Are Consumers Ready to Accept GMOs?

Patrick Mitton

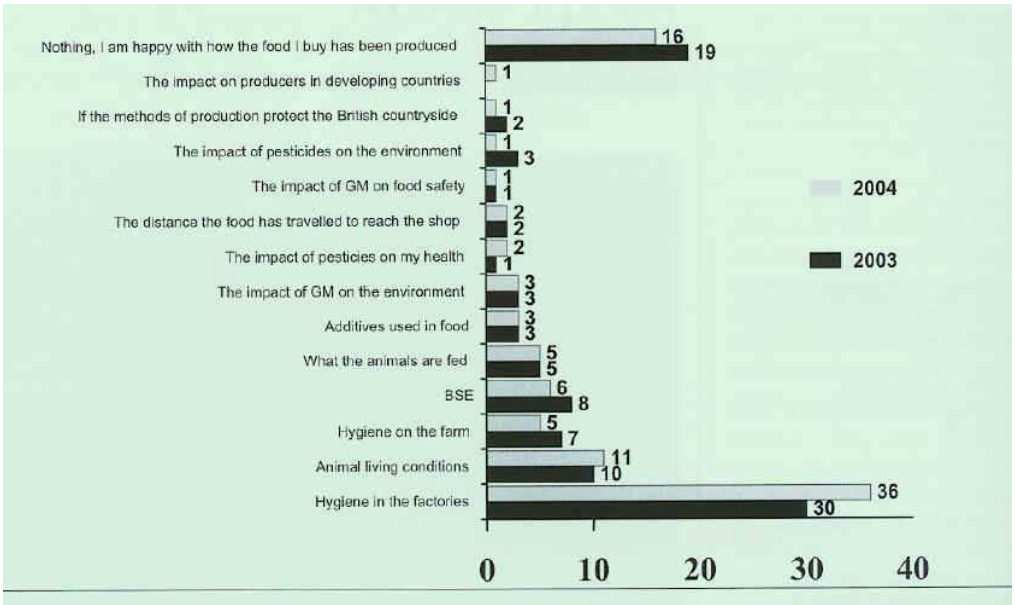
Before considering whether consumers are ready to accept GM food it is interesting to first take a look at the Global planting of GM crops and thereby gain a picture of what is happening today. If we take the figures from the ISAAA (The International Service for the Acquisition of Agri-biotech Applications) we see the following;

The USA grows 42.8 m.ha, Argentina 13.9 m.ha, Canada 4.4m.ha, Brazil 3.0 m.ha and China 3.0 m.ha. A further 13 countries contribute towards the global total of circa 70 m.ha. The GM crops currently under commercial sale comprise Soybean, maize, cotton and canola. The percentage of these crops which are GM as a proportion of the global production are soybean 61%, maize, 23%, cotton 11% and canola 5%. No country has commercial production of GM wheat.

