

# The GM Food Debate: An Evaluation of the National Bioengineered Food Disclosure Standard and Recommendations for the United States Based on Food Justice

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## INTRODUCTION

In July 2016, the United States shifted its regulatory approach to genetically modified (GM) food with the enactment of the National Bioengineered Food Disclosure Standard (NBFDS), which requires mandatory labeling of all GM food.<sup>1</sup> The NBFDS requires the United States Department of Agriculture (USDA) to draft regulations establishing a mandatory disclosure standard for GM food and ultimately, will require

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1. National Bioengineered Food Disclosure Standard, Pub. L. No. 114-216, 130 Stat. 834 (2016) (codified as amended at 7 U.S.C. § 1639). This policy shift in the United States was not due to a revolutionary scientific discovery on the impacts of GM food to human health or the environment, nor was the policy shift based on a novel concern over GM food production. In fact, numerous GM food bills had been debated by Congress in recent years without success. *See generally* Heather Bañuelos, *GMO Disclosures and Claims: A Possible End to the U.S. GMO Labeling Controversy?*, INT'L FOOD L. GAZETTE (July 2016), <https://kslawemail.com/41/1130/pages/article6.asp> [<https://perma.cc/AY3R-KMWL>]. Instead, the United States' shift to the mandatory labeling requirement was due to the effective date of Vermont's state law mandating GM food labeling. *Id.*; *see* Chris Prentice, *U.S. GMO Food Labeling Bill Passes Senate*, REUTERS (July 7, 2016), <https://www.reuters.com/article/us-usa-food-gmo-vote/u-s-gmo-food-labeling-bill-passes-senate-idUSKCN0ZO08N> (discussing the NBFDS legislation when it passed in the U.S. Senate and was moving to the House of Representatives for a vote and stating: "[T]he bill sponsored by Republican Senator Pat Roberts of Kansas and Democrat Senator Debbie Stabenow of Michigan is the latest attempt to introduce a national standard that would override state laws, including Vermont's that some say is more stringent, and comes amid growing calls from consumers for greater transparency").

a disclosure on the package of any GM food sold in the United States.<sup>2</sup> However, given the broad language of the NBFDS, the USDA has the power to establish a regulatory scheme that exempts most food produced using genetic modification and foods containing GM material from NBFDS's disclosure standard.<sup>3</sup>

The enactment of the NBFDS has sparked critique from consumers, advocacy groups, and scholars who view the law as undermining the Consumer's Right to Know Policy,<sup>4</sup> which was the fundamental basis of Vermont's state law.<sup>5</sup> While not clearly defined, the Consumer's Right to Know Policy is: the notion that governments should require labeling of GM food because of the unknown risk inherent in GM food production; the consumers' assertion that the public has the right to know what is in their food; and the assertion that mandatory GM food labeling disclosures would assist consumers in making informed choices.<sup>6</sup> While many consumers have demanded mandatory GM food labeling in the United States based on the Consumer's Right to Know Policy, it is unclear whether many consumers and scholars understand the food justice implications of GM food production and the relevant arguments related to mandatory labeling of GM food.

Indeed, missing from the political discussions regarding GM food production (at least in the United States) is a discussion regarding the food justice implications of GM food production and its consequences on society both within the borders of the United States and internationally.<sup>7</sup> The adequate labeling of GM food empowers individuals within communities to make informed decisions about the food they choose to

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2. National Bioengineered Food Disclosure Standard, Pub. L. No. 114-216, 130 Stat. 834 (2016) (codified as amended at 7 U.S.C. § 1639).

3. See *infra* Part II.

4. For a discussion of the NBFDS and how it fails to uphold the Consumer's Right to Know Policy, see Courtney Begley, Note, "So Close, Yet So Far": *The United States Follows the Lead of the European Union in Mandating GMO Labeling. But Did it Go Far Enough?*, 40 FORDHAM INT'L L.J. 625, 732-33 (2017).

5. See, e.g., Kati Gallagher, *VT Right to Know GMOs Denounces Senate Passage of "Compromise" GMO Labeling Bill*, VT. RIGHT TO KNOW GMOS (July 8, 2016), <http://www.vtrighttoknowgmos.org/vt-right-know-gmos-denounces-senate-passage-compromise-gmo-labeling-bill/> [<https://perma.cc/4SVG-RMTS>]; Press Release, Consumers Union, Consumers Union Opposes New Senate GMO Labeling Proposal (June 23, 2016), <http://consumersunion.org/news/consumers-union-opposes-new-senate-gmo-labeling-proposal/> [<https://perma.cc/29YD-5N5M>].

6. Li Du, *GMO Labelling and the Consumer's Right to Know: A Comparative Review of the Legal Bases for the Consumer's Right to Genetically Modified Food Labelling*, 8 MCGILL J.L. & HEALTH 1, 7-8 (2014).

7. Furthermore, any conversation about GM food production should include acknowledgment of the systemic influence on food production by the "Big Ag" agenda and pressure from large transnational corporations.

purchase and consume.<sup>8</sup> The food justice analysis raises many of the issues inherent in the Consumer's Right to Know Policy regarding GM food labeling; however, the food justice analysis goes further by recognizing the deeper, underlying socioeconomic issues of GM food production and may require more stringent GM food labeling to fulfill its principles.<sup>9</sup> This Note aims to identify the food justice issues caused by the NBFDS and make recommendations for the United States to minimize these concerns.

Part I provides an overview of the GM food debate. Part II reviews the NBFDS. Part III explains the food justice implications of GM food production. Part IV analyzes the food justice concerns of the NBFDS. Part V provides recommendations for the United States to incorporate in the regulatory scheme under the NBFDS to address concerns with food justice.

#### I. BACKGROUND: THE GM FOOD DEBATE

The exact definition of GM food varies from jurisdiction to jurisdiction, and even the terminology used when discussing GM food—"genetic modification," "genetic engineering," or "bioengineering"—can be purposefully chosen by actors in an attempt to dispel the stigma that the public may hold against GM food.<sup>10</sup> Thus, for clarity in this Note, the term GM food encompasses food that was produced using processes that otherwise would not occur in nature and food that contains GM genetic material.<sup>11</sup>

The debate over GM food production is highly divisive among researchers, scholars, and consumers, and the precise language used in conversations or debates about GM food is just one example of how GM food and its production can be divisive. Those who support the production

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8. "Mandatory labeling of [GM] foods would allow consumers to decide whether to accept [the] consequences [of GM agriculture and GM food] or to 'vote with their forks' to support agricultural and food production practices that cause less harm." Stephen Tan & Brian Epley, *Much Ado About Something: The First Amendment and Mandatory Labeling of Genetically Engineered Foods*, 89 WASH. L. REV. 301, 328 (2014).

