

# AFIC

asian food information centre

## **Communicating with Consumers on Food Biotechnology**

### **Report of the Asian Food Information Centre 2003 Qualitative Research Results**

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## Table of Contents

Executive Summary .....	2
1. Background Information .....	3
1.1 Research Objectives .....	3
1.2 Research Methodology .....	3
1.2.1 Piloting .....	3
2. Survey Results .....	3
2.1 Perception and Attitude to Food & Nutrition .....	3
2.2 Awareness of terminology relating to Food Biotechnology .....	4
2.2.1 Food Biotechnology terminologies .....	5
2.3 Message Testing .....	6
2.3.1 Biotechnology pro messages .....	6
2.3.2 Summary of biotechnology messages .....	8
2.4 Communication Channels .....	9
2.5 Information Providers .....	10
2.6 Concluding thoughts on Food Biotechnology .....	10
3. Conclusions .....	11
4. Recommendations .....	12

## List of Tables

Table 1: Concerns on foods consumed .....	5
Table 2: Appropriate Terminologies on Food Biotechnology .....	7
Table 3: Biotechnology "pro" messages and their credibility among respondents .....	8
Table 4: Messages on concerns about Food Biotechnology and their credibility among respondents .....	9
Table 5: Communication Channels .....	11

## **Executive Summary**

In 2003, AFIC commissioned research using focus group discussions methods in the Philippines, China and India to assess the perception of adults toward biotechnology foods as well as to test and develop appropriate educational messages on issues relevant to food biotechnology.

The majority of consumers adopted an open-minded position towards biotechnology foods and did not reject them per se. Many participants in the discussions clearly had very limited knowledge about food biotechnology but interestingly, increasing knowledge levels were associated with increasingly positive acceptance of biotechnology foods.

The application of biotechnology to potentially produce foods with enhanced nutritional value or requiring less pesticide for cultivation, elicited very positive responses. Consumers found this information highly credible, and expressed desire for further information on such potential benefits.

Conversely, consumers were very unaware of prevailing concerns being debated within the inner circle of stakeholders, such as horizontal gene transfer, and were therefore not seeking information on safety and risk assessment. Unsolicited provision of information on safety assessment standards, rationale and process did not appear to improve knowledge levels or stimulate interest, but instead raised anxiety no matter how the information was presented. Response to all information on risk assessment was consistently negative, even when the information offered, provided evidence of the rigour of the safety assessment process.

Consumers identified the mass media e.g. television, radio, newspapers, magazines and advertisements, etc, as the most widespread and effective communication channel. Scientists and academicians, as well as inter-governmental organisations such as FAO and WHO were perceived to be the most neutral and credible parties to disseminate information on food biotechnology through these channels. Government information providers were also regarded positively, although less than academic institutions or the UN agencies.

Educating consumers in Asia remains a challenging, necessary and to date, largely unfulfilled task. Based on the results of this survey, AFIC notes that information disseminated to date has not impacted awareness levels of this sample group; that group participants express clear desire for more factual information in understandable language and format; and that consumer interest is primarily on potential benefits. It is therefore recommended that education activities will be most effective, if consumer benefits of biotechnology foods are used as the cornerstone message or at least as an introduction to the topic. It is also highly noteworthy that increasing knowledge levels were positively associated with increasing acceptance of food biotechnology.

## **Background Information**

### **1.1 Research Objectives**

The objectives the current research was as follows:

- To gain insights into the attitudes and perceptions of adults toward food biotechnology.
- To test current information themes, and statements on food biotechnology.
- To develop appropriate educational messages for consumers on food biotechnology

### **1.2 Research Methodology**

Focus group discussions (FGDs) were used as the research method. FGD's were held in the Philippines, China and India. These countries were selected, partly because all had progressed regulatory decisions on the cultivation of biotechnology in the previous 12 months and thus discussions could reference actual, rather than hypothetical national policy status.

There were two target segments in the survey – a mixed gender group of 18-35 year olds and a female only group of 36-55 year olds. Due to gender sensitivity in India, separate male and female group discussions were held instead of mixed gender group.

AFIC had conducted questionnaire-based surveys on consumer perceptions of food biotechnology in 1999 and 2002, but such surveys are inherently self-limiting in their scope. The use of FGD's was intended to explore reactions and perceptions regarding food biotechnology in greater depth, to provide respondents with the opportunity to articulate their views and responses more fully, and therefore further 'dimensionalise' the main findings of the earlier surveys.

