnology and the crops currently being evaluated. Two other examples are provided in the *Report from the Philippines*, and the *Chilean Report on Biotechnology Regulations*. Reports can also provide information about research activities, current field trials, regulations, new government agencies, uses of biotechnology in plants and animals and a listing of products currently on the market.

2.4 Workshops/Consultations[1]

Through the organization of workshops, government actions become more transparent and provide the public with useful information. Workshop/consultation summaries and reports effectively highlight policy-related discussions with stakeholders and illustrate the spectrum of opinion considered by governments. International workshops are an important source of information and provide insight into other countries' viewpoints and their approaches with respect to biotechnology. Examples include:

- *Proceedings of the ASEAN Workshop on Regulations for Agricultural Products Derived from Biotechnology* edited by Primary Production Department, Singapore.
- *Consultation on Regulating Livestock Animals and Fish Derived from Biotechnology*, a Government of Canada report that outlines results from a public consultation in the emerging area of animal biotechnology.

2.5 Media Relations

Planning a media relations program helps organizations identify what information they want the media to report, and how they want their story told. Critical steps in planning a media relations campaign include (Shiller 1989):

- identifying the organization's goals and objectives
- identifying the key publics you want to reach
- identifying the activities or issues which help advance your goals and objectives
- identifying key points to publicize
- identifying the media that will best carry your message
- preparing or gathering the materials for the media
- distributing those materials by the most appropriate means
- arranging and preparing for media interviews, if appropriate
- evaluating the media coverage received.

[1] See example documents under tab 2: Government

To do their job, reporters and editors need a continual supply of news tips and background materials (Wilcox and Nolte 1997). Communications materials and activities that attract media attention include:

- media advisories to report on upcoming events, press conferences, etc
- media information kits, to provide information about new legislation or programs. Kits could include news releases, fact sheets, answers to frequently asked questions, new publications and reports and contact names for additional information
- access to expert spokespersons to provide media interviews
- arranging technical briefings and panel discussions to educate and inform the media
- responding to misleading or erroneous information by writing letters to the editor
- tailoring materials for specific stakeholders (producers, grocers, manufacturers) by providing background material and technical information for newsletters and journals.

2.6 Conclusion

By communicating government information, the public learns about the roles and responsibilities of the various ministries, departments and agencies involved with food and agriculture biotechnology. This facilitates public awareness of food and agricultural products derived through biotechnology. It also highlights that these products are regulated to meet standards for safety, that an infrastructure is in place to deal with arising issues, and that the government is committed to making its role more transparent – an integral part of providing effective communication.

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Appendix

Tab 2

Example Name	Country/Organization
National Guidelines for the Release of Genetically Modified Organisms into the Environment	Genetic Modification Advisory Committee, Ministry of Science, Technology and the Environment. Malaysia
Assessment Criteria for Determining Environmental Safety of Plants with Novel Traits	Plant Biotechnology Office, Variety Section, Canadian Food Inspection Agency
The Biology of Zea mays L. (Corn/Maize)	Plant Biotechnology Office, Variety Section, Canadian Food Inspection Agency

Example Name	Country/Organization
Determination of the Safety of Pioneer Hi-Bred International Inc.'s European Corn Borer (ECB) Resistant Corn (Zea mays L.) Line MON809	Plants Products Division, Food Production and Inspection Branch, Agriculture and Agri-Food Canada (now Canada Food Inspection Agency)
Genetic Modification Advisory Committee: Terms of Reference	GMAC Secretariat Centre for Gene Analysis and Technology Faculty of Life Sciences University Kebangsanan Malaysia
Genetic Manipulation Advisory Committee, Annual Report 1997-1998	Australia
National Center for Genetic Engineering and Biotechnology	National Science and Technology Development Agency, Thailand
Plant Genetic Engineering Unit Central Research and Service Laboratory in Plant Molecular Biology	National Science and Technology Development Agency, Thailand
National Biotechnology Directorate Strategic Plan 1996-2000	Malaysia
Transgenic Plants Field Testing Regulation in Mexico	Mexico
Report from the Philippines	Reynald E. de la Cruz, Director, National Institute of Molecular Biology and Biotechnology, University of the Philippines Los Banos College
Chilean Report on Biotechnology Regulations	Veila Arriagada (SAG), Mario Paredes (INIA)
Proceedings of the ASEAN Workshop on Regulations for Agricultural Products Derived from Biotechnology	Edited by Primary Production Department, Singapore
Consultation on Regulating Livestock Animals and Fish Derived from Biotechnology	Canadian Food Inspection Agency, Health Canada, Agriculture and Agri-Food Canada, Fisheries and Oceans Canada

Section 3:

Fact Sheets

Fact sheets, including pamphlets and brochures, are a means of providing effective information on biotechnology to a general audience. A variety of government and non-government organizations in APEC economies have used this medium to inform the public about the issues surrounding agricultural biotechnology. Fact sheets are generally short in length and can be targeted to meet a specific information need or to deliver specific messages. They are also flexible enough for use in a variety of settings such as grocery stores, health food stores and libraries. In a survey, conducted in 1997 for the Canadian Council of Grocery Distributers and the Food Marketing Institute, 88 percent of respondents felt that more information about agricultural biotechnology should be available in supermarkets (Market Facts of Canada 1997). The largest proportion of respondents, 41 percent, cited pamphlets and brochures at the point of purchase as being the most useful type of information.

