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# Genetically Modified Foods: To Label or Not to Label

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## **GENETICALLY MODIFIED FOODS: TO LABEL OR NOT TO LABEL**

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## I. Introduction

The U.S. Food and Drug Administration (“FDA”) is one of the most influential and instrumental governmental entities in the United States today. The FDA regulates the food, drugs, medical devices, vaccines, cosmetics, tobacco products, and animal and veterinary products that circulate our consumer market every day. The breadth of products it is responsible for overseeing makes obvious why regulation of all these arenas is overwhelmingly demanding and complex.

One of the FDA’s most important areas of regulation is the food industry. Every year, thousands of new food products are introduced to the marketplace and the FDA is responsible for the safety of all of them. This duty has become more difficult and convoluted with modern advancements in technology and has raised a number of questions with regard to safety and wholesomeness. New processing methods for creating and modifying the food that reaches supermarket shelves has been a source of great debate, and many are hesitant to enter what they see as uncharted waters. For others, advances in technology allowing new methods of food processing and production marks a revolution that could solve many of the problems facing the agricultural economy today.

Ensuring that the foods themselves are safe and wholesome does not mark the end of the FDA’s responsibility. Wholly apart from the FDA’s obligation to inspect and monitor the inside of any food package is the duty to make sure that those packages are properly labeled. Much of today’s controversy centers on what a food label should include in order to give consumers sufficient information to make knowledgeable purchasing decisions.

Regulating the contents of food labels became an obligation of the federal government when the Food, Drug, and Cosmetic Act (“FDCA”) was passed in 1938. The Act required that four items be included on the label of food products: the ingredients used in the composition of the food, the net weight, the name and address of the manufacturer, packer, or distributor, and the identity of name of the food.<sup>1</sup> The Act also required that foods with certain ingredients, like wheat and nuts, be prominently displayed to serve as a warning to individuals with food allergies. In 1990, Congress imposed the additional requirement of providing consumers with nutritional information such as serving size, calories, fat, protein, cholesterol, and carbohydrates.<sup>2</sup>

Congress has continued to alter exactly what must be included on a product’s label, but the main aim of labeling has never deviated, which is to “communicate meaningful information in a clear and understandable manner.”<sup>3</sup> One technological advancement in particular, known as biotechnology, has created new difficulties with respect to this goal. Biotechnology, also known as genetic engineering, has taken the forefront in recent years as a process for producing foods that Americans consume on a daily basis. It is used for the production of crops and plants, animal and soy products, and yields a vast majority of the food items purchased and consumed by Americans today.<sup>4</sup>

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<sup>1</sup> *See generally* WEIRICH, P., LABELING GENETICALLY MODIFIED FOOD: THE PHILOSOPHICAL AND LEGAL DEBATE (Oxford University Press, 2007).

<sup>2</sup> 21 C.F.R. § 101.9(c) (2012)

<sup>3</sup> Weirich, *supra* note 1.

<sup>4</sup> *See generally* PAREKH, S. R., THE GMO HANDBOOK: GENETICALLY MODIFIED ANIMALS, MICROBES, AND PLANTS IN BIOTECHNOLOGY (Humana Press, 2004).

Currently, the government does not require food manufacturers or retailers to put a GMO or non-GMO label on food items to indicate what production method was used. While some companies have voluntarily chosen to display a non-GMO sticker in an attempt to express a commitment to natural production methods, there is no legal obligation to do so. The FDA's decision to abstain from initiating a mandatory GMO labeling scheme has been the topic of a heated debate that centers on a consumer's right to know how food is being produced today. Activist groups and individuals that contest the genetic modification of food are pushing the federal government to regulate what they see as a dangerous and problematic practice, while most farmers, agricultural corporations, and food manufacturers are pushing heavily in the opposite direction. These GM food developers fear and expect that enactment of government regulated labeling will devastate their most lucrative industrial practice.

Opponents and proponents of mandatory labeling have meticulously and comprehensively researched the practice of biotechnology as well as its effect on humans and the environment in support of their arguments for pro- or anti-labeling. The novelty of the technology makes it difficult to assess the validity and reliability of studies conducted to date, which is perhaps why the FDA has yet to intervene. However, the issue seems to be approaching resolution because of the attention that it has been given by political groups and the media. As such, both sides expect that the federal government will soon state its position on whether GMO labels will be legally mandated in the near future.

## II. What is Biotechnology?

Biotechnology is an offspring of the studies and findings of scientist Gregor Mendel in the late 1800s. Mendel manipulated the genes of various plants and was able to mate them with a “high probability of achieving a desired result,” which is known today as selective breeding.<sup>5</sup> Mendel’s success led farmers to adopt his practices, which in turn allowed them to raise high-quality crops at a much faster rate than traditional methods of farming.<sup>6</sup> In the 1970s, geneticists made another revolutionary advance that involved splicing DNA molecules and combining them with molecules of different origins. This process, known as recombinant DNA technology, allowed scientists to alter genes within organisms and across species, changing the physical and chemical properties of plants and organisms.<sup>7</sup> Mastery of this method led to substantial use of genetic engineering in the agricultural and pharmaceutical industries beginning in the 1980s. Thus, the genetically modified organism (“GMO”) was born.<sup>8</sup>

In 1992, the FDA conducted its first review of a GMO food. Calgene Inc. produced the first commercial GMO food, the Flavr Savr tomato, which had “the ideal property of delayed ripening.”<sup>9</sup> Because of this ability, the tomato had a longer shelf life and gave farmers more time to get their produce to supermarkets.<sup>10</sup> This resulted in less food waste and lower costs for the farmers. After conducting studies on the tomato, the

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<sup>5</sup> HARTWELL, L., L. HOOD, M. GOLDBERG, A. REYNOLDS, L. SILVER, AND R. VERES, *GENETICS: FROM GENES TO GENOMES* (New York: McGraw-Hill, 2008).

