Genetically Modified Statutes: the Commercialization of GMOs in America

Florida Southern College Senior Thesis

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Abstract

In a world of modern commercialism and proliferation of various branding techniques, agriculture often is overlooked in life's grand scheme. Often American assumptions regarding products and the actual informative labeling of said goods vary greatly. Genetically modified organisms (GMOs), though highly controversial, will soon be limited by Federal Department of Agriculture guidelines regarding labeling. As a country, the US has no concise guidelines for labeling GMOs. This study questions whether this is in conflict with the consumer's best interest, and if the American public believes they hold the right to know the processes involved in food production just as much as a food's calorie content. In this study, 100 participants were asked to complete an anonymous online polling survey composed of seven questions to gauge interest in GMOs, while a second, separate focus group of 47 participants answered qualitative questions in a group-discussion format. The study found there is currently a lapse between informing food labels and consumer awareness, and, specifically, that the majority of consumers believe they hold the right to know how their food was manufactured. The study also found that GMOs are not of major concern to most of the participants, and they are less crucial to buying habits than price and conveniency of products.

Thesis

The aim of this research is to investigate the American public's concern regarding genetically modified foods and their (lack of) labeling within the country. The study aims to find answers to the following questions:

- Do Americans perceive GMOs as "negative" or "bad"?

- Does this perception affect their daily food choices?
- Do Americans believe they have a right to know if their foods are genetically modified?
- How can GMOs be marketed to promote understanding of the product/can this be done?
- Are Americans informed regarding GM-related news/policies?

Introduction

The first GMO approved for commercialization was the Flavr-Savr tomato in 1994, which was accomplished by inserting an additional copy of the tomato's own gene to slow fruit softening and thus increase shelf life (Martineau and Gresshoff, 1997). Since that initial plant, over 181.5 million hectares of GM crops planted in 28 countries were reported in 2014 (James, 2014). The emergence of GMOs came with outright opposition (James, 2014), and the "right to know" was pursued by various organizations to establish a threshold of tolerance (James, 2014). World-wide, this threshold varies from 0 to 5% (James, 2014). Therefore, the presence of GM ingredients have the potential to be entirely controlled by competent American authorities with the ability to regulate GMOs based on gene traceability.

The argument to label or not to label genetically modified (GM) foods is one of the numerous issues shaping debates about modern biotechnology (Zainol et al., 2015). Though GM foods present numerous benefits in the current marketplace, modern biotechnology poses a threat to wary consumers' conceptions stemming from technological skepticisms and lack of information (Zainol et al, 2015). Many of GM's adversaries believe biotechnology to be "credence goods" that may harbor hazards that remain obscure and have potential to manifest long after irreversible damage has been caused (Zainol et al, 2015). These goods are engineered to express traits such as herbicide tolerance, insect resistance and abiotic stress resistance (Zainol et al, 2015).

Modern advances in biotechnology have enabled scientists to change the DNA of crops and other foods by precisely inserting one or more genes unrelated with the species, resulting in a plant or animal containing a varied amount of new genes. Other techniques like cell fusion, radiation and chemical mutagenesis fall under this broad umbrella as well, and all these processes are cause of concern that these changes may alter traditionally-grown crops in unforeseen ways (Yang and Chen, 2016). The original concern regarding GMOs was that of allergic reactions in people, which a 2005 review of allergen testing proved incorrect (Lehrer and Bannon, 2015). Another concern is that GMOs could cause horizontal gene transfer, or the transfer of one gene to another animal in a way not found in nature. However, studies disproved this concern as well, showing that the risk of horizontal gene transfer from GMO plants and animals is extremely low (Yang and Chen, 2016).

According to a broad scientific consensus, currently marketed GMOs are of no greater risk than conventionally-bred organisms (AAAS, 2012). In 2012, the American Association for the Advancement of Science publicly stated GMOs are no more detrimental to human consumption than the same foods containing ingredients from crop plants grown through conventional techniques (AAAS, 2012). GMO advocates support GM use to increase food production, arguing that the explosion of populations amongst all continents has created an exponential demand for food (Yang and Chen, 2016).

The U.S. Food and Drug Administration (2001) defines the term “genetically modified organisms” as “originally used by the molecular biology scientific community to denote a living organism that had been genetically modified by inserting a gene from an unrelated species.” Because genes from unrelated organisms are not transferred naturally, biotechnology is utilized to create these “transgenic” organisms (U.S. Food and Drug Administration, 2001). Organizations studying the presence of GMOs in America estimate between 75-80 percent of all

packaged or processed food items available at supermarkets nationwide contain GMOs (Center for Food Safety: About GE Foods, 2014; Martin, 2013; Pew Initiative on Food and Biotechnology, 2005). A large contributor to this factor is the U.S. crop production. The U.S. cultivates the largest amount of GM crops in the world and many Americans rely heavily on both these crops and processed foods (GM crops: A story in numbers, 2013).

Weaving in and out of the domain of public concern, GM foods have been a persistent topic of discussion since their 1970 inception and eventual marketplace presence with the Flavr Savr (GM crops: A story in numbers, 2013). The outcome of genetic modification, the act of taking certain sections of genetic code from one organism and placing that gene in another for a desired effect, varies from plants' increased resistance to pests/pesticides to creating foods with altered nutritional values to crops with the ability to grow at a more rapid speed. These crops were introduced to both EU and US markets starting in the late 1980s (GM crops: A story in numbers, 2013). Western Europe was quick to limit the introduction of GM foods on the market (GM crops: A story in numbers, 2013), but American activists had mixed success combating the introduction of GMOs in the political sphere (Ruth et al, 2016).