3.1 Characteristics of Fact Sheets

Two key characteristics of fact sheets are content and design:

3.1.1 Content

Fact sheets should provide information that is balanced, accurate, consistent, clear, and interactive as noted in the "Effective Communication" segment of this guide (Hrudey and Leiss 1998). Fact sheets, pamphlets and brochures are often targeted to specific audiences and are designed to address the information needs of that particular audience (Covello et al.1989). Focus testing information in fact sheets, before their release, is also beneficial to ensure the information is readily understood. Fact sheets should also provide readers with access to more information by providing a phone number, mailing address, e-mail address, Internet site address or fax number.

3.1.2 Design

The length of the document and the level of technical language should reflect the needs of the intended audience (Natural Resources Canada 1993). Short, easy-to-read fact sheets are suitable for the general public. Supplementary brochures with more in-depth technical information can complement the fact sheets and should be accessible for people who require more information (Government of Canada 1998). The fact sheet should not be crammed with text and should have some "white" space, as well as interesting and

relevant design aspects to attract the reader. Text and design elements should "flow" and tell a story in a concise fashion.

For fact sheets that are to be distributed through local grocery stores or other similar locations, it is beneficial to have bright colours to attract potential readers. Graphics are a way to interest audiences in reading materials and can be very beneficial in aiding comprehension (Covello et al. 1989).

3.2 Government Fact Sheets[1]

Government ministries and agencies have developed a variety of consumer fact sheets on agricultural biotechnology. These documents cover diverse topics and range in length and technical depth. Two very notable brochures from the Ministry of Agriculture, Forestry and Fisheries in Japan illustrate how to communicate about the process of, and science behind, technology. These brochures also demonstrate how to use graphics to enhance the learning process. A further example is a detailed treatment on the topic of regulations, titled *Questions and Answers on Biotechnology Permits and Genetically Engineered Plants and Microorganisms* by the United States Department of Agriculture, Animal and Plant Health Inspection Service. The question and answer format of this document which focuses on commonly asked questions, and provides information on the role of government, is attractive and relevant to consumers. Another good example of the question and answer format is a fact sheet produced by the Government of Hong Kong's Food and Environment Hygiene titled *Know More - Genetically Modified Food, Myths and Facts.*

3.3 Non-Government Fact Sheets

Examples of non-government fact sheets highlighted in this section range from one page, "quick information" documents, to more lengthy ones that contain more detailed information. Two concise, easy-to-read fact sheets on the general and background information of agricultural biotechnology are *Improving Our Food Supply With Nature's Help* from the National Institute of Nutrition in Canada and *What the Heck is Biotech?* from the Food Biotechnology Communication Network in Canada. Examples of more detailed brochures, which could supplement the previously mentioned documents, are *What You Should Know About Food Biotechnology* from Asian Food Information Centre (AFIC) and *Food Biotechnology: Health & Harvest For Our Times* produced by the International Food Information Council (IFIC). These brochures are effective because they place biotechnology within the context of the evolution of agricultural practices (IFIC 1997).

In addition to providing general and background information on agricultural biotechnology, it is important to address specific consumer questions surrounding the science behind the products of biotechnology (United States Department of Agriculture 1992). Examples of such brochures are *A Growing Appetite For Information* produced by the Food Biotechnology Communications Network and the Consumers' Association of Canada, and *From Field to Plate: A Discussion of the Issues Surrounding Biotechnology in Agriculture and Answers For Sustainable Agriculture*, both produced by Ag-West Biotech Inc., of Saskatoon, Canada. A brochure that effectively explains the science of biotechnology is *Genetics and the Understanding of Life* from the National Centre for Biotechnology Education, Department of Microbiology in the UK. Finally, it is important that industry communicate about its own products (Powell and Leiss 1997). The document *Glufosinate Ammonium Tolerant Canola* produced by Hoechst in 1993 is an example of a company communicating to the public about one of its potential products (now approved and on the marketplace in several countries), including how it was developed and how it is grown.

3.4 Conclusion

Fact sheets, pamphlets and brochures play an important role in the communication of biotechnology. They are able to:

- provide a wide range of information from a variety of sources

[1] See example documents under tab 3: Fact Sheets

- reach a diverse audience
- be produced at a reasonable cost
- be distributed at locations that are very convenient for consumers, such as grocery stores.
- target readership appropriately by employing a diverse range of formats and utilizing appropriate language. For example, children and youth are an ideal audience. Tools that enhance understanding of science can be complementary to in-school teaching activities and lead to better informed adults in the future
- be updated easily as new information becomes available.

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Appendix

Tab 3

Example Name	Country/Organization
Questions and Answers on Biotechnology Permits and Genetically Engineered Plants and Microorganisms	USDA, Animal and Plant Health Inspection Service
Improving our Food Supply with Nature's Help	National Institute of Nutrition, Canada
What the Heck is Biotech?	Food Biotechnology Communication Network, Canada
What You Should Know About Food Biotechnology	Asian Food Information Centre
Biotechnology in Everyday Life	Ministry of Agriculture, Forestry and Fisheries, Japan
Recombinant Agricultural Crops	Ministry of Agriculture, Forestry and Fisheries, Japan

Example Name	Country/Organization
Food Biotechnology: Health & Harvest For Our Times	International Food Information Council
A Growing Appetite for Information	Food Biotechnology Communications Network and the Consumers' Association of Canada
From Field to Plate: A Discussion of the Issues Surrounding Biotechnology in Agriculture	Ag-West Biotech Inc, Canada
Answers For Sustainable Agriculture	Ag-West Biotech Inc, Canada
Genetics and the Understanding of Life	National Centre for Biotechnology Education, Department of Microbiology, United Kingdom
Glufosiante Ammonium Tolearant Canaola	Hoechst

Section 4:

Internet

The Internet provides an effective communication medium to reach both national and international audiences. While the Internet is more widely accessible in some countries than others, it is an expanding and potentially cost-effective communication medium for providing accurate, balanced, competent and interactive information.