<sup>6</sup> *Id.*

<sup>7</sup> PINSTRUP-ANDERSEN, P., AND E. SCHIOLER, *SEEDS OF CONTENTION* (Johns Hopkins University Press, 2000).

<sup>8</sup> *See generally* D. MACKENZIE, *INTERNATIONAL COMPARISON OF REGULATORY FRAMEWORKS FOR FOOD PRODUCTS OF BIOTECHNOLOGY* (Canadian Biotechnology Advisory Committee, 2000).

<sup>9</sup> *Id.*

<sup>10</sup> *Id.*

FDA released a statement that Flavr Savr tomatoes were “substantially equivalent” to traditionally bred tomatoes based on nutritional value, composition, and safety.<sup>11</sup> The fact that the technological process is not evaluated by the FDA is controversial and troublesome for those demanding mandatory labeling. These individuals and groups attest that the FDA’s method of testing only the end product is inadequate and leads to inaccurate results.<sup>12</sup>

Shortly after evaluating the Flavr Savr tomato, the FDA released more general statement regarding its views on GMO foods.<sup>13</sup> It stated once again that there is no meaningful difference between bioengineered foods and foods produced via traditional processes, so the “key factors in reviewing safety concerns should be the characteristics of the food product, rather than the fact that the new methods are used.”<sup>14</sup> The FDA commented on their role in regulating both genetically modified foods and traditionally produced foods, and again made clear that the end product, rather than the process, will be evaluated.<sup>15</sup>

Despite the fact that the FDA has stated that it has found no significant difference between foods produced using biotechnology and foods produced using conventional methods, whether consumers should be made aware of how specific foods items were produced remains a strongly debated topic. Both proponents and opponents of mandatory

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<sup>11</sup> *Id.*

<sup>12</sup> *See generally* NON-GMO PROJECT, [www.nongmoproject.org](http://www.nongmoproject.org) (last visited May 3, 2013).

<sup>13</sup> *Statement of policy: Foods derived from new plant varieties*, FOOD AND DRUG ADMINISTRATION, <http://www.fda.gov/Food/GuidanceComplianceRegulatoryInformation/GuidanceDocuments/Biotechnology/ucm096095.htm> (last visited Apr. 22 2013).

<sup>14</sup> *Id.*

<sup>15</sup> *Id.*

GMO or non-GMO labels have passionately expounded on the arguments giving weight to their beliefs, and the validity and legitimacy of both sets of opinions explain why the matter remains unresolved.

Today, genes from unrelated organisms may be introduced into plants to delay ripening and rotting, to add color before harvesting, to reduce the need for fertilizers, to confer resistance to pests and fungi, and to facilitate the use of herbicides on harmful weeds.<sup>16</sup> Because of these purported cost-effective qualities, supermarkets have become inundated with genetically modified foods. It has been reported that over 80% of processed foods in supermarkets contain GM material, including 90% of soy products and over 70% of corn.<sup>17</sup> Given the extremely high percentage of both processed foods and agricultural produce that contain GM material, American consumers are likely purchasing quite a high number of genetically modified foods every day, whether they know it or not.

Regardless of one's position on the matter, the crux of the debate focuses largely on the consumer's right and/or need to be informed. Opponents of mandatory labeling take the FDA's review as proof that it makes no difference how a food item is produced, since the end result is virtually identical. They argue that the absence of any reported negative side effects nixes any need for GMO labels, and that doing requiring them would cause a devastating decline in the demand for genetically modified foods. They also maintain that a GMO label would do more harm than good because it would be a source of confusion for American consumers.

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<sup>16</sup> *The Regulation of Genetically Modified Foods*, AMERICAN SOCIETY OF INTERNATIONAL LAW, [www.asil.org/insigh38.cfm](http://www.asil.org/insigh38.cfm) (last visited May 3, 2013).

<sup>17</sup> *Id.*

Conversely, proponents of labeling submit that without knowing the long-term health effects of GMOs, the FDA cannot say for certain that the end product is truly the same.<sup>18</sup> While some labeling advocates do not oppose the sale of genetically modified foods altogether, they hold that consumers have a right to know what they are putting into their bodies and that the government bears the responsibility of making this possible.<sup>19</sup> Even if a GMO label would initially cause confusion, Americans should at least have the opportunity to educate themselves and thereafter make informed purchasing decisions.

### III. Opponents of Mandatory Labeling

The most outspoken opponents of mandatory GMO labeling are farmers, supermarkets, and agribusiness companies, all of whom are major stakeholders in the GM industry. These groups have an enormous financial interest to defend against prospective labeling regulations. These groups assert that stamping a GMO label on foods is not only unwarranted, but also that it is harmful in that it would falsely alarm consumers.<sup>20</sup> Additionally, they argue that those concerned about consuming GMOs already have the ability to avoid them by purchasing certified organic produce.<sup>21</sup> The U.S. Department of Agriculture (“USDA”) implements certification standards for the organic production process, whereby an agricultural product can only be labeled organic if it contains at least

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<sup>18</sup> *Id.*

<sup>19</sup> *Id.*

<sup>20</sup> ASIL, *supra* note 16.