Just a couple decades after the introduction of GM crops, in 2012, 174 million hectares of farmland worldwide were devoted to their growth (GMO Compass 2014). This is equivalent to the total amount of arable land within the US at that time (Trading Economics 2014). GM plants account for roughly 93 percent of soybeans, 90 percent of maize, 95 percent of sugar and 90 percent of cotton produced in the US (Schurman et al, 2003). Despite this prevalence, differing state regulations within the country have lead to divide and confusion regarding the foods and their production (GM crops: A story in numbers, 2013). These differences range from the unlimited production of unlabeled GM crops to the outright ban of their production and sale.

Literature Review

The dispersion of wealth in America echoes American populations seeking out “better for you” foods. According to a study by “Nutraceuticals World,” consumers said buying local (37 percent), organic (33 percent) and non-GMO (30 percent) are all important factors to them when shopping for food (More Americans Embracing Plant-Based, Organic & Non-GMO Foods: Dairy Alternatives Ranked as the Favorite 'Better-For-You' Food, 2016). Price, cited by 64 percent, is the largest reason consumers hold back from purchasing new foods. Concerns about taste and texture ranked second and lack of store availability, third. Approximately one-third responded that they were willing to pay an additional $2.00 or more for foods thought of as better-for-you, like GMO-free and organic (More Americans Embracing Plant-Based, Organic & Non-GMO Foods: Dairy Alternatives Ranked as the Favorite 'Better-For-You' Food, 2016).

America’s perception of “natural” foods vary. Consumers today equate natural and/or stereotypically “clean” foods and products with a healthier lifestyle (James, 2014). With an influx of advertising communications through social media and other outlets, consumers have more power to hold companies accountable when it comes to the transparency of both ingredients within products and the manufacturing practices used to produce them. Now, more than ever, consumers are basing purchases off a more “value” driven perspective (More Americans Embracing Plant-Based, Organic & Non-GMO Foods: Dairy Alternatives Ranked as the Favorite 'Better-For-You' Food, 2016). One in two consumers have cited “brand that I trust” as a top factor in purchase decisions (James, 2014). Truthful labeling is a vital way to build consumer trust, as people shop according to values based on product and ingredient factors. GMOs are one of the most widely-debated labeling topics and a forefront issue among over 8 in 10 healthy-lifestyle consumers (More Americans Embracing Plant-Based, Organic & Non-GMO Foods: Dairy Alternatives Ranked as the Favorite 'Better-For-You' Food, 2016) although many product labels do not yet clearly identify their presence.

Although humans have been modifying the genomes of plants and animals for thousands of years utilizing conventional breeding techniques, the introduction of transgenic food has created a unique, unprecedented situation within human history: a conflict every nation must grapple with in roughly the same time frame. This grappling exists at sub-national, national and supranational levels. Currently, 28 countries grow GM crops and 64 countries mandate GM labeling (Healthy Conscious Consumers Shop Values, Seek Non-GMO and Food Transparency, 2015). A minority of countries including Zambia, Syria, Bhutan, Peru and Benin all completely restrict the production, importation and use of GM products country-wide (James, 2014).

Numerous controversies increased public awareness of GM foods within Europe, including the introduction of a bovine growth hormone in England. Mad cow disease lowered European trust in the government's regulations on food (James, 2014). Combined with Monsanto's ultimate decision not to label soybeans as GM at the product's inception and their overall "bullish approach to the introduction of their products in Europe" (Popek and Halagarda, 2017), Europe's wide distaste expanded to the company itself. In reaction to Monsanto's onset of products within Europe and with aid from labeling regulations, activists boycotted GMOs and genetically modified products sans labels were more or less extracted from the continent.

As described by international agribusiness scientists Schurman and Munro, the conflict of GMO legislation arises between activists and agribusiness defined by their "lifeworlds," two different ways of "looking at the world that are in this case mutually exclusive"(Schurman et al, 2003). The "lifeworld" of biotechnology, the stance often adopted by scientists and researchers, is deeply rooted in the belief that scientific research is key for human advancement. The arguments on the side of biotechnology are that GMOs have proven safe for consumers, have aided the reduction of worldwide hunger and that GM crops improve the lives of farmers.

The other “lifeworld” of American anti-GMO activists is spurred by fear and skepticism for science and profit-driven progress. The activist roots against GM foods were based on concerns regarding the Global South’s exploitation, capitalism and the environment. Activists criticize possible effects on diminishing biodiversity, unknown health impacts after long-term consumption and the economic effects on farmers and small businesses. These anti-GMO groups often ally themselves with consumer advocacy groups concerned with the right to know what they are consuming, battling large-scale corporations in the process (Popek and Halagarda, 2017).

Consumer criticism has deeply affected major companies as recently as June 7, 2016. In 2014, General Mills removed all GMOs from their original Cheerios and Chobani pledged to work towards non-GMO feed for its dairy cows (Schurman et al, 2003). In 2015, Hershey’s removed genetically engineered ingredients from “Kisses” and milk chocolate bars, Hellmann’s offered non-GMO mayonnaise options, Similac introduced a non-GMO infant formula and Campbell’s released several organic and non-GMO products including organic soups and goldfish crackers (Green America: The Tipping Point Is Here On GMOs, With 10 Major Companies Shifting To Non-GMO Products, 2016).

2016 saw the introduction of GMO-free hummus from Sabra Hummus and non-GMO infant formulas from Enfamil and Nestle (Green America: The Tipping Point Is Here On GMOs, With 10 Major Companies Shifting To Non-GMO Products, 2016). These major food companies, along with countless others, understood the tremendous consumer demand for such products and chose to change their products to satisfy this demand. Campbell’s was the first major packaged food company to voluntarily clearly label GMOs on their packages. Kellogg’s, Mars, General Mills, Con Agra and Del Monte have all committed to label products made with GMOs (Green America: The Tipping Point Is Here On GMOs, With 10 Major Companies Shifting To

Non-GMO Products, 2016). Although there is no clear current legislation regarding labeling, these companies chose to specify genetically modified ingredients to meet consumer interests.