The survey was conducted in English in the Philippines, Mandarin in China and Hindi in India. All the studies took place in November 2003. The average duration for each FGD was about 1 ½ hours. Each group consisted of 8-10 participants, and was led by experienced facilitator, with additional support.

#### **1.2.1 Piloting**

Two pilot interviews were conducted in Manila with females who had met the screening criteria prior to the FGDs. The discussion guide and messages were revised after the pilot interviews to better capture the research objectives.

## **2. Survey Results**

### **2.1 Perception and Attitude to Food & Nutrition**

*The respondents were asked about their perceptions on food and nutrition and asked to name what they considered to be nutritious and non-nutritious foods. They were also asked if they had concerns about the food they consume and prompted on specific issues if these were not raised voluntarily.*

Generally all FGD discussion groups regarded fruits, vegetables, dairy products and food containing carbohydrates, protein, vitamins and minerals as being nutritious. Older females also emphasised the need for calcium-rich foods to build strong bones as well as health tonics.

Fresh foods and foods that were hygienically prepared were perceived to be nutritious while fast-food and foods that contained preservatives or were hygienically suspect (e.g. from road-side stalls) were perceived to be non-nutritious.

The main concerns about food were presence of pesticides and preservatives in food..

**Table 1: Concerns on foods consumed**

	Concerns on foods consumed	
	Spontaneous responses	Prompted responses
<b>Philippines</b>	<ul style="list-style-type: none"> <li>• Expired foods</li> <li>• Flavouring eg. MSG</li> <li>• Foods that are not fresh/ nutritious</li> <li>• Pesticides</li> </ul>	<ul style="list-style-type: none"> <li>• Preservatives</li> <li>• Pesticides</li> <li>• Artificial flavouring</li> </ul>
<b>China</b>	<ul style="list-style-type: none"> <li>• Foods that are not fresh / clean</li> <li>• Additives</li> <li>• Pesticides</li> <li>• Animals fed with hormones</li> <li>• Contaminated water</li> </ul>	<ul style="list-style-type: none"> <li>• Pesticides</li> <li>• Hormone fed animals for faster growth</li> </ul>
<b>India</b>	<ul style="list-style-type: none"> <li>• Quality of foods</li> <li>• Foods that are not clean / fresh</li> <li>• Cost of foods</li> </ul>	<ul style="list-style-type: none"> <li>• Pesticides</li> <li>• Preservatives</li> </ul>

*The main concern most respondents had was about the presence of pesticides and preservatives used in foods. Biotechnology was not mentioned among the list of concerns about food and nutrition.*

## **2.2 Awareness of terminology relating to Food Biotechnology**

*FGD participants were asked specific questions about food biotechnology and asked to elaborate, if they could, what came to mind when they heard this term. They were also invited to share any other perceptions or views they held on this topic.*

Respondents who were aware or somewhat aware of biotechnology food expressed acceptance of the technology and emphasised the positive benefits. Perceived potential benefits included greater nutritional value and increased productivity. Reduction in pesticide use was also mentioned by some, and generated very positive interest when mentioned by FGD facilitator.

Those who had limited or no previous awareness of food biotechnology were more likely to express concern and/or scepticism. Perceived potential disadvantages included increased cost, artificial production methods, impact on human health, as well as potential negative impact on the environment.

*Biotechnology was viewed positively by those who expressed the greatest awareness, and those participants with awareness prior to the FGDs emphasised reduced pesticides use and an increase in the nutritional value of foods as the benefits which they would most value. Consumers with lower awareness levels also reported that they would also place great value on these potential benefits. Participants expressed preference for information and on the technology used to be explained in terms both understandable, and relevant to their own daily lives, interests and concerns.*

### **2.2.1 Food Biotechnology terminologies**

The term “genetically enhanced” was received positively. Participants described the term as both not intimidating, and emphasising improvement, for example more nutritious.

The term “biotechnology foods” was also received positively, and was participants felt it conveyed as sense of being natural or life-affirming.

Most respondents found the terms “genetically modified” and “genetically engineered” to be too technical, confusing and intimidating. The terms also held the implication that the foods had been altered by industrial methods. For example “engineered” was described as term relating to machines, rather than food.