The advantages of using the Internet to communicate about biotechnology include:

- internet sites promote interactive communication due to the speed and ease with which dialogue can be sent through e-mail (Williams and Tollett 1998);
- diverse audiences, including the general public and other governments, can be reached;
- internet sites can be updated quickly and inexpensively whenever changes or corrections are necessary (Micheal Malm's Good Webpage Design 1999);
- balanced information can be promoted through links to other information sources.

Internet users should be cautioned, however, to validate the source of information. Some sites may not be monitored or edited regularly, others may provide mis-information or biased reports.

4.1 Internet Site Attributes

The three main activities of Internet users when visiting a site are reading text, viewing images and interacting with the Internet site interface, e.g. using links and writing e-mail (Art and Zen of Web Sites 1999). It is, therefore, necessary to make these activities easy and informative for the visitor. Different attributes, such as content, readability, navigation design, updates, links, contact information, graphics, download time, compatibility, and colour facilitate these activities:

4.1.1 Content

The content is the most important aspect of the Internet site, (A Contentious Interview with Jakob Nielsen Part 1, 1999) as the Internet is an information source for almost 90 percent of users. Internet sites that are rich in content and reader-friendly are more likely to meet the information needs of visitors in the simplest, most timely manner (All Things Web: The Value of Usability 1999). Effective communication techniques, such as providing accurate, balanced, and competent information (see the "Effective Communication" section of this guide), should be applied to meet the needs of target audiences. A list of APEC economy Internet sites related to food and agricultural biotechnology is provided under tab 4: Internet.

4.1.2 Readability

Reading on a computer is more difficult than reading from the printed page. Studies have shown that reading speeds are about 25 percent slower

on a monitor than on paper (Learning to Write for the Web 1999). It is, therefore, beneficial to keep words, sentences and paragraphs short. Meaningful subheadings should be used to break up and summarize text. Many readers will just scan Internet pages, reading only the subheadings and stopping when they find the information they need. With respect to presentation of the text, it should be as clear and uncluttered as possible and the columns should be narrower than the screen (Learning to Write for the Web 1999). Use logical screen "breaks" whenever possible. To improve the readability of text, it is beneficial to use white or "close to white" background with dark text (Micheal Malm's Good Webpage Design 1999). The Australian Genetic Modification Advisory Committee (GMAC) site (as shown in tab 4) displays notable text attributes. The text is written on a white background with wide margins on either side. Appropriate subheadings are used that allow quick access to information.

4.1.3 Navigation Design

Attributes that make information easier to find or renders it more accessible, is of undeniable benefit to the site (All Things Web: The Value of Usability 1999). Consistency in presenting information makes navigating the site easier. From predictable navigational conventions to a consistent appearance, a reader-friendly Internet site makes it easy for readers to develop reliable expectations about the site and its pages (All Things Web: What is "Reader-Friendly"? 1999).

Good navigation design can be aided by:

- keeping the pages neat and uncluttered (Art and the Zen of Web Sites 1999);
- accentuating new and updated information (Williams and Tollett 1998);
- providing an internal search engine that is accessible from every page (Top Ten Mistakes in Web Design (Alertbox May 1996) 1999);
- providing an index (links to different sections in the site, such as the site map, search engine and home page) on each page in the same location, including having an index at the top and bottom if the page scrolls down (William and Tollett 1998);
- providing easily accessible shortcuts to the paths that visitors will want to follow most often (All Things Web: What is "Reader-Friendly"? 1999); and
- providing every page with a link to the home page (Top Ten Mistakes in Web design (Alert box May 1996) 1999).

The Internet site of the Canadian Food Inspection Agency is very consistent in its appearance and provides the same index on each page. To enhance the ease of navigation, the index appears at both the beginning and end of its pages. The *United States Department of Agriculture (USDA) Biotechnology and Scientific Services* Internet site provides a search engine and links to help with internal navigation and navigation to other Internet sites. These examples are highlighted under tab 4.

4.1.4 Updates

An Internet site needs updating and maintenance to evolve, stay current and address new issues. Implementing a plan for "regular maintenance" is highly recommended. Such a plan should include removing outdated material and updating older content, as needed (A Contentious Interview with Jakob Nielsen Part 1 1999). Informing visitors of what is new and what has changed allows for quick access to new information. This is demonstrated in the *United States Department of Agriculture (USDA)* Internet site through the highlighting of all updated information with a "new" symbol. A revision "date stamp"on *Japan's Agriculture, Forestry and Fisheries Research Council Secretariat* Internet site assures the viewer that information is current. (See example documents under tab 4.)

4.1.5 Links

By providing a list of useful links, a site can provide visitors with additional information and added perspectives on the subject. It is important that links be kept up-to-date (Art and Zen of Web Sites 1999) and that the links on the page go to the pages intended (Micheal Malm's Good Webpage Design 1999). Links should be checked regularly

to avoid links that go nowhere (All Things Web: Ten More Things to Avoid in Authoring a Web Page 1999). The more informative the links are, the better. Links enhance the site and benefit the reader by providing more information. An example of a particularly useful link page is the New Zealand Ministry of Agriculture and Forestry site (shown under tab 4) titled *Genetically Modified Food/Organisms Index*.

