

Chapter 14

SPAIN

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GMOs in the field

Spain's first approved commercial GM crop in 1998 was from Ciba Geigy (now Syngenta Seeds): insect-resistant maize Bt176, engineered with genes from the bacterium *Bacillus thuringiensis*. Since then, Spain has until recently been the only European country with large-scale commercial cultivation of GM crops: GM maize MON 810 for animal feed, the only approved event after the European ban on Bt176 (1). There are currently 61 varieties of MON810 maize authorized for growing in Spain (2). According to ISAAA (3), Spain is the twelfth largest world producer of GM crops; it is also the fourth country in the EU for GM crop trials with several current for sugar beet, maize, potato and cotton (both herbicide and insect resistant) (1). The largest number of applications to the Spanish Commercial Varieties Register have been for maize varieties, followed by cotton and sugar beet (4).

Although the data vary according to source (even official sources), it is clear that the GM cultivated area in Spain has shown an increasing trend between 1998 and 2005; from 14,000 ha. to 50,000 or 57,000 ha. of Bt176 maize grown in Spain in 2005, according the Ministry of Environment and to the Spanish government representative at the European Commission, respectively (see Table 1, page 14-13).

At the regional level, Catalonia is Spain's second autonomous region in terms of GM cultivated area ranking. In 2005 the 42% of all maize grown in Spain as a whole was GM, reaching 60% in the maize-growing zones of the Catalan region (5). Catalonia also has 83% of the authorised field trials in Spain, emphasising the importance of the biotechnological sector there (5); see Appendix, Tables 1 and 2, page 14-13.

Political landscape

Public administration has traditionally been favourable to GMOs and biotech interests, allowing a massive introduction of GM maize into Spain. However, despite there being large-scale commercial cultivation of GMOs, political debate on GMOs is almost inexistent. Indeed, it is very unusual to hear any political statements on GMO food, or even on biotechnology in general; they have little relevance in political terms. Within this context, and not having any biopolitics tradition, co-existence is the only issue specifically discussed when regulation is being considered. There are no specific Spanish regulations, the current framework being based on EU-wide rules.

Spanish institutions with regulatory responsibilities over GMOs are the Interministerial Commission on GMOs (Ministry of the Environment) as the regulatory body responsible for commercialisation authorizations, and the Biosafety and Biovigilance National Commissions (Ministries of the Environment and Agriculture, respectively), for risk assessment and regulation generally.

The national scene

European Union regulations until very recently imposed a strict moratorium on the deployment of any transgenic crops, with Spain being the only exception (6), a situation promoted by the 1996-2004 right-wing *Partido Popular* (PP) government. The PP won the general elections in 1996 and an absolute majority in 2000. During the eight years of the PP mandate, Spain became one of the main proponents of GMOs at the EU level; given the absolute majority in Parliament from 2000 to 2004 it was difficult for that situation to be reversed.

In 2004, just before the general elections, the PP government presented a draft document on national measures concerning co-existence based on the European Recommendations. The document received fierce criticism from a coalition of environmental organisations, especially organic agriculture, who mainly objected on the grounds of “genetic contamination” and associated issues. In response, the Ministry of Agriculture presented new draft legislation late in February 2004 but with a similar reaction by the opponents. In the event, the document was not approved before the elections in 2004 which resulted in a new government that apparently took a new approach to the GM issue. The Socialist Party (PSOE) regained power with a simple majority, supported by *Izquierda Unida* (IU), the other national left-wing party.

This change of direction was felt at the European level, where Spain moved from being pro-GMO to abstention in several Council votes. In June 2005, Spain voted against the Commission’s proposal to lift the bans on Bt176 and MON810. At the domestic level, the new government showed a greater predisposition for dialogue. The new Minister of Agriculture stopped the draft co-existence document approval process and promised to re-examine it, taking into consideration the suggestions made by opponents.

In July 2005 the Ministries of Agriculture and Environment presented a new Draft Decree on Co-existence which brought no significant changes regarding the former PP version. It was also criticised because interested stakeholders were not allowed to participate in the drafting. A new version of the draft was presented in April 2006: having taken into consideration statements made by the opposing NGO coalition, the Ministry of Environment presented a new regulative framework proposal a couple of months later (June 2006). Since then, no new moves have been made in the matter of regulation

During this three-year period of revisions, criticisms made about the different drafts have remained essentially unvarying. Given this evolution, and despite the first signs of change, opponents of GMOs regard the PSOE government as essentially the same as their predecessors. Indeed, 14 new varieties of MON810 were approved (July 2005) and thousands of hectares of Bt176 were grown during the 2005 campaign despite the EU ban. In August 2005, registration of event Bt176 expired in Spain, seven months after the European ban in January of that year following European Food Safety Authority’s (EFSA) recommendation.

In March 2004 only left-wing parties made reference to the GMO issue in their electoral programmes. On co-existence, the PSOE defended a policy “*based on the need to guarantee compatibility between modes of production*”. For its part, arguing that GM crops “*may have unpredictable and irreversible consequences for human health and natural and agrarian*

ecosystems”, IU demanded the revocation of crop variety authorizations already approved pending the authorization proceedings then taking place. Thus, IU was the only national party critical of the then current GMOs regulation framework. More recently, in the general election of March 9th, 2008, GMOs were not an issue in the election campaign. Indeed, if mentioned at all, GMOs were relegated to a very secondary role in the election programmes of the main national political parties. IU advocated a “GM-free” Spain. Having won the elections, the PSOE was expected to maintain its position (cautious, but favourable) on GMOs. For its part, IU recorded the worst results in its history so the only party openly critical of GMOs has now no chance of making any political changes in this field.

Region – Catalonia

In Spain, the autonomous regions have devolved powers on agriculture issues. Once a new GM-variety is approved nationwide, these regions manage commercial cultivation and its effects. Catalonia is the second autonomous region in Spain: with a large GM cultivated area, co-existence is the main issue in the wider GMOs debate. Though GM-crops have been grown in the region since 1998, there are still no regulations about co-existence. Given the exponential growth of GM-crops, the Catalan government began to deal with the matter in 2003. A first co-existence draft document was prepared in 2004; it received an outright rejection from several biotechnology opposition groups, forcing its revision; that timidly introduced the co-existence/GMO debate into the public sphere. A final version was submitted for its approval on May 2005; approval is still expected. Indeed, the last communiqué against the Decree from the opponents of GMOs was in July 2007.