9. See *infra* Part IV.

10. Some regulatory bodies and producers prefer the term "bioengineering" or "genetic engineering" to distinguish particular modification processes from conventional breeding techniques. As many scholars have noted, very explicit definitions must be used in discussions in order to prevent misunderstanding. For example, selective breeding could be categorized as genetic modification under an extremely broad definition of the term.

11. Following the European Commission's definition, the author excludes *in vitro* fertilization, natural processes (such as conjugation, transduction, and transformation), and polyploidy induction from the definition of genetic modification techniques. See Council Directive 2001/18 of the European Parliament and of the Council of 12 March 2001 on the Deliberate Release into the Environment of Genetically Modified Organism and Repealing Council Directive 90/220/EEC, annex I(A) pt. 2, 2001 O.J. (L 106) 1 (EU), <http://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX%3A32001L0018> [<https://perma.cc/UM29-67RF>].

of GM food generally argue that genetic modification will help solve global food requirements (through increased crop yield), will reduce the overall need for herbicide and pesticides, and will allow for improved characteristics that are absent in the GM food's conventionally-bred counterparts.<sup>12</sup> Those who oppose GM food often cite concerns grounded in the precautionary principle,<sup>13</sup> including unknown human health concerns<sup>14</sup> and potential environmental harm.<sup>15</sup> Those opposed to GM food may also have concerns regarding the socioeconomic impacts<sup>16</sup> or moral issues<sup>17</sup> surrounding GM food production.

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12. The development of GM crops was intended to improve characteristics of the plants themselves to allow "crops to be grown in conditions not hospitable to traditional varieties and reducing the need for irrigation." Tan & Epley, *supra* note 8, at 315. GM crops were also intended to improve yields; to improve per-acre productivity to reduce the need for additional agricultural land development; and to reduced reliance on chemical pesticides, herbicides, and fertilizers. *Id.* GM crops, thus far, have failed to meet many of the aspirational goals of genetic modification. *See id.* at 316 (finding that GM crops have increased the use of chemical herbicides).

13. The precautionary principle requires that precautionary measures be taken when an activity raises threats of harm to human health or the environment, even if the cause and effect relationships are not fully established by science. David Kriebel et al., *The Precautionary Principle in Environmental Science*, 109 ENVTL. HEALTH PERSP. 871, 871 (2001).

14. Concerns regarding the safety of GM food for human consumption based on unknown health risks were the primary source of public opposition to GM food production and prompted public demand for mandatory disclosure. One health concern involved the unintended introduction of allergens into GM food that could cause allergic reactions in people who consume them. *See* Leslie Francis et al, *FDA's Troubling Failures to Use its Authority to Regulate Genetically Modified Foods*, 71 FOOD & DRUG L.J. 105, 107 (2016); Jessica A. Murray, Note, *One Turkey, Seven Drumsticks: A Look at Genetically Modified Food Labeling Laws in the United States and the European Union*, 39 SUFFOLK TRANSNAT'L L. REV. 145, 150 (2016). Other health concerns of GM food production included the transfer of antibiotic resistance markers. *Id.* at 151.

15. Because it is unknown how GM crops would interact with wild-type species, GM food production poses potential disruption to the natural ecosystem. *See* Francis et al., *supra* note 14. For example,

alarming consequences of vertical gene transfer between GMOs and their wild-type counterparts have been highlighted by studying transgenic fish released into wild populations of the same species. The enhanced mating advantages of the genetically modified fish led to a reduction in the viability of their offspring. Thus, when a new transgene is introduced into a wild fish population, it propagates and may eventually threaten the viability of both the wild-type and the genetically modified organisms.

Theresa Phillips, *Genetically Modified Organisms (GMOs): Transgenic Crops and Recombinant DNA Technology*, 1 NATURE EDUC. 213, 3 (2008) (internal citations omitted).

16. Some examples of social and economic concerns of GM food production include: farmer knowledge, practices, and customs; gender; rural communities; seed availability and cost; and coexistence of GM and non-GM crops. *See* NATIONAL ACADEMIES OF SCIENCES, ENGINEERING, AND MEDICINE, *GENETICALLY ENGINEERED CROPS: EXPERIENCES AND PROSPECTS* (2016) [hereinafter *GE CROPS REPORT*], <http://www.nap.edu/download/23395>.

17. GM food production has raised religious concerns for those who adhere to strict food preparation or dietary rules and for religious groups whose religion opposes mixing of species or meddling in the work of the divine. Murray, *supra* note 14, at 153–54. The Jewish law, *kilayim*, prohibits: planting mixture of seeds, grafting of trees of different species together, planting grape seeds with other kinds of seeds, crossbreeding animals, harnessing two animals from different species together to work, and wearing garments made of wool and linen. Dov Bloom, *What is Kilayim?*,

After examining the existing evidence regarding the claims of the positive and negative effects of GM crops and food, the Committee on Genetically Engineered Crops: Past Experience and Future Prospects released a report in 2016 that summarized what scientists know of the actual effects of current GM crops.<sup>18</sup> The Committee found that in general, only two traits had been modified in crops: insect resistance and herbicide resistance.<sup>19</sup> It is important to note when discussing the potential environmental, human health, or socioeconomic effects of GM crops and GM food production, nuanced effects from one particular GM species may differ from another GM species depending on the nature of the genetic modification or the traits that were genetically modified.<sup>20</sup> The report made significant findings, including: that there is no scientific evidence, to date, indicating that GM food consumption had resulted in negative impacts on human health;<sup>21</sup> that limited, but *actual*, environmental harms had resulted from the production of some GM food;<sup>22</sup> and that there are

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CHABAD.ORG, [http://www.chabad.org/library/article\\_cdo/aid/3570273/jewish/What-Is-Kilayim.htm](http://www.chabad.org/library/article_cdo/aid/3570273/jewish/What-Is-Kilayim.htm). [<https://perma.cc/BY3C-XY76>]. Genetic modification involving the mixing of genetic material of two species directly conflicts with the kilayim prohibition of mixing species. Murray, *supra* note 14, at 145. Similarly, there are concerns whether GM food is halal (permitted under Islamic law) or haram (non-halal). *Id.* at 154. Within the Catholic Church, concerns regarding humans producing unnatural lineages and opposition to humans “encroaching upon the roles that are traditionally held as divine, such as creation and genetic modification of life” cause followers uncertainty as to whether GM food can be reconciled with their faith. *Id.* at 154. In 2016, Pope Francis condemned GM food production while speaking to the Food and Agriculture Organization of the United Nations on World Food Day, focusing his argument on the moral implications of GM food production. *See* Pope Francis, Message of His Holiness Pope Francis for the World Food Day 2016 (Oct. 14, 2016) [https://w2.vatican.va/content/francesco/en/messages/food/documents/papafrancesco\\_20161014\\_mes\\_saggio-giornata-alimentazione.html](https://w2.vatican.va/content/francesco/en/messages/food/documents/papafrancesco_20161014_mes_saggio-giornata-alimentazione.html) [<https://perma.cc/7C49-JQLT>].