4.1.6 Contact Information

More than any other communication media, the Internet sites differentiate themselves by their interactivity. Internet sites should allow visitors to react and respond immediately to what is written, either through e-mail feedback, discussion boards and chat rooms (Learning to Write for the Web 1999). Having an e-mail address, a physical address or a telephone number available on the Internet site makes a site more interactive (Art and Zen of Web Sites 1999). Tab 4 contains examples of various "interactive" attributes, including personnel directories (*United States Department of Agriculture* site) and forms to request copies of publications (*Australia's Genetic Manipulation Advisory Committee (GMAC)* site.

4.1.7 Graphics

Graphics are best used as a supplement to text, and not as a substitute for it (All Things Web: Words, Words, Words 1999). They should be kept to a minimum to decrease download time. Multimedia effects should only be used when they truly add to the user's understanding of the information (The Need for Speed (Alertbox March 1, 1997) 1999). Animated graphics reduce the readability of the site. It is very difficult to concentrate on content when something is blinking or moving on the page. Oversized graphics take too long to download and should be avoided (All Things Web: Ten More Things to Avoid in Authoring a Web Page 1999). The icon of DNA strands which are on every page of the *Australian GMAC* Internet site is an example of a beneficial graphic because it provides a consistent appearance for the site. This aids the navigation process. The *Food for Our Future* site also provides an example of useful graphics. These particular graphics aid the learning process by providing visual images to complement the text. An organization's "corporate look" should be used on the internet as well as on all other communications materials in order to facilitate recognition. (See examples under tab 4.)

4.1.8 Download Time

People go to Internet pages because they want to get information efficiently (Learning to Write for the Web 1999). At most, an Internet page should take 15 seconds to download (Webpageguide.com: Designing Your Site - Hints and Tips 1999). To ensure fast-loading pages:

- build relatively small pages, and
- use links to connect these smaller pages within a larger Internet site
- reduce the size of the graphics files, providing less data to download (All Things Web: The Rules 1999).

4.1.9 Colour

"Colour can create moods, add emphasis, attract attention, organize information and entertain the viewer."

Williams and Tollett (1998)

Colour can be used to convey information or to draw attention to where it is really needed (Art and Zen of Web sites). Bright and bold colours accentuate important information such as new issues or recent updates to the Internet site. By using the same colours for each page a connective flow is attained, associating each page to the particular Internet site. Exemplary colour usage appears on many of the pages shown in the appendices. For example, the Australia's GMAC Internet site has bold colours to accentuate the specific headings and consistent colour throughout the site. Japan's Ministry of Agriculture, Forestry and Fisheries Internet site also uses colour to emphasize the titles and highlight particular information. (See examples under tab 4.)

References

"All Things Web: How Much Is Too Much" http://www.pantos.org/atw/35654.html (6 July 1999)

"All Things Web: What is "Reader Friendly"?" http://www.pantos.org/atw/35252.html (6 July 1999)

"All Things Web: The Rules" http://www.pantos.org/atw/f-35426.html (6 July 1999)

"All Things Web: Ten MORE Things to Avoid in Authoring a Web Page" http://www.pantos.org/atw/35270.html (6 July 1999)

"All Things Web: The Value of Usability" http://www.pantos.org/atw/35679.html (6 July 1999)

"All Things Web: Words Words Words" http://www.pantos.org/atw/35603.html (6 July 1999)

"A Contentious Interview with Jakob Nielsen Part 1 and 2" http://www.contentious.com/articles/1-5/qa1-5b.html (6 July 1999)

"Art and the Zen of web sites" http://www.tlc-systems.com/webtips.shtml (15 June 1999)

"Learning to write for the Web" wysiwyg://173/http://www.phillynew...irer/99/Jun/27/business/COMP27.htm (6 July 1999)

"Micheal Malm's Good webpage design" http://www.mscs.mu.edu/~georgec/Classes/Web.1997/12GoodWeb/am1m.html (15 June 1999)

"The Need for Speed (Alert March 1, 1997)" http:// www.useit.com/alertbox/9703a.html (6 July 1999)

"Top Ten Mistakes in Web Design (Alert May 1996)" http//:www.useit.com/alertbox/9605.html (6 July 1999)

"Webpageguide.com: Designing Your Site - Hints and Tips" http://www.webpagequide.com/webdesign_hints.htm (6 July 1999)

Williams Robin, and John Tollett. 1998. *The Non-Designer's Web Book*. Peachpit Press. Berkeley, pp. 90, 92, 93, 95, 133 and 135.

APEC Economy Internet Sites Related to Food and Agricultural Biotechnology

Country	Internet Address
APEC	http://www.apecsec.org.sg/ http://www.affa.gov.au:80/docs/market_access/apec/atc/index.html
Australia	http://www.affa.gov.au:80/ http://www.health.gov.au/tga/gene/gmac/gmac.htm http://www.csiro.au http://www.anzfa.gov.au
Brunei Darussalam	http://www.agriculture.gov.bn/
Canada	http://www.cfia-acia.agr.ca http://www.hc-sc.gc.ca/
Chile	http://www.minagri.gob.cl/*
Hong Kong, China	http://www.info.gov.hk/fehd

Country	Internet Address
Indonesia	http://www.deptan.go.id/english/index.htm* http://www.rad.net.id/users/personal/p/pusdatan/*
Japan	http://ss.s.affrc.go.jp/index-e.html http://ss.s.affrc.go.jp/docs/sentan/index.htm
Korea, Republic of	http://www.kribb.re.kr/
Malaysia	http://agrolink.moa.my/doa/*
New Zealand	http://www.maf.govt.nz/MAFnet/index.htm
Thailand	http://www.biotec.or.th/
United States of America	http://www.aphis.usda.gov http://www.epa.gov/ http://vm.cfsan.fda.gov/list.html http://www.nbiap.vt.edu/ http://www.nal.usda.gov/bic

* Department of Agriculture web pages were listed when unable to find specific information on biotechnology.