In the 2004 elections for the Catalan Parliament, the victory of the Catalan Socialist Party (PSC) over *Convergència i Unió* (CiU) (nationalist conservative) was a historical shift that brought important changes in some public policies, but not in GMOs regulation. The new government follows the same strategy as the former in the promotion of the agribiotechnological sector. Thus, in July 2006, the Catalan Agriculture Department published a draft document on technical rules for organic agriculture which considered the possibility of labelling as organic those products containing up to 0.9% of GMOs. The organic agriculture sector in Catalonia rapidly reacted against this proposal, which was immediately revised to contemplate a zero presence. The organic sector remains concerned for the future of organic agriculture following the approval of a new European Regulation on the production and labelling of organic products which will come into force in 2009 (Council Regulation (EC) No. 834/2007 of 28 June 2007 on organic production and labelling of organic production and repealing Regulation (ECC) No. 2029/91). Political statements in Catalonia concerning GMOs have been made only by the left coalition including the Greens (*Iniciativa per Catalunya-Verds*), asking for designation of the region as a “GMO-free zone”. The other regional parties in their programmes either make no mention at all of the subject or vaguely write of the need to “control” of GM production.

Current issues

Co-existence

Spain, both nationally and regionally, is currently static. GM-maize has been cultivated for 10 years but there are still no regulations on the co-existence of GM, conventional and organic crops. For the first time trials are being opposed by anti-GMOs activists. In 2006, a coalition

of environmental and agrarian organisations published a report on the impossibility of co-existence. It analysed seven years of de facto co-existence between GM- and non-GM-maize, reporting several commingling cases in Catalonia and Aragón. Such genetic commingling has occurred not only in the field, but also in a seed bank. In one case, native maize variety (*blat de moro del queixal*) was received in 2005 by the Cultivated Biodiversity Conservation Centre of Central Catalonia, in Manresa. Controls were negative with respect to transgenic detection, and so the seed was distributed to organic farmers. Later, a second analysis of a sample of the cultivated seeds was made, this time with a positive result for GM-content. Responsibility in case of contamination is currently undefined but is a major cause for concern for farmers, particularly organic producers.

The first trial in Spain of an anti-GMO activists accused of participating in the destruction of an experimental GM maize field under public ownership took place in October 2006 in Catalonia. He was accused of participating in the destruction of an experimental GM-maize field under public ownership. The public prosecutor demanded a € 500,000 fine but the case was dismissed for lack of evidence. In a second case (in September 2003), 50 people symbolically harvested GM-maize from a trial site and presented it to the authorities together with a manifesto. There were no further activities on site but later one of the participants was charged with causing injury. The accused was found not guilty.

“GMO-free zones”

Four regions (Menorca, Mallorca, Asturias and the Basque Country) and 48 municipalities in 9 of the 17 autonomous regions of Spain have declared themselves to be “GMO-free zones”.

Iniciativa Legislativa Popular (ILP, Popular Legislative Initiative) against GMOs

The ILP is a political device offered by the Catalan *Estatut d’Autonomia* (Statute of Autonomy). It allows a group of people to propose a law to the regional parliament and to submit it for voting in plenary session. A minimum of 50,000 signatures must be collected and validated as prescribed. Convinced of broad social support, such an *ILP* has also been organised by the anti-GMOs movement in Catalonia (7) who have undertaken this call for participation.

The objective is to stop the cultivation of GM-crops and the development of GM-food in Catalonia, as well as to guarantee the labelling of products containing GM-ingredients. The bill makes four main points:

- declaration of Catalonia as a “GMO-free Zone”.
- immediate ban of GM-crops.
- clear labelling of food products using GMOs in their production process, and of food products not using them.
- moratorium on the trialling of GMOs in Catalan fields and investigation into their effects.

Public opinion

Systematic information on consumer attitudes to GM-food is very scarce in Spain; what does exist is superficial and indicative only. Indeed, no opinion polls specifically on GM food/GM-labelled food have been conducted nationwide, but nine polls were carried out

which include GM-food/biotechnology questions, conducted both by public (*Centro de Investigaciones Sociológicas* (CIS)) and private (retailer *Eroski*) institutions.

Poll by CIS

Opinion polls were run in 1997, 1999, 2001, 2003 and 2006 showing (8-12):

- (a) antipathy to the use of GE techniques in agriculture and food production increasing somewhat over time (2001: agreement 25.9%, disagreement 49.9% (2001); 2003: agreement 15.2%, disagreement 58.9%);
- (b) GE food and agriculture is risky for people and the environment: majority agree on both counts (1997: (71.5% and 68.3%, respectively; 2001: 73.9% and 72.7%);
- (c) lack of information on GE issues in food and medicine: in 2001, 54.3% considered themselves poorly informed, 26.5% totally uninformed;
- (d) theoretical willingness to buy GM-potatoes if their nutritional value were higher than conventional and if they were cheaper reduces over time: in 1997 29.6% would buy, 58.6% would not; in 2001, 26.8% and 63.5%, respectively);
- (e) a greater acceptance of crop-related biotech applications (resistance to frost and pests), rather than for animal manipulations (larger fish, faster cattle growth, more milk production).
- (f) 91.7% (2001) think that GM-food labelling should be mandatory.

Poll by Eroski

The annual consumer barometers carried out by this retailer in 2002, 2003, 2004, 2005 and 2007) showed a generally low level of confidence in GM-food amongst consumers (13-17). Though low, it nevertheless increases with time (3.3/10 in 2002 to 3.8/10 in 2007), as a sustained tendency.

The media

Attention traditionally paid to biotechnology by the Spanish media has not been marked, in line with the limited interest shown toward science issues in general (18). A poll on Science and Technology (19) was conducted in 2002 showed little interest in science and technology (2.82 out of 5 points) (interest in food consumption and consumer issues being 3.55 and 3.48, respectively). It also showed that citizens' expectations of scientific research is centred first and foremost in medical advances (76%), and to lesser extents on the environment (23%), food (21%) and agriculture (16%). Those polled also declared that the available information on science and technology is clearly insufficient (2.48 points out of 5).

To evaluate press coverage of GMO issues, two national and two regional newspapers plus a weekly general information magazine were monitored. Nationally, *El País* has the biggest daily circulation in Spain (566,546 copies) (20) and is the most widely read (1,970,000 readers/day); its editorial stand is considered centre-left. *El Mundo*, regarded as right-wing, is second in daily circulation (434,161). *Tiempo de Hoy* is the national weekly magazine with the biggest print run (99,024 copies). In the regional (Catalan) category, *La Vanguardia* sells the most copies in Catalonia while *El Periódico de Catalunya* is the most widely read. (It

may seem paradoxical that *El Periódico*, despite not having the largest sales is nevertheless the most widely read; the reason is that it is to be found in bars and other establishments where newspapers are freely available for customers.)