On March 3, 2016 Paul Norman, President of Kellogg North America, issued this statement on GMO Labeling:

> At our core, Kellogg believes in transparency and that people should know what's in their food and where it comes from...As a company that sells food in every state, we know that an inconsistent patchwork of labeling laws like the one that goes into effect July 1 in the State of Vermont is confusing and will increase grocery costs for American families and our business.
>
> We will continue to strongly urge Congress to pass a uniform, federal solution for the labeling of GMOs. In fact, we believe an agreement on one is achievable. But until a federal solution is reached, and in order to comply with Vermont's labeling law, we will start labeling some of our products nationwide for the presence of GMOs beginning in mid-to-late April. We chose nationwide labeling because a special label for Vermont would be logistically unmanageable and even more costly for us and our consumers...We also believe that the food industry should move beyond a debate about labeling and instead engage in a more constructive dialogue about the important role biotechnology can play in the future of food and in feeding a growing population around the world (“Statement from Paul Norman,” 2016).

As more and more companies evaluate their labeling of GMOs, particularly if this labeling may prove advantageous to the manufacturer, the pressure for labeling standards in the US has increased greatly. Currently within the US, American-produced GMOs are currently regulated and monitored by three governing agencies: the Food and Drug Administration (FDA), the Department of Agriculture (USDA) and the Environmental Protection Agency (EPA). This

shared power has given rise to confusion regarding regulatory roles, as each agency has differing opinions in procedure. While the FDA is responsible for regulating nutrient content and the production of GMOs, the USDA oversees the safety and completeness of test fields used by bioengineering companies to test their new strands. The EPA's role is to regulate any GM plants that contain pesticide-related genes and determines the effects genetically modified plants may have on the overall environment. Food is evaluated for toxicity and direct health effects, tendency to cause allergic reactions in humans, proteins synthesized by new gene(s), nutritional effects caused by genetic modification and any unintended effects from gene insertion (Davidson and Tish, 2014). There is no standard for holistic, scientific testing and regulation of foods by one agency.

The European Union (EU) regulates GMOs through an extrapolated application procedure resulting in a single approval for GMO cultivation, use in human foods and use in animal feeds. The European Food Safety Authority (EFSA) is responsible for risk assessment of GM crops, and their report is then evaluated by at least two more commissions and committees before any form of approval can be granted. In Australia, the Office of the Gene Technology Regulator (OGTR) is responsible for overseeing all GMOs and genetically modified products. GM foods must undergo a safety assessment by Food Standards Australia New Zealand (FSANZ), a government agency, before they can be sold anywhere within Australia or New Zealand (Davidson and Tish, 2014).

One major difference between the regulation of GM foods in the United States and the EU is within each nation's approach to labeling requirements. Precautionary measures to protect human health are often applied in what could be described as "precautionary" in principle. In the United States, labeling of GMFs is voluntary by brand, and the decision to label a food as genetically modified is left up to individual companies. This, however, may change in

the future. A proposition (citizen-originated law) was put to a vote in November 2012 that required all GMOs to be labeled as such if sold in the state of California. The law did not pass, echoing Vermont's attempts for state-wide labeling. In the EU, labeling of GMOs is mandatory. Other differences between the EU and the US involve tracking GM through the production process to prevent unintended contamination.

Unable to find effective regulation, American law has been inconsistent regarding GM labeling. In 2014, Vermont became the first state to require mandatory GM labeling throughout its borders. Connecticut and Maine followed suit, passing GMO labeling laws to go into effect once neighboring states passed similar laws. In response to these statewide efforts, Representatives Mike Pompeo (R-Kan.) and G. K. Butterfield (D-N.C.) introduced federal legislation. This recent ruling on July 29, 2016 saw President Obama sign into law a bill, H.R. 1599, that killed Vermont's popular yet controversial Act 120 requiring clear, easy to read GM labels on food packaging produced within and shipped to the state. In addition, this bill also pre-empts labeling laws in Connecticut, Maine, Alaska and seed labeling laws in Vermont and Virginia. It was meant to prevent other states from adopting similar legislation in the near future, a blockade for dissemination and discrepancy between state legislature.