Appendix

Tab 4

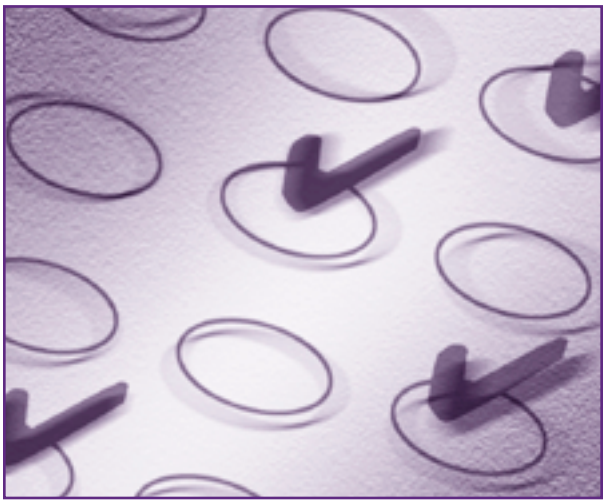
Example Name	Country/Organization
Australian Genetic Manipulation Advisory Committee (GMAC)	Department of Industry, Science and Resources, Australia
Canadian Food Inspection Agency	Canada
Animal and Plant Health Inspection Service	USDA Marketing and Regulatory Programs
Animal and Plant Health Inspection Service, Plant Protection and Quarantine	USDA, Biotechnology and Scientific Services
Innovative Technology Home Page	Ministry of Agriculture, Forestry and Fisheries, Japan

Example Name	Country/Organization
Genetically Modified Food/Organisms Index	New Zealand Ministry of Agriculture and Forestry
Biotechnology Staff	USDA
Regional Biotechnologists	USDA
Request for Publications	USDA
Genetic Manipulation Advisory Committee	Australia
Food for our Future	United Kingdom

Section 5:

Surveys

Surveys can be an effective tool to sample public views of biotechnology and to analyze understanding and perception. Public perception will have a great influence on the future of the agricultural biotechnology. It is important that beliefs and knowledge of consumers be researched, understood, and considered when developing educational information, legislation and policy (Hoban and Kendall 1992). Surveys are a feasible tool to consult with the public and can access a wide range of respondents (Leroux et. al. 1997). In designing a survey it is important that the goals and the objectives of the survey are clear. The challenge is to develop a questionnaire that is comprehensive, that does not lead the respondent and that incorporates elements that explore the specific issues and objectives. It is also important to recognize the weaknesses of surveys with respect to the quality of information they generate; survey results represent a static picture of public opinion reflecting a one-way exchange of information between the survey-taker and the respondent (Leroux et.al. 1997).



Other public opinion research methods can also be considered, including qualitative research. This includes focus groups – where a small number of participants are brought together to be a part of a facilitated discussion that usually takes about two hours or more to complete. This group discussion allows governments to probe public opinion in much more detail than is possible in a survey approach. The results, however, are not statistically valid and are normally used to augment detailed knowledge around consumer opinion. Other research approaches include intercept studies where consumers are "intercepted" and asked a series of question (a survey) in a public area – perhaps a shopping mall or grocery store, as well as more in-depth interviews with smaller numbers of participants (Merton. 1987).

The following are examples of the types of information sought from a variety of surveys carried out to date in APEC economies:

- Knowledge level of consumers about agriculture and food biotechnology
- Accuracy of consumer knowledge & knowledge gaps
- Public questions with respect to specific issues such as health, safety, the environment, ethics and economics
- Sources of knowledge, e.g. print, electronic media, educational systems or government.
- Credible sources of information
- Attitudes and opinions about various applications of biotechnology
- Perceptions about the role of the government
- Impact of knowledge about biotechnology products on the perception of safety
- Future expectations regarding biotechnology

By analyzing responses to questions, attitudes and perceptions can be tracked to determine whether they vary by segments of the public. With this knowledge, communications tools can be geared to separate audiences to meet specific information needs (Covello et al. 1989). The public's knowledge and opinions can be segmented into various groupings, such as:

- region
- age
- gender
- environment (urban, rural)
- education
- income
- affiliations with specific groups
- political participation; and
- culture.

Different APEC economies have undertaken surveys to assess public perception, illustrating the range of questions and analysis that can be done and how the resulting information can be used effectively. Examples of such surveys include *Japanese Consumers' Awareness and Attitudes About Biotechnology; U.S. Consumer Attitudes Toward Food Biotechnology, Biotechnology and the Canadian Public: A Report on a 1997 National Survey and Some International Comparisons* and *Public Perceptions of Genetic Engineering Australia, 1994*, and are found under tab 5.

References

Covello, Vincent. 1999. *Risky Business*. Biotechnology Focus Vol 2, No 3, Promotive Communications Inc. Aurora, p. 11.

Ekos Research Associates Inc. 1995. *Conceptual Model for Predicting Consumers' Attitudes, Opinions and Behaviour*. Industry Canada.

Hoban, Thomas. 1998. *Japanese Consumers' Awareness and Attitudes About Biotechnology*. Japan Statistics and Research Inc. p. 1.

Hoban, Thomas and Patricia. Kendall. 1992. *Consumer Attitudes About the Use of Biotechnology in Agriculture and Food Production*. North Carolina State University. North Carolina, pp. 1- 8

Kelley, Jonathan. 1995. *Public Perceptions of Genetic Engineering: Australia, 1994*. Department of Industry, Science and Technology, Commonwealth of Australia. Australia, p. 7.