During the period running July 1st 2006 to March 3rd 2008, 98 articles related to GM-food and -crops were found in the titles monitored press sources (54 national, 44 regional). They included 28 news items, 17 opinion/comment articles, and nine letters. Fig. 1 shows that while the average monthly totals were fairly low, there were three peaks in frequency, each with 11-12 entries). The items were issue-driven; the stories corresponding to the peaks are identified below.

We have noted earlier that interest in GM issues is subdued. However, whenever it is awakened, it is because of GM in agriculture rather than in food on the shelves.

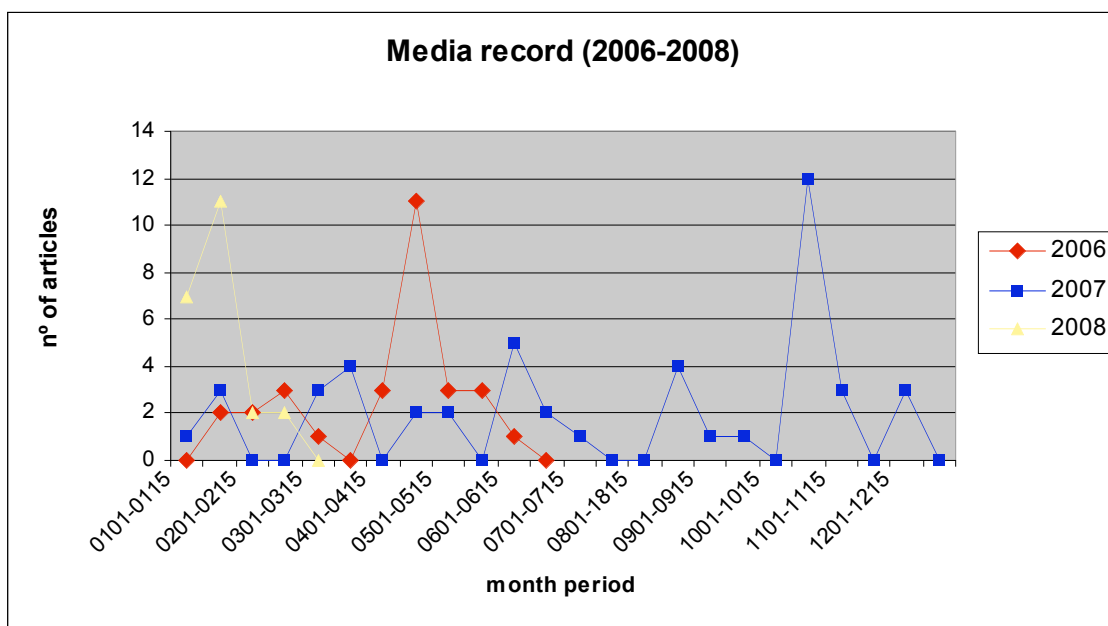


Fig 1. Frequencies of media items about GMOs (July 2006-March 2008)

In 2006 the first anti-GMOs protest against a field trial taking place in Spain generated an unusual number of articles in the newspapers directly related to the trial itself and indirectly related to it: co-existence, organic maize, genetic commingling and responsibility (12 entries during October 16th-31st, 6 entries during November).

A second frequency peak was identified between October 16th-31st, 2007, stimulated by the French President Sarkozy's announcement about the future suspension of GM-crops cultivation in France. This reopened the GMOs debate in the media and generated a good deal of related information (GM-crops increases in Europe and Spain, Spain being the leading country for growing GM-crops, Brussels blocking two new GM-crop approvals). June 2007 was also a quite prolific month with items related mainly to Spain's second anti-GMOs trial.

Finally, January 2008 was also a very intense month concerning GM-related articles. During the first two weeks, the French veto on Monsanto's GM-maize plantings was clearly the top (GMO) story in the last two weeks of January. During the later part of this project (October

2007-March 2008) the main stories of relevance referred to the GM debate in Spain (experts and civil organizations asking the government to ban GMOs, urging the Spanish government to move its position to that of France) and, at the European level, Brussels delaying two GMO approvals.

In their attitude towards GMOs, most (37) items were neutral and unfavourable (33), with lesser numbers mixed (both sides of the argument presented – 15) or favourable (13) (Fig. 2). There was no correlation between the type of item and the attitude expressed towards GMOs. Moreover, all items being all basically event-driven articles, they contributed towards helping readers to formulate their own opinions.

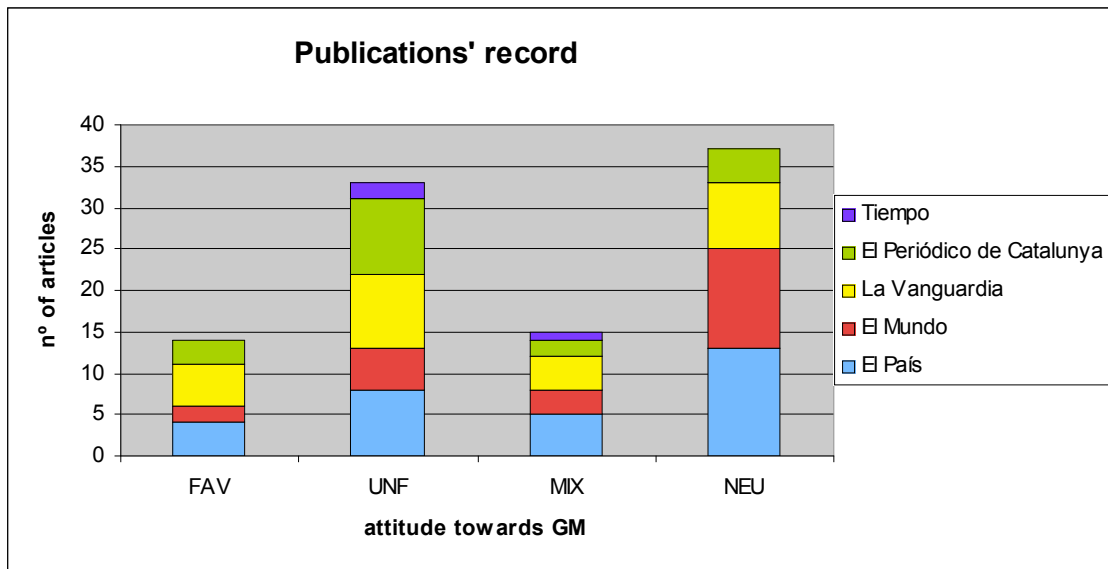


Fig 2. Attitudes of media items towards GMOs.