*“Genetically enhanced” and “biotechnology foods” were found to be the two most suitable terms used to describe Food Biotechnology.*

**Table 2: Appropriate Terminologies for Food Biotechnology**

	Appropriate Terminologies		
	Philippines	China	India
Genetically enhanced	<ul style="list-style-type: none"> <li>• Sounds positive, less intimidating</li> <li>• More nutritious</li> </ul>	<ul style="list-style-type: none"> <li>• Easier to understand</li> <li>• Less frightening</li> <li>• More nutritious</li> </ul>	Foods are more nutritious
Biotechnology Foods	Preferred by a few older females	Preferred by a few older females	Easiest term to understand
Modified	Altered foods / unnatural	Strange foods	Least suitable
Engineered	<ul style="list-style-type: none"> <li>• Frightening</li> <li>• Scientifically altered foods</li> </ul>	Too technical	Related to machines, not food

### **2.3 Testing Current Information Themes and Commonly Used Statements on Food Biotechnology**

Respondents were shown a series of statements (both positive and negative), and asked to describe their responses to these. The full text of these statements is included in Appendix 1.

Overall, the credibility of the messages was largely based on respondents' knowledge of biotechnology. Scepticism and uncertainty levels increased when respondents encountered unfamiliar terms or were unsure of the meaning of specific details or terms used in the statements. For example, some of the older female participants were unable to comprehend the core meaning of statements that had terms like "conventional varieties" and "genetically modified crops, because the terminology was not well understood.

#### **2.3.1 Statements on Potential Benefits of Food Biotechnology**

Generally, the respondents were positive about the statements on the nutritional benefits that biotechnology might bring to foods; these were also rated as the most believable. These statements were felt to be a good introduction to biotechnology.

There was also strong agreement from all the respondents on the statements on labelling. Respondents thought that *all* foods, both foods derived from biotechnology foods and

foods derived from conventionally bred sources should be labelled to enable consumers to make informed choices.

Statements, that compared developed and developing countries were poorly received. For example, participants of the FGD's did not feel that the experiences of US consumers were relevant to them because of differing lifestyles, physiology and diets.

Interestingly, respondents also reacted negatively to statements that suggested that biotechnology could be used in developing countries to help relieve food shortages.

**Table 3: Summary of Biotechnology Benefit Statements and Participant Responses**  
(in order of most to least credible)

Statements (abbrev)	Philippines	China	India
A – nutritional value	Attractive and credible	Attractive and credible, less so for older females	Attractive and credible
H – Consumers have right to choose	Yes		
C – Crops for extreme environments	Require more information	Attractive and credible	Attractive and credible
G – Reduce pesticide use	Require more information	Attractive and credible	Attractive and credible
Q – FAO & WHO qualified support for biotechnology	Poorly understood, what are conventionally bred crops?	Poorly understood	Require more information
J – Biotechnology research to remove allergens	Poorly understood		
D – Land availability	Attractive and credible	More information, eg impact on the environment?	Impact on the environment?
F – Misleading labelling	Statements poorly understood, but in general responses were demand for labelling of all foods.		
K – Gov't approval of biotechnology crops	Some awareness, but require more information.	Partially aware but more info on humans & environmental impact required.	Partially aware. Require more information
B – Labelling only for allergens	Label all foods		
E – Labelling for some BT foods	Label all foods		

(Cont'd from previous page)

I – Developed countries' priorities	More information on impact on farmers required	Rejection of statement, comparison not appropriate	Rejection of statement, comparison not appropriate
L – American consumers	Rejection of statement, comparison not appropriate	Rejection of statement, comparison not appropriate	Rejection of statement, comparison not appropriate

\* see Appendix 1 for details of full statements presented to participants

### 2.3.2 Statements on Potential Disadvantages of Food Biotechnology

Statements communicating concerns about food biotechnology generated much confusion among respondents with many being unsure if the messages were true because of the lack of knowledge. For example, a statement which described sterility of second generation seeds generated confusion, and prompted many of the participants to question if it were technically possible to create such seeds. Participants also had difficulty in evaluating statements about environmental impact, because of low technical knowledge levels, for example the meaning of conventional/traditionally bred crops.

Most of the participants found statements that asserted there was too little known about the consequences of food biotechnology credible. When participants were asked for their response to statement suggesting further research should be conducted on impact to human health and environment was necessary, similarly most participants found this statement credible, although no specific concerns could be identified.