<sup>21</sup> *Adoption of genetically engineered crops in the U.S.*, ECONOMIC RESEARCH SERVICE, U.S. DEPARTMENT OF AGRICULTURE, <http://www.ers.usda.gov/Data/BiotechCrops/> (last visited Apr. 22, 2013).

95% organic ingredients, and opponents of labeling maintain that this sufficiently allows consumers to avoid GMOs.<sup>22</sup>

Opponents of mandatory labeling bolster their position with three main points. First, they highlight the various benefits that biotechnology has already introduced and will continue to provide. Second, they point out the negative effects that mandatory labeling would have on the United States consuming public. Lastly, they highlight and support the FDA's conclusion that foods produced via genetic engineering are categorically the same as traditionally produced foods.<sup>23</sup>

#### **A. The Benefits of Biotechnology**

Opponents of mandatory GMO labeling adamantly hold that implementation of a mandatory labeling policy would strip the marketplace of the many benefits that genetic engineering has introduced.<sup>24</sup> They specifically note the new waves of nutrient-enhancing capabilities, low costs of crop production, potential effects on world hunger, and decreased environmental impacts.<sup>25</sup> Overall, genetic engineering allows for “desirable attributes that farmers might not be able to achieve” using traditional methods of plant breeding.<sup>26</sup>

One central focus of biotechnology has been the nutrient enrichment of agricultural produce. By modifying an individual crop's genetic makeup, scientists have

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<sup>22</sup> 7 C.F.R. § 205.301(b) (2013).

<sup>23</sup> MACKENZIE, *supra* note 8.

<sup>24</sup> *See Generally Are Biotech Products Safe?* MONSANTO, <http://www.monsanto.com/products/Pages/biotechnology-safety-info.aspx> (last visited Apr. 28 2013).

<sup>25</sup> MONSANTO, *supra* note 25.

<sup>26</sup> PAREKH, *supra* note 4.

purportedly been able to add vitamins, minerals, and other vital nutrients to foods that might otherwise be lacking.<sup>27</sup> While this facet of biotechnology could certainly benefit the entire population, it is especially appealing for poorer countries facing starvation and malnutrition.

Monsanto, one of today's most notorious biotechnology corporations, has headed up a project to create a genetically engineered virus-resistant sweet potato for farmers in Kenya.<sup>28</sup> According to scientist Florence Wambugu, these genetically modified potatoes were bigger, richer in color, and retained more nutritional value. For many, this was proof that the sweet potato might offer "tangible hope" for hungry Africa.<sup>29</sup>

Another nutrient-enhanced crop under development today has been named golden rice.<sup>30</sup> Golden rice is being touted as "a solution to some childhood health problems in developing regions" and is gaining recognition for its potential to alleviate chronic malnutrition, specifically individuals in Asian countries whose diet consists largely of rice.<sup>31</sup> The rice is enriched with various essential vitamins and minerals, specifically iron and beta-carotene.<sup>32</sup> Beta-carotene, which the body converts into vitamin A, is naturally found in the stalks and leaves of the rice plant, but not in the actual grain itself.<sup>33</sup> In genetically modified golden rice, the beta-carotene is introduced into the actual

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<sup>27</sup> *Id.*

<sup>28</sup> Florence Wambugu, *Why Africa Needs Agricultural Biotech*, AGBIOWORLD (July 1, 1999), <http://www.agbioworld.org/biotech-info/topics/dev-world/africa.html>.

<sup>29</sup> *The use of GM crops in developing countries*, NUFFIELD COUNCIL ON BIOETHICS, <http://biotechbenefits.croplife.org/paper/the-use-of-genetically-modified-crops-in-developing-countries/> (last visited Apr. 22 2013).

<sup>30</sup> *Agricultural Biotechnology Playing Bigger Role in Food Output*, CNBC (Apr. 26 2011), <http://www.cnbc.com/id/42572371>.

<sup>31</sup> *Id.*

<sup>32</sup> *Id.*

<sup>33</sup> *Id.*

grain.<sup>34</sup> Implanting vitamins and minerals into a low-cost and easily accessible food has given a sense of optimism to many individuals looking for an answer to malnutrition problems across the globe.<sup>35</sup> While golden rice has not yet achieved a gold star from the FDA, many see the rice and other GMOs like it as a major leap forward in the fight against world hunger.<sup>36</sup>

In addition to arguing that biotechnology enhances the quality of crops, opponents of mandatory labeling also boast that genetic engineering also dramatically increases the quantity produced. In 2006, it was reported that “252 million acres of transgenic crops were planted in 22 countries by 10.3 million farmers.”<sup>37</sup> The majority of these food items were “soybeans, corn, cotton, canola, and alfalfa,” all of which had both herbicide- and insect-resistant qualities.<sup>38</sup> Supporters of biotechnology say that the process enables faster growth of better quality crops, all at a lower cost to farmers. Given the rising global population, “increasing the availability and sustainability of crops is a challenge for the farming industry”, and biotechnology has become a progressively popular method for increasing the amount of crops farmers can produce.<sup>39</sup> This prospective capability of feeding the masses has been given serious attention by groups and individuals aimed at pulling poor countries out of “economic and social despair.”<sup>40</sup>

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<sup>34</sup> *Id.*

<sup>35</sup> *Id.*

<sup>36</sup> Louise Chu, *Genetically Modified Food Labeling Through the Lens of Public Health*, UNIVERSITY OF CALIFORNIA SAN FRANCISCO (Nov. 5, 2012), <http://www.ucsf.edu/news/2012/11/13058/genetically-modified-food-labeling-through-lens-public-health>.