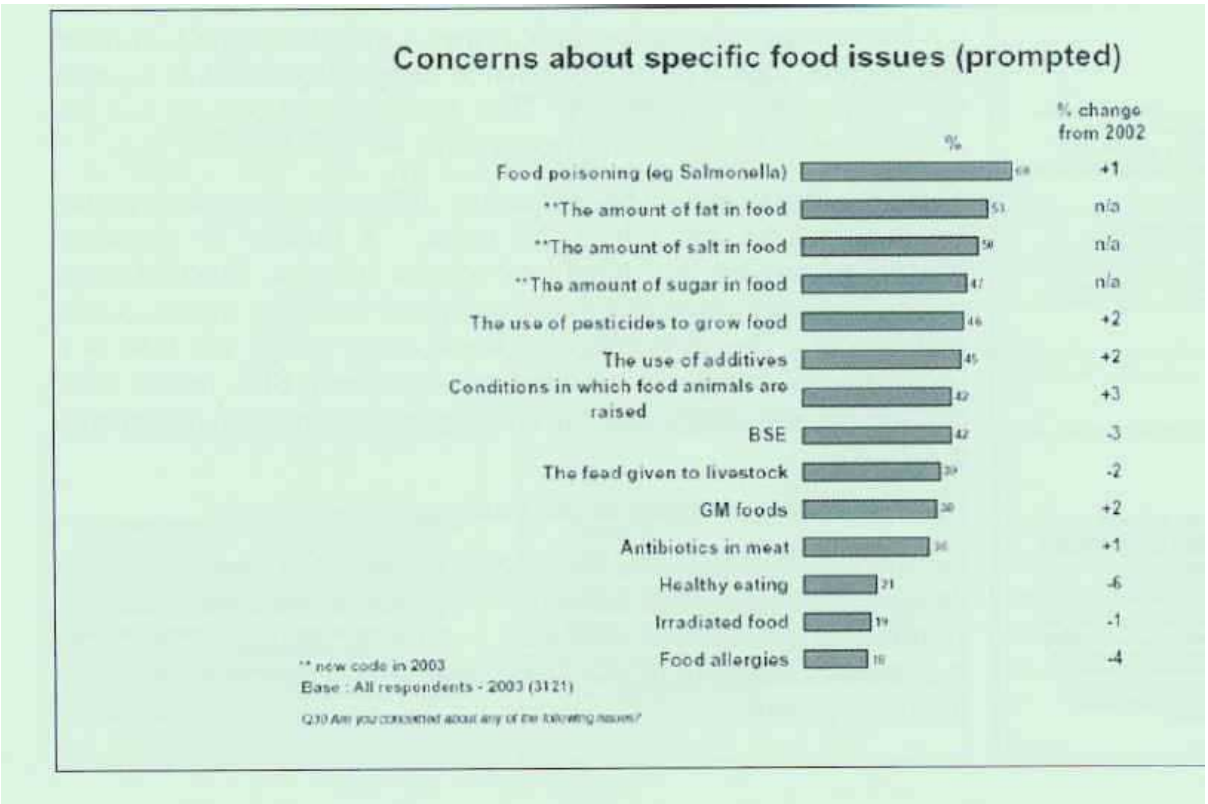
So what are the concerns of the European consumers?

For the UK, we can study the February 2004 IGD Consumer Watch data, which has tracked consumer response to the topic 'concerns about food production methods - farm & factory'. This table indicates the ranking of the first response to feed topics raised by the focus groups.

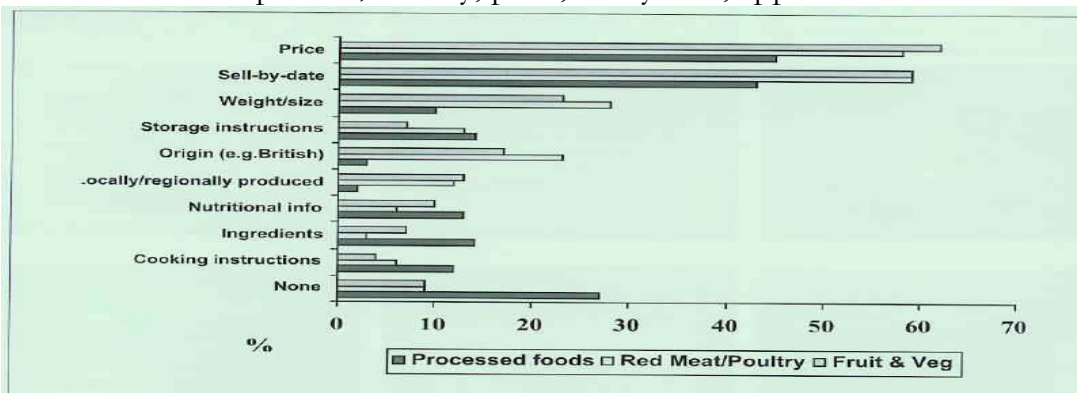
Figure 1. "Thinking about how food is produced (farm and factory) do you have any concerns?" (first first choice) - IGD Consumer Watch, February



The IGD survey shows UK consumer concern focused on factory processes rather than farm processes when looking at the full supply chain production of food. The outcome of concern for factory hygiene is a reflection of the media coverage of chicken production methods, which had received significant coverage in early 2003 and again, high media coverage in early 2004 following the incidence of bird flu in Asia. Concerns over GM in this survey situation gained lower ranking. However, in respect of food safety the Food Standards Agency survey of 2003 GM gained higher significance.



Against these results we can also take a look at the preferences of shoppers at the point of sale decision. Once again, looking at the IGD data, we see a new set of criteria become important; namely, price, sellby date, appearance etc.