Leroux, Thérese, Marie Hirtle and Louis-Nicholas Fortin. 1997. Executive Summary of: *Comparative Study of Mechanisms Developed in Other Countries for Reviewing the Ethical and Social Issues of Biotechnologies*; from the Workshop "Biotechnology, the Consumer and Canadian Marketplace" held September, 1997, Ottawa, Canada, p. 2.

Merton, R.K. *The Focussed Interview and Focus Groups: Continuities and Discontinuities*. Public Opinion Quarterly Vol 51:4, pp 550-566.

Appendix

Tab 5

Example Name	Country/Organization
Japanese Consumers' Awareness and Attitudes about Biotechnology	Japan
U.S. Consumer Attitudes Toward Food Biotechnology	United States
Biotechnology and the Canadian Public: Report on a 1997 National Survey and Some International Comparisons	Edna Einsiedel, University of Calgary, Canada
Public Perceptions of Genetic Engineering Australia, 1994	Dr. Jonathan Kelley, Institute of Advanced Studies, The Australian National University

Section 6:

Newsletters

Newsletters are a useful medium for providing information on evolving issues and developments in agriculture and food biotechnology (United States Department of Agriculture 1992). Governments, non-government organizations, committees and industry within APEC economies produce a variety of newsletters geared to specific areas of interest.

6.1 Elements of Effective Newsletters[1]

Effective newsletters cultivate brevity and clarity. Newsletter writing, as with all nonfiction writing, must be logical, employ carefully chosen words, and, demonstrate a unity of approach and subject matter. (William Zinsser, *On Writing Well, The Classic Guide to Writing Nonfiction, 1998)*. Good newsletters share many of the following characteristics:

- objectives are well defined as part of the editorial policy for the newsletter
- the target audience is clearly identified
- the content is relevant to the readership
- writing is professional and objective
- the design is attractive, professional and consistent from one issue to the next
- each issue is produced on schedule
- a phone, fax or e-mail address is provided to solicit reader feedback
- reader interests are identified via regular surveys or through reader participation on editorial advisory groups
- reader distribution lists are well maintained.

Various APEC economies produce newsletters to keep consumers informed of developments in biotechnology. The newsletters described below provide information on biotechnology in scientific, technical and government committees, and industry. *The Agbiotech Bulletin,* produced by Ag-West Biotech in Canada, provides a business perspective on biotechnology with information on patent issues, legal and regulatory issues, investment, and communications initiatives. As a complement to this monthly newsletter, Ag-West Biotech also produces *Food Biotechnology Resource News* which focuses on current issues in food and agricultural biotechnology. A notable feature in this newsletter is the "Grocers' Forum" which is devoted to answering readers' questions. *The GMAC Newsletter*, produced by the Genetic Manipulation Advisory Committee in Australia, provides updates on current changes regarding GMAC activities and decisions.

Special issues of newsletters are often produced to address specific questions in more detail than would normally be possible in a single issue. Tab 6 contains the January 1998 issue of the *ISB (Information Systems for Biotechnology) News Report* produced by the United States National Biological Impact Assessment Program, a joint project of the United States Department of Agriculture and the Virginia Polytechnic Institute and State University. This particular edition focuses on

[1] See example documents under tab 6: Newsletters

Internet sites that provide information related to food and agricultural biotechnology.

Information on food biotechnology can be placed in newsletters which are not focused exclusively on biotechnology. The Second Quarter 1999 issue of *Food Facts Asia: Current Topics in Food Safety and Nutrition* produced by Asia Food Information Center features an article on genetically modified foods and a survey on Asian consumers attitudes towards genetically modified foods. Providing information through nutrition-focused newsletters is useful in reaching food professionals and specialists who interact directly with consumers (Covello et al. 1989). Articles submitted to association newsletters are often accepted. These "outreach" activities are another way of targeting messages to specific audiences, i.e., industry, consumers, decision and policy makers.

References

Covello, Vincent and David MacCallum et al. 1989. *Effective Communication: the Role and Responsibility of Government and* Hrudey *Nongovernment Organizations*. Plenum. New York, p. 9.

United Sates Department of Agriculture. 1992. *United States - Commission of the European Communities Workshop: Methods of Communicating Biotechnology with the Public*. United States Department of Agriculture. p. 15.

Zinsser, William. 1998. *On Writing Well, The Classic Guide to Writing Nonfiction*. 6th Edition, Harper, New York.

Appendix

Tab 6

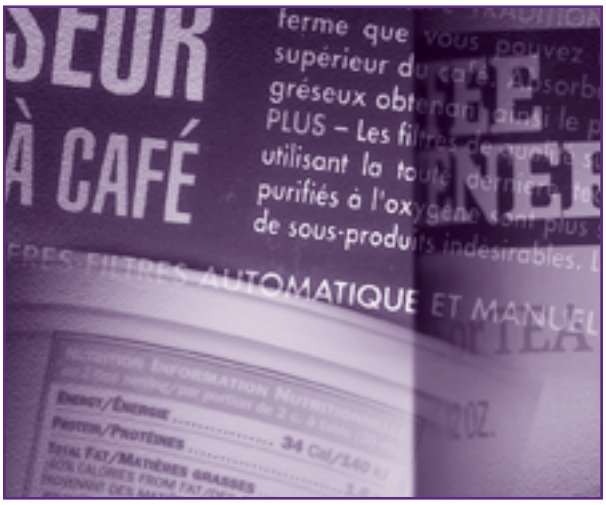
Example Name	Country/Organization
The Agbiotech Bulletin	Ag-West Biotech, Canada
Food Biotechnology Resource News	Ag-West Biotech, Canada
GMAC	Genetic Manipulation Advisory Committee, U.K.
ISB News Report	Information Systems for Biotechnology, U.S. National Biological Impact Assessment Program
Food Facts Asia	Asia Food Information Center