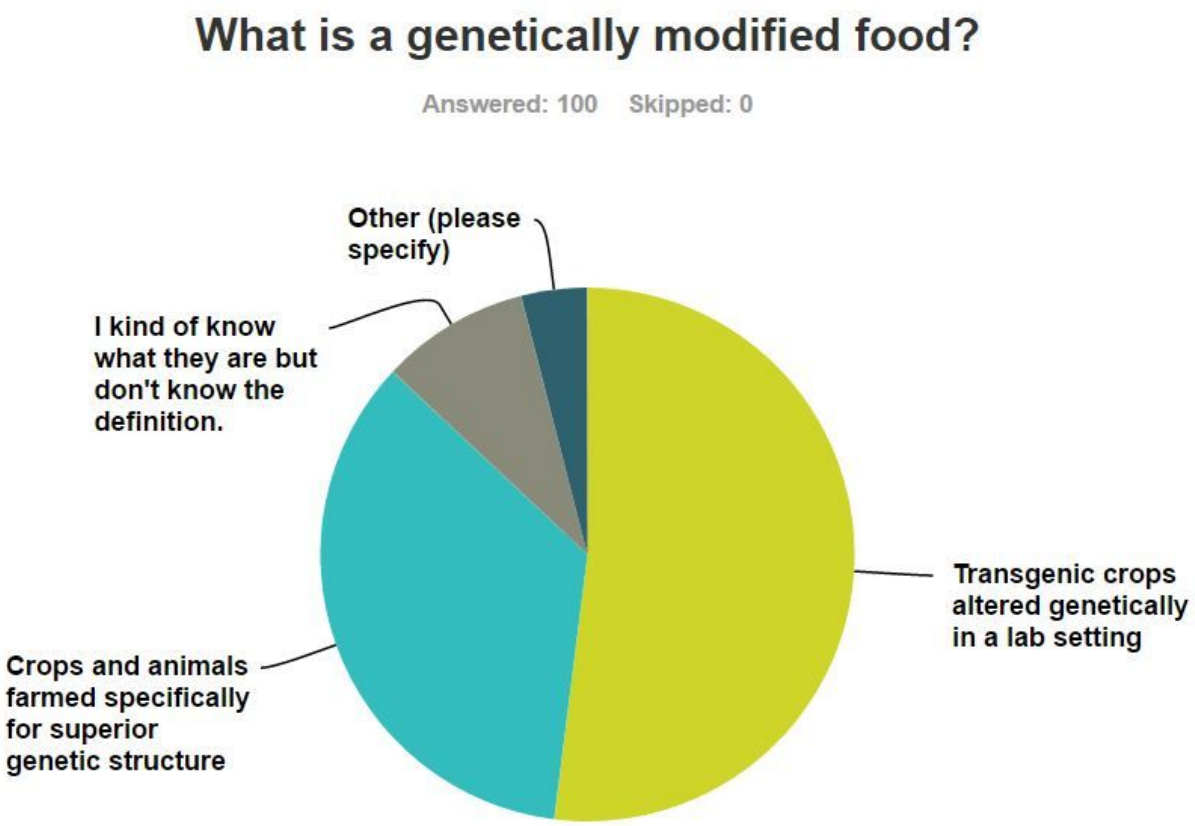
Pompeo's "Safe and Accurate Food Labeling Act of 2015" imposes a relatively weak labeling requirement without penalties for noncompliance. By giving companies the option to include QR codes of 1-800 numbers on packages, companies are granted the privilege of disclosing the information in a manner more hidden than most consumers would deem successful. The bill itself imposes a timeline for the USDA, which will have two years to draft guidelines for the law. It also makes it harder for companies to voluntarily disclose the presence of GMOs, and does not impose a strict set of guidelines for labeling.

Although hard, science-backed research has yet to produce conclusive results, science-based precautionary measures should be in place to protect American's human health. The public should have knowledge of potential dangers associated with their food, and credible scientific evidence should deny or support these dangers. Protective measures should be updated as relevant science advances, and policies should change to reflect these advances. Toxic food products should not be placed on the market in America. Science has progressed so much within the past forty years that uncertainties we had when first developing GMOs should no longer be prevalent within American policies. The problem is that regulations have not been scientifically updated, and the American public has not been well represented because of this.

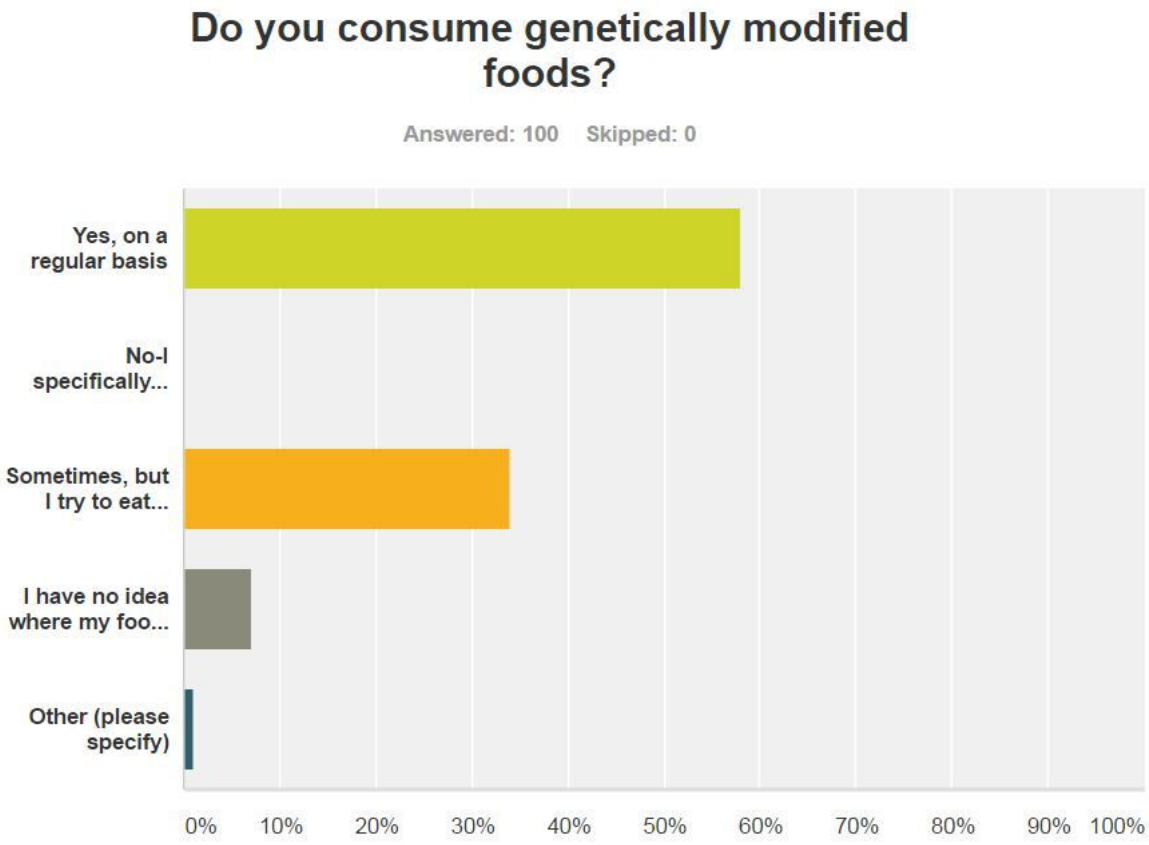
In cases of scientific uncertainty, America needs to take precautionary action. Legislation based on the current status of science, a constantly expanding field, needs to contain inbuilt mechanisms for revisions in response to increased knowledge. Risk analysis, management, communication and governance are needed to address the impact of GMOs on health, safety and environmental risks and business risks arising from the continuous development of new biological technologies.