18. *See* GE CROPS REPORT, *supra* note 16, at 1.

19. *Id.*

20. *See id.*

21. *Id.* at 236 (finding the scientific research to date “reveals no differences that would implicate a higher risk to human health from eating GE foods than from eating their non-GE counterparts”). The report noted that understanding the health effects of any food can be difficult because the “properties of most plant secondary metabolites are not understood, and isolating the effects of diet on animals, including humans, is challenging.” *Id.* Furthermore, the report concluded:

Long-term epidemiological studies have not directly addressed GE food consumption, but available time-series epidemiological data do not show any disease or chronic conditions in populations that correlate with consumption of GE foods. The committee could not find persuasive evidence of adverse health effects directly attributable to consumption of GE foods.

*Id.*

22. *Id.* at 154. The report concluded that “the committee found no evidence of cause-and-effect relationships between GE crops and environmental problems[.] However, the complex nature of assessing long-term environmental changes *often made it difficult to reach definitive conclusions.*” *Id.* at 154–55 (emphasis added).

both actual and unknown socioeconomic impacts of GM food production.<sup>23</sup>

The Committee's finding (while useful to policy makers and the public to understand the current effects of GM crops) may not be entirely conclusive on the effects of currently available GM food because the available research on GM food safety has been purposefully limited by the agrochemical companies that produce GM crops.<sup>24</sup> The intellectual property rights that agrochemical companies receive for their patented GM seeds and species allow them, *inter alia*, to restrict research on their product.<sup>25</sup> This research ban on GM food restricts the availability of information regarding the environmental and human health effects of GM food production and consumption.<sup>26</sup> Some have argued that a lack of universal mandatory GM food labeling also limits scientists' ability to make connections between consumption of GM food and its safety.<sup>27</sup>

The most popular arguments supporting and opposing the labeling of GM food are largely based on the available information regarding the

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23. *Id.* at 333 (finding that currently available research on the social and economic effects of GM food is not sufficient to make many conclusions, especially considering the diversity in global farmers, the crops they grow, and the conditions of crop growth).

GE maize, cotton, and soybean have provided economic benefits to some small-scale adopters of these crops in the early years of adoption. However, sustained gains will typically—but not necessarily—be expected in those situations in which farmers also had institutional support, such as access to credit, affordable inputs, extension services, and markets. Institutional factors potentially curtail economic benefits to small-scale farmers.

*Id.* at 287. The report also concluded that the benefit to small farmers derived from the production of some GM crops could be achieved through means other than genetic modification:

VR papaya is an example of a GE crop that is conducive to adoption by small-scale farmers because it addresses an agronomic problem but does not require concomitant purchase of such inputs as pesticides. Other technologies currently in the [biotechnology research and development] pipeline—such as insect, virus, and fungus resistance and drought tolerance—are potential candidates to accomplish the same outcome especially if deployed in crops of interest to developing countries.

*Id.* Finally, the report noted that investment in future GM crops “may be just one potential strategy to solve agricultural-production and food-security problems” because changes in other dimensions of the food system (improving germplasm, environmental conditions, management practices, and socioeconomic and physical infrastructure) can also enhance and stabilize crop yields. *Id.*

24. See, e.g., Elizabeth A. Rowe, *Patents, Genetically Modified Foods, and IP Overreaching*, 64. SMU L. REV. 859, 885 (2011).

25. *Id.* at 873.

26. Carmen G. Gonzalez, *Food Justice: An Environmental Justice Critique of the Global Food System*, in INTERNATIONAL ENVIRONMENTAL LAW AND THE GLOBAL SOUTH 401, 416 (Shawkat Alam et al. eds., Cambridge Univ. Press, 2015) [hereinafter Gonzalez, *Food Justice*] (citing Keith Aoki, *Food Forethought: Intergenerational Equity and Global Food Supply—Past, Present, and Future*, 2011 WIS. L. REV. 399, 470 (2011)); Rowe, *supra* note 24, at 885. It has been argued that the restrictions on research into such mainstream products that are consumed and produced so routinely is dangerous, and the information restrictions involving food and its safety should receive heightened levels of scrutiny similar to pharmaceutical products. *Id.*

27. Behrokh Mohajer Maghari & Ali M. Ardekani, *Genetically Modified Foods and Social Concerns*, 3 AVICENNA J. MED. BIOTECH. 109, 113 (2011).

effects of GM food. Those opposed to mandatory labeling of GM food have argued: that labeling GM food is pointless because it is as safe as conventionally grown food; that labeling GM food does not convey any additional nutritional information to consumers; that labeling GM food would confuse consumers regarding the safety of GM food consumption; and that labeling GM food would be an expensive endeavor for the food industry.<sup>28</sup> Those who support mandatory labeling of GM food have argued: that the public has the right to know whether their food is genetically modified because the DNA in GM food is different than DNA in conventionally grown; that labeling of food is not always dependent on nutrition or food safety; that mandatory labeling would allow scientists to track the effects of GM food consumption; and that labeling for genetic modification would not be any more expensive than other mandatory labeling.<sup>29</sup>

As discussed in the introductory section of this Note, the Consumer's Right to Know Policy is a commonly cited argument supporting mandatory GM food labeling based on the unknown risks associated with GM food production and consumption and the notion that labeling disclosures would assist consumers in making informed choices regarding their food.<sup>30</sup> Put another way, the Consumer's Right to Know Policy is "the notion that the public has a basic right to know any fact it deems important about a food or a commodity before being forced to make a purchasing decision."<sup>31</sup> The concept of a "Right to Know" is traceable to a message that President Kennedy sent to Congress in 1962 regarding the protection of the consumer interest, which focused on the right to safety, the right to be informed, the right to choose, and the right to be heard.<sup>32</sup> The Right to Know concept has since been used in discussions regarding freedom of the press, citizen access to information about government activities, employee access to information regarding hazardous substances in the workplace, and citizen access to information regarding the presence of carcinogens in consumer products.<sup>33</sup> The justifications for food labeling

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28. Nina Fedoroff, *NO: It's Simply a Ploy to Make Consumers Worry in Should Companies Be Required to Label Genetically Modified Foods?*, WALL ST. J. (July 12, 2015), <https://www.wsj.com/articles/should-companies-be-required-to-label-genetically-modified-foods-1436757040>.