Consumers' are being asked their preferences against their knowledge of production methods and safety. The food supply industry has to face the challenge of delivering to expectations against the background of a predominately urban population that has limited knowledge of farm production techniques. Many for example, would have little knowledge about how soybeans, maize or a wide range of other crops are grown. Furthermore, for players in the supply chain there is the need to operate in a rapidly changing environment. In the past production was typically local and people enjoyed a picture-postcard landscape. Today, food supply

has become global. Consumers expect wide choice, all-yearround availability, but have limited trust for farming. Trust has been challenged because consumers regard the farm as where most of the food problems have emanated from, for example; salmonella, BSE and foot-and-mouth

We cannot escape the fact that the consumer is the key driver for the food supply chain. The biggest driving factors today are convenience, price, quality and safety. But in trying to satisfy these drivers we find the debate has become polarised. GM compared to none GM. Organic compared to conventional. To make progress the middle ground needs to be discovered in order to move forward to the satisfaction of all. It is a great challenge because we have many expectations to satisfy. Against local consumer expectations we also have to satisfy ourselves that we can progress against the Global challenges which face all of us in the coming decades. Consumer trust, politics and society expectations, environment and Biodiversity considerations as well as global population increase. There is also regional variation on food expectation. Much of the Western world seeks convenience and choice to satisfy a fast hectic life style. There are many parts of the world where the need to consider food security will be key for some time to come.

Many consumers recognise the benefit of GM technology that will enable crops to be grown in overseas hostile environmental conditions. Also, many recognise that GM technology offers the prospect of developing new foods that offer

direct consumer benefit. Processing benefits for the food manufacturing industry are also an opportunity that offers the chances for 'new improved' foods. All of these developments are now well within the scientific capability of the research establishment. The opportunity to seize the benefits will be lost if consumers are denied the chance to choose the future food options available. Transparency through labelling will be key to enabling such freedom of choice to take place. Such opportunity will also offer value-adding options to the supply chain by offering more food choices and segments.

developing new foods that offer

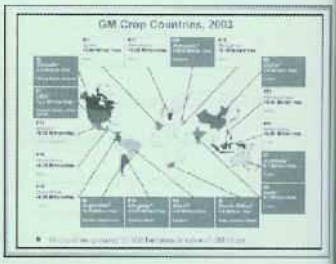
Are Consumers Ready to Accept Genetically Modified Ingredients?

15th March 2004

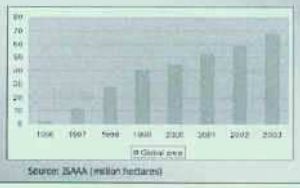
Patrick Mitton
agricultural biotechnology council

Presentation topics...

- **Global position of GM crops**
- **Consumer opinion Europe - UK**
- **Consumer expectations**
- **Consumer benefits**

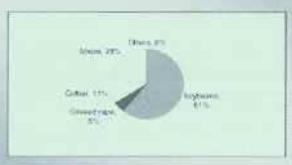


Global area of GM crops 1996-2003



Source: ISAAA (million hectares)

Global area of GM crops 2003: by crop



Source: ISAAA

GM crops in Europe: 2003

- Countries growing GM crops commercially are Spain, Romania and Bulgaria
- Spain: 32,000 ha Bt maize
- Romania: 45,000 ha HT soybeans
- Bulgaria: 5,000 ha HT maize

Crops with GM traits: soybeans

- 95% of EU requirement imported as beans or meal
- GM grown in all leading suppliers, esp US & Argentina
- 55%-60% of all imports are probably GM

EU soybean/derivative usage

Product	Market size (m tonnes)	Requirement to be non GM (%)
Wholebeans	1.5	22
Soy oil	2.12	39
Meal	30.77	27

Crops with GM traits: maize

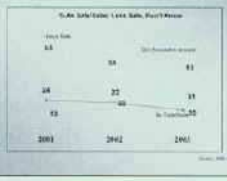
- EU uses 39 m tonnes: 93% from EU origin
- GM supplies: 0.32 m tonnes from Spain and up to 1.36 m tonnes from Argentina (4% of total)
- Active requirement for certified non GM = probably one third of total usage

Crops with GM traits: oilseed rape

- EU produces 9.3 m tonnes of OSR and imports about 0.7 m tonnes (2003)
- All usage is non GM: no GM trait yet approved for EU cultivation or importation/use

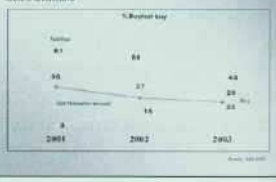
Concern about safety of GM

- Consumers increasingly say they 'don't know' if GM crops and foods are less safe than other crops and foods