**Table 4: Summary of Biotechnology Concern Statements and Participant Responses** (not in any ranked order)

Statements (abbrev)	Philippines	China	India
M – MNC's profit at farmers' expense	<ul style="list-style-type: none"> <li>Participants unsure about the inability of plants to germinate a second season, therefore perceived as very credible</li> <li>China: concern regarding impact on farmers' jobs.</li> </ul>		
N – Genetic pollution	Not very credible, and unsure what Conventional varieties means	Fairly credible, but unsure what Conventional varieties means	Not very credible, and unsure what Conventional varieties means
O – Too little known of consequences	Attractive and credible		
P – Require more testing for long-term	Attractive and credible		

### ***Summary of response to statements on food biotechnology***

In summary, respondents showed great interest in the nutritional benefits of biotechnology foods and were positive about the use of biotechnology to reduce pesticides use. There was also some interest in the possibility of biotechnology foods resulting in lower the prices for foods.

Respondents remain open-minded about biotechnology and expressed confidence in the scientific community, national governments and international organisations such as the FAO and WHO to assess the benefits and risks of biotechnology on their behalf.

In addition, respondents were alarmed and confused by statements on risk evaluation, even those intended to outline the rigorous safety assessments applied to biotechnology crops. Any statement suggesting more information is needed (through research, via labelling etc) was received positively. This is somewhat paradoxical as participants clearly expressed desire for more information, but did not appear to be assimilating knowledge from the rather large volume on information on food biotechnology that has already been disseminated via mass media and other channels. The most obvious conclusion that could be drawn is that more appropriate, more relevant and better presented information is required.

### **2.4 Communication Channels**

*Respondents were asked to rate which communication channels they preferred to receive information about food biotechnology and asked to rate which channels were considered the most effective.*

Overall, respondents identified the mass media, e.g. television, newspapers, magazines and advertisements, as the most effective communication channel to educate people on food biotechnology. Schools were seen to be a suitable channel to educate the young.

While some older female respondents viewed non-governmental organisations as a possible channel of unbiased communication, they could not name any specific ones.

**Table 5: Communication Channels**

	<b>Philippines</b>	<b>China</b>	<b>India</b>
Most effective method	Mass media e.g. TV, newspapers, magazines and advertisements to reach out to a wider audience		
Websites	Greater accessibility for younger population only		
Academics	To educate the young in schools	Suitable but less outreach	To educate the young in schools
Food labels	Yes		
NGOs	Yes, but don't know any	More acceptable than government as are non-profit organisations	Yes, but don't know any
Government agencies	Dept of Agriculture, Science & Technology	Have more faith in scientists	Through consumer forums

## 2.5 Information Providers

*Respondents were given a list of organisation names and asked which they were familiar with and which they considered credible.*

Organisations identified as most credible for the two information categories – agricultural information and health & nutrition information – largely depended on the respondent's awareness of these organisations and the familiarity of the organisation name. This was true of both international and national organisations.

The FAO was cited as being most credible for agricultural information and the WHO for both agricultural and health & nutrition information.

National organisations mentioned as being most credible were government agencies tasked with the regulation and research of agriculture and health matters in the respective countries.

## 2.6 Concluding thoughts on Food Biotechnology

*Respondents were asked how they would describe food biotechnology to their friends and family.*

Most of the younger participants would recommend friends and family to try biotechnology foods. Younger participants reported that would describe biotechnology

foods as being potentially more nutritious. Participants also chose to describe biotechnology foods as unlikely to have a negative impact on the environment and could have other nutritional and health benefits.

Many of the older female participants did not feel able to describe biotechnology foods to friends and family, because of insufficient knowledge. These participants expressed desire for more information on these the technology and issues associated with food biotechnology.

### **3. Conclusions**

People generally take an interest in the food they eat. Nutritious foods are perceived to be those that are thought to offer a number of health advantages. What consumers were most concerned about was the use of pesticides and preservatives in food production. There was also a prevailing perception that the more natural a food is, the more beneficial or less harmful it was.

There was poor overall awareness and understanding of food biotechnology among the respondents despite the issue being in the news as a result of government decisions on food biotechnology in the past 12 months. There is no evidence that knowledge levels in Asia are lower than other parts of the world; studies conducted in for example in Europe and North America find similarly low levels of knowledge and awareness

The level of acceptance of biotechnology foods correlated closely with awareness and knowledge levels on food biotechnology. The younger generation, who claimed to have a higher awareness, demonstrated greatest acceptance of the concept, while those with the least knowledge and awareness exhibited greatest wariness and scepticism.

Nevertheless, even minimal understanding appeared to be sufficient for respondents to remain open-minded on acceptability of biotechnology foods.

The language used in communicating food biotechnology must be chosen with great care, because it has strong impact on initial responses. The terms “enhanced”, “genetically enhanced”, and “biotechnology” were preferred and were particularly associated with nutritional benefits.