29. Andrew Kimbrell, *YES: We Deserve To Know What's in the Food We Eat in Should Companies Be Required to Label Genetically Modified Foods?*, WALL ST. J. (July 12, 2015), <https://www.wsj.com/articles/should-companies-be-required-to-label-genetically-modified-foods-1436757040>.

30. See generally Du, *supra* note 6.

31. Steve Keane, *Can a Consumer's Right to Know Survive the WTO?: The Case of Food Labeling*, 16 *TRANSNAT'L L. & CONTEMP. PROBS.* 291, 302 (2006) (citation omitted).

32. *Id.* at 301.

33. *Id.* at 301-02.

based on the Consumer's Right to Know Policy have focused on health and safety concerns, religious or ethical dietary restrictions, environmental concerns, and production method objections.<sup>34</sup>

Taking into account the current state of research and information available regarding the effects of GM food—or more importantly, the lack of an abundance of such information—there are many ways a government may choose to regulate the production, distribution, and labeling disclosure of GM food.<sup>35</sup> In general, however, there are two diametric views of GM food that encompass the various approaches taken by countries to regulate and label GM food.<sup>36</sup> On one end of the spectrum, governments can require mandatory labeling of GM food, thereby upholding the Consumer's Right to Know Policy by providing consumer information and consumer choice<sup>37</sup> and upholding the precautionary principle by mitigating potential risk of GM food production.<sup>38</sup> These

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34. *Id.* at 302.

35. See generally Guillaume P. Gruère & S.R. Rao, *A Review of International Labeling Policies of Genetically Modified Food to Evaluate India's Proposed Rule*, 10 J. AGROBIOTECH. MGMT. & ECON. 51 (2007), <http://www.agbioforum.org/v10n1/v10n1a06-gruere.htm> [<https://perma.cc/8L32-3LT8>] (reviewing current national labeling laws and their observed effects in developing and developed countries). For GM foods that are substantially equivalent to their conventionally bred counterparts, countries with mandatory labeling laws vary in their labeling requirements based on (1) the coverage of their regulatory scheme and (2) the threshold level for labeling of GM materials or ingredients in food. *Id.* at 52. Varying coverage of labeling laws may require labeling for: a list of particular food ingredients or all ingredients in packaged food products that include detectable transgenic protein or DNA; highly processed products derived from GM ingredients even without quantifiable presence of GM ingredients; animal feed; additives and flavorings; meat and animal products fed with GM feed; food sold by caterers and restaurants; and unpackaged food. *Id.* Threshold levels of labeling laws may vary in level (0.9% to 5%) and may apply to each ingredient or only to major ingredients in food. *Id.* Gruère and Rao found that all countries with GM food labeling laws require the labeling of food derived from genetic modification that is not substantially equivalent to its conventionally bred counterparts (when the GM food displays novel traits and properties). *Id.* at 51–52.

36. In their review of national labeling laws, Gruère and Rao divided countries into three groups. See *id.* at 53–54. The first group of countries have stringent mandatory labeling regulations based on production process, with wide coverage, few exceptions, and a very low threshold that triggers labeling of GM food. *Id.* “At the other end of the spectrum,” the third group of countries have voluntary labeling guidelines for GM food. *Id.* The second group is an intermediary group of countries that have mandatory labeling requirements for GM food based on differences in the finished products, with intermediate or higher threshold levels, and more exemptions. *Id.* Therefore, there are two ends of the spectrum that represent the diametric views of GM food regulation and labeling.

37. See *id.* at 54 (“The overall objective of mandatory labeling requirements is to provide consumer information and consumer choice.”).

38. See Begley, *supra* note 4, at 656–57 (“As opposed to the US system that is based on the substantial equivalence doctrine, the EU regulatory system is founded upon the precautionary principle. The precautionary principle presumes that if an activity may have environmentally harmful consequences, it is better to take action before it is too late instead of waiting until complete scientific evidence can indisputably prove the causal connection.”); Murray, *supra* note 14, at 155–56 (“In light of inconclusive safety concerns and potential risks, the European Union views biotechnology as a



mandatory labeling schemes can be product-based (which would require labels for food containing GM materials or GM ingredients over a specified threshold in the final product) or process-based (which would require labels for any food made with GM technology).<sup>39</sup> On the other side of the spectrum, governments may not have any GM food labeling laws or may just have voluntary GM food labeling guidelines, which does not uphold the Consumer's Right to Know Policy because they do not require the food industry to provide this information for consumers and rejects the precautionary approach to GM food production because they consider GM food and its production to be the same as production of non-GM food.<sup>40</sup>

Before the passage of the NBFDS in 2016, there was no national mandatory labeling requirements for GM food in the United States because the United States viewed GM food production as safe and equivalent to conventional food production.<sup>41</sup> The authority to regulate genetic modification in the United States is divided between the USDA, the FDA, and the EPA.<sup>42</sup> The USDA regulates the genetic modification of plants and crops; the EPA regulates genetic modification of pesticides and microorganisms; and FDA regulates genetic modification in food, drugs, and biological products.<sup>43</sup> In 1992, the FDA published a statement of policy that clarified its position on the regulation of GM food after a

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novel process that requires new regulations and, therefore, it has taken a precautionary approach by regulating GMOs.”)

39. Gruère & Rao, *supra* note 35, at 52.

40. Begley, *supra* note 4, at 685–686 (comparing GMO regulation between the United States and the EU). Begley notes:

Because the FDA views GMOs as GRAS, it does not require that companies submit specific information concerning the safety of their GMO products, as the European Union does. While the FDA does not conduct independent research for each GMO seeking approval, the European Union requires an independent body to do its own research for each application. And finally, since the FDA presumes GMOs are safe under the substantial equivalence doctrine, it has not required any labeling of GMOs, as it does not consider GMOs to be materially different from their traditional counterparts. In contrast, the European Union requires traceability at every step for approved GMOs under the precautionary principle, as future risks may become visible at some point.

*Id.* at 686.