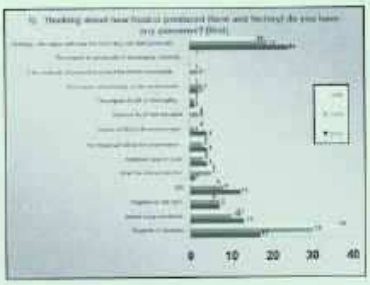
Consumers views on purchasing GM are in flux

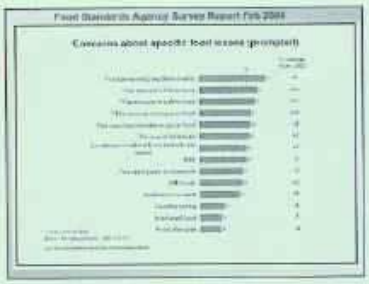
- Many consumers 'don't know' if they would buy GM labelled food if available



IGD Consumer Research

- **Focus groups**
  - Different lifestyles
  - Different regions
  - Different demographics
- **National survey**
  - 1,000 GB consumers





Information most often used when selecting food - top 10

Food Production - Changing background

The Past: Local Production	Today: Global Production & Supply
Seasonal	Non-Seasonal
Limited Choice and Variety	Wide Choice and Variety
Picture card landscape	'Problems' perception
fields	BSE
hills	contaminants
farms	Foot & Mouth
animals	mistrust

Consumer expectations on agriculture

The public in most of the 'Developed' countries are unfamiliar with 'how food is produced'

But, consumers expect and believe in a healthy and sustainable environment

Consumer expectations when shopping

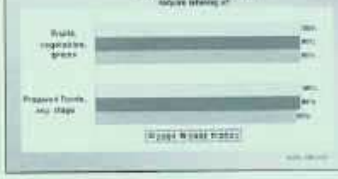
The power of the Consumer

Demand for

Consumer Views on Labelling

One thing that is not in debate...

- Nearly all consumers favour labelling of GM products Regardless of the stage of production

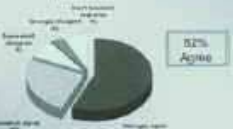


Why?

- In focus groups, labelling is an integral part of undecided consumers' 'choice equation' – without labels it is impossible to have choice

And 'choice' resonates with consumers

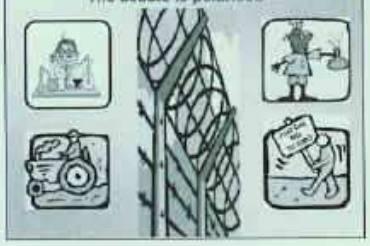
- Most consumers believe consumers should have a choice on GM



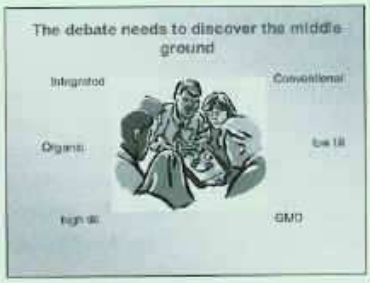
Support for labelling also reflects . . .

- Labels reflect desire for more information and provide reassurance
- Consumers want labels, but that doesn't mean they will read them

The debate is polarised

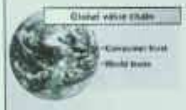


The debate needs to discover the middle ground



The conflicting demands and expectations

Challenges to be addressed



Challenges to be addressed

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Challenges to be addressed

Regional differences for food demand

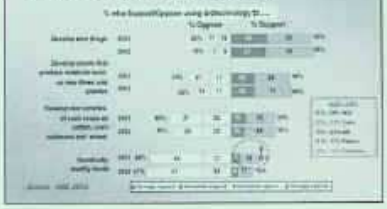
Developed countries: Speedy / trendy / healthy

Developing countries: Availability & choice

Food technology advances

Support for using GM for various purposes

- Solid majorities support use of GM for developing new drugs, half for developing new plants for industrial materials



Plant biotechnology: innovation areas

- Crops for growing under stress conditions – salt, drought, cold, disease and pest pressure
- Crops with higher yield potential
- Crops for producing food with health benefits
- Plants as a factory – innovative raw material, renewable resources

Benefits for consumers and food chain

Conclusions

Conclusions

- Once products containing GM ingredients are on shelves, the issue will take on a new dimension
- labelling will create a new dimension to the whole issue of consumer acceptability to GM ingredients
- The future offers real opportunities for consumer benefits in the areas of functionality and processing benefits

Chairman

Thank you to both our speakers for a very informative start to our debate/ Robin is there some things you wanted to pick up from what Patrick had to say there, just offer a couple of comments before we open it up to the floor?