Section 7:

Communicating on the Food Label

"A food should not be represented in a manner that will create an erroneous impression regarding its character in any respect"

Codex Committee on Food Labelling (1994)



The main purpose of labels on food products is to provide the consumer with basic product information, e.g. product name, list of ingredients, net quantity, etc., to provide health/safety and nutrition information, and to provide a vehicle for national and international food marketing, promotion and competition. Currently, foods of biotechnology that have undergone nutritional or compositional changes or that present a health risk, such as allergens, are subject to mandatory labelling in most, if not all, countries. The labelling of genetically modified foods that have gone through a health and safety review and have no identified health or safety concerns, are subject to a variety of different labelling strategies in various countries.

7.1 Development of Policy[1]

How to label foods obtained through biotechnology, and foods not obtained through biotechnology, in a meaningful, informative way is a question currently facing a number of countries. One of the first documents to explore this question was *Implications of Biotechnology for Food Labelling* written by the United States for the 23rd session of the Codex Alimentarius Committee on Food Labelling. Since then, different economies have established principles, legislation or are in the process of discussions on the labelling of biotechnology products. *Labelling Food Produced Using Gene Technology: An invitation to comment or make a submission on proposals to extend the labelling requirements of Standard A18* from the New Zealand Ministry of Health and the Australia-New Zealand Food Authority is an example of a proposal that has gone out for public consultation on this topic.

7.2 The Food Label as a Communications Tool

To analyze the utility of the food label as a communications tool, it is helpful to understand the existing major sources of information related to new foods, consumer shopping habits, as well as interpretation and understanding of the label message (National Institute of Nutrition 1999).

1 See example documents under tab 7: Communicating on the Food Label

7.2.1 Sources of Information on New Foods

The level of awareness of foods derived through biotechnology was investigated and reported in the *Voluntary Labelling Of Foods From Biotechnology Report on a Qualitative Study Among Canadian Consumers* written by Canada's National Institute of Nutrition (NIN) and found to be low. The main sources of information about new foods were found to be the mass media, recipe leaflets, word of mouth and advertising. Participants did not mention food labels as a source of information until they were prompted. Labelling was viewed as a possible solution but not an absolute solution to providing information / education about foods from biotechnology. Other means, such as television, leaflets (including recipes), in-store taste tests, the Internet, magazines and toll free numbers, were also seen as acceptable means of providing information to consumers.

7.2.2 Shopping Habits

The shopping habits of Canadian consumers with respect to labelling was also investigated in the National Institute of Nutrition study. It was found that most shoppers are in a rush and do not notice new labelling messages unless they are buying a product for the first time. Similar conclusions have been reached in other studies (Madill 1995). Those who do look at labels are generally looking for particular information that is valuable to them, such as price and brand name. Once a product is known and accepted the label is usually ignored, except for recognition purposes.

If a new food label is to be noticed, it has to be clear, visible, attention-grabbing, recognizable from one category of product to another, or previously publicized by the media or other background information sources (National Institute of Nutrition 1999).

7.2.3 Interpretation and Understanding of the Label Message

If consumers do notice the label for foods from biotechnology, it is important that the message be understood. The specific choice of words on a label can have a considerable affect on the consumer's level of understanding of genetically modified food products. A negative reaction tends to occur when unknown scientific terminology is used. Thus, messages such as "genetically modified" or "product of biotechnology" are misinterpreted and in many cases cause concern among consumers. In the NIN study for example, consumers, when asked, thought that genetic and biotechnology meant chemicals were added (probably preservatives), that the food was grown in a way that was not normal (e.g. not from planting a seed in soil) and that the food was not as safe as other foods. Other terminology was tested, such as "genetically enhanced," "genetically engineered," and "advanced growing method" among many examples. Participants preferred phrases in which the words were neither too simple nor too technical, that avoided the word "genetic" or "biotechnology" (although when the terms genetically and biotechnology were qualified, e.g. plant biotechnology, they became more relevant to participants) and used words that reflected natural procedures such as farming, agriculture and growing (National Institute of Nutrition 1999). An education strategy, it was noted, would provide more background information to consumers, supplementing label information.

References

Madill, Judith. 1995. "Who are the consumers and what are their needs?: Academic perspective." In *Food Biotech and Consumer Information: Do We Need to Label*. Proceedings from the FBCN Forum, Montreal. December 1995, pp.31-33.

National Institute of Nutrition (NIN). 1999. *Voluntary Labelling of Foods from Biotechnology*. Rapport Vol. 14, No 2, NIN. Ottawa, pp. 6-7.

National Institute of Nutrition. 1999. *Voluntary Labelling of Foods From Biotechnology Report on a Qualitative Study Among Canadian Consumers*. NIN. Ottawa, pp. 7 and 11-14.

Codex Alimentarius Commission. 1994. *Codex Alimentarius Commission Codex Committee on Food Labelling Twenty-Third Session Implications of Biotechnology for Food Labelling*. United States. p. 13.