<sup>37</sup> *Genetically Modified Foods and Organisms*, U.S. DEPT. OF ENERGY GENOME PROGRAMS, <http://genomics.energy.gov> (last updated May 17, 2012).

<sup>38</sup> *Id.*

<sup>39</sup> CNBC, *supra* note 32.

<sup>40</sup> LACKNER, C., GM CROPS TOUTED TO FIGHT POVERTY, (National Post, 2003).

The Flavr Savr tomato makes it onto the list of genetically engineered crops whose properties permit lower-cost production and transportation.<sup>41</sup>

Jack Boynes, spokesman for Bayer's CropScience unit, reported that the number of Americans fed by one farmer has soared in the last several decades. Boynes says that in 1960, one farmer averaged feeding 26 people, but today, that number has risen to 155 people per farmer.<sup>42</sup> Without implementing new industrial practices to enable farmers to keep up with this rapidly increasing responsibility, there is no guarantee that the farming industry would be able to rise to the challenge. For this reason, governments are "embracing agricultural biotechnology, particularly insect-resistance traits and herbicide tolerance for crops," as these are just a few aspects of genetic modification that "help[s] farmers improve their crop yields while keeping costs low."<sup>43</sup> Herbicide-resistant plants have resulted in reduced use of insecticides, which has "facilitated minimum tillage practices."<sup>44</sup> These attributes have given way to less expensive farming practices, and in turn, a reduction in overall food costs.<sup>45</sup> According to agricultural industry consultant PG Economics, "biotech crops" have produced \$52 billion of farm-level economic benefits from 1996 to 2008.<sup>46</sup> The ability to cheaply produce food offers food security not only for poorer nations, but also for growing populations in all countries, including the United States.

Opponents of mandatory labeling argue that the attributes enabling low-cost crop production also yield positive environmental effects. Thus, in addition to benefitting the

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<sup>41</sup> MACKENZIE, *supra* note 8.

<sup>42</sup> LACKNER, *supra* note 41.

<sup>43</sup> *Id.*

<sup>44</sup> USDA, *supra* note 22.

<sup>45</sup> *Id.*

<sup>46</sup> USDA, *supra* note 22.

human race, it could also have a lasting effect on the ecosystem as a whole. Many scientific groups and technology companies collectively maintain that biotechnology has resulted in reduced “emission[s] of greenhouse gases from the soil and tractors” and that herbicide- and insect-resistant plants decrease the need for pesticides.<sup>47</sup> Pesticides have been known to be harmful to the atmosphere, plants, animals, and even humans, so decreasing the need for their use may protect the environment and the animals they usually kill off.<sup>48</sup> Many of these groups also claim that the biotechnology lends a hand in the conservation of soil, water, and energy.<sup>49</sup> By growing crops more quickly and efficiently, fewer natural resources are used to produce the same amount of crops. Advocates even go as far as to say that transportation costs will be brought down in the long-run, since the crops have a much longer shelf-life, and less of them go to waste.<sup>50</sup>

## B. Adverse Effects of Labeling

In addition to highlighting the claimed benefits of genetic engineering, opponents of GMO labeling have enumerated the ways in which labeling would directly harm American consumers and the economy as a whole. Specifically, they stress the impact that would have on the nation’s exports, the financial devastation that a decreased demand for GMO products would bring about for the agricultural industry, and the confusion that GMO labels would cause in the American marketplace,<sup>51</sup>

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<sup>47</sup> U.S. DEPT. OF ENERGY GENOME PROGRAMS, *supra* note 38.

<sup>48</sup> Damian Carrington, *GM crops good for environment, study finds*, THE GUARDIAN (June 13, 2012), <http://www.guardian.co.uk/environment/2012/jun/13/gm-crops-environment-study>.

<sup>49</sup> *Id.*

<sup>50</sup> MACKENZIE, *supra* note 8.

<sup>51</sup> USDA, *supra* note 22.

Opponents of mandatory labeling focus on the impact that GMO labeling scheme would have on our economy with regard to international trade. Given the general rejection of GMOs on a global level, requiring American manufacturers to place a GMO label on its products would drastically decrease international demand for its products.<sup>52</sup> An example of this is the European Union, had a strict moratorium in place that altogether restricted imports of GM foods until 2004.<sup>53</sup> Currently, Norway, Thailand, Saudi Arabia, Egypt, and the Philippines all other have bans on the importation of GM foods.<sup>54</sup>

On a national level, opponents maintain that enacting a new policy would of course involve additional administrative costs.<sup>55</sup> Considering the breadth of products that contain genetically modified ingredients, adding GMO labels to all of these items and thereafter monitoring them would be a gigantic federal expense.<sup>56</sup> Additionally, and perhaps more significantly, they point to the economic impact on supermarkets, farmers, and agribusiness companies. In recent years, the majority of these entities have relied almost entirely on the production and sale of GM foods to stay afloat in times of

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<sup>52</sup> MACKENZIE, *supra* note 8.

<sup>53</sup> Label GMOs

<sup>54</sup> Hartmut Meyer, *Countries & Regions With GE Food/Crop Bans*, ORGANIC CONSUMERS ASSOCIATION <http://www.organicconsumers.org/gefood/countrieswithbans.cfm> (last visited May 7, 2013)

<sup>55</sup> See generally Stanley R. Johnson, *Quantification of the impacts on U.S. agriculture of biotechnology-derived crops planted in 2006*, NATIONAL CENTER FOR FOOD AND AGRICULTURAL POLICY (Feb. 2008),

<http://www.ncfap.org/documents/Quantification%20of%20the%20Impacts%20on%20US%20Agriculture%20of%20Biotechnology.pdf>.