Robin Grove-White

I found it extremely interesting but there was nothing in what Patrick said for me that persuaded me that consumers in the terms of the proposition were remotely ready to accept GM's in the UK. He referred to

the unfortunate polarisation of debate, I think...• but just on this issue of polarisation I think it certainly was proposed and the report that you referred to right at the beginning on Uncertain World written in 1997 that we produced, we say look this is an area where there has to be

serious debate but the conditions have to be right and frankly with Government being so unambiguously in favour and so frankly patronising if not downright insulting over a period of years about the concerns that people have had, its actually very hard to have serious detached debate, as it were negotiating under duress with the WTO and European obligations being invoked constantly, but I just make a second point that I think there's a danger of misrepresenting the shrewdness and intelligence of the public when Patrick talks about education and the implication that what in the social science trade we call the deficit model, the problem is people's ignorance and you have to top them up and education should be directed to topping them up with the hard facts. What we found in the public debate is what a lot of social researchers show, is that the people have a very shrewd sense, they may not be well informed but they have a very shrewd sense of how the land lies and they're discerning and they're sound about, for example these uncertainties in knowledge. But finally the most significant thing I think that we both agree on is this very large body, this growth in numbers of people who don't have a definite view, who are in a state of what we have to call ambivalence but when you're thinking about public sensibilities in this area for the future the important thing is to understand what are the components of that ambivalence, what are the underlying structures, what are the things that people are

responding to and they are the facts in this narrow sense that I think Patrick's advocating, but the general framework of how is this technology being handled in the real world, in our society and what sort of confidence do we have in regulators and Governments in the motives of industry and indeed the ambitions of industry in terms of consolidation, now these are perspectives I think it is very important to be aware of.

Patrick Mitton

Yes I think really in terms of the polarisation Robin, I think what the way you are responding there is some common ground there and I think that is good to take the debate forward. You are actually saying quite a bit about government and regulations, I didn't particularly cover that at all but it is an interesting area that you are referring to and it worries me a bit if all of us are not being served well by the regulatory process. Industry tends to assume that the regulatory process does become the safeguard for us all however we see it but I think that is an interesting area in terms of the regulator and the role of Government and your perception of this that they are actually biased which is a bit of a problem for us all if that's the case. I'll just come back to the point about the public, I didn't use the word that they're ignorant and that's quite a strong word, but I really make the point in terms of if you take the UK most people are now living in an urban society, you hear the expression that we're quite a few generations from when our forefathers were actually directly involved in the

land, I mean many people these days don't actually grow vegetables in their garden, they wee certainly doing this when I was a child, understanding about how things grow and so forth. I wouldn't want to go to the point of saying they're all ignorant and we have to do something about it, that is a bit extreme but I think it is a growing challenge about the understanding of farming methods and what goes on and my point was is there something to be done about that, I mean is that an issue, I'm not advocating anything extreme or patronising but for many people their view of the countryside is what they see when they roll down the M40 into London when they look to the left and to the right or when they are walking in the Lake District. They don't understand farm production methods and you speak to farmers these days, we all do, and one or two of them get worried even now about some of their farming practices next to footpaths in case they get told off for doing what might be good in terms of hedgerow management and I have heard those comments coming out of farming conference, you know the real worry that we've lost a bit of our identity with how crops are growing. I throw this out as a debate for all of us, I'm not trying to take an extreme stance on that.

Question for Patrick Mitton from Nigel Meadows, Oxford

You mentioned functional foods, I think the total markets now worth about £500 million, do you think that broader availability of GM ingredients will accelerate that growth ?

Answer: Patrick Mitton

The whole issue of functional foods is clearly a whole topic in itself as I said in my talk, it really becomes a question of whether people would see direct consumer benefit. You often get the talked about angle of the cancer beating whatever. People would really want to queue up for that, but there are more experts in this room regarding functional foods in the market and it's a very new area and I know a lot of people look at it because its seen to be an area of adding value. Whether GM would make a

difference is difficult to say because these foods are many years from the market and because they are many years from the market then acceptability in other areas would probably come there first. Anyway so it's a bit of a time answer really as to when these things would be available, which would be many years. If there was general acceptability I don't see people having any qualms at all providing they can understand what the personal benefit is to themselves and have a good understanding of the balance of what's available and the cost and so forth.