GM foods on sale

Retailer contacts

The four major retailers with the greatest market share in Spain were contacted at the beginning of the project to seek their cooperation. Getting to talk to a representative of each company who could deal with the questions we wanted answered was a difficult task. Moreover, in no case were we able to talk directly to the most relevant people in charge. Unfortunately, in all cases the retailer finally refused to participate, giving various arguments for their rejections. The Barcelona Chamber of Commerce was contacted in the hope they would open some doors but that was equally unsuccessful.

We suspect that the negative responses resulted from a sensitivity to the subject, a general lack of interest in cooperating with research activities, reluctance to share information, and a perception of no benefit in return for their collaboration. Our experience in other research projects, and of other colleagues consulted, suggest that such reactions are not unexpected. On the contrary, Spain has a very poor tradition of research cooperation between industry and universities in projects and there is a correspondingly low level of university-industry interaction.

Store monitoring

A survey of the main supermarket chains, medium-sized and discount stores, and some small/ethnic shops was made by visits in Barcelona between September 2006 and September 2007. Stores in four city districts were monitored for products which might contain GM-ingredients, in order to make a systematized search (see Appendix 1, Table 3, page 14-13).

The four districts chosen are socio-economically diverse. The same retailers were monitored in all the districts (some chains that we found in some districts but not in others), in order to identify possible differences in the products on offer between districts. However, there were no such differences relevant to our study. Indeed, the products found (either GM-labelled or GM-free-labelled) did not appear to depend on the socio-economic context of the different areas of the city: whenever a GM-product was identified in a supermarket, it could be found in other stores of the same retailer. Sporadic visits were made to other establishments in other districts, as well as to non-target chains, looking for additional products but none were found.

Six GM-labelled products were identified, all of them being or containing soya products or ingredients. All the products identified during 2006-2007 remained on sale until the end of the monitoring period in March 2008. The very same products except for soya oil had been listed by Greenpeace Spain, updated to May 11th, 2007.

According to information on their websites, all four major retailers have their own GM-free products. However, some offer other GM-labelled products. In two cases (mayonnaise and margarine), the identification of GM-labelled products depended on the size of the container: the smaller one carried a label but the larger one did not.

Retailers appear not to maintain a clear anti-GM-product position but do discriminate against them to some extent. Twenty-one products (all containing soya plus a chocolate waffle) were identified as carrying some form of non-GM-content message. Some ambiguous messages were also identified, giving the impression of a product being GM-free without actually saying so (see Appendix 1, Table 4 for examples of labels, page 14-14).

This kind of negative labelling is not regulated in Spain. The labels or signs indicate that particular information is simply informative and not endorsed by an official certifying institution. However, we found many more GM-free labels than GM-labels. On the shelves no special advertising was observed about the GM/GM-free status of products; in some cases they were next to one another.

Official controls (AESAs, ACSAs)

Food safety authorities, both at national and regional level, carry out controls with regard to GMOs in food products. The national AESA body (*Agencia Española de Seguridad Alimentaria*) has a "Surveillance and Control Programme" with two main objectives:

- to monitor the food industry's performance with respect to the established regulations regarding GMOs, and particularly use of approved GMOs ; and
- to monitor and record as necessary all GMO labelling and to guarantee traceability.

This programme has been in place since the European Regulations on GMO traceability and labelling came into effect in 2004. During 2004 and 2005, food products which might contain

GMOs were identified at the national level as priority food products for official control and were investigated accordingly. AESA results for 2004 and 2005 (Appendix 1, Table 5, page 14-15) show that a very small percentage of the samples monitored (6.51% in 2004, 6.62% in 2005) turned out to be positive for GM-content and not accordance with the regulations.

The Catalan ACSA (*Agència Catalana de Seguretat Alimentària*) also has a “System of Surveillance and Control of GMOs in Catalonia” including:

- inspections of agrifood companies;
- monitoring the traceability and labelling of food products available to the final consumer.

ACSA takes random samples of different food products in the retail stores to check that the labelling of products as GM-free is correct. The results of these tests have always in accordance with current regulations) in the recent years (see Appendix 1, Table 6, page 14-16).

Focus groups

Four focus groups were held during November 2007 in Barcelona. The methodology used, as well as the detailed analysis results for each focus group is detailed in Appendix 2, page 14-16 *et seq.*

Content analysis has shown that several criteria contribute to consumers’ decisions when buying food, the following being the most relevant:

- shopping place;
- fresh products;
- healthy life/food;
- proximity;
- convenience;
- price;
- quality.

These were shared by all participants except for those in one group who did not highlight “healthy life/food”.

The discussions confirmed that participants’ information on GM-products was a highly confused mix of information, misinformation and disinformation. Participants in the first three groups had some previous knowledge on the term though not on its meaning. Participants in groups 2 and 3 confirmed their ignorance of the EU directives making the labelling of any GM-food product obligatory. None of the participants in any of the four groups had ever seen a product labelled either “GM” or as “GM-free”.

With regard to the characteristics determining GM products, participants in groups 1-3 expressed rather similar opinions. According to them, GM-products:

- all have the same size and appearance;
- grow faster (this was about vegetables, fruit and animals);
- make mass production easier (so there is food for all);
- are probably cheaper;
- can be purchased out of season.

In weighing up the pros and cons of GMOs, none of the participants was aware of the possible benefits that GM-products have – or might eventually possess – nor were they aware of possible risks.

Participants in groups 1, 2 and 4 might perhaps buy GM-products if they had any benefit for health and if they were sold at an affordable price. However, all of them said that they would instinctively choose a non-GM product rather than a GM-version. Participants in group 3 qualified this opinion saying that, maybe because of their age as they were older than the others, they would not mind buying such products for their own consumption but not for their family members.

In group 4 none of the members was aware of the existence of GMOs. They had never seen or heard anything about them; any relationship between genetic modification and food products was completely unknown as far as they were concerned.

Should they wish to know more, participants would look for information in the media (television, radio, newspapers), on the internet or in books – or they would ask to their friends or “scientists”. All the focus groups wanted more information from official organisations .

A generation gap was noticed between participants in groups 1 and 2 and those in groups 3 and 4 concerning their economic status and the phase of their lives. Participants in their twenties paid much more attention to product prices than did the older participants. For their part, middle-aged participants (30-60 years old) attached more importance to health and made less of the economic aspects.