<sup>56</sup> *Id.*

economic calamity.<sup>57</sup> A drastic decrease in the demand of GM foods would be detrimental to the entire agricultural industry.<sup>58</sup>

According to a recent study, biotechnology has “increased crop production by 3.9 million tons, lowered crop production costs by \$1.9 billion, and increased growers’ net returns by \$2.6 billion” in 2006.<sup>59</sup> Opponents anticipate that the Americans will stop purchasing genetically modified food products simply because they are intimidated by the unknown, and given these figures, that is not a risk worth taking. They expect that requiring these cost-saving products to display a GMO label will underhandedly abolish biotechnology.

Opponents of labeling also address the threat of consumer confusion in support of their rejection of GMO labels. American consumers are overloaded with variables affecting their daily purchasing decisions. Nutrition information, allergies and ingredient intolerances, price, personal preferences, and where the item was produced are just a few of the features and influences consumers take into account when making food selections. Opponents of mandatory labeling strongly assert that the addition of a GMO or non-GMO label would further complicate the process, serving neither the interests of consumers nor producers of food items.<sup>60</sup>

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<sup>57</sup> *Id.*

<sup>58</sup> *Id.*

<sup>59</sup> Johnson, *supra* note 56.

<sup>60</sup> Edna Einsiedel, *Consumers and GM Food Labels: Providing Information or Sowing Confusion?* AGBIOFORUM (2000), <http://www.agbioforum.org/v3n4/v3n4a09-einsiedel.htm>.

As a general matter, American consumers do not comprehend what a genetically modified organism is.<sup>61</sup> Survey results have suggested that a large percentage of the U.S. population does not understand biotechnology, probably due “to a lack of education and exposure to biotechnology and general science.”<sup>62</sup> Given their novelty, GMOs seem to carry a negative connotation, and until consumers truly understand the process and all its implications, this stigma may not disappear. Entities opposed to labeling seem to take the stance that a GMO label would be a befuddling red flag to most all American shoppers, and that it would undermine the FDA’s main aim of providing clear and defined information to prospective consumers.<sup>63</sup>

### C. FDA’s Conclusion

As a final piece of their argument, opponents of GMO labeling point to the FDA’s conclusion that whether a crop is produced by traditional means or via biotechnology, the end product is categorically identical.<sup>64</sup> Since the end product is the same, the process is irrelevant; therefore, a GMO or non-GMO label is warrantless.<sup>65</sup> Major agribusiness companies like Monsanto and Syngenta claim that their products are just as safe for consumers as non-GMO products.<sup>66</sup> They support the FDA’s present policy of “not

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<sup>61</sup> S.H. Priest, *U.S. public opinion divided over biotechnology?* NATURE AMERICA (2000), <https://research.cip.cgiar.org/confluence/download/attachments/3452/U4.pdf>.

<sup>62</sup> *Id.*

<sup>63</sup> *Id.*

<sup>64</sup> Johnson, *supra* note 56, at 14.

<sup>65</sup> *Id.*

<sup>66</sup> MONSANTO, *supra* note 27.

regulating GM foods based on process” and of labeling specific products “only if they contain an allergen or different nutritional property.”<sup>67</sup>

Additionally, they stress that there have been no proven adverse effects on humans, animals, or the environment.<sup>68</sup> Assuming, *arguendo*, that genetically modified foods do not produce independent benefits, there is no data to substantiate the contention that they are unsafe or harmful.<sup>69</sup> While advocates of mandatory labeling have heavily emphasized the possibility of long-term effects, opponents maintain that assuming that they exist is an error that would derail the progress that biotechnology has facilitated in the agricultural industry.<sup>70</sup>

#### IV. Proponents of Mandatory Labeling

Proponents of GMO labeling have contested nearly every argument made against mandatory labeling, largely by rebutting the so-called benefits of biotechnology and pointing out its probable side effects. Many of these groups and individuals contest the genetic modification of food altogether, but have tailored their efforts to mandating labeling rather than to stopping genetic engineering altogether.

The Non-GMO Project is one of the strongest forces in the movement to enact mandatory labeling. This non-profit organization is governed by several high-level executives of natural food manufacturing companies, such as Eden Foods, Good Earth Natural & Organic Foods, and Nature’s Path.<sup>71</sup> Retailers like Whole Foods Market also

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<sup>67</sup> *Id.*

<sup>68</sup> *Id.*

<sup>69</sup> *Id.*

<sup>70</sup> *Id.*

<sup>71</sup> NON-GMO PROJECT, *supra* note 13.

heavily support the Project by encouraging the manufacturers of their products to become non-GMO certified.<sup>72</sup>

As the only third-party verifier of non-GMO foods in the United States, the Non-GMO Project seeks to offer consumers an “informed choice about whether or not to consume genetically modified organisms.”<sup>73</sup> Manufacturers who volunteer to have their products independently tested by the Project will receive a non-GMO verified seal on the label of that particular product if it complies with specific standards.<sup>74</sup> While a food item does not need to be 100% GMO free to receive the sticker, it does need to contain less than .9% genetically modified ingredients.<sup>75</sup> The Non-GMO Project supplies a comprehensive list of all of its non-GMO verified products on its website so that consumers can get learn what non-GMO foods are available.<sup>76</sup>

Not all labeling advocates take such an aggressive approach, as some entities do not necessarily oppose the use of genetic engineering in the agricultural industry. They simply argue that if a product *is* the result of genetic engineering, the manufacturer should be legally required to make consumers aware of this by placing a GMO label on the product.<sup>77</sup> This assertion is bolstered by the belief that consumers have the right to know how their food items are being produced, which outweighs the risk of possible consumer confusion.<sup>78</sup>

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<sup>72</sup> *Id.*

<sup>73</sup> *Id.*

<sup>74</sup> *Id.*

<sup>75</sup> *Id.*

<sup>76</sup> *See Generally Id.*

<sup>77</sup> WEIRICH, *supra* note 1.

