

European consumers and GM-foods

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Abstract

Rather than ask consumers via questionnaires and polls about their attitudes to GM-foods and if they would buy them, the CONSUMERCHOICE study sought to determine whether European consumers actually did purchase GM-labelled food products in those countries participating in the project in which they were on sale (the Czech Republic, Poland, Spain and The Netherlands in this inquiry). The results showed (a) that indeed they did, and (b) that what consumers said in questionnaires with respect to GM-foods was not a reliable guide to what they did when buying their food supplies. A survey of the behaviour of Polish and UK citizens living in or visiting North America revealed that they took little or no action to avoid the widespread use of (unlabelled) GM-products in Canada and the United States.

Key words: consumers, EU Member States, GM-foods, labels, questionnaires, polls, behaviour in food stores

Reliably evaluating the real opinions and motivations of individual consumers can be difficult: recording their actions when they are making their food purchases is even more so.

In Europe and elsewhere over the past 15 years or so there have been many such questionnaires and other surveys with respect to genetically modified (GM) crops and foods, usually asking participants a range of questions related to the questioner's interests or those of his sponsor. The *Eurobarometer* series has been particularly valuable, especially for issues which are not very contentious and about which respondents might have a fairly relaxed attitude and reveal their true opinions, although those might not always be deeply held but rather thought up on the spur of the moment in response to the questions. Questions are asked (not only, of course, about GM technology) across the whole of the European Union and issues are revisited every so often so that the development of responses over time can to a degree be followed. The results have usually shown a majority of respondents to be uncertain at best – or decisively unfavourable – towards the consumption of GM-products and even more so about the cultivation of GM-crops within their countries.

Citizens in the different Member States vary widely in their attitudes. People in Central Europe (Austria, Germany, Hungary and Slovenia) tend to be very antipathetic. In Western Europe (France [before politics intervened in 2008], Portugal, Spain, The Netherlands and the United Kingdom) opinions are more balanced, although many people are in principle against. For example, the conclusion from focus group discussions conducted by the Institute of Grocery Distribution (IGD) in 2003 (Groves, 2003) showed that roughly 13% of the population would refuse to consume GM-products, 13% would do so with enthusiasm, some 24% said they would rather not but did not look at the food labels (were they therefore serious?) and the remainder were indifferent; one could argue from those findings that roughly a quarter of the people involved felt deeply, pro or con, with the remainder not being much bothered. The conclusions from such measurements have not changed very much in the interim, although a very recent single-question survey in the UK showed that 64% of the population were prepared for GM-crops to be cultivated in Britain if that would result in a decrease in the use of pesticides (Grice, 2012).

Nevertheless, many – perhaps most – European citizens regularly consume meat and dairy products derived

from animals fed GM-fodder, mainly containing GM-soya from South America. The vagaries of the EU regulations do not require such products to carry a label, although the sacks of fodder must themselves be labelled as containing GM if more than 0.9% is indeed genetically modified. However, consumers do not care or do not know (or do not care to know) that they are eating products from such animals.

Although eschewed by some food retailers, the use of GM-fodder for cattle has been commonplace, except in the organic sector. However, until recently all pig- and poultry-feed has been non-GM. In 2011, the first of the major UK supermarket chains announced that the price of non-GM feed had risen so much that henceforth they would use poultry feed from GM-sources. There was no response in the sales of dairy and poultry products in that supermarket chain. In 2012 a second company made a similar announcement; again, there appears to have been no reaction in terms of sales (*Morrisons to sell GM-fed poultry*). Were the consumers not listening? Did they not care? As far as we know, nobody has asked these questions.

Availability of GM-food products in Europe

In 2006, a two-year EU project entitled “CONSUMERCHOICE: Do European Consumers Buy GM Foods?” (*Do European consumers buy GM foods?*) was launched involving 10 EU Member States (Estonia, Germany, Greece, Poland, Slovenia, Spain, Sweden, the Czech Republic, The Netherlands and the United Kingdom); the objective was to try to answer the question in a more direct way. At that time, there were no labelled GM-food products on sale in Germany, Greece, Slovenia and Sweden but products of various sorts, mostly based on oils from GM-soya and GM-maize, were (and still are) available in the food stores of the other six countries; and not offered just on a transitory basis: most of those products had been available on the shelves for years for consumers to buy – and continue to be so.