41. See Rachele Berglund Bailey, Comment, *A Tale of Two Systems: A Comparison Between U.S. and EU Labeling Policies of Genetically Modified Foods*, 15 SAN JOAQUIN AGRIC. L. REV. 193, 208–09 (2005–2006) (comparing the differences in regulation and labeling between the United States and the EU). Bailey found that the United States based its voluntary GM food labeling policies upon its conclusions that: (1) scientists can make threshold decisions on behalf of consumers, rather than consumers making their own choices; (2) that federal regulations would only warrant labels for food that was materially different from its conventionally bred counterpart and could not base labeling requirements on the process used in food production; and (3) that labeling GM was unnecessary and misleading to consumers. *Id.* at 208–09.

42. Luis Acosta, *Restrictions on Genetically Modified Organisms: United States*, LIBRARY CONG. (Mar. 2014), <https://www.loc.gov/help/restrictions-on-gmos/usa.php> [<https://perma.cc/N9Z3-GXJD>].

43. *Id.*

painstaking review of comments from the food industry and the public regarding federal oversight of foods derived from genetic modification.<sup>44</sup> In its policy, the FDA noted that foods derived from genetic modification must meet the same safety, labeling, and other regulatory requirements that apply to all food regulated by the FDA.<sup>45</sup> The agency found no evidence indicating that GM food differed, as a class, from conventionally bred food in any meaningful or uniform way and stated that if food derived from genetic modification was found to be materially different from its traditional counterpart, it would require the labeling of the food to disclose the material differences.<sup>46</sup> Thus, the FDA concluded that the “regulatory status of a food, irrespective of the method by which it is developed, is dependent upon objective characteristics of the food and the intended use of the food (or its components).”<sup>47</sup> The FDA emphasized “[i]n most cases, the substances expected to become components of food as a result of genetic modification of a plant will be the same as or substantially similar to substances commonly found in food, such as proteins, fats and oils, and carbohydrates.”<sup>48</sup>

The FDA concluded that it would only differentiate food based on the characteristics of the finished food product rather than the methods used in the production of the food.<sup>49</sup> Therefore, the FDA would not require food producers to label food as genetically modified unless the agency found that the “compositional differences resulted in material changes.”<sup>50</sup> Although the FDCA does not define the term “material,” the FDA historically interpreted material to mean “information about the attributes of the food itself.”<sup>51</sup> For example, the FDA required a new canola oil to be labeled “laurate canola oil” because of a genetic modification that caused the canola oil to have increased lauric acid content compared to conventional canola oil.<sup>52</sup> Therefore, until the passage of the NBFDS, GM food labeling in the United States was only required for GM food in the infrequent cases where the genetic modification of a plant resulted in a

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44. Statement of Policy – Foods Derived from New Plant Varieties, 57 Fed. Reg. 22984 (May 29, 1992).

45. *Labeling of Foods Derived from Genetically Engineered Plants*, U.S. FOOD & DRUG ADMIN., [hereinafter USFDA], <http://www.fda.gov/Food/FoodScienceResearch/GEPlants/ucm346858.htm> (last updated Nov. 19, 2015) [<https://perma.cc/DK37-2XMK>].

46. *Id.*

47. Statement of Policy – Foods Derived from New Plant Varieties, 57 Fed. Reg. 22984, Ch. I.

48. *Id.*

49. *Id.*

50. USFDA, *supra* note 45.

51. *Guidance for Industry: Voluntary Labeling Indicating Whether Foods Have or Have Not Been Derived from Genetically Engineered Plants*, U.S. FOOD & DRUG ADMIN. (Nov. 24, 2015), <https://www.fda.gov/RegulatoryInformation/Guidances/ucm059098.htm> [<https://perma.cc/F5RA-3EHU>].

52. USFDA, *supra* note 45.

“material difference” from its conventionally bred counterpart despite the demand from consumers for mandatory labeling of GM food based on the Consumer’s Right to Know Policy.<sup>53</sup>

The United States’ policy decision stood in stark opposition to the European Union’s (EU) method of GM food regulation, which followed the precautionary principle and required disclosure of any food containing GM ingredients, as well as any food produced with genetic modification.<sup>54</sup> The EU has taken a vastly different approach to the regulation of GM food production and labeling than the United States. Since the 1990s, the EU has been concerned with the deliberate release of GMOs into the environment.<sup>55</sup> The EU has established a legal framework for GM food to “protect human and animal health and the environment” by requiring high standards in safety assessments before a GM food is allowed to be sold to the public.<sup>56</sup> Within the EU, the goal of the labeling requirements for GM food include ensuring “accurate information is available to operators and consumers to enable them to exercise their freedom of choice in an effective manner as well as to enable control and verification of labelling claims.”<sup>57</sup> Under European law, GMOs are defined as any organism, except human beings, “in which the genetic material has been altered in a way that does not occur naturally by mating and/or natural

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53. Kelly A. Leggio, Comment, *Limitations on the Consumer’s Right to Know: Settling the Debate Over Labeling of Genetically Modified Foods in the United States*, 38 SAN DIEGO L. REV. 893 (2001) (“The consumer’s right to know, in the case of GM foods, boils down to a “desire” to be informed about GM foods and nothing more. The mere desire to know has never been enough to mandate speech in the form of food product labeling. Where no safety risk or other reasonably necessary choice between food products exists, there is no significant government interest to protect that can outweigh the rights of the food supplier . . . Thus, the consumer’s right to know is not sufficient to require mandatory labeling of GM foods.”) *But cf.* Tan & Epley, *supra* note 8 (“Because genetic engineering is not inherently dangerous, and because no credible evidence has emerged to date that any GE food available on the commercial market has caused harmful health effects in humans, opponents of mandatory labeling argue that concerns raised about GE foods are much ado about nothing. But the impacts of GE agriculture and GE foods, aside from the potential health risks they pose, are wide-ranging and significant. Mandatory labeling of GE foods would allow consumers to decide whether to accept these consequences or to ‘vote with their forks’ to support agricultural and food production practices that cause less harm. Correctly applied, the First Amendment poses no obstacle to this compelled disclosure.”).

54. *See* Murray, *supra* note 14, at 155–57.

55. Council Directive 90/220/EEC of 23 April 1990 on the Deliberate Release into the Environment of Genetically Modified Organisms, 1990 O.J. (L 117) 15-27, <http://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX%3A31990L0220> [<https://perma.cc/W3D6-SF5H>].

56. *GMO Legislation*, EUR. COMM’N, [http://ec.europa.eu/food/plant/gmo/legislation\\_en](http://ec.europa.eu/food/plant/gmo/legislation_en) (last updated Feb. 02, 2018) [<https://perma.cc/3HU2-Z826>].