<sup>78</sup> *Id.*

Whether one is aiming to enact mandatory labeling in an attempt to stop biotechnology or solely attempting to require GMO labeling, the same three points support their arguments. First, there is no hard proof of any of the so-called benefits that anti-labeling groups mention.<sup>79</sup> Second, the studies that the FDA relied on in concluding that GMO and non-GMO foods are substantially equivalent were conducted by the same for-profit organizations that benefit from the sale of GMOs.<sup>80</sup> Third, the long-term side effects of biotechnology are not yet known, so putting such products on the market is premature and irresponsible. American consumers are entitled to know the drastic production changes the agricultural industry has made, and failing to warn them of GMOs is unsafe, misleading, and emphatically deceptive.<sup>81</sup>

#### **A. No Proof of the Benefits**

Pro-labeling entities challenge their opponents claims that GMOs are fresher, healthier, and tastier than foods produced by traditional methods.<sup>82</sup> They argue that if the genetically engineered foods are as safe, wholesome, and nutritious as they are advertised to be, there is no reason to avoid putting the GMO label on them. The fact that these food companies are not using the GMO label to point out the benefits and superiority of their products causes many to be suspicious of the legitimacy of the so-called benefits of biotechnology. Their reluctance to place GMO labels on their packages gives the

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<sup>79</sup> NON-GMO PROJECT, *supra* note 13.

<sup>80</sup> *Id.*

<sup>81</sup> See Generally Hallman, W., A. Adelaja, B. Schilling, and J. Lang, *Food Policy Institute, Public perceptions of genetically modified foods: Americans know not what they eat* (2002).

<sup>82</sup> MONSANTO, *supra* note 27

impression that these companies are attempting to hide the fact that GMOs are incorporated into their food products.

Activists maintain that labeling is essential to the legitimacy our entire food industry. Without a regulated labeling scheme, an accurate determination of which products contain GMOs is nearly impossible. Additionally, because the vast majority of companies choose not to label products containing genetically modified ingredients, there is no way to trace potentially adverse health consequences back to a particular product or process.<sup>83</sup> They allege that both the tests used to assess the risks and those used to assess the benefits of GMOs are inaccurate due to the difficulty in isolating GMO foods from non-GMO foods.<sup>84</sup> Thus, labeling advocates argue that any proof offered to show that GMOs are beneficial is erroneous and unreliable. In addition to attacking the studies themselves, proponents of mandatory labeling next point out the untrustworthiness of the entities conducting these studies.

### **B. Biased and Insufficient Safety Studies**

Groups like the Non-GMO Project and Label GMOs, another non-profit GMO awareness organization, are suspicious of the motives of the corporations conducting studies on the wholesomeness of GMO products.<sup>85</sup> They maintain that these multi-million dollar biotech companies, like Monsanto, conduct biased, insufficient, and altogether

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<sup>83</sup> WEIRICH, *supra* note 1.

<sup>84</sup> *Id.*

<sup>85</sup> *What are we eating?* LABEL GMOS, [http://www.labelgmoss.org/the\\_science\\_genetically\\_modified\\_foods\\_gmo](http://www.labelgmoss.org/the_science_genetically_modified_foods_gmo) (last visited May 2, 2013).

inaccurate studies because they rely so heavily on the sale of GMOs.<sup>86</sup> Rather than ignoring the fact that the FDA has found GMO and non-GMO products to be substantially equivalent, advocates emphasize that this general approval of GMOs is “based on studies conducted by the same corporations that created them and profit from their sale.”<sup>87</sup> With so much to gain, it is no wonder why these corporations fail to point out any differences that may exist between the end products.<sup>88</sup>

In addition to this conflict of interest argument, there is great debate regarding the proficiency of the studies themselves. Proponents of labeling argue that the framework used to test the safety of GMOs is far too informal and does not accurately reflect either the short or long-term risks of consuming GMOs.<sup>89</sup> Somewhat surprisingly, new food items do not require testing before they are moved into the marketplace, so long as they are not “too different in chemical composition” from foods already on the market.<sup>90</sup> This is the FDA’s definition for its substantial equivalence test.<sup>91</sup> Analyzing a food’s chemical composition takes into account a very limited set of variables like toxins and allergens, and if no significant difference is found between a GMO and non-GMO food, no further safety testing whatsoever is required.<sup>92</sup> These tests are of course performed on an internal level by whichever company is introducing the product, so there is another conflict of interest argument to be made for these safety tests as well.

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<sup>86</sup> *Id.*

<sup>87</sup> NON-GMO PROJECT, *supra* note 13.

<sup>88</sup> *Id.*

<sup>89</sup> *Id.*

<sup>90</sup> LABEL GMOs, *supra* note 82.

<sup>91</sup> FOOD AND DRUG ADMINISTRATION, *supra* note 14.