Robin Grove-White

I was very interested earlier in Sir Peter Davis's comments about the current Greenpeace concern about GMO's in animal foods, GM soya which is of course confirmed by the data that Patrick's shown us. As Greenpeace I know the acute sensitivity of Sainsburys to public anxieties expressed about that and so if functional foods move in the direction of GM ingredients then this is not because I will do it, but bodies

like Greenpeace will be acting in that sort of way in relation to it and if we will then discover whether this has public resonance so I don't think its just a straight forward matter of whether this is a factor that will influence the speed of development of functional foods with GM's.

Chairman: John White

Do you think that the consumers will be more ready to accept GM as a technology if there was a greater understanding of some of the processes involved and the purpose to which it was put. I think there's a huge difference between the kind of spider gene in a tomato. If I can characterise that which is clearly what seems to sit very much at the forefront of the consumers minds, when you talk about GM technology as opposed to say, a kind of chemist bench level technology which is working at very very basic levels which is not finely what the genetic modification is not finding its way into the ultimate say food ingredient. Now consumers understanding that difference are going to have, I would suggest, a slightly different attitude to genetic modification per se.

Patrick Mitton

Well I think my view would be that people, and many people, and many people in campaigning organisations, many people in the wider public understand the difference between science in the laboratory and enormous potentials that have been unlocked in molecular biology since Crick and Watson and so forth. This must surely be put to profitable human use, this knowledge, I mean this is common ground, I don't think,

there are very few people I know who say we shouldn't be doing molecular biology any more, I mean that would be ridiculous. The argument is what do you use it for ? for whose benefit ? and as it were under what terms and conditions ? and that's what the argument is about now and the answers are

now very convincing. The answers of the protagonists for it have not been very convincing, ergo there is all this uncertainty and ambivalence and a considerable body of hostility as well.

Question: Sylvia Macdonald, British Baker

I would like to ask why the scientific establishment isn't lobbying more for really regulated highly controlled trials that we as the public can all have faith in to see that GMO's don't cause allergens that they don't cause soil contamination, that they don't affect the environment. We can't make up our mind as consumers until we know all the facts and yet it doesn't seem to be the scientific people such as yourself that are really lobbying Government to give us the facts and properly controlled tests. I don't see why not. As scientists surely you really care about the facts.

Chairman: John White

Are there any other people who want to speak supporting that particular point ?

Question: Jim Brown, Hamilton

Is it not true that some of the few trials that were attempted have been destroyed by Green peace or people acting against the trials so that where evidence could have been gathered to make a decision on GMO's were destroyed before it was

available.

Patrick Mitton

There's always more and more science which could be done I guess but the farm scale evaluations were the biggest trial ever for this way of growing crops so that was quite extensive and it was done by independent scientists. It was not actually the companies that were actually deciding what should be what, so I think the independents should at least give some faith to the public and it was quite detailed actually. I don't know if you looked into all the different things they looked at but it was quite detailed in terms of all the creepy crawly things which were being caught and so forth. I felt that was quite extensive in terms of what it was looking at in hypothesis and what it came out with in terms of the results. Allergens have to be tested there is no GM food can be put into the market without the allergy testing being carried out, that's my understanding. We may have here a degree of perception of a shortfall unless you know there is a particular shortfall but industry has been quite happy to support whatever's being demanded of it in terms of trials etc and testing.

Robin Grove-White

The question is why haven't scientists like those in Patrick's company and so on been more actively pressing for research in areas of known concern and he praised and named the farm scale evaluations which rightly he said have been very big and very important. Those evaluations if you go back historically only resulted because of public controversy.