Methodology and Results

Researchers conducted an anonymous online polling survey of 100 participants varying in age from high-school to retirees. These participants ranged from college-aged students to retirees, were within the researcher's social stratas and completed the survey online. The majority (72 percent) identified as being within the 20-30 year age group. 16 percent identified with being "over 25 years of age" and 12 percent responded as being under 20 years old. This survey consisted of seven questions, all multiple choice with one fill in the blank. The last polling question was entirely open answer.



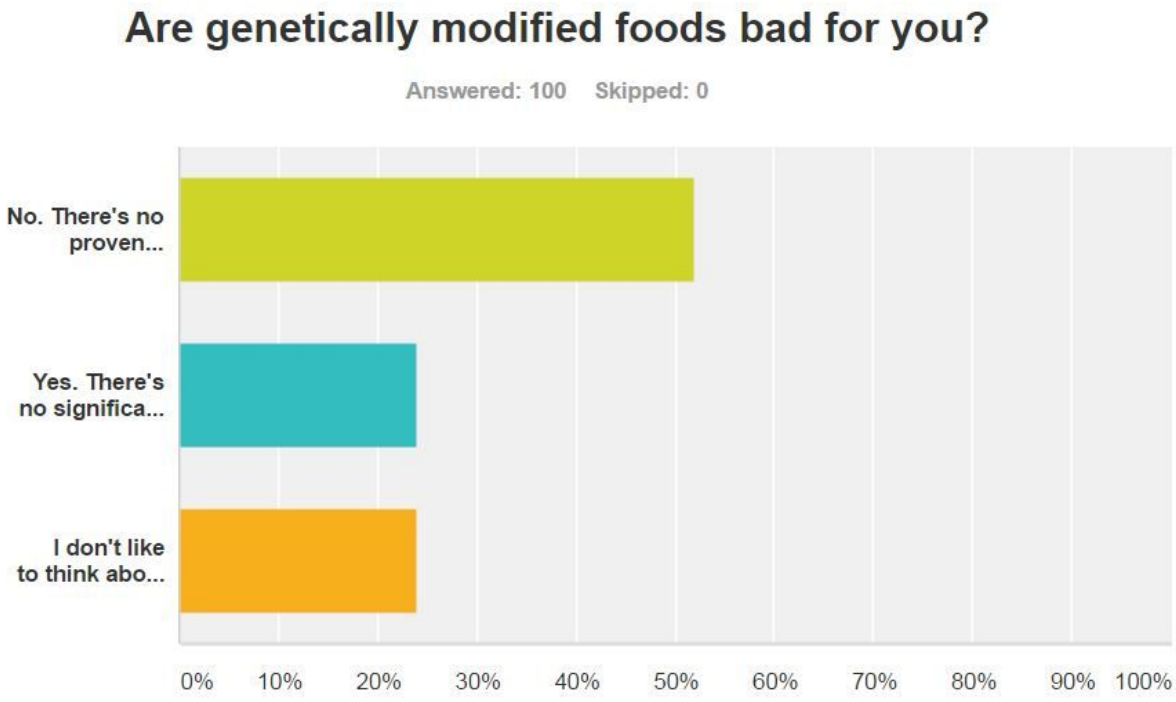
Over half (52 percent) answered that transgenic crops are “altered genetically in a lab setting,” while 35 percent responded GM foods are “crops and animals farmed specifically for superior genetic structure.” Zero participants responded that they had no previous knowledge of GMOs, while 9 percent answered they have too little knowledge of GM food to know the definition of what a GMO is. While GMOs are altered genetically in a lab setting, it is interesting to see the results that over one-third of the participants regarded this alteration as positive, making the food superior to that of more organically produced foods.



When asked if they eat GMOs on a regular basis, the participants answered 58 percent saying “yes, on a regular basis” and 34 percent responding that they “try to eat organic when possible.” Seven participants responded that they have no idea where their food comes from, and one participant responded that it is not something they look for while disseminating between food products. This polling question was meant to gauge consumer interest in regards to organic foods juxtaposed with anti-GM sentiments.