<sup>92</sup> *Id.*

Those pushing for labeling also point out what they see as an inconsistency in many corporations' comments on the quality of genetically modified foods. Essentially, the proponents argue that the FDA's review of GMOs and non-GMOs does not match up with the arguments by anti-labeling groups who say that GMOs are actually *better* than non-GMO food items. On one hand, these groups agree with the FDA and accede to the fact that the end products are exactly the same.<sup>93</sup> On the other hand, these groups propose that GMOs are actually healthier, larger, quicker-growing, tastier, and all-in-all superior.<sup>94</sup> It is apparent that these huge agricultural biotech companies are attempting to have it both ways by touting these contradictory theories, and by doing so, are misleading the American public.<sup>95</sup> The unreliability of these safety studies leads to the inevitable conclusion that there is currently no accurate assessment of what side effects GMOs can and will produce.

### C. Unknown Side Effects

While anti-labeling entities advertise that there has been no hard evidence of harmful or damaging side effects, in the short term or in the long term, from the implementation of biotechnology in the agricultural industry, proponents of labeling offer evidence to the contrary.<sup>96</sup> They evince biotechnology's damaging effects on humans, the environment, and the farming industry.<sup>97</sup> Alternatively, they assert that even if no

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<sup>93</sup> CNBC, *supra* note 32.

<sup>94</sup> MONSANTO, *supra* note 27.

<sup>95</sup> LABEL GMOs, *supra* note 82.

<sup>96</sup> *Id.*

<sup>97</sup> NON-GMO PROJECT, *supra* note 13.

negative effects have yet been proven, the novelty of the process makes it entirely too soon to say that they will not eventually surface.<sup>98</sup>

Pro-labeling groups like the Non-GMO Project offer examples such as the increased use of toxic herbicides, the emergence of super weeds and super bugs, exacerbated allergy symptoms, and antibiotic resistance in support of their proposition that GMOs have already had negative side effects on humans and the environment.<sup>99</sup> The Non-GMO Project maintains that its studies are far more accurate and reliable, in that they do not stand to profit off of the outcome of the tests.<sup>100</sup> Ultimately, they contend that whether or not one believes that these adverse effects exist today does not necessarily mean that they never will. Since biotechnology is such a young form of science, it is too soon to say that harmful side effects won't appear after the damage has been done.<sup>101</sup>

As a final point, advocates of labeling highlight the fact that “61 countries with over 40% of the world’s population” have significantly restricted or altogether banned GMOs.<sup>102</sup> China, all of the European Union, Russia, Japan, Saudi Arabia, and Australia are among the countries that disagree with the United States regarding our boundary-free attitude toward GMOs in our food supply.<sup>103</sup> Many questioning the safety of GMOs are asking what these nations understand about the effects of biotechnology that the United States has failed to discover.

Emphasizing the conceivable side effects of GMOs provides the labeling movement with a sturdy backbone. Mandatory labeling parallels the principle that

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<sup>98</sup> PAREKH, *supra* note 4.

<sup>99</sup> LABEL GMOS, *supra* note 82.

<sup>100</sup> NON-GMO PROJECT, *supra* note 13.

<sup>101</sup> *Id.*

<sup>102</sup> LABEL GMOS, *supra* note 82.

<sup>103</sup> *Id.*

consumers should be able to decide for themselves whether eating genetically modified foods is worth the foreseen risks. Americans want to know what they are eating, and the government is responsible for affording them the ability to do so.<sup>104</sup> Nationwide polls have continued to show that “a significant majority of North Americans would like to be able to tell if the food they’re purchasing contains GMOs.”<sup>105</sup> CBS News conducted a poll in 2008, which revealed that 87% of consumers wanted GMOs to be labeled.<sup>106</sup>

Overall, the American public wants to be able to make informed choices when it comes to the food they are purchasing, and failing to include a GMO label eliminates the ability to do so. The novelty of biotechnology creates an understandable suspicion of its safety, and agricultural biotechnology corporations are touting GMOs as safe and beneficial entirely too soon. Until sufficient time has passed for long-term side effects to prove non-existent, consumers should be given the opportunity to avoid these foods.

## V. A Proposed Solution

Given the passionate stances on both sides of the debate, finding a solution to appease both opponents and proponents of mandatory GMO labeling has proven extraordinarily difficult. Fortunately, most parties involved understand that a compromise must be made in moving forward. There is hope that the government will take steps to address the concerns of both groups and will be able to intervene in a constructive and helpful way.

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<sup>104</sup> NON-GMO PROJECT, *supra* note 13.

<sup>105</sup> *Id.*

<sup>106</sup> *Figuring out what’s in your food*, CBS NEWS (Feb. 11, 2009) [http://www.cbsnews.com/8301-18563\\_162-4086518.html](http://www.cbsnews.com/8301-18563_162-4086518.html).

Initially, anti-GMO groups were strongly rooted in their cause to put an end to agricultural biotechnology. However, many of these entities have seen how this inflexibility has put the issue in a deadlock. Consequently, groups like the Non-GMO Project and Label GMOs have shifted their focus on pushing for mandatory labeling, rather than beseeching the government to stop biotechnology altogether. They have reached out for the support of conscientious consumers, retailers, and manufacturers, which has enabled to them to grab the government's attention.

There are three general options available to the federal government in addressing this issue. First, the government could essentially do nothing, whereby it would maintain its current policies and regulations. Second, it could set specifications for and regulate any products that claim to be free of GMO ingredients. Thirdly, the FDA could create a policy to mandate labels on foods that contain GMO labels.