In conclusion:

- there was a high degree of confusion and disinformation/misinformation about GM-products;
- there was also ignorance of EU directives on GM-food products labelling.
- there was a lack of awareness of products labelled either GM- or GM-free.
- there was unawareness of possible risks and benefits concerning GMOs.
- participants showed an instinctive preference for non-GM products.
- the relationship between GMOs and food products was not understood.

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APPENDIX 1: TABULAR INFORMATION

Table 1. GM maize area in Spain (hectares). 1998-2005 (4)

1998	1999	2000	2001	2002	2003	2004	2005
22468	25072	26964	11598	20992	32248	58200	50000
						60000	57000

Table 2. Total GM maize cultivation area in Catalonia (hectares) (2003-2005)

Data sources: 2003-2005(20); 2007 (2)

year	area			genetic modification	
	total	GM	GM/Total (%)	Bt176	MON810
2003(20)	41625	5398	12.97		
2004(20)	41925	16259	38.78	2187	14005
2005(20)	40913	17170	41.96	928	16242
2006(2)	37871	15248	40.25	0	15248

Table 3. Shop inspections: districts, supermarkets, products

city districts	monitored supermarkets	target products
Ciutat Vella	3 large-sized	soya “dairy” products
Gràcia	6 medium-sized	bakery
Nou Barris	2 discount	snacks
Sarrià-Sant Gervasi	3 small-sized/corner/ethnic shops	frozen products
		cooking oils
		mayonnaise

Table 4. Findings during in-store surveys; label messages.

GM-labelled products identified	examples of GM-free messages/labelling
1 soya lecithin (3 times, 2 chains) "soya (genetically modified soya)"	<i>"X is produced from Non Genetically Modified (no GMO) soya grains and with guaranteed traceability from its origin"</i>
1 soya lecithin (once, 1 chain) "soya (genetically modified soya)"	<i>"Without genetic manipulation"</i> <i>"No GMO"</i>
1 soya oil (once, 1 chain) "contains GM soya oil"	<i>"X has a unique traceability system in order to guarantee that its products and ingredients are not contaminated by genetically modified organisms (GMO). This system has been approved and is supervised by independent auditors certified with the ID Certificate"</i>
1 mayonnaise (twice, 1 chain) "soya oil (produced from genetically modified soya)"	<i>"GMO free soya"</i> <i>"No GMO/OMG soya: Product IP (Preserved Identity): produced from non genetically modified soya seeds and with guaranteed traceability"</i>
1 margarine (five, five different chains) "this product contains genetically modified soya oil"	<i>"Product made with no genetically modified ingredients"</i>
4 dietetic bars (chocolate and orange, yoghurt, chocolate, cream) (once, 1 chain) "containing GM soya"	examples of ambiguous messages
	<i>"X has been produced from top-quality soya beans, from traditional cultivation without modification"</i> <i>"We respect the environment! We don't buy soya harvested in the rainforest"</i> <i>"We don't buy soya in the free market or in the rainforest (...). We maintain direct relationships with soya producers"</i>

Table 5. AESA's analytical control results 2004, 2005. Internal market

food product	total		results			
	number of samples		negative*		positive	
	2004	2005	2004	2005	2004	2005
Baby food	33	33	33 (4<0.9%)	33 (4<0.9%)	0	0
Baby milks	6	10	6 (2<0.9%)	10 (2<0.9%)	0	0
Soya vegetable meats (hamburgers, sausages)	18	1	0	0	0	0
Soya yoghurts	11	46	11 (1<0.9%)	46 (4<0.9%)	0	0
Soya beverages, desserts	24		5<0.9%		0	
Maize flours, starches	15	25	15 (4<0.9%)	25 (6<0.9%)	0	0
Grain soya, soya flours	9	16 ^a	9 (3<0.9%)	16 (2<0.9%)	1>0.9%	0
Bread, biscuits, pastry products containing soya and/or maize	29	51	27 (2<0.9%)	49 (3<0.9%)	2>0.9%	2>0.9%
Dietetic products containing soya and/or maize	17	21	17	21 (3<0.9%)	0	0
Chocolates	4	5	4	5	0	0
Pre-cooked meals	25	21	25 (4<0.9%)	21 (6<0.9%)	0	0
Cereals/expanded cereals	2	5	2	5 (2<0.9%)	0	0
Soya sauce	1	3	1	3	0	0
Soya lecithin	2	-	2	-	0	-
Texturised soya protein	1	-	1	-	1>5% RR soya	-
Vegetable meats (Viandita)	1	-	Maize DNA	-	0	-
Cooked meat products	17	55	17 (8<0.9%)	55 (8<0.9%)	0	0
Sweets	2		5		0	
Industrial use intermediate products	5	14	5	14 (8<0.9%)	0	0
Beanshoots	-	8	-	8 (2<0.9%)	-	0
Sweet maize	-	12	-	12	-	0
Canned fish	-	1	-	1	-	0
Frozen fish products	-	4	-	4	-	0
TOTAL	217	331	214	329	3	2

Source: Author's compilation based on AESA (21, 22).

^a Including soya lecithin; *Negative = GM-free. A result is considered to be negative if the 0.9% adventitious presence threshold is not exceeded either for the food as a whole or in any ingredient, and that this presence is accidental or technically unavoidable (Regulation 1829/2003 on genetically modified food and feed products, Article 12.2); 38 imported samples were also analysed with no irregularities found.

Table 6. ACSA's analytical control results, 2004-2006

year	product traceability and labelling	
	no. of food samples	results
2004	32	✓*
2005	75	✓
2006	20	✓

Source: Authors' compilation based on DAR (2, 23, 24)

*confirmed GM-free

APPENDIX 2: FOCUS GROUPS ANALYSIS

*Moderators: Milena Prokoplevic
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Methodology

Focus groups were used to check consumer opinions and attitudes about their food consumption and purchasing, and the habits and criteria governing their food choices. Groups were formulated on the bases of age and highest education level as follows:

Group 1: 20-30, university graduates

Group 2: 20-30, not university graduates

Group 3: 30-60, university graduates

Group 4: 30-60, not university graduates

For technical reasons, it proved impossible to obtain a complete age spread for the 30-60 age range: participants in groups 3 and 4 are all in their fifties; details are given in Table 7. Each focus group lasted approximately 1 hour, varying depending on the depth of involvement and the characteristics of the participants themselves (especially as far as the quantity and level of information concerning the existence of GM products and their properties was concerned, and how they impacted).