So, to a degree, and whatever the questionnaires and polls might say, there was a ready answer to the question “Do Europeans buy GM-foods?”. Supermarket shelf space is valuable; retailers do not continue to carry products on their precious shelves if only a few people buy them. However, those GM-products were there and stayed there: clearly, people were buying them, and in sufficient quantities to justify the space they occupied.

Of course, not every consumer would buy them. Estimates suggest that a typical large supermarket carries between 40,000 and 50,000 different products. Just to see for himself, this author recently looked at the list of food purchased during one week in his own household: there were about 50 items. It is difficult to be sure how many different ones there might have been over a period of several weeks. Since most of the items were staples bought on a regular basis (bread, milk, meat, fruit and vegetables, and some packaged goods), it might be possible to make a guess and suggest that the total range purchased over time reached 100 items or, at the extreme, perhaps 150. So, an average consumer (this author and his family are very average!) might in total buy at most 0.3-0.4% of the total range of products available. Not all of them are food: cleaning materials and other household products are also on sale. Nevertheless, however you look at it, the proportion is very small. There may be very few products indeed bought by everybody or even by a majority of consumers: this is something worth exploring but CONSUMERCHOICE did not do so.

One of the arguments raised for not stocking GM-products is that (most?) consumers do not want to see them in the stores. The thinking must be that consumers are so intolerant of other people’s preferences that if they were so much as even to see a GM-product in a food shop they would never shop there again. Maybe. However, in our large European cities there are often sizeable minorities with their own food tastes and requirements which are not shared by the population as a whole. Retailers seem to manage that perfectly well. Jews and Moslems traditionally do not eat pork products and will not tolerate any food items that may have been in any contact with pork. Yet, retailers operating in areas with significant Jewish and Muslim populations seem to have no difficulty offering kosher and halal products, as well as bacon and pork chops, under the same roof. The customers buy what they want. If there were more GM-products, that could generate a similar situation. EU regulations require them to be labelled: so, buy them if you want to and avoid them if you do not want to. Many retailers seem not to take that view; it is worth asking why not?

Who buys GM-products in Europe?

It is comparatively easy to test apparent public opinion by the use of questionnaires and polls, although

evaluating the reliability of data so accumulated to predict consumer action is more doubtful. As we discuss below, what consumers say when responding to a questionnaire or poll does not necessarily correlate well with what they actually do in reality when facing a real situation. On the other hand, it is easy to ask questions but much more difficult to scrutinise the actions of individual consumers, particularly if they are not to be made aware of any such scrutiny. There is, then, a further problem of relating the answers to questions offered by individuals to what those very same individuals may do in the grocery store and the foodstuff choices they make.

People know when they are being asked questions or invited to participate in an opinion poll. Individual answers may be influenced by the nature of the question: asking "Would you eat Frankenstein food?" (as has indeed been done on occasion) is hardly the way to elicit a rational, dispassionate answer. Frankenstein food does not sound at all appetising; even if in a particular poll about GM the word "Frankenstein" is not used, some people will remember that GM-foods have been referred to by that term in the past (Gentle, 2005; Wangvipula, 2004) and it still continues to crop up today (Angel, 2012; Blythman, 2012). Furthermore, respondents may wonder why the question is being asked: "Would I eat GM-food? Why are they asking me that? Nobody asks me whether I would eat any other sort of food. Is something the matter with it, something I don't know about? Will I appear stupid or ignorant if I say I would eat it when I ought to know that it may be dangerous? I suspect that's why they are asking the question: it would be better play safe and say 'no'."

Such responses may be particularly likely when the respondent has heard or read something about the issue, gained the impression that some people are unhappy with the proposal and notes that whatever it is that is being proposed might really be for some company's commercial benefit, as opponents are saying. "Actually, I really know nothing about it: those newspaper headlines do not tell me very much and I don't understand all the technical talk about genes (?) and things. Do plants naturally have genes? I am not sure. I ought to have read that stuff more carefully but, if some people are worried, I had best say that I am worried, too." In the case of GM-crops and foods consumers are indeed likely to have read worrying claims, hundreds of them over the years, some very lurid and disturbing

indeed (*Scientists warn of GM crops link to meningitis*; Ingham, 1999).

