# *Do American Consumers Want GM Food Labeling? It Depends on How You Ask the Question*

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Good afternoon. I am a professor and chair of the Department of Human Ecology at Rutgers, the State University of New Jersey, the land grant university for the state of New Jersey. I'm an experimental psychologist, and I study public perceptions of risk and risk communication. I have been looking at public perceptions of GMOs for more than 20 years. The first paper I published was in *Nature Biotechnology* back in 1996.

I have about 10–12 minutes to tell you everything I have learned in the last 20 years. My first key point is this: The success of ag-biotech depends as much on consumer perceptions and acceptance of GM products as it does on the ability to create them. Key point number two is that most of the American public actually knows little or nothing about GMOs, and I will show you some data that illustrates that.

In 2013 we conducted a study with support from my dean just before one of the referenda on GMO labeling. We wanted to get national baseline data because we actually thought that the proposition was going to pass, and we wanted to see before and after changes.

The timing for data collection was October 23–27, 2013. This is nationally representative data collected by GFK Knowledge Networks from an internet panel recruited using proportional random sampling, currently the best way to get a representative sample. It is not an opt-in survey. The margin of error is plus/minus 3%. The data is weighted to project to the US population.

Here are some selected results:

- We asked, "Before this survey were you aware that GM foods existed?" Twenty-five percent of the population said no, indicating that one-quarter of the population has no idea that these things even exist.
- "How much have you heard or read or heard about GM foods?" Fifty percent said "very little" or "nothing at all." Half the population says they know very little or

have heard or read very little or nothing at all about GMOs. Now that comes as a surprise perhaps to many of you in this room who spend your lives studying this issue, but this is not the only data that suggests this, and frankly, the data I have collected over the last 20 years shows there has been very little change in this number.

- "How much do you know?" Fifty-five percent say "very little" or "nothing at all." So, half the population said they've heard or read very little about GMOs. More than half the population says they know very little or nothing at all about GMOs. "How often have you talked about this?" Sixty-six percent, two-thirds, never have had a conversation about GMOs with anyone in their entire lives.
- Of those who have had a conversation, only 3% of the public says they have done so frequently. So that is the most engaged segment of the population. Again, this was right before a referendum, there was a lot of press about it, and still only 3% said they've had frequent conversations about GMOs; 18% said "occasionally"; 11% said "very rarely." "As far as you know are there any foods containing GM ingredients in supermarkets right now?" Only 43% say yes, and 51% say they don't know. What I want to try to communicate to you is that, in fact, the majority of the population does not know if supermarkets are selling GMOs.
- We asked the 43% who said they knew that there are GMO-containing products in the supermarket to pick out particular products with GMO components from a list and generated the following responses: (see Figure 1)
  - For foods that are currently on the market in GMO versions: 75% think that there are GMO varieties of corn; 59% think there are GMO varieties of soybeans; 34%, canola; 47%, soy; 30%, squash; 28%, sugar, and 22% papayas. It is worth noting that while GMO varieties of papayas saved the Hawaiian papaya industry, most of that crop is exported and so most of the US population cannot actually purchase GMO papayas in their local supermarkets.
  - For foods not currently available as GMO, 56% think there are GMO tomatoes available in US supermarkets (there have not been since 1997!), and 55% think that products with GMO wheat are for sale. Fifty percent think GMO chicken is for sale in US supermarkets; 44%, apples; 40%, rice; 35%, salmon; 34%, oranges.
  - The bottom line is, 43% of the population thinks or guesses correctly that there are products with GMO ingredients on supermarket shelves. However, the majority of the ingredients they think are GMO in fact are not. So there is considerable confusion about what GMO products are available in US supermarkets.
- We asked, "Have you ever eaten a food containing GMO ingredients?" Only 26% of the population said yes. In the room here, how many of you have eaten a food with a GMO ingredient? Please raise your hands. You should know that you have all been eating GMOs for about 20 years now. Yet, only about one-quarter of the population knows that.

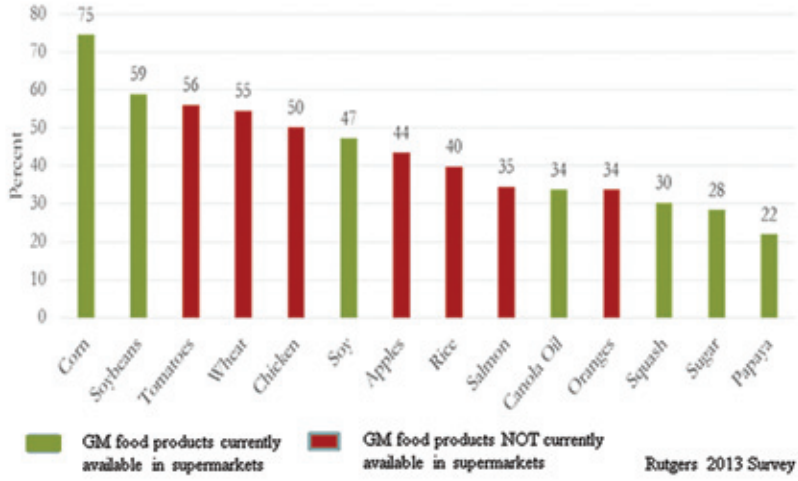


Figure 1. Percent of 491 consumers who said GM foods are available in US supermarkets. Rutgers 2013 Survey

So, here is my key point number three: Most Americans have heard, read, and talked little about GMOs. Most don't know foods with GM ingredients are sold in US supermarkets. Many of the foods people think are GMO are not, and most don't know that they are eating foods with GMO ingredients.