#### **A. The Government Maintains Its Current Policies and Regulations**

By choosing to maintain its current policies and regulations, the government would continue to require that products are labeled based on health concerns, allergies, and other required nutrition information, but would not require any notation of production processes. As such, the role of activist organizations would become increasingly more instrumental in generating consumer awareness of GMOs.

The idea of third-party research and labeling is an excellent example of a middle-ground solution to the labeling controversy. The Non-GMO Project, and others like it, could continue independently testing and labeling products that are free of GMOs. Private sector labeling would serve the purpose of affording consumers knowledge and

choice in their purchasing decisions. In addition, the presence of a non-GMO label as compared to a GMO label might eliminate the GMO stigma by keying in on positive non-GMO features.

Adding a non-GMO label to food items instead of a GMO would probably be more accepted by opponents of mandatory labeling for several reasons. First, placing a non-GMO label on a product rather than a GMO label seems to rid packages of the negative undertone that opponents fear will eliminate biotechnology. Secondly, a non-GMO label might be less cluttering and confusing, due to the fact that so many foods *do* include genetically modified ingredients. There are much fewer foods that do not have genetically modified ingredients, so this would result in the addition of fewer labels on food packages. Additionally, the non-GMO label seems to speak to those who are already concerned about or altogether opposed to the sale and consumption of genetically modified foods. The label is therefore reaching those who would be looking for it anyway and who likely have done research to understand what the label really means. This practice diminishes the possibility that naïve consumers will be avoid certain foods simply because GMO is stamped on the package. It is also important to note that the Non-GMO Project mainly targets health foods in grocery stores like Whole Foods Market, which again demonstrates that the label is likely to surface for customers who already examine the contents of their food items.<sup>107</sup>

While private sector testing and labeling does solve many of the issues posed by both sides, it is not a perfect solution. The fact that many different entities could participate in voluntary labeling leads to the conclusion that such labels would be non-

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<sup>107</sup> NON-GMO PROJECT, *supra* note 13.

standardized and possibly confusing. Failure to adopt a standardized non-GMO label would in turn result in credibility issues for American consumers, who aren't sure what private entities they can trust without government approval.

Overall, the education that this type of labeling could provide is likely to outweigh the possibility of confusion that a non-standardized label might cause. Third party labeling practices would keep anti-labelers pacified for the time being, while also serving their purpose of offering consumers some opportunity to make informed purchases. Should to government choose to maintain its currents policies regarding food labeling, private sector labeling is a viable option.

### **B. The Government Sets Specifications for Non-GMO Labels**

Another approach to resolving the labeling controversy would require that the government a more active approach by changing its current policies. The FDA could require that a particular food item must comply with certain specifications in order to bear a non-GMO label. Similar to the aforementioned solution, this approach would give manufacturers the freedom to choose whether they want a specific product to bear a non-GMO label. Application of a non-GMO label would also avoid the issue posed by the perceived stigma of a GMO label. By monitoring and regulating the use of a non-GMO label, rather than requiring the private sector to bear this burden on its own, the government would be ensuring greater uniformity, reliability, and accuracy of labels.

Proponents of labeling add that this non-GMO labeling system might encourage farmers and food manufacturers to adopt traditional production methods. It might also increase consumer demand for non-GMOs, which would motivate retailers to purchase

these products. Naturally, opponents of labeling continue to maintain that this would be destructive to the existence of biotechnology. They further emphasize that implementing this type of system would be an enormous, unnecessary federal expense because the organic produce already offers assurance of non-GMO food. While such a program would require federal funding, it might be the most cost effective means of government intervention is settling the labeling dispute.

### **C. The Government Mandates GMO Labels**

Lastly, the government could choose to take the extreme approach of mandating that all foods containing a certain amount of genetically modified ingredients bear a GMO label. Under this approach, the government would be responsible for monitoring GMO labels to ensure that all products that contain genetically modified ingredients are labeled as such. In order for the program to succeed in clearing consumer confusion, the government would have to offer some education on GMOs in addition to just adding labels to products. This type of systematic and comprehensive involvement by the government is what many labeling proponents are pushing for because it avoids the chaotic framework that would exist if labeling were left to the private sector.

While this type of government regulation would certainly solve the problem of informing consumers, it creates a number of problems in its own right. First, it does not relieve the GMO of its negative connotation, which is one of the greatest concerns of agribusinesses and farmers. Additionally, given that the vast majority of foods today contain GMOs, it would be enormously expensive to add GMO labels to products, to monitor them, and to educate the public on the implications of GMOs. And lastly, the

label might eventually become unnoticeable, and therefore meaningless, given the breadth of products that contain GMOs.

## **VI. Conclusion**

Until testing can accurately reveal all of biotechnology's pros and cons, it is unlikely that the government will either support or ban GMOs altogether. Consequently, enacting some sort of reliable labeling campaign is necessary to preserve the reliability and integrity of the American agricultural market. A government campaign that would set specifications for non-GMO labels seems to be the most effectual and economical solution. It would enable consumers to make informed purchasing decisions, avoid the negative GMO connotation, and require the federal government to oversee only those products that seek a non-GMO label. This would be a far less intrusive approach than requiring all food manufacturers to label GMOs, and would offer greater uniformity than if the private sector were solely responsible for monitoring these products.

Both sides of the debate have already made leeway in finding common ground, and there is hope that the government will aid proponents and opponents alike in pursuing their purposes. While there is no solution that will completely placate the most extreme proponents or opponents of mandatory labeling, the various government and/or third party actions could help to protect and inform consumers will also allowing technology to improve human and environmental sustainability.