Is it therefore possible to find out what people do when they buy food and ask them only later what their opinions are? In theory, yes it is, but it would be very difficult to do so in anything other than a pseudo experiment which the respondents would almost certainly recognise as being an artificial experiment arranged for the purpose of testing consumer reaction. If there were GM-products on genuine sale in a familiar store, and if there were some way of identifying individual people who bought them so that investigators could later recognise those very same people and ask them about their views on GM-products without first mentioning the fact that they had actually bought them – and run controls with people who had not bought GM-products – yes, it might in theory be possible. However, our experience in dealing with supermarkets and grocery shops suggests that they would not be willing to cooperate. In practice, therefore, the approach is not feasible.

Accordingly, in the CONSUMERCHOICE project we adopted a variant methodology. There exist in some countries market research organisations which record the purchases of a panel of respondents who agree to run everything they buy past a barcode reader. The market research company therefore has a record of everything (including individual food items) bought by each of their panellists in the countries in which they carry out such surveys. CONSUMERCHOICE arranged with one such company (GfK) to send a short questionnaire about GM-food purchases to their panellists and to correlate the answers with the record of recent purchases, all the information conveyed back to be anonymous and the identities of individuals not to be revealed; the CONSUMERCHOICE researchers would know what individuals had bought, and how the same individuals had answered the questions, but not who they were. Such surveys were carried out in the Czech Republic, Poland, Spain and The Netherlands (GM-products were also on sale in Estonia, but GfK does not operate there, and in the UK, where the GM-foods failed to show up in the bar code analyses for reasons which never became clear).

The questions were:

- 1) According to law, does food with GM-ingredients have to be labelled? (K)
yes/no/don't know

- 2) Before deciding to buy a particular food item I always read (or have previously read) the detailed ingredients listing on the package. (B)
yes/no/don't know
 - 3) I know how to tell whether a product contains GM-ingredients. (K)
yes/no/don't know
 - 4) I don't care if the food I buy contains GM-ingredients. (A)
yes/no/don't know
 - 5) I buy food labelled as containing GM-ingredients. (B)
yes/no/don't know
 - 6) I would buy organic food even if it also contained GM-ingredients. (A)
yes/no/don't know
 - 7) I am careful never to buy food labelled as containing GM-ingredients. (B)
yes/no/don't know
 - 8) Compared with other foods, I regard those containing GM-ingredients as being safer for health. (R)
answers graded on a ten point scale
 - 9) I buy food with GM-ingredients because, compared with other food, it is healthier, cheaper, tastier or produced in a more environmentally friendly manner. (R)
yes/no/don't know
 - 10) In general, I believe that the use of gene technology in food production is (good.....bad). (A)
answers graded on a ten point scale
- These questions test for attitude (A), behaviour (B), knowledge (K) and reasoning (R).

For details of the answers to these questions and how they related the individual purchases of GM-food products, the reader is referred to the original source (*Do European consumers buy GM foods*, chapter 6: *Shopper Barcode Survey, Opinion Polls and Questionnaires; Methods and Findings*).

There were a number of interesting conclusions to this study, in particular:

"The differences between people's opinions and behaviour was also apparent in what they said with respect to how much they cared about buying or not buying GM-food, and how careful they were. As one would expect, non-buyers of GM-labelled food expressed more concern than buyers, suggesting that people in our sample who never buy any GM-products would be more careful to avoid those products than those who bought them. This was, however, not the case: almost three out

of every four of both buyers and non-buyers did not take care to avoid food labelled as containing GM-ingredients. This observation also indicates that what people say differs from what they do. When asked whether they had bought GM-food, half of our respondents said they had not. Yet, the barcode analyses of their purchases showed that half of them were wrong and they had indeed bought such products. Perhaps they did not know what they had bought. Some people also thought they had bought GM-food when, in fact, they had not. Our data is not sufficiently extensive to probe more deeply into the minds of the shoppers but we may reasonably conclude:

- that whatever they may say, most people do not actively avoid GM-food, suggesting that they are not greatly concerned with the GM issue;
- the way people respond to prompting via a questionnaire is no reliable guide to what they do in a grocery store."