Table 7. Focus groups composition

	women	mean age	men	mean age	total
Group 1	5	22	1	30	6
Group 2	4	21	2	24	6
Group 3	7	58	1	63	8
Group 4	6	55	0	-	6

With the aim of directing group discussion towards their purchasing habits and attitudes, and the criteria guiding consumers when buying food, the focus groups were structured around the following discussion points:

- shopping place;
- type of product;
- subjective relationship with food;
- influence of information on the food products available.

Once the dynamics had been established, group analysis was structured in three phases:

1. identification of the *main matters of interest* in each group;

2. defining *operational categories* to explore the issues revealed in the first phase;
3. *content analysis* of the information thereby elicited.

After identifying the most relevant subjects in each group session, ten categories were defined, each with several sub-categories. Content analysis is considered below for each group separately, followed finally by a global summary of the four groups.

Category description

Categorisation parameters depended on the type of information obtained during the group sessions. Whenever possible a classification on self-explanatory categories was made, referring to objective questions (e.g. places and products). For subjective, value laden or controversial answers, a classification was used followed by a series of questions by way of clarification.

Categories

1. *type of store*

1.1 *supermarket*

- A. Caprabo
- B. El Corte Inglés
- C. Bon Preu
- D. Mercadona
- E. Bon Àrea
- F. Consum
- G. Veritas (organic food supermarket)

1.2 *market*

1.3 *greengrocers*

1.4 *organic products stores*

2. *type of products*

2.1 *fresh products*

- fish
- meat
- fruit/vegetables
- yoghurt

2.2 *canned products*

2.3 *organic products*

2.4 *GM products*

3. *healthy food/life concept*: what products are considered as “healthy food”,

associated with a healthy life style? What are their characteristics?;

4. *junk food concept*: what products are regarded as “junk food”? What are their characteristics?;
5. *proximity*: – is the distance from home to the store important when choosing where to shop?;
6. *convenience*: – this category applied to several situations: (a) the purchase of prepared or semi-prepared food to minimise time and effort spent on in food preparation; (b) getting a lot of food for minimal expenditure (e.g. eating at McDonalds); (c) the concept of convenience changes with age and marital position
7. *price*.
8. *quality and variety*.
9. importance of *information* on the product *label*.
10. *disinformation/misinformation*: “disinformation” (lack of information) refers to situations in which participants claim a lack of information (as well as not knowing where to find it, whom to ask for it, whether there is an official source from which it might be obtained); “misinformation”, inadvertent or deliberate, refers to erroneous data that participants might use believing it to be correct.

Content analysis

Group 1, age 20-30, university graduates

This group comprised nine women and one man from Lleida, Sitges, Miami, Madrid and Argentina; all lived in upper middle-high class neighbourhoods of Barcelona.

Several criteria were important for this group when they bought food products (category number from the list above is in parenthesis):

- type of store;
- concept of healthy food;
- convenience;
- price;
- quality.

All participants mentioned a supermarket as the place where they usually do their shopping; some of these supermarkets were judged as being of higher quality than others. The main reason for shopping in supermarkets is convenience, a criterion always more important than price:

“I’m from Lleida but I’m studying here with my sister, we live together. I study

psychology and we go shopping together to Caprabo but not just for proximity but because there are also more products.”

“..because of variety and price. I have Lidl next door and I don’t go there...

“So, when we need to buy vegetables, we go down there and buy a lot at the same time. But if you just need an onion, then you go to Caprabo and buy it”.

Caprabo is considered to be the chain with the greatest pros and cons: it offers a large variety of products (even though those products are always canned, one of the major disadvantages) and in small quantities but it does have higher prices than other supermarkets.

Participants compared different supermarkets taking into account prices, proximity, convenience quality/variety of products. If one of these criteria is not satisfied, the supermarket is not regarded as the best place to shop:

“It’s a problem not knowing how much you’re going to spend. If I don’t spend more than thirty Euros I don’t bother to go to Lidl for odd items. So, it’s not just what I like it’s also that there’s variety and is not expensive. I don’t know, Caprabo is more expensive, isn’t it? There’s variety but it’s quite a bit more expensive”.

Participants of this group think that vegetables from a greengrocer are healthier and fresher:

“I guess because of the feeling that they have less preservatives, fresher”.

“When we have to buy a lot of vegetables, we go to a health food store that’s two streets away because Caprabo has canned vegetables, usually much more expensive, in small quantities and they don’t have the same flavour”.

This group generally disliked canned products. As it will be noted later, younger participants (aged 20-30) go to small stores rather than markets to buy fruit and vegetables because of the high prices in markets.

Group attitudes, beliefs and opinions were generally similar with regard to organic products,:

1. They are suspicious of the possibility of the existence of a 100% organic product:

“I guess that those products have less chemicals added, less aggressive. I think it’s that. Normally, for most products, technicians come round every two weeks to check that farmers are doing the right thing, have used the right methods and chemicals. They don’t let farmers do whatever they want; no,. they are always watching even if the product is not organic. So, I guess they keep a closer watch or they have to add products that have less chemical component because organic products are never 100% so; they always have chemicals in them, though in a lesser amounts, and they also think that because of the inspections organic products are more closely supervised than are conventional ones.

2. what characterises an organic product is the fact that it has less pesticides and less chemical products;

3. an organic product is probably more expensive;

4. none of the participants buy them because of price;
5. they are not on view in supermarkets;
6. none of the participants had ever seen a product labelled as organic.

People in this first group usually pay little attention to labels. Only two were interested in them and look for the information about the origin of the product and the production process. People who do not look at labels claim that they always buy the same items and so already know about them. They generally know little about GMOs; the majority had never heard the word “transgenic” and only one of the two people that knew the term knew what it meant.

To summarize: there seems to be a good deal of confusion and disinformation over GM-products. Participants consider vegetables, meat and fresh products in general to be genetically modified because, they argue, fruit and vegetables always have the same size and shape and they can be purchased the whole year round, including out of season:

“..from the labelling, I guess, and because of the shape of the fruits and the vegetables...”

“Watermelons have also been made... well, the Japanese that now bring them in boxes – for space reasons they made them square so they could bring more watermelons”.

“Mainly fruit”.

“I think it’s fruit, meat and fresh products. Maybe fish not so much but meat also. I don’t know why it rings a bell”.

Half of these participants would buy GM-products if had benefits for health and if the price was affordable. They said that they did not know about potential risks and possible benefits of these kind of products; being unaware of other possible sources of information about GMOs, would look that up on the internet.

Group 2, age 20-30, not university graduates

This was made up of four women and two men, most of them born in Barcelona except for one from Madrid and one from Lebanon.