57. Commission Regulation 1830/2003, 2003 O.J. (L 268) 24 (EU), <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:268:0024:0028:EN:PDF> [<https://perma.cc/9MQ5-83KD>].

recombination.”<sup>58</sup> The genetic modification techniques that result in GMOs under this definition include the following:

- (1) recombinant nucleic acid techniques involving the formation of new combinations of genetic material by the insertion of nucleic acid molecules produced by whatever means outside an organism, into any virus, bacterial plasmid or other vector system and their incorporation into a host organism in which they do not naturally occur but in which they are capable of continued propagation;
- (2) techniques involving the direct introduction into an organism of heritable material prepared outside the organism including micro-injection, macro-injection and micro-encapsulation;
- (3) cell fusion (including protoplast fusion) or hybridization techniques where live cells with new combinations of heritable genetic material are formed through the fusion of two or more cells by means of methods that do not occur naturally.<sup>59</sup>

The EU, however, excludes *in vitro* fertilization, natural processes (conjugation,<sup>60</sup> transduction,<sup>61</sup> and transformation<sup>62</sup>), and polyploidy induction<sup>63</sup> from methods that yield GMOs.<sup>64</sup> The directive explicitly also excludes the 1) process of mutagenesis<sup>65</sup> and the 2) cell fusion of plant cells in organisms that can exchange genetic material through traditional breeding methods from its definition of genetic modification.<sup>66</sup> The EU approach to GM food labeling can be in the EU is summed up as follows:

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58. Council Directive 2001/18, art. 2(2), 2001 O.J. (L 106) 1 (EU), [http://eur-lex.europa.eu/resource.html?uri=cellar:303dd4fa-07a8-4d20-86a8-0baaf0518d22.0004.02/DOC\\_1&format=PDF](http://eur-lex.europa.eu/resource.html?uri=cellar:303dd4fa-07a8-4d20-86a8-0baaf0518d22.0004.02/DOC_1&format=PDF) [https://perma.cc/A9PP-QUCR].

59. Council Directive 2001/18, annex I(A) pt. 1, 2001 O.J. (L 106) 1 (EU), [http://eur-lex.europa.eu/resource.html?uri=cellar:303dd4fa-07a8-4d20-86a8-0baaf0518d22.0004.02/DOC\\_1&format=PDF](http://eur-lex.europa.eu/resource.html?uri=cellar:303dd4fa-07a8-4d20-86a8-0baaf0518d22.0004.02/DOC_1&format=PDF) [https://perma.cc/A9PP-QUCR].

60. Conjugation, in prokaryotes, is “the direct transfer of DNA between two cells that are temporarily joined. When the two cells are members of different species, conjugation results in horizontal gene transfer.” JANE B. REECE ET AL., *CAMPBELL BIOLOGY* G-8 (Jane B. Reece et al. eds., 10th ed. 2014).

61. Transduction is a process where bacteriophages (also called phages, the viruses that infect bacteria) carry bacterial genes from one host cell to another; transduction between two cells of different species results in horizontal gene transfer. *Id.* at G-35.

62. Transformation is a process where the genotype and phenotype of a cell are altered by the uptake of foreign DNA from its surroundings. *Id.*

63. Polyploids are “organisms with multiple sets of chromosomes in excess of the diploid number.” Geoffrey Meru, *Polyploidy*, PLANTBREEDING, [http://plantbreeding.coe.uga.edu/index.php?title=5.\\_Polyploidy](http://plantbreeding.coe.uga.edu/index.php?title=5._Polyploidy) (last modified May 15, 2013) [https://perma.cc/B3Q2-A6LW].

64. Council Directive 2001/18, annex I(A) pt. 2, 2001 O.J. (L 106) 1 (EU).

65. Mutagenesis is the mutation or purposeful changing of an organism’s genes using mutagens that interact with and alter the organism’s DNA. *See* NEIL A. CAMPBELL ET AL., *BIOLOGY* G-24 (Pearson Benjamin Cummings 8th ed. 2008).

66. Council Directive 2001/18, annex I(B), 2001 O.J. (L 106) 1 (EU).

Prior to entering the market, the European Union requires that GMOs undergo a high level of scientific assessment, because the European Union deems them to be inherently different from their traditional counterparts. The two main aspects of regulation in the European Union that cover the farming process and the final product placed on consumer shelves are Regulation 1829/2003 and Regulation 1830/2003. Regulation 1830/2003 regulates each stage of the production process, mandating labels for any product that “contains or consists” of an ingredient derived from a GE plant. The European Union ultimately enacted this regulation to ensure all GE foods are properly labeled before reaching the consumer to provide information about the product’s origin and a right to choose. Regulation 1829/2003 regulates the final product, requiring labels for all GE animal feed and food for human consumption regardless of whether there is GE material in the final product. The purpose of this regulation is to identify GE ingredients within the food chain; however, there are exceptions for enzymes and animals that consumed GE animal feed.<sup>67</sup>

The EU’s approach to genetic modification is very expansive for two reasons. First, under this definition, a broad range of techniques trigger GM disclosure.<sup>68</sup> Nearly every genetic modification technique used to artificially transfer genetic material from one organism to another is incorporated into the GM food disclosure requirements.<sup>69</sup>

Second, the EU’s definition requires nearly all foods containing GM genetic material to be labeled. The labeling requirements for GM food under European law are based on the threshold percentage of GM material in food products.<sup>70</sup> Therefore, food products containing less than 0.9% GM ingredients do not require a GM food disclosure label, provided that the trace amounts are “adventitious or technically unavoidable.”<sup>71</sup> Consequently, if a food producer “wishes to place a product on the market that contains an amount of GMOs over the threshold of 0.9%, he or she is required to indicate in writing (1) each food ingredient that is produced with GMOs, (2) each of the feed materials or additives that are produced from GMOs, and (3) that the product is produced from GMOs on products

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67. Murray, *supra* note 14, at 156–57.

68. See Council Directive 2001/18, annex I(A) pt. 1, 2001 O.J. (L 106) 1 (EU).

69. See *id.* Despite this broad definition, the law is unclear as to whether a gene deletion technique would fall under the category of recombinant nucleic acid techniques triggering disclosure or whether it is an exempted technique. See *id.*

70. See *Traceability and Labeling*, EURO COMM’N, [https://ec.europa.eu/food/plant/gmo/traceability\\_labelling\\_en](https://ec.europa.eu/food/plant/gmo/traceability_labelling_en) (last updated Feb. 8, 2018) [<https://perma.cc/2AK6-GV9E>]. See generally Commission Regulation 1830/2003, art. 4(B), 2003 O.J. (L 268) 24 (EU).