In 1998 and before the Ministry of Agriculture and ACA, the advisory committee were in denial that there could be any indirect effects of the kind that the trials then were addressed from the indirect biodiversity impact of growing these crops under commercial conditions was nobody's job and anyway the scientific advice from the Government's own scientific advisory committee was that there isn't an issue here. There was controversy, the Government couldn't resist it, they bought time, this is all confirmed by Ministers and so on. They got the industry's agreement, they said look you are on a hiding to nothing if we go ahead now, and these trials concluded that two or the three crops tests do have, would under commercial conditions have major adverse implications for biodiversity about which people are very concerned. In other words refuted the position on which policy was being made 3 or 4 years previously, and I think the implications of this are extremely serious for public mistrust and the question posed is a very potent one. You know why Government and the scientists who are largely private sector scientists aren't urging examination of a much wider set of possible contingencies that could arise. As to the question of ripping up crops I can only speak for Greenpeace in that action which reached court and so on was creating a symbolic media event packing up crops and returning them to the owner. The idea that there was wholesale destruction of systematic crops to prevent research, these were small symbolic actions by a whole range of people but which had,

as the scientists who conducted them indicated, had absolutely negligible effects on the value of the trials themselves. This is a highly charged political area where Government and industry have persistently been in denial of a whole range of concerns that are now confirmed through for example the science reviewers of having a thoroughly valid scientific basis and until, in terms of buying space for calm discussion how can you do it' when these processes just toll on and on and on.

Question: Bill Lavers, Uxbridge

I think its right to say that every time you give consumers choice about whether to buy GM or not to buy GM they chose not to and you (Patrick) made the point in your presentation that its about time that consumers got choice. I just wonder what you say to that point. I think it's even true in the States that if you ask people do they know they are eating GM they say 'no' and when they find out they don't like it and try and buy something that doesn't contain it for whatever reason.

Patrick Mitton

I don't know about the American work but certainly that choice is not necessarily available in Europe. There are some places where you can buy quite a few GM foods and they do sell, I mean that is the case but it is a very minimum choice available at the moment. If in the end there were choice available and there is a decision not to buy then again the economic model will prevail. It depends on

the extent to which people use that labelling of course as their decision maker, which will depend on the point

to which they regard as important and of course the range of results from surveys indicate that people are right across the piste on this one. But there are some shops that have sold GM ingredient foods.

Bill Lavers

I think that the truth is that GM tomatoes were selling quite well until GM soya ingredients came along and looked like they were going to come into the food industry through the back door, that is exactly the position we are in in the baking industry if I'm not mistaken. GM could come in through the back door with soya but look forward a bit more is it going to come in through the front door in GM wheat and in general it seems to me that the consumers don't like the idea of things come in through the back door and its that issue when you label to stop products coming through the back door that I was trying to get addressed.

Joe Hart, Dorset

Just a comment concerning choice. The identiperserve issue was introduced into Europe by a French chain when they insisted that they would have all their products GM free by the end of 1999/2000. They insisted to their suppliers nonetheless that this must be don't at zero incremental cost, the point being that if we need a choice true costs have to be visible right through to the point of consumption and supermarkets by insisting on lack of choice are actually removing choice from the consumer. The economic choice from the consumer, having cheaper goods with GM labelling. Just a further point, in all the discussion this morning no one actually made any comments on

conventionally modified genetic breeding, the invitro versus conventional crops and no one made any points about the allergen testing of conventional wheats, the hybrids and so on. The incremental difference between invitro modified and conventionally modified crops is negligible.

Robin Grove-White

Yes I take your point entirely, you are absolutely right but the question if we are talking about public concerns, public perception is whether this adds anything. Well you say not but the Governments science review talks in a way to myself as an interested non scientist suggests there is a great deal that is not known about allergies and that new patterns of allergy, this is a phenomenon of the contemporary world as I understand it and the relationship between the properties of particular GM constructs or whatever allergies is again, one can do testing but its always in terms of existing knowledge and the point the GM science review is making, at least I draw from it, is that knowledge is not keeping pace with the phenomena and that's perfectly reasonable that that should be so. All of those things will feed into the discussion about GM wheat.

Joe Hart

Even in social science one important factor is we must distinguish between correlations causative and although we have correlations between increasing allegenicity and other sides of food manufacturing its not causatives that is sensitive in invitro modified crops.

Robin Grove-White

Well with respect you make a sound point, I'm not disagreeing with the point that you are making but what is important in the minds of people taking everyday decisions is whether those, as it were, that argument as it would appear on the head of a pin about whether the correlation corresponds to causation or not, is not one that is going to influence things and I think that's perfectly reasonable given the state of knowledge about allergy that I as a layman read in the authoritive studies.

Chairman to Audience

To give some context if you could just indicate whether you are actually in favour of GM technology or not - please raise your hand if you are in favour, and then those against.

Interesting about 2 to 1 against. Chairman to Audience

Do you think that consumers are ready for GM food?

Reply - No one in favour