In their case shopping is daily or weekly, usually one of the supermarkets Caprabo, Bon Preu, Consum, Dia, Mercadona and Veritas. Their criteria are: “healthy food/life concept”, store location, price and quality. They pointed out that price is a limiting factor and they cannot always afford to buy where they would prefer. Some of the participants had to put price before quality.

“..not in Veritas, which I find excessively expensive. (...) eating good, but in small places, greengrocers or butcher shops (...) I refuse to buy at Caprabo because of the price. And I don’t think the product either... I mean I don’t know, I see it super-canned, and loads of papers, cardboards and plastic for four tomatoes you’re going to eat in three weeks from today because they are

green”.

“...and because I can’t go shopping at Veritas: it is very expensive”.

“... what it costs to us... young people don’t have money, you know? And if you live away from your home, by yourself, and you are also looking for quality in a supermarket, it’s a lot of money. You prefer to spend less and eat worse...”

There is a conscious attitude in favour of healthy food; living a healthy life is important to these people at the personal as well as at the environmental levels. Eating/living in a healthy way broadly means buying fresh fruit and vegetables in small stores (greengrocers), to be able to choose individual items, not buying the canned foods and to be able to afford “eco”/organic food. Again, participants’ purchasing power was important: they felt unable to have that kind of healthy life and adhere to their convictions.

However, they do go to some supermarkets, even though they are more expensive, because they are closer to home and take less time:

“...we buy the bulk of our food at Mercadona and then, if we’re missing something, we have Caprabo right on the doorstep...”

Organic products were regarded as:

1. free from chemicals (no pesticides, insecticides, etc.);
2. not genetically manipulated;
3. of local agricultural origin.

Nevertheless, there was some lack of confidence that products labelled “organic” always had those characteristics.

The participants did sometimes read labels:

“I do look at them sometimes”.

“It depends on how I see it. I say ‘ah, I’m gonna check that, but more for curiosity rather than being really interested”.

“I do maybe for lack of information. Because, I don’t know: there are a lot of additives, many things which I don’t know if they’re good or bad or to what extent I can take them, and what the products contain, I don’t know what milk has in it or croissants; I don’t know, eh?, Yes, I look at labels a bit but... I don’t know, it’s not that I really buy depending on the labels, I don’t know”.

Again, the labels’ importance was related to the participants’ purchasing power. One of the participants points out that earlier, when he was economically dependent on his parents, he paid more attention to labels:

“Well, before, when I went shopping with my mother, I used to look at the preservatives, colouring agents and antioxidants they put in all the products, but now I get whatever, cheap, and that’s it”.

As in the former group, GM as a subject caused considerable confusion. The participants understand the concept as distinct from what “organic” means:

“Well, not being treated with anything chemical. (...) ... to kill plagues and so. This is what I understand, as organic, not being treated, nor manipulated, genetically or whatever...”

The general opinion is that fruit and vegetables out of season are probably GM: strawberries, water melons, meat, flavoured yoghourts and maize were mentioned together with other products. In support of this view they commented that these products have a different taste, that a lot of water and a “perfect” appearance. As in the previous group, these participants confused “genetically modified” and “hybrid”.

“Well I don’t know I notice it in strawberries, you obviously can tell, they are huge strawberries, (...), not tasty...”

“The same as yellow watermelons and stuff like that, it’s just they’re not natural. They just aren’t.”

“And, moreover, you eat one of these strawberries she’s telling about and it’s all water, it doesn’t taste like strawberries. It’s like meat, you put it in the pan and it’s left like this: because it’s inflated with water”.

“Manipulated, I don’t know, so it lasts longer, so it’s more colourful, so it’s tastier, they put hormones, in meat, eh... I don’t know...it’s just...”

Most of them had heard the word “transgenic” before but only one participant “dared” to suggest some kind of definition:

“It means altered, that its cycle has been altered. For whatever reason, (...) whatever, or to make it bigger, more colour, better taste, adapted to climate. Maybe, I don’t know, there are exotic fruits being grown here and they grow them in a microclimate. This is an alteration as well, fruit doesn’t come out the same”.

As in the previous group, most of the information expressed about GMOs was limited, confused, and wrong. None of them of the existence of European directives making the labelling of GM-products obligatory; they had never seen a product labelled as being “GM”.

In general they shared the opinion that all industrial products are genetically altered resulting in higher productivity and so lower prices making such products are affordable to everyone:

I have bought, well, we do buy. But because it’s what is more, it’s cheaper”.

Moderator: “You do buy GM products?”

“Yes”.

Moderator: “How can you tell?”

“Not with the GM-label, yes, you buy a product...”

“I don’t know for sure, that it is GM, but sure, well, let’s see, maybe I don’t look for it”.

“You don’t know for sure if it is or it is not but... I’m not buying it in a store... a healthy food store or anything”.

People in this second group did not think about potential risks associated with GM-products, nor were they able to identify any kind of benefit which might eventually linked to them. However, they thought that if GM-products had benefits, people would buy them as they do with the organic foods although they themselves would continue to opt for a non-GM product. However, they did not exclude the possibility of choosing a GM-product if it were cheaper than the non-GM equivalent.

Participants recognized they lacked information on the subject. Their main source would be the internet. They had not thought of using official or national organisations to learn more.

Group 3, age 30-60, university graduates

There were seven women and one man in this group, one born in Zaragoza and the others in Barcelona. All live in upper middle class areas of Barcelona. Five of the eight had recently retired.

In this group, additional criteria emerged when shopping:

- type of store;
- healthy life/food concept;
- location of store;
- convenience;
- quality.

Unlike the earlier groups, supermarkets did not dominate their buying. They all do basic shopping in supermarkets for convenience, and in some cases for proximity reasons. But they prefer small stores selling organic products and Veritas. Fresh products are bought at the market.

“I’m a mother with a family of five. Every day we cook and buy for five people, aged from 9 up. I’m 49 and usually buy... it depends, for convenience, which means the supermarket near our home, except for vegetables which I try to look for...”;

“...at present I’m living by myself so, of course, I buy very little and, as I do buy very little, I do so at Veritas. It is one of the shops where they sell healthy food, and... or what I consider to be “healthy”, and... I eat very little bread, and soya milk...”

“I’m 63, I retired some months ago and... I live by myself. For 10 years I didn’t eat at home and now I now do, which is a novelty for me... I still have some of my old habits like shopping once per month with everything from the supermarket but I do buy fresh fruit and vegetables from a store near my house which is always open even on Saturdays and Sundays and... they have fresh vegetables and, well everything... for convenience I’m now also discovering Veritas. I take soya milk, too, bio yoghourts, stuff like that.”