The presentation of information on food biotechnology must be reviewed thoroughly. There is great deal of information available, but this does not appear to be reaching consumers. Future educational initiatives should look to work with media, as this is the preferred source of information. It is also highly recommended that educators on biotechnology also consider how to present information in more relevant and effective modes. Consumers want to know more, but they want to know how it will affect their own individual daily lives, express very little desire for information on hypothetical risk.

Regarding, communication channels, the credibility of the channel was influenced by its source. Scientists and academic bodies were perceived to be the most credible sources of information and expert opinion, government sources were also viewed as credible.

The message on nutritional benefits generated most interest and enthusiasm and was identified by respondents as a good introduction to the concept of food biotechnology when describing what food biotechnology was to close acquaintances, such as friends and family.

Consumers were generally unaware of the concerns hotly debated among the inner circle of stakeholders, e.g. sterile seeds, horizontal gene transfer, etc. Providing information on these issues did not appear to improve knowledge levels and were poorly understood.

Finally, most participants felt that messages that drew comparison with the West were inappropriate, and case studies, research results etc sourced from the west were not perceived as credible.

#### **4. Recommendations**

As messages about the benefits of biotechnology foods were considered positive and credible, discussions and information resources on biotechnology for this provides context to engage consumer interest. i.e. why plant breeders wish to apply biotechnology techniques as an aid and additional tool in their work. The context provides relevance to consumers - consumer interest was most stimulated by awareness that there may be benefits that directly apply to their lives and diet. Discussing the benefits of biotechnology foods is particularly important, in communications on risk assessments, because the lack of context considerably adds to the difficulties consumers have in understanding the rationale, process and scope of safety assessment.

Increasing knowledge levels is imperative, both here in Asia and elsewhere, as this issue is a focus of much debate and current regulatory development, but consumers show low levels of awareness of this.

## Appendix 1

<b>Discussion Statements on Food Biotechnology</b>
<b>Message A:</b> Food biotechnology offers many nutritional benefits, such as increased vitamin and mineral content, lower fat content, better quality protein. Examples in the future may include rice with higher vitamin A content; rice with higher iron content; tomatoes with more antioxidant content, oils with healthier unsaturated fats content, corn with more nutritious good quality protein, potatoes that absorb less oil.
<b>Message B:</b> Biotechnology foods only need to be labelled if bred from plants that some people are allergic to (for example soya or nuts)
<b>Message C:</b> Food biotechnology can help to grow crops in regions of the world where it was previously impossible because of extreme weather or soil conditions.
<b>Message D:</b> There is limited land availability and the population is growing. Biotechnology is one way to produce more food on less land without further damaging the environment.
<b>Message E:</b> Not all foods produced using biotechnology need to be labelled, only those where biotechnology has resulted in changes to the nutritional content, composition, or safety compared to its traditional counterpart.
<b>Message F:</b> Labelling only biotech foods with the term “genetically modified” is misleading because many agricultural products have been genetically modified through traditional breeding.
<b>Message G:</b> The need for pesticides is reduced because food biotechnology strengthens a crop’s ability to defend itself against pests.
<b>Message H:</b> The consumer has the right to choose foods that have been nutritionally improved or enhanced by biotechnology.
<b>Message I:</b> Developed countries such as the UK and France which do not experience food shortages do not recognise the potential benefits of biotechnology to less developed countries like India where there are food shortages and many farmers struggle to make a living.
<b>Message J:</b> Biotechnology researchers are working to identify and remove the proteins that cause allergy in some foods.
<b>Message K:</b> The <country of FGD> government has approved biotechnology-bred <commercially cultivated crop>. Farmers are now growing these varieties successfully with no evidence of any harm to the environment or to human health.
<b>Message L:</b> American consumers have been eating genetically modified ingredients for more than eight years. There have been no reports of any harm to human health, or irreversible damage to the environment.
<b>Message M:</b> Multi-national corporations are using food biotechnology to raise profit at the expense of farmers by creating seeds that switch off a plant’s ability to germinate a second time.

**Message N:** Genetically modified crops may breed with conventional varieties. This may result in permanent environmental change.

**Message O:** Too little is known about the consequences of letting genetically modified organisms into the food chain.

**Message P:** We simply don't know enough about the long-term effects of food biotechnology on human health. More testing must be done before the products are released to the market

**Message Q:** United Nations (UN) organizations, such as Food and Agriculture Organization (FAO) and the World Health Organization (WHO) have both concluded that biotechnology-derived foods are just as safe as their conventionally bred varieties.