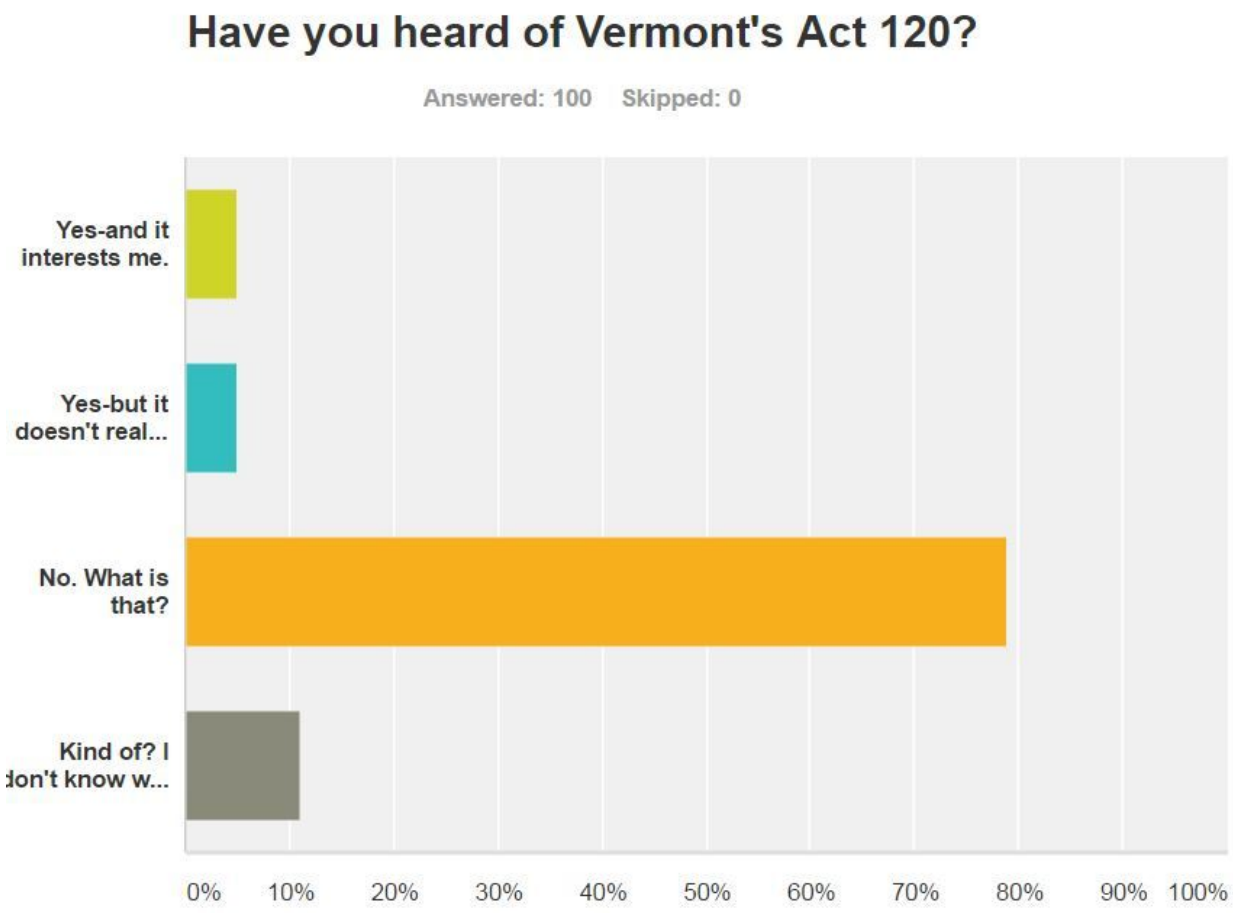
This particular question highlights the idea that consumers are generally concerned with eating organically and avoiding GM foods, but this concern is not entirely a priority. These results undermine the concerns of major food corporations doubting the need for GM labeling because it would be detrimental to their business. Although some participants are concerned

with GMOs, these results prove that it is not a high enough priority when juxtaposed with price and conveniency to prove a real concern to the average American consumer. Over half the respondents are aware of their GMO consumption and unabashedly revealed this within the poll.



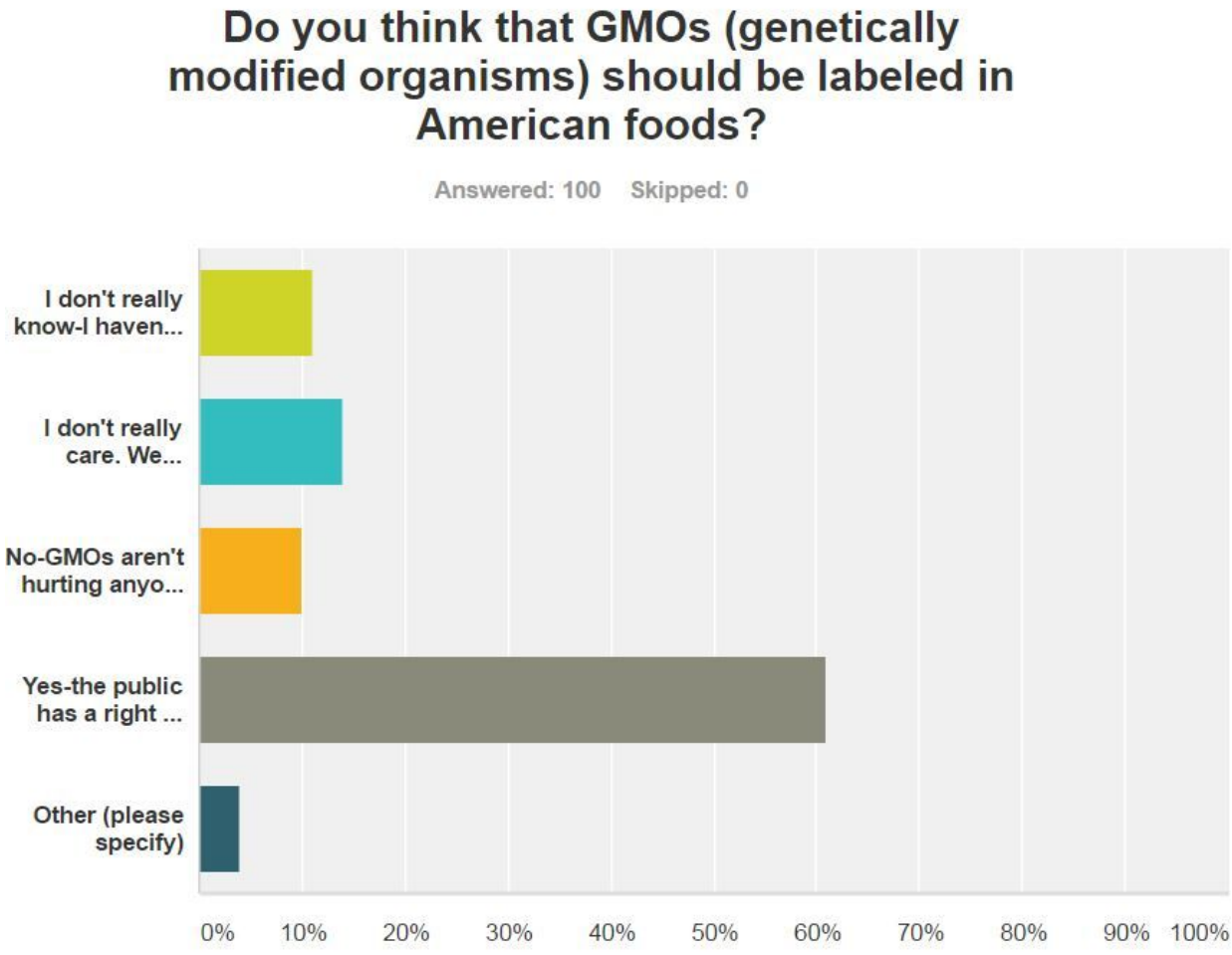
A third, more direct question asked the participants if “genetically modified foods (are) bad for you?” Over half (52 percent) the respondents answered that there is “no proven scientific evidence saying they are.” The other 48 percent was more split with this answer, with 24 percent responding “yes-there is no significant scientific data saying they are not” and the remainder responding that they don’t know the answer and don’t spend time thinking about it. These results are interesting because they are so split. Though half of the respondents believe transgenic foods are not “bad” for the population, a quarter responded that they are indeed