Appendix

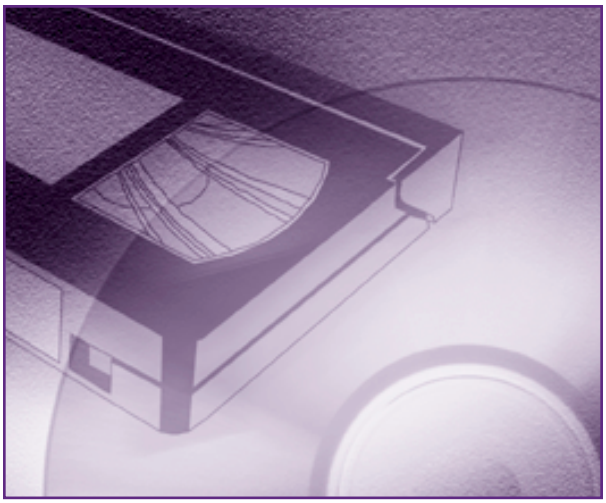
Tab 7

Example Name	Country/Organization
Implications of Biotechnology for Food Labelling	Prepared for Codex Alimentarius Commission by the USA
Labelling Food Produced Using Gene Technology	New Zealand Ministry of Health and the Australian New Zealand Food Authority
Voluntary Labelling of Foods From Biotechnology, Report on a Qualitative Study Among Canadian Consumers	National Institute of Nutrition, Canada

Section 8:

Multimedia Approaches

Unique interactive/multimedia communication approaches are very effective in providing information on biotechnology. These communication tools seek to increase interactive communication and in some cases provide hands-on experience to aid the learning and comprehension process, and include: citizens' consensus conferences, videos, compact discs (CDs) and demonstration laboratories.



8.1 Citizens' Consensus Conference[1]

A citizens' consensus conference is a communication activity which integrates the public's opinions about a new technology into the decision-making process (Lay Panel Report 1999). The recommendations of the citizens, based on their views and opinions on biotechnology, are relayed to decision-makers (Lay Panel Report 1999). Examples of reports of citizens' conferences on agricultural biotechnology are, *First Australian Consensus Conference: Lay Panel Report* and *Canadian Citizens' Conference on Food Biotechnology Citizens' Final Report*. Both of these reports cover the concerns of the public with regards to ethics, regulations, environment, economic, social, health, safety, labelling and public awareness (Citizens Panel on Food Biotechnology 1999).

8.2 Videos

Videos are an entertaining medium. As well as enhancing the learning process through visual images and narration, videos can portray certain aspects of biotechnology more completely then other communication media. The downside is that they are expensive and usually have a short "shelf life".

The video, *Food Biotechnology: A Roundtable on Public Issues* (15 minutes), produced by the International Food Information Council, highlights three key issues of interest to consumers: product safety, nutrition, and environmental safety.

The video *Biotechnology: The Breakthrough Technology of the 90s*, produced by Astroff Corkum Ross Associates for federal regulatory departments in Canada, describes the role of regulations in agricultural, food and other areas of biotechnology. A complementary video titled *Biotechnology & Agriculture: A New Approach* provides a more detailed explanation of the science behind biotechnology.

1 See example documents under tab 8: Multimedia Approaches

8.3 CD-ROMs

CD-ROMs can provide a more interactive way to communicate about biotechnology to reach specific target audiences. The CD-ROM *BioMars: A Biotech Career Adventure Game* developed by Canada's Biotechnology Human Resources Council, is an excellent means of communicating with younger audiences. The purpose is to identify possible career options available in the biotechnology field and to provide some background information on the science of biotechnology. It provides a series of topics and gives a detailed introduction on biotechnology with sections such as:

- "What is biotechnology?"
- "What career paths are there in biotechnology?"
- "What education and training do I need?"
- "Where can I find additional information?"

In addition, a computer game about biotechnology can be played using the knowledge gained about biotechnology from the CD. The Biotechnology Human Resources Council is at this time seeking partners to bring BioMars to other areas of the world. For more information, BHRC can be e-mailed at **info@bhrc.ca** (Internet site: www.bhrc.ca)

8.4 Demonstration Laboratories

Public tours of research facilities are an interactive way for consumers to learn more about the science behind agricultural and food biotechnology. By providing access to laboratories or greenhouses, consumers can not only watch techniques of biotechnology being performed, but get some hands-on experience with these techniques.

The Saskatchewan Agricultural Biotechnology Information Centre lab run by Ag-West Biotech on the University of Saskatchewan campus, in Saskatoon, Canada, offers public tours of a demonstration lab. The tour includes experiments for people to try, presentations, demonstrations, interactive displays and computer simulations. Staff scientists and graduate students are available to answer questions. Pictures of the lab are provided under tab 8, along with a brochure advertising the centre (take a "virtual tour" on their Internet site under **www.agwest.sk.ca** – you will need to perform the search function to find it). A brochure about the demonstration lab can be found under tab 8.

References

Citizens Panel on Food Biotechnology. 1999. *Citizens' Panel Final Report: Designer Genes at the Dinner Table*. University of Calgary. Calgary, pp. 1-4.

Lay Panel Members. 1999. *First Australian Consensus Conference: Gene Technology in the Food Chain*. Australian Museum. Canberra, p. 14.

Appendix

Tab 8

Example Name	Country/Organization
First Australian Consensus Conference, Lay Panel Report	Australia
Citizens' Panel Final Report, Citizens' Conference on Food Biotechnology	Canada
BioMars: A Biotech Career Adventure Game	Biotechnology Human Resources Council
Saskatchewan Agricultural Biotechnology Information Centre	University of Saskatchewan, Canada/Ag-West Biotech
Interactive display materials, Saskatchewan Agricultural Biotechnology Information Centre	University of Saskatchewan, Canada/Ag-West Biotech

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