71. *Traceability and Labeling*, *supra* note 70; Commission Regulation 1830/2003, art. 7, 2003 O.J. (L 268) 24 (EU).

where there is no list of ingredients.”<sup>72</sup> With a threshold level of less than 1% GM composition, nearly all foods containing GM material must be labeled.<sup>73</sup>

For these reasons, the text of the EU’s GM food production and labeling laws leave little ambiguity as to which GM food must be labeled. Additionally, because the process-based GM food labeling laws do not ban GM food production and just require the labeling of foods containing GM materials and foods produced with GM techniques, EU’s GM food labeling laws allow the food industry to conduct a reasonable amount of genetic manipulation to ensure that specific crops have desired characteristics without hindering the Consumer’s Right to Know what processes were used in the production of food.

## II. THE NATIONAL BIOENGINEERED FOOD DISCLOSURE STANDARD

The NBFDS amends the Agricultural Marketing Act of 1946 and sets out a basic framework for how the United States will manage mandatory GM food in the United States.<sup>74</sup> This Part will describe three important aspects of the NBFDS: (1) the NBFDS’s applicability and scope, (2) the federal preemption of state law, and (3) the establishment of the national disclosure standard.<sup>75</sup> Then, this Part will present popular reactions to the NBFDS.

### A. *NBFDS Applicability and Scope*

The NBFDS limits the application of the mandatory disclosure to foods that fit within the statutory definition of GM food.<sup>76</sup> Section 291 of the NBFDS contains the statutory definition of genetic modification that triggers the applicability of mandatory disclosure.<sup>77</sup> Under Section 291(1), GM food is food that “contains genetic material that has been modified through *in vitro* recombinant deoxyribonucleic acid (DNA) techniques . . . for which the modification could not otherwise be obtained through conventional breeding or found in nature.”<sup>78</sup> Under this definition,

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72. Begley, *supra* note 4, at 685.

73. This threshold “gives some leniency to manufacturers and producers for certain traces of GMOs that may be technically unavoidable.” *Id.*

74. *See* National Bioengineered Food Disclosure Standard, Pub. L. No. 114-216, 130 Stat. 834 (2016).

75. The NBFDS contains additional sections not explicitly reviewed in this Note.

76. National Bioengineered Food Disclosure Standard, Pub. L. No. 114-216, 130 Stat. 834, 834–35 (2016) (codified as amended at 7 U.S.C. § 1639 & 7 U.S.C. § 1639(a)).

77. *Id.* at 834. Note that the NBFDS uses “bioengineered” and “bioengineering” instead of genetic modification. These are interchangeable for the purposes of this Note.

78. *Id.* The following is the exact definition of GM food in the NBFDS:

(1) BIOENGINEERING. — The term ‘bioengineering’ and any similar term, as determined by the Secretary, with respect to a food, refers to a food—

GM foods must meet both requirements of Section 291(1) in order to trigger the mandatory labeling standards—meaning that a food must contain GM material that was derived from in vitro DNA techniques *and* the modification to that material must not be found in nature *or* possible through conventional breeding methods.<sup>79</sup> Section 291(2) of the NBFDS further defines “food” as food “intended for human consumption.”<sup>80</sup> This exempts GM crops or GM products that are intended for livestock feed or animal feed from the mandatory disclosure program.<sup>81</sup>

The NBFDS does not set out a threshold level for foods containing genetically modified ingredients that would trigger mandatory disclosure. Instead, as described later in this Note, the NBFDS requires the USDA to set a threshold amount that triggers inclusion in the mandatory labeling program.<sup>82</sup>

The NBFDS exempts specific categories of food that may otherwise be captured by the statutory definition of GM food. In Section 293, the NBFDS exempts food derived from an animal to be considered genetically modified solely on the basis of the animal’s consumption of genetically modified feed.<sup>83</sup> The NBFDS also exempts food served in restaurants or similar food establishments from requiring any disclosure.<sup>84</sup>

### *B. Federal Preemption of State Law*

The NBFDS explicitly prohibits and preempts any state or other political subdivision from establishing or continuing any GM food labeling programs for foods involved in interstate commerce unless that labeling program is identical to the program that the USDA will establish under the NBFDS.<sup>85</sup>

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(A) that contains genetic material that has been modified through in vitro recombinant deoxyribonucleic acid (DNA) techniques; and

(B) for which the modification could not otherwise be obtained through conventional breeding or found in nature.

(2) FOOD. — The term ‘food’ means a food (as defined in section 201 of the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 321)) that is intended for human consumption.

*Id.*

79. *See id.*

80. *Id.* The GM food labeling disclosure standard applies to any food that would be subject to the labeling requirements under the Federal Food, Drug, and Cosmetic Act (FDCA), as well as any food subject to the labeling requirements under the Federal Meat Inspection Act; the Poultry Products Inspection Act; or the Egg Products Inspection Act. National Bioengineered Food Disclosure Standard, Pub. L. No. 114-216, 130 Stat. 834, 834–35 (2016) (codified as amended at 7 U.S.C. § 1639(a)).

81. *See id.* at 834.

82. *Id.* at 835.

83. *Id.*

84. *Id.* at 836.

85. *Id.* at 837.

C. *Establishment of the National Disclosure Standard Under the NBFDS*

The NBFDS charges the USDA with promulgating the NBFDS's regulatory program within two years of enactment of the NBFDS.<sup>86</sup> In establishing the regulatory program for mandatory GM food labeling, the NBFDS gives the USDA the authority to "determine the amounts of a bioengineered substance that may be present in food, as appropriate, in order for the food to be a bioengineered food."<sup>87</sup> The NBFDS also requires the USDA to "establish a process for requesting and granting a determination by [the USDA] regarding other factors and conditions under which a food is considered to be a bioengineered food."<sup>88</sup> Therefore, the USDA will have to clarify what level of GM material and what other factors and conditions will trigger mandatory disclosure in the national program.<sup>89</sup>

The NBFDS provides manufacturers a choice of how to present the disclosure on GM food, giving them the option to use on-package text or symbol or electronic or digital link (such as a QR code).<sup>90</sup> The NBFDS required the USDA to conduct a study regarding electronic or digital disclosure methods no later than one year after enactment of the NBFDS to "identify potential technological challenges that may impact whether consumers would have access to the bioengineering disclosure through electronic or digital disclosure methods."<sup>91</sup> That study has since been completed and the findings of the study should impact the types of electronic or digital disclosure methods that will be used in the national program.<sup>92</sup>

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86. *Id.* at 835. It has been noted that Congress charged the USDA with the authority to establish the regulatory scheme instead of the FDA because Congress viewed GM food labeling as a marketing issue rather than a food safety issue. *National Bioengineered Food Disclosure Standard*, INT'L DAIRY FOODS ASS'N, <http://www.idfa.org/issues/national-bioengineered-food-disclosure-standard> [https://perma.cc/J42W-PYGP].