Europeans abroad in GM-land

Another approach used by CONSUMERCHOICE was to ask what Europeans did when they travelled to North America. Large numbers of people do so every year (about 5 million from the UK alone) on business, to visit families and friends, and as tourists. Europeans are said to be averse to eating GM-foods. In both Canada and the United States, the products of GM-crops are widely used in foods; it has been estimated that 70% or more of the processed and packaged foods in those countries contain one or more GM-ingredients; they are not labelled as containing GM so, unless an intending purchaser had some understanding of the role of GM in North American agriculture and the food industry, he or she would not be aware they were purchasing and eating GM-foods. This would be equally true for food in restaurants.

Do Europeans know that? If so, do they understand what it means? What do those people who do not wish to consume GM-products do? Do they seek to avoid them? How do they do that? What do they eat in North America?

Once more, these were difficult questions to answer. However, access to the appropriate people might be achieved, the information would have to come from the answers to some sort of questionnaire: CONSUMERCHOICE researchers could no more loiter in American supermarkets in the hope of spotting the food purchases

of a European and asking them why they made that choice than they could do so in Europe.

Europeans who have travelled to North America are not easily recognisable in the community once they are back in Europe. If only one could present the questionnaires on the flights across the Atlantic as people are returning to Europe, or ask individuals as they emerged from immigration controls in their home countries – but, of course, neither is realistic.

The views of Europeans who were living in or who had recently visited North America

Two alternative approaches were therefore adopted. In the first (*Do European consumers buy GM foods*, chapter 12: *Poland*, page 12-2), a group of 200 scientists from Poland, then living in Hawaii, New York or New Jersey, were sent a questionnaire about what they did with respect to buying GM-foods and for their views on a number of related matters, including so-called “organic” products; 91 people responded, of whom:

- 92% agreed that they knew the meaning of GM-food;
- 21% specifically chose GM-food;
- 26% rejected it;
- 46% were indifferent.

Of those people who chose to buy GM-foods, none did so because they thought it better value or for environmental reasons, 3% purchased them because they perceived a lower price, 23% because of higher quality and 5% because they were safer for health reasons. On the other hand, those who refrained from GM purchases gave lower quality (5%), possible health risks (33%), possible undesirable environmental impact (20%), moral and philosophical factors (16%) and other considerations (5%) as their reasons for not doing so.

In the UK, a different tactic was adopted *Do European consumers buy GM foods*, chapter 16: *United Kingdom*, page 16-14 et seq). A questionnaire (with all its acknowledged problems) was offered by E-mail for anonymous response to the faculty, students and staff of eleven universities in various parts of the country. The questions were chosen so as not to make it obvious that the primary objective was information about attitudes to GM. Of the 20 questions posed, nos. 1-6 were about the respondents’ age, gender, region of residence, size of residence city, occupation and educational standard reached. Questions 7-11 asked where respondents obtained

their food in America and which cuisine they preferred. There followed three questions on organic food: whether and why it was or was not selected. Only questions 15-20 dealt with matters of GM:

- 15) Do you know the meaning of “GM” (“genetically modified”)/“GE” (“genetically engineered”)?
- 16) Are you aware that in North America many processed foods and some whole foods are GM/GE or are derived from GM/GE-sources, and are not labelled to show that?
- 17) Do you seek to identify GM/GE-products when you buy food in North America?
- 18) With respect to GM/GE-foods in North America, do you tend to choose them, avoid them or neither? (choose, avoid, neither). If you avoid them, how do you do so?
- 19) If you choose GM/GE-products in North America, do you do so because you perceive them to be: of better value, of lower price, of higher quality, safer for health, better for the environment (yes/no/not applicable/other reasons (please specify).
- 20) If you avoid GM/GE-products in North America, do you do so because you perceive them to be: a) of lower quality, b) have possible risks for health, c) have possible risks for the environment, d) objectionable on moral, philosophical, political, religious, economic grounds (yes/no/not applicable).