Key point number four is that being uninformed does not stand in the way of having an opinion in the US, or expressing it, or running for the legislature.

One of the things I will show you is that how you ask the question likely determines the answer you get when the population doesn't know anything, hasn't heard anything, hasn't talked about it, and hasn't actually made up their minds about GMOs. In the survey, we simply asked, "Do you approve or disapprove of the use of genetic modification to create new varieties of plants?" We asked the same question in regard to animals as to plants.

Seventeen percent say they approve, and of that, 5% say they strongly approve, 12% say they somewhat approve. Thirty percent say they disapprove, and of those, 14% strongly disapprove, 16% somewhat disapprove. Then there is the "I don't know response"; 50% indicate a neutral response, composed of 25% who said they neither approve nor disapprove and 25% who simply say they don't know.

However, it is important to note that most Americans will only say "I don't know" if you give them the opportunity to say it. So, one of the things to be aware of when you read the results of other surveys about public approval of GMOs is whether these surveys allowed people to say "I don't know" or only offered a forced choice of yes or no. If we take the 50% who initially say they are unsure or neither approve nor disapprove, and ask

them whether they lean toward approval or disapproval, we actually end up with another 18% leaning toward approval and about 15% leaning toward disapproval; and so what we end up with is 33% approving, 45% disapproving, and 18% neutral.

So how you ask the question largely determines the responses. If you want to claim that the majority of the population disapproves of GMOs, you can ask the question in such a way that people who don't really know the issue will seem to disapprove.

Here is key point number five from the standpoint of a psychologist: Relatively uninformed opinions are uncrystallized, which means they are not well thought through. They are not strongly held. They are subject to change and in fact they are influenced by the way you ask the questions.

Point six is that decision making involves both cognition and affect; that is, both thoughts and feelings. Many psychologists, and also the economists with whom I work who incorporate ideas about emotion into their theories, suggest that affect only comes after cognition—that first we think and then we feel. An economist might say that people evaluate the information they are given, which leads to an overall affective reaction, fear, anger, dread, outrage, and that is the way the world works. Yet, anyone who has been in love knows that very often, first we feel and then sometimes we think.

I also know as a psychologist that the way the world really works is that affect often comes first. In fact research tells us that people have a remarkably poor understanding of what actually influences their perceptions and their behaviors, their decisions. They cannot say why they feel the way they do, they just feel. They can't say why they made a particular choice. They just made it. They can't say why they acted the way they did, they just did so. And so, the question is, on what are they basing these kinds of decisions? It is pretty clear to me that affect can actually drive future cognition; we know that first impressions matter, for example. When you want to sell a house, you fix up the outside to have curb appeal, right? So people fall in love with the house and overlook how bad the kitchen actually is? There is also this kind of cyclical thinking that we are familiar with: I like it because it is good, and it is good because I like it.

Affect also plays an important role in framing the way people interpret cognitive information. Content for decision making about biotech is in fact, fairly abstract. People haven't heard very much. They don't know very much. They haven't talked about it. They don't know they are eating it. It is also not very high on the issue agenda for most people. If it were, they would actually be talking about it. And I just showed you they are not. The key thing is that this is not something about which people have been forced to make personal decisions. In fact, because we don't have a lot of labels about GMOs, people don't know that they are actually purchasing products with GMO ingredients unless they have seen one that says "GMO-free."

So, key point seven is that affect plays an important role in perceptions of GMOs. Most of the population don't know very much, haven't heard very much, aren't talking about it, and don't know they are eating it, and yet they have opinions.

What is the basis for these opinions? We asked, "Would you say your opinion of GM foods is based on general feeling or specific issues?" Our advisors at GFK said you can't ask that

question. No one will answer it honestly. However, 50% of the population said "a general feeling," which makes a lot of sense given that 50% said that they didn't know anything. Fifteen percent—*only* 15%—said that their opinion was based on "specific issues," and another third indicated a combination of issues and feelings. So the basis for opinions isn't necessarily a thoroughly reasoned argument of the pros and cons of GMOs. People don't know very much about GMOs, but what they do know is that they don't like it.

Internet hoax: KFC said one of the best known fake rumors was that chickens used by the company are genetically modified and have six wings and eight legs (computer-generated image).

Key point number eight: Even the best science can be overwhelmed by people's worst fears. Yesterday's *Wall Street Journal* featured a story with the headline "Kentucky Fried Chicken Sues Chinese Companies over Alleged Eight-Legged Chicken Growers." And you laugh, but in fact this is apparently a fairly widespread rumor in China, and according to some of my graduate students, has been around for about three or four years. And to prove that the rumor is true, there is this (obviously Photoshopped) picture of an eight-legged, six-winged chicken that has been passed around social media.

