

Television and Science

How the Media Shape the Public's Understanding Of Crucial New Developments

By Mary L. Nucci and Robert Kubey

Television plays a critical role in the public's understanding of new developments in science. Once they leave formal education, most Americans rely on television to keep them informed about science and technology.

An important case in point is the genetic modification of foods, which has been touted as having the potential to increase food yield, enhance the nutritional value of foodstuffs and decrease the use of pesticides in agricultural practice. Yet despite the fact that concerns have been raised about the potentially harmful effects of genetically modified food on human health and the environment, the American public to a great degree remains unaware of the scope and extent of the products of this technology.

Between 1980 and 2003 genetically modified foods were first introduced to the American public (the first genetically modified whole-food product, the Flavr Savr tomato, reached store shelves in 1994), and achieved controversial status due to the accidental contamination of taco shells with an unapproved genetically modified corn. Typically for any technology, this period from concept to market would be the time when the public would first become

aware of the development through media coverage, and from that media coverage would subsequently develop an opinion of the technology.

In the U.S., television news serves as the primary source of science content for most Americans. Although viewership of network television has declined due to the Internet and cable-news shows, the evening news shows broadcast on ABC, CBS and NBC still account for an average nightly audience of more than 25 million viewers.

An examination of the networks' news coverage of genetically modified foods between 1980 and 2003 found that during the time frame when the technology moved from lab to consumer, there were only 169 stories on genetically modified food on the three broadcast news networks. During these 23 years news coverage on the subject was spotty and incomplete. Most of the 169 articles were on CBS News (94 stories), with ABC reporting half as often (46 stories) and NBC only one-third as often (29 stories). In 1984, 1985, 1986, and 1990 only CBS aired any stories about the technology.

CBS's dominance in news coverage was explained during our interviews with CBS executive producer Jim Murphy, producer Sally Garner

and reporter Wyatt Andrews. These interviews illuminated the importance of a production team interested and committed to reporting on an issue for its regular inclusion in news coverage. Garner and Andrews were able to maintain consistent coverage of genetic modification because of the latitude of executive producer Jim Murphy. As Wyatt Andrews commented,

“first of all it’s food, and people eat that. I think people are fascinated by that. And second, it is the technological frontier. Marry that to food and he [Murphy] sees it as a no-brainer. He just thinks the audience is going to be interested when people are messing with your food.”

Yet in spite of CBS’ greater coverage, assuming an average of 10 stories per show over the 23-year period, these 169 stories represent less than one percent of all stories presented on the three networks during that time frame, and is likely the main reason that the American public has little or no conception of the technology of genetically modified food. On average, there was less than one story a month on a technology during the time in which it moved from laboratory to the consumer’s plate. This stands in sharp contrast to the vocal and active public debate around genetically modified food taking place in the media in Europe during the same time; this really drove the sentiment against genetically modified food throughout Europe.

Reporting increased around the approval on the Flavr Savr tomato in 1994, but then died down until 1999 and the controversy as to whether Monarch butterflies might be killed by eating pollen from genetically modified corn. Considered a watershed moment

in the rise in social activism against genetically modified foods, the Monarch butterfly issue had a direct effect on media coverage which was further compounded by the discovery in 2000 that taco shells were contaminated with a genetically modified corn intended exclusively for cattle feed. Over one-quarter of all the network stories from the thirteen years examined aired that year. Slightly less than half of all stories on genetically modified food aired between 1999 and 2001.

Within these stories, 66 percent included one or more on-camera experts or “talking heads” that rendered opinion or reported facts or both. These experts represented a wide variety of institutions and organizations, but the three most frequently used experts for all networks were food industry representatives, activists and scientists. The combination of industry/scientist, which often represents the same viewpoint on genetic engineering, dominated as spokespersons during the time frame studied. Activists, typically representing an alternate viewpoint, were used as experts much less frequently, while government agencies that could rightly be seen to have some role in the development of genetically modified food, including the United States Department of Agriculture, the Environmental Protection Agency and the National Institutes of Health were present as experts less than one percent of the total.

Experts’ comments about genetic engineering were more positive from 1980 to 1990 than in the following decade. This is in line with the increasing concerns over time about genetically modified food both in the U.S. and overseas. Industry, scientists and government tended to be more

positive than activists and the public, while farmers and farm associations were essentially evenly divided in their support for the technology. The Food and Drug Administration, the key regulatory agency in the United States overseeing genetically modified food issues, presented an overwhelmingly positive perspective on the technology.

However, within each category of experts there was no overall unified stance towards the technology. Industry representatives were six times as likely to speak positively about genetically modified food as negatively; scientists were only twice as likely to have a positive perspective. Experts categorized as activists were more than 10 times likely to voice a negative opinion on genetically modified food. The public perspective was also decidedly negative, with four times as many public voices opposing genetically modified food.