More than 1,531 responses were received. Among the more interesting results were:

- 1,397 people knew the meaning of genetically modified/genetically engineered;
- 853 knew that in North America many processed foods and some whole foods are GM/GE or derived from GM/GE-sources, and are not labelled to show that (note that in North America the term “genetically engineered” [GE] is often used);
- of the 853 who were aware of GM-foods in North America, 247 sought to identify such products when buying food there – but so did 106 of the 678 unaware, a curious finding which illustrates the limitations of any questionnaire in which some respondents appear not properly to understand the question (or perhaps the questioner does not understand the thinking of the respondents!);
- of the 247 people aware and who did seek to identify GM-foods, only 3 tended to choose them, 198 to avoid them and 47 to do neither. Curiously, only 6

people said they avoided GM by buying organic food, actually the most sensible answer since the foods themselves are not labelled and one would therefore need some degree of expert knowledge to identify processed foods containing any ingredients from GM-sources;

- for all 1,531 responders combined, 20 said they tried to select GM-products, 407 avoided them while 1,104 did neither;
- among those avoiding GM-products, the reasons were: lower quality (43%), possible risks for health (82%), possible risks for the environment (88%), objectionable on moral/philosophical/political/religious/economic grounds (66%) – multiple reasons could be given;
- of respondents who are aware of the presence of GM-foods in North America, interest in organic food is reflected in their seeking to identify GM-products. Thus, of the consumers who never bought organic food, 9.3% sought to identify GM-products and 91% did not. Many consumers (62%) who often bought organic wanted to identify GM-foods versus 38% who did not. For occasional organic purchasers, the results were 24% and 79%, respectively. Thus, frequent purchasers of organic foods were most likely to want to identify GM-products, occasional purchasers much less so while those who never buy organic had very little interest at all in doing so.

Limitations of these studies

As we have noted earlier, all questionnaires have their limitations as do those conducted as part of CONSUMERCHOICE even though in that case the questions were asked after the event (“what *did* you do.....?”) rather than before (“what *would* you do.....?”). The samples were limited, particularly in the case of the Polish residents in the US. And the UK sample was not representative of the whole population: it was confined to members of universities, and particularly those who had travelled to America. More respondents were located in the south-east of the UK than in other areas; there were more responses from university faculty members than from students, and so on. The high level of educational attainment, and the likely higher than average income of this test group, means that they may not have been typical of the UK population as a whole.

Nevertheless, these questionnaires do provide some indications of the behaviour of Europeans when they

travel to a country where GM-foods are prevalent; overwhelmingly, in North America they appear to do little or nothing to avoid them. Yet, in Europe itself the arguments over GM-foods wage continually. There is something interesting going on.

Can we conclude anything from the CONSUMERCHOICE studies?

We probably can:

- 1) The fact that in some EU countries foods containing GM-ingredients (and labelled as such according to law) have been on continuous sale for several years in the competitive environment of modern supermarkets suggests that their sales are sufficiently healthy to warrant the retailers agreeing to allot shelf-space to them.
- 2) Although many European citizens express reluctance to buy GM-foods, a number nevertheless do so. Not many GM-products are on sale in Europe and, as we have noted earlier, the demand for individual products of any sort is limited to sections of society; with the possible exceptions of bread and milk, there are few products bought by everybody. Thus, the fact that cooking oil derived from GM-soya is available to be purchased is of interest only to people wishing to buy soya cooking oil.
- 3) One can imagine the situation for the average shopper. An indication that a product contains GM-ingredients is usually included on the ingredients label. Most people probably rarely read such labels. (Indeed, it has often been said that the only label frequently looked at is the one showing the price.) Food shoppers mostly buy their regular products which they recognise from the appearance of the packet or the item; they do not scrutinise the detailed description except, perhaps, to check the recommended expiry date.
- 4) It is therefore not impossible that consumers buy GM-products without realising as well, perhaps, as without caring.
- 5) This certainly seems to be borne out by the data that we have of Europeans in North America; for the most part they know that much of the food there is derived from GM-sources and it seems not to worry them.