Even if you don't know very much about agriculture but you do think that Kentucky Fried Chicken is out to make as much profit as they possibly can, this can appear plausible to you. And again, you laugh, but if you have no connection to agriculture how would you know this is not possible or not even preferable from an agricultural standpoint? There is a picture of it, it therefore must be true.

This is likely the evolution of a rumor prevalent about ten years ago. The rumor then was that Kentucky Fried Chicken had changed their name to KFC because they were using chickens so genetically altered that they could not be called chicken anymore. The rumor suggested that KFC was breeding chickens that had no feathers, beaks, or feet because it made them easier to process.

In data collected in 2004, we found that a large number of Americans had heard this rumor. An even larger number of people were willing to believe it. We updated this data in 2013 along with some other things that we had seen on the internet. We asked the following true/false questions: Are GE crops harmful to bees? Does eating GE wheat lead to gluten intolerance? Was a genetically altered chicken used by a fast food company? Has

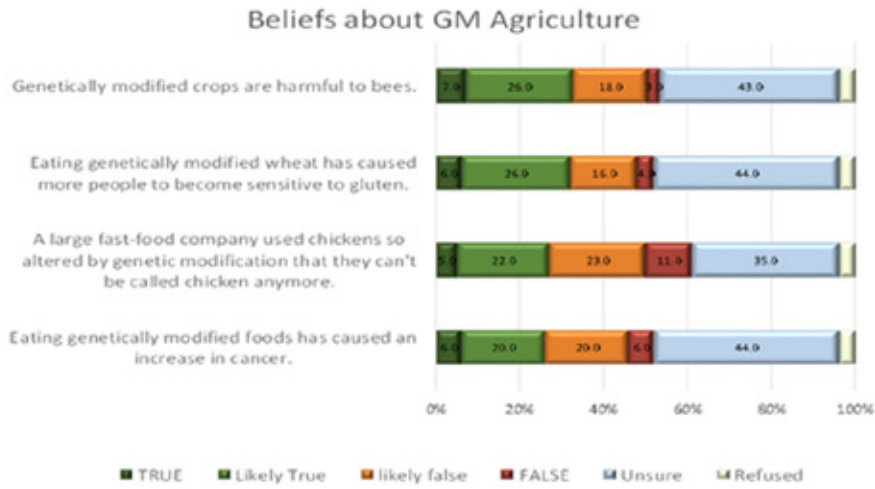

Figure 2. Decisions About the Veracity of Claims/"Facts." Hallman, Cute, Morin 2013

eating GE food caused an increase in cancer? Figure 2 illustrates the results. We formulated the questions this way because we know that Americans are really good guessers when confronted with true/false questions. In part, this is because we teach students not to leave a true/false question blank on a test because doing so means they get no credit. So, we teach people to take their best guess, and the odds are 50/50 that they will get credit. In this graph, the light green and the light orange reflect people's guesses, so perhaps you should just really pay attention to the dark green and the dark red and also the white, which is "I don't know."

Asked "Are GM crops harmful?" a large percentage of the population either says yes that is true or they don't know. Asked if eating GM wheat has caused more people to become sensitive to gluten, the same thing. Large fast-food companies used chickens so altered by GMOs that they can't be called chickens anymore? About one-quarter of the population believes that is true. Another third can't say whether it is true or false. That should be disturbing to you. "Eating GM foods has caused an increase in cancer." Again, it all sounds plausible. Given what little they know about GMOs, why should people be able to reject these particular ideas?

Key point number nine: People learn about many risks through implicit comparisons suggesting superiority. Lots of advertising introduces risks that people have never heard of before or implies that what is "free" is best. We have "cage-free," "antibiotic-free," "cruelty-free," "BPA-free," and my favorite, the impossible "chemical-free." GMOs are often framed as though they were a contaminating substance, not a range of technologies. So "GMO-free" suggests that a product is free of a particular contaminant, as opposed to being free from an ingredient produced through a particular technology.

My colleague Mr. Welsh was talking here earlier about framing. Here is Chipotle, which is very, very disturbing, saying they are "GMOver it" and using the frames Dr. Welsh just discussed for why they made this decision. Hershey has plans to produce chocolate without GMO ingredients, which has been framed as having been in response to pressure from anti-GMO activists. In fact this development is portrayed in the anti-GMO activists' press releases as a victory. And then finally we have Similac, which just introduced a non-GMO formula. Why is this important? Because once people make a decision to purchase one of these products, their opinions become a lot more crystallized. And then they actually adjust their attitudes and opinions to support that decision. They pay attention to confirming information. They discount inconsistent information. More maddeningly, they reinterpret disconfirming information to support what they already believe and they take actions and make other decisions that support their initial decisions.

So, that is all I have time to say. I hope you will ask me good questions.

**Speaker Profile:** http://humanecology.rutgers.edu/faculty.asp?fid=28

**Stephen Palacios** presented *The Limits of Science in Impacting the GMO Discourse: How Food Manufacturers and Retailers Affect Consumer Opinion*, but elected to not have his talk published in this report.