Although the networks were strongly similar in coverage patterns over the years examined, which was shown in previous research, differences in coverage indicated distinct emphases in focus. Critical examination of one event illustrates these differences. On April 5, 2000, both ABC and CBS ran a story about the National Research Council report on genetically modified food which was generally positive towards the technology. ABC's story mentioned that the report called for tighter government monitoring that should set some of the concerns about genetically modified food to rest. CBS was substantially more critical, with anchor Dan Rather introducing the report with the statement that "future gene-altered crops need to be checked for possible threats to other plants" and adding that "critics of gene-altered

foods don't like the study's main finding or the scientists who've made it."

Fewer than half of all Americans had heard that human food had been accidentally contaminated by genetically modified foods approved only for animal feed and that pollen from genetically modified corn was shown to kill Monarch butterfly larvae.

The day before the National Research Council report ABC ran a story on Monsanto, a company with one of the largest stakes in genetically modified food in which Hendrik Verfaillie, President of Monsanto Company, announced that they would release proprietary scientific information about genetically modified rice to "facilitate and encourage basic research to improve rice and other crops." Neither CBS nor NBC carried the story. One element in ABC's report was most striking. Following the report, the late Peter Jennings commented, "One of the biggest companies in genetically altered foods, Monsanto, said today it would give away valuable research on the genetic structure of rice which could lead to new strains of healthier strains of rice that would be more resistant to disease. No company has ever disclosed so much genetic information about a single crop." This very favorably worded statement about the value of Monsanto's release of data presented a positive impression of Monsanto and genetically modified food.

ABC may well have chosen to run the Monsanto story because they thought it had important news value, while a skeptic might wonder if

Monsanto had better public relations contacts with ABC than at the other networks. ABC news has received many millions of dollars in advertising from Archers Daniel Midland (ADM), a company that also has considerable interests in the success of genetically modified food. And there have been a variety of controversial arrangements between ABC and ADM that have been documented and made their own news over the years. No record can be found regarding ADM providing advertising revenue to CBS or NBC, but they do provide PBS's *News Hour* and NPR news with millions of dollars annually.

Regardless, over the time frame studied, genetically modified food appeared to be a non-issue for the three evening news shows, which did not see fit to detail the technology and its implications in a manner that would elevate its importance as an issue for the American public. This may in part be due to newsroom practices in which agricultural reporting has been biased towards a business or economic focus, and not on scientific or investigative reporting.

The possible impact of this lack of coverage can be seen in the results of a public opinion poll from the Food Policy Institute at Rutgers, the State University of New Jersey. That study showed that in a survey of Americans' knowledge and attitudes towards genetically modified food, in 2003 only 19 percent of Americans were able to recall a event or news story related to genetically modified food. A follow-up study in 2004 found that significantly fewer than half of all Americans had heard that human food had been accidentally contaminated with genetically modified foods approved only for animal feed, and that pollen

from genetically modified corn was shown to kill Monarch butterfly larvae in the laboratory.

Critically, these results indicate that for a subject as ubiquitous and pervasive as food (that is, everyone needs to eat), the lack of coverage may be of concern for other less all-encompassing technological issues. If the technology about food is not covered by the American press, what does this imply about the potential for coverage of technologies with less relevance to a majority of the population? As the knowledge that Americans possess tends to be driven mostly by the degree to which it is covered by the media, and the American public is still reliant primarily on television for information on science and technology, the paucity of coverage of genetic modification highlights concerns for the ability of the public to make sound and rational decisions regarding this technology or any other developing technology.

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As a mass medium, television has perhaps the greatest likelihood of influencing public opinion about science and scientists. In this first study of television news coverage of genetically modified food, it can be seen that over the 23 years of the study, coverage was sporadic and light except for the very infrequent crisis event. One network, CBS, dominated coverage, yet it appears that each of the networks treats the issue quite similarly in terms of its use of on-air experts, critics and supporters of genetically modified food.

Although media coverage can result in the development of long-standing perspectives, coverage as spotty as seen in this 23-year time frame would likely have little effect on an individual's support or opposition to genetically modified foods; in fact, since 2001 the American public's support for genetically modified foods has remained flat, while opposition has declined.

Although the data on the relationship of television use to the public's support for science is unclear, this research points to concerns with this medium effectively serving as the primary source for developments in science and technology for the American public. This concern may be moot with the growing reliance on the Internet as the source for specific science and technology information. However,

these results should support a call for strengthening the dissemination of science and technology on television.

This essay is based on an article by the same authors published in Science Communication, Vol. 29, 2008. The opinions expressed are those of the authors and do not necessarily reflect official positions or policies of the USDA, the Food Policy Institute or Rutgers University. Mary Nucci is a Research Analyst at the Food Policy Institute, and Ph.D. candidate at the School of Communication, Information and Library Studies at Rutgers. Robert Kubey is professor of Journalism and Media Studies, and director of the Center for Media Studies at Rutgers.