“bad” and another quarter responding they are unsure. These split opinions are the result of varying amounts of research by participant. While some of the polling audience was more attuned to and aware of scientific literature regarding GMOs, much of the audience in both the poll and focus group represented a large portion of the country and were unaware and therefore wary of genetically modified foods and the science behind them. The responses to this question echo the deafening disconnect between science-based thinking and consumer wariness, highlighting the differing views within American society and scientific illiteracy.

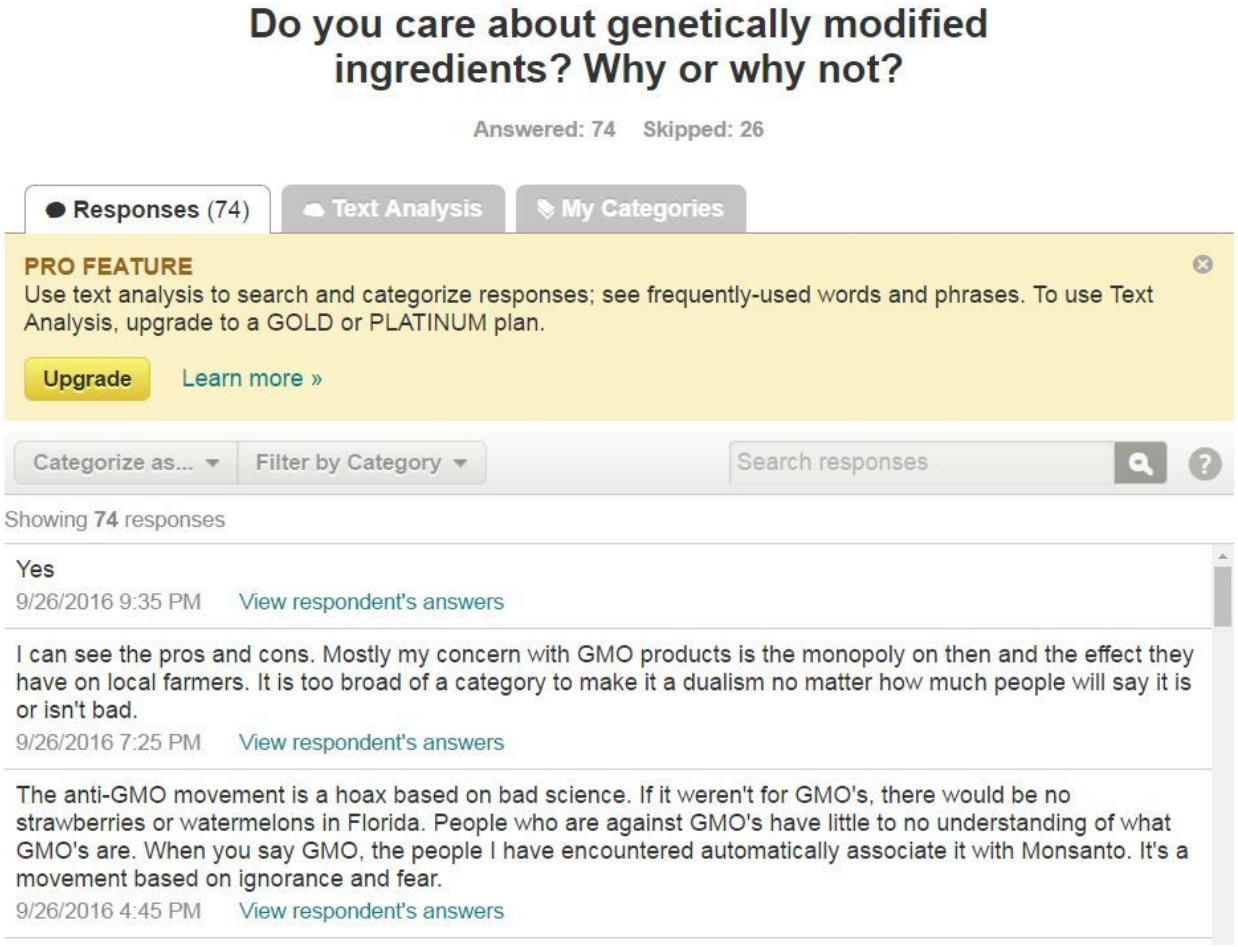


In regards to information-based news pieces regarding GMOs, a definite majority (79 percent) of the participants responded they have not heard of Vermont’s Act 120. Only 5 of 100 responded that they knew of the act and “it interests me.” Five responded that they knew what it

was but it didn't interest them, and eleven responded that they had heard of it but didn't know its significance. Act 120 is often regarded as "a light in the DARK" (DARK referencing the DARK Act) that was debated as recently as July 1, 2016, only a few months before the survey was conducted. This being said, the regard and priority of GMOs is very low in the minds of modern Americans ranging in age and income level. Inferring from these results, transgenic foods are not something of significant concern and are not highly researched by the average citizen. From this inference, it is safe to say that the labeling of GM foods will not have a significant impact on the food industry, yet the American legislation is still hesitant to label.