“...as it’s just the two of us then and we are retired and at home, we’ve also changed our style of eating. Before we ate at work but now I always try to buy vegetables at the market from a farmer who twice a week brings fresh vegetables. Once we go to this healthy food store where they bring bio vegetables, organic grown...”

These examples show some differences compared with the earlier groups:

- changes in life cycles;
- generational gaps;
- great importance of a healthy life.

All these participants had changed their lifestyles, including their eating habits when they retired. They identified healthy eating/living with organic products for the following reasons:.

1. the products taste good;
2. fruit and vegetables are produced locally;
3. eating fresh products;
4. consuming soya or almond milk;
5. free from pesticides, preservatives, additives and chemicals;
6. not genetically manipulated.

Though these kind of products are part of their normal purchases and of their attitudes favouring a healthy diet, participants did express a considerable distrust about the authenticity of organic products. Only one participant knew that an organic product is identified by an official organic logo:

“I don’t believe either that all organic crops are organic...”

“Me neither.”

“No, no.”

“Too many organic crops and little reality.”

Moderator: “How do you know this products is organic?”

“That’s what I’m telling you: I can’t know, I don’t believe it and so I would rather not buy it.”

Moderator: “But who tells you it is organic?”

“That’s it: nobody.”

“Well! But let’s see... but if it is identified by a logo?”

“No”.

“Because they can perfectly well have misled you.”

In general all these participants looked at labels and were agreed on what information should be there:

1. biological and geographical origins of the product;
2. for animal products: how the animals were fed;
3. product composition (fat content, protein content, additives, preservatives, artificial colours);
4. expiry date.

Unlike the previous groups, these participants in this group did have a basic knowledge of GM-products but showed some similarity to groups 1 and 2. The information they had was confused and often wrong. If they wanted more they would resort to television, radio and newspapers. All the participants called for more information from official organisations.

Moderator: “And what does the term “transgenic” suggest to you?”

“Genetically modified.”

“Of course.”

“Yes.”

“...maize is almost all transgenic”.

“tomatoes are transgenic”. (everyone seemed to agree with this statement and used it as an example of GM-products on the shelves)

People in this group saw GM-food products as:

1. all having the same size and appearance;
2. fruit, vegetables, animals all growing faster;
3. making mass production easier (so there is food for everybody);
4. probably cheaper.

“it’s like value, they are supposed to have it but they don’t tell you and... eh? ... It’s what you were saying, they seem made with a mould”;

“sometimes I see some boxes and I think “they look as if they’ve come out of a mould”, all rounded...“;

“they are too nice”;

“what it does happen is that whenever something serious has happened in the

world like the mad cows or that of chickens, automatically that product is then better labelled”;

“there is more for everyone?”;

“maybe cheaper, no?”;

“maybe this, that there’s more for everyone and everybody being able to eat some more of this, no?”

They were unaware of the European directives on obligatory labelling of GM-products. They had never seen a product labelled “GM” but they neither had they seen one labelled “GM-free”. All participants were in favour of labelling these kinds of products.

Nor were they aware of possible risks or benefits associated with GM-products but they instinctively would choose a GM-free alternative rather than its GM counterpart. However, they left open the possibility of buying some GM-labelled products, arguing that at their age they would not live much longer as a result of consuming exclusively GM-free products. Nevertheless, they all agreed that they would not buy these kind of products for their families.

Group 4, age 30-60, not university graduates

The fourth group comprised six Barcelona women, also resident in upper middle class areas. Four of them are housewives, one was retired and one working as a government employee.

The following criteria were important for them:

- type of store;
- fresh products;
- proximity to home;
- convenience;
- price;
- quality.

Their most frequently used store depended on the types of products they look for. Fresh products were bought in the markets while canned goods came from a supermarket. They regarded El Corte Inglés as being the chain offering more products and a better quality of service. In favour of shopping at the market they mentioned a larger product variety and more affordable prices.

As with group 3, these participants highlighted the importance of proximity to home and convenience for their choice of where to buy. They also stressed the appearances of product as well as the ambience of the shop itself:

“it catches your attention when I see everything fresh and very well, very carefully presented. If I see it carelessly presented, I don’t buy it. I buy on appearance. I know that’s not normal but it’s the way I am”;

“I buy every week...at the supermarket and then at the market for fresh stuff like vegetables, fish and meat. I now also buy yoghourts, cheese, cold meat at the market”;

“I am the same, I buy at the market and everything fresh and then a lot in the supermarket at El Corte Inglés”;

Moderator: “Why do you insist, ‘a lot’?”;

“because I find everything there: you get out all loaded and then you put it in the ca. Besides, the quality and the price – and fish, for instance; there are always offers – well, it’s very good”;

“I buy at the market whenever I can, when I have time, and sometimes also go to El Corte Inglés...”

Healthy food was very important for them; they defined it as:

1. having a high fibre content;
2. “health products” (without specifying what that means or which products);
3. “Comida que siente bien” (“food that feels good for the body”);
4. eating a lot of fruit.

“fibre, a lot of fibre; for me, that it ‘siente bien’”...

“fibre, everything with fibre, a lot of fruit. That it’s healthy in the sense that it has a lot of fibre”;

“I take orange juice every morning...”

Unhealthy food characteristics, particularly as regards fruit and vegetables, were:

1. ripened in cold stores, not on the tree;
2. not tasty;
3. available the whole year round.

They do not consume organic products because they distrust their authenticity. In their opinion there is nothing specific about them apart from not containing chemicals, having less sugar and being more expensive.

“I don’t believe in them”;

“I don’t”;

“That they are completely organic and that there’s... no, I don’t believe it. Because there are to be found in so many places on the shelves that it surprises me: where do they come from, where are they grown? It all comes from abroad and who knows?”;

“Yeah, with the price to being completely organic – I don’t buy it either: paying just for the sake of paying...”;

“I don’t believe that they don’t add anything to kill the bugs”.

In general they all looked at labels but not for specific information other than the expiry date, and water and salt content. Nor did they know what kind of information a label should offer. One of the participants was interested in the soya milk production process. All participants agreed that the print on the labels is too small and argue this is why so little attention is paid to them.

None of the participants knew about GM-products before they took part in the focus group. They were unaware that genetic modification can be a part of food production. Nor had they seen labelled GM-products. Despite their lack of knowledge about those products, if they had to choose they would select a GM-free alternative. But were the GM-product to have a health benefit they would choose that instead. If they wanted to know more about the subject they would look up it in the internet, read magazines, newspapers and books, or ask their friends or “scientists”.