The conclusion reached by the CONSUMERCHOICE team to their original question “Do Europeans buy

GM-foods?" was "Yes, if they are available on the shelves". For all the many claims that Europeans (Scherer, 2012; Morgan, 2012; *Morrisons ignore customers and pressure farmers – GM Freeze*) (and others – Chang, 2007; *Consumer choice and 'Frankenstein foods'*) "don't want" GM, it is reasonable to concur with Matthew 7:16: "*Ye shall know them by their fruits*" (and not by their answers to questionnaires and polls).

References

- Angel D. (16.07.2012). *Frankenstein meat might get passed in EU*. FoodBeat (<http://www.foodbeat.com/food-news/frankenstein-meat-might-get-passed-in-eu/>).
- Blythman J. (29.05.2012) *Vandals! No, not protesters trashing crops but the GM lobby still trying to force increasingly discredited Frankenstein Food down our throats*. Daily Mail (<http://www.dailymail.co.uk/news/article-2151380/GM-lobby-trying-force-increasingly-discredited-Frankenstein-Food-throats.html?ito=feeds-newsxml>).
- Chang L. (17.08.2007). *Group resists GMO taro*. Kauai Garden Island News (http://thegardenisland.com/news/article_465dba8d-628f-59b4-ac70-7c75291dda2f.html).
- Consumer choice and 'Frankenstein foods'*. Cañon City Daily Record (13.02.2006) (<http://www.canoncitydailyrecord.com/Opinion-story.asp?ID=2816> – this link is no longer active).
- Do European consumers buy GM foods? ("CONSUMER-CHOICE")*. European Commission (2008) (<http://www.kcl.ac.uk/medicine/research/divisions/dns/projects/consumerchoice/index.aspx>).
- Gentle P. (22.11.2005). *Letter from Poland: Frankenstein food?* Polskie Radio External Service (22.11.05) (<http://www2.polskieradio.pl/eo/print.aspx?iid=29912>).
- Grice A. (25.07.2012) *Dramatic change as two-thirds now support GM crop testing*. The Independent (<http://www.independent.co.uk/news/uk/politics/dramatic-change-as-two-thirds-now-support-gm-crop-testing-7973432.html?origin=internalSearch>).
- Groves A. (2003) *Report series consumer watch – GM food*. Institute of Grocery Distribution.
- Ingham J. (1999) *Human genes in GM food*. The Express.
- Morgan S. (2012) *Welsh farmer leads anti-GM crop protest against pioneering wheat crop experiment*. Wales Online (<http://www.walesonline.co.uk/news/wales-news/2012/05/03/welsh-farmer-leads-anti-gm-crop-protest-against-pioneering-wheat-crop-experiment-91466-30889471/#ixzz1tnUW6ZsY>).
- Morrisons ignore customers and pressure farmers – GM Freeze*. Farming UK (26.03.2012) (RLINK "http://www.farminguk.com/news/Morrisons-ignore-customers-and-pressure-farmers-GM-Freeze_23207.html" "http://www.farminguk.com/news/Morrisons-ignore-customers-and-pressure-farmers-GM-Freeze_23207.html)
- Morrisons to sell GM-fed poultry*. Yorkshire Post (30.03.2012) (<http://www.yorkshirepost.co.uk/news/country-view/farming/morrisons-to-sell-gm-fed-poultry-1-4402760>)
- Scherer C. (2012) *Commentary; GMO grass mix-up is embarrassing*. Drovers CattleNetwork (<http://www.truthabouttrade.org/2012/07/09/commentary-gmo-grass-mix-up-is-embarrassing/>).
- Scientists warn of GM crops link to meningitis*. Daily Mail (26.04.1999) (<http://www.safe-food.org/news/1999-05-01.html>)
- Wangvipula R. (2004). *GM crops / Frankenstein food - Fresh efforts to promote bio-tech*. Bangkok Post (http://www.bangkokpost.com/News/17Aug2004_news19.php?PHPSESSID=7d05cb0394b6a1a9c5386fd79d1b09ad-this link is no longer active).
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