The majority of respondents (61 percent) polled that “the public has a right to know whether or not their foods have been genetically modified” when asked if America should enforce transgenic labeling. A quarter of the surveyed population responded that they either “don’t care” or “don’t really know” if GMOs should be labeled, and 10 percent responded that “GMOs aren’t hurting anyone, so why should they be labeled?” Four respondents answered with their own answers, one of which was “yes, but there should be a published list of criteria that explains what constitutes a GMO, and maybe labels that correspond to levels of modification.” This response best resonates with the purpose of this research and further advances the idea that Americans imply the right to know if their foods are GM but the criteria should be dense, public and scientifically based. The responses to this question further suggested that the American public believes that they have a right to know if foods are GM, or else the public is so far removed from the controversy that they hold no concerns regarding transgenic organisms. Only 10 percent of the respondents answered that GMOs should not be labeled on the grounds that the foods hold no detrimental effects.



When polled “do you care about genetically modified ingredients? Why or why not?” with the option of a fill-in answer, the results varied but leaned towards general concern for GM ingredients. This open-ended question challenged respondents to consider and admit their own opinion regarding GMOs, and all respondents either expressed a concern for GM foods or dismissed the foods as being scientifically based, therefore inherently fine for human consumption. Concerns ranged from economic to scientific and miniscule to disturbed, with multiple respondents claiming their concern being “the effect on local farmers” in contrast with general health concerns about consumption. Multiple respondents answered that the American public should have more of an awareness of where and how their food is produced, but that they personally do not view GMOs as unsafe. Respondents indicated the need to genetically

modify foods/plants for their survival, the general opinion being that this use of genetic modification was valid in the respect of food preservation.

Results and Discussion

Qualitative research found through surveys and a focus group revealed mixed feelings regarding genetically modified foods, though there was general concern. While there is a definite concern regarding transgenic food, many consumers feel they do not have access to appropriate knowledge regarding GM foods necessary in deeming GM foods healthy or unhealthy for human consumption. According to this qualitative research, consumers generally regard GM foods as “bad” though they accept them as necessary within modern society and America as food sources. Most of the respondents (58 percent) admitted they eat GM foods on a regular basis while 7 percent claimed to have no idea where their food comes from. This dissemination of information reveals that Americans, when asked, claim to have a concern about GM foods, but this concern may or may not translate into buying habits.

Companies are hesitant to label foods because mixed responses to GMOs intimidate them (Zainol et al, 2015). However, this research accentuates the idea Americans feel like they don’t have appropriate knowledge to make informed decisions in regards to GMOs, and therefore lean more to the side of acceptance of this product that is already so widespread. Consumers eat GM foods everyday, and most (58 percent) are aware of this fact. These consumers are aware, yet they still consume the product due to a variety of conditions including cost and taste. When contrasting the desire to eat non-GMO and the price associated with it, the majority of respondents answered they would not go out of their way to eat organically and non-GMO. This suggests that, even if GM foods were labeled, they would still be just as quickly consumed as an unlabeled food. Currently, consumers value price and taste more than manufacturing processes.

Recent studies by “Just Label It!” show that over 90 percent of Americans support mandatory labeling of GMOs (Zainol et al, 2015). The qualitative research done through polling questions and focus groups within this study resonated this sentiment. Though many of the respondents felt they needed more information, they responded that the American public has the inherent right to know the processes involved in the growth of their foods, similar to the carb and calorie content.

Conclusion

On July 31, 2016, former President Obama signed bill S. 764 into existence. The bill puts into place an overarching standard for foods made with GM ingredients. The move came two weeks after Congress passed legislation laying out the need for labeling on all food packages indicating whether or not they contain GMO ingredients in direct response to Vermont’s Act 120 and inter-state discrepancies. A big criticism of this bill is its allowance for companies to use QR codes or 1-800 numbers as a form of GMO labeling, an unclear and obscure solution to the public’s outcry for mandatory labeling citation. Some opponents currently call the bill the DARK Act, short for “Denying Americans the Right to Know” in argument that these alternative labels discriminate against low-income consumers who lack the technology to access the information.

GMOs are estimated to be in the majority of our food, from 75 percent to 80 percent of America’s daily consumption (Zainol et al, 2015). Though the FDA has made statements saying the foods are safe for human consumption, most consumers argue that, safe or not, they still have the right to know if what they are consuming has been genetically modified. American companies argue new labels would prove too expensive (Zainol et al, 2015), but currently 64 countries, including most of the EU, have already transitioned ("More Americans Embracing Plant-Based, Organic & Non-GMO Foods: Dairy Alternatives Ranked as the Favorite 'Better-For-You' Food,” 2016). It was found in this qualitative research study that most

consumers polled would not change their buying habits when purchasing GM foods, and that genetic modification is second to taste and price.

The need to label GM foods is viewed throughout public opinion polls as something the public is concerned with. The general sentiment is that, despite the food's health value, the American public has an intrinsic right to know if the food they are consuming is indeed transgenic. These labels should be clear, easily seen and not hidden. The participants polled and surveyed viewed QR and 1-800 number are interim solutions to be enforced while the FDA researches the long-term effects of GM foods. As seen when the bill was initially proposed, the public does not accept this QR code solution as permanent. It does blatantly disregard American consumers without access to technology, favoring citizens with cell phones. Cell phones should not be necessary in disseminating nutritional facts regarding the foods citizens purchase on a daily basis. This information should be open, transparent and viewable in-store. American politicians need to honor the public's cries for labeling and meet the rest of the world, which is already labeling this essential fact. Easy to access, understandable marketing efforts should be employed regarding transgenic foods. The public should be directed to scientific research translated for public consumption, and such research should be peer-reviewed and relevant.

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