87. National Bioengineered Food Disclosure Standard, Pub. L. No. 114-216, 130 Stat. 834, 835 (2016) (codified as amended at 7 U.S.C. § 1639(b)).

88. *Id.*

89. The USDA is currently in the process of "developing a national mandatory system for disclosing the presence of bioengineered material." *GMO Disclosure & Labeling*, U.S. DEP'T AGRIC.: AGRIC. MKTG. SERV., <https://www.ams.usda.gov/rules-regulations/gmo> [https://perma.cc/BM2J-2D3F]. The USDA has "established a working group to develop a timeline for rulemaking and to ensure an open and transparent process for effectively establishing this new program, which will increase consumer confidence and understanding of the foods they buy, and avoid uncertainty for food companies and farmers." *Id.*

90. National Bioengineered Food Disclosure Standard, Pub. L. No. 114-216, 130 Stat. 834, 835 (2016) (codified as amended at 7 U.S.C. § 1639(b)).

91. *Id.* at 836.

92. See DELOITTE, STUDY OF ELECTRONIC OR DIGITAL LINK DISCLOSURE: A THIRD-PARTY EVALUATION OF CHALLENGES IMPACTING ACCESS TO BIOENGINEERED FOOD DISCLOSURE (2017),



*D. Reaction to the NBFDS*

The legislative history or context in which the NBFDS was enacted and the intended goals of the NBFDS is useful in understanding the reactions by various stakeholders to the NBFDS.<sup>93</sup> The NBFDS was enacted largely due to GM food labeling state laws that were about to be implemented; the NBFDS was meant to preempt and override these state laws and remedy Interstate Commerce Clause concerns of the food industry.<sup>94</sup> The state laws that the NBFDS preempted were aimed at enhancing transparency of GM food production based on the Consumer's Right to Know.<sup>95</sup> Because of these various issues, legal scholars, the food industry, advocacy groups, and consumers have expressed mixed reactions to the enactment of the NBFDS.<sup>96</sup>

Some groups have reacted to the enactment of the NBFDS by citing broad, big-picture policy concerns that would be inherent of any mandatory GM food labeling law. For example, some scholars are concerned that mandatory GM food labeling will lead consumers in the United States to believe that the genetic modification of food has rendered GM food less healthy or more dangerous for human consumption.<sup>97</sup> Some food companies and farm groups are concerned that GM food labeling under the NBFDS will lead to consumers avoiding purchasing GM food.<sup>98</sup> Additionally, food companies and farm groups are concerned that mandatory GM food labeling in the United States will push GM food out of business if enough consumers find the disclosure off-putting and choose not to purchase GM food.<sup>99</sup>

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<https://www.ams.usda.gov/sites/default/files/media/USDA%20Deloitte%20Study%20of%20Electronic%20or%20Digital%20Disclosure%20170801.pdf> [https://perma.cc/AX5Y-RLXN].

93. One reporter put it this way: "After years of bitter debate and legislative stalemate over the labeling of genetically modified ingredients, a compromise proposal sailed through Congress in breathtaking speed over the past three weeks." Dan Charles, *Congress Just Passed A GMO Labeling Bill. Nobody's Super Happy About It*, NPR (July 14, 2016), <https://www.npr.org/sections/thesalt/2016/07/14/486060866/congress-just-passed-a-gmo-labeling-bill-nobodys-super-happy-about-it>.

94. See Dan Charles & Allison Aubrey, *How Little Vermont Got Big Food Companies To Label GMOs*, NPR (Mar. 27, 2016), <https://www.npr.org/sections/thesalt/2016/03/27/471759643/how-little-vermont-got-big-food-companies-to-label-gmos>.

95. See generally *id.*

96. Begley, *supra* note 4, at 708 ("The reaction to the new national federal labeling standard has been mixed and much controversy surrounds the question of whether the law actually requires GMO labeling.").

97. See Chelsea R. Crawford, *Don't Judge A Food By Its Label: How a Mandatory Labeling Requirement for Genetically Engineered Foods Would Generate Confusion About Health and Food Safety and Create Economic Impacts for All*, 14 IND. HEALTH L. REV. 29, 59 (2017) ("Mandatory labeling will not solve the problems of a consumer's right to know. Instead, this action will create further problems and misunderstandings about genetically engineered foods and their health value.").

98. Charles, *supra* note 93.

99. *Id.* Interestingly, while generally opposed to mandatory GM food labeling, the food industry largely welcomed the nationwide standard—especially one that was less stringent than the Vermont

Many consumer and advocacy groups reacted with concern and opposition to the NBFDS due to more specific details and ramifications of the NBFDS; these concerns reveal the problems and deficiencies of this specific law, rather than mandatory GM labeling in general. For example, because the NBFDS allows manufacturers the option to use digital disclosures on GM food packaging rather than requiring universal on-package text, many groups believe that the NBFDS places a heavy burden on consumers to discover the disclosure information.<sup>100</sup> The use of digital disclosures require consumers to have a smartphone with them while shopping in order to use the disclosure information to make informed decisions regarding their food purchases.<sup>101</sup> Additionally, many advocacy groups are concerned that the requirement of a smartphone to access the disclosure information will place a disproportionate burden on low-income individuals to discover disclosure information.<sup>102</sup>

Some members of organic food industry (including farmers, businesses, and consumers) are concerned that the NBFDS could undermine the transparency and trust that the organic food regulation program has established in recent decades.<sup>103</sup> The NBFDS could

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state law—to take the place of a state-by-state patchwork system of GM food labeling that would result in different standards across the nation. *See, e.g.*, Charles & Aubrey, *supra* note 94 (“We continue to strongly urge Congress to pass a uniform, federal solution for the labeling of GMOs to avoid a confusing patchwork of state-by-state rules,” wrote Paul Norman, president of Kellogg North America in an emailed statement.”); Prentice, *supra* note 1.

100. *See, e.g.*, Begley, *supra* note 4, at 711 (“Some also argue that by allowing food manufacturers to use a bar code to disclose GMO information of the food they sell, the regulation allows companies to hide this information and makes it more difficult for consumers to find out information about GM ingredients.”).

101. *See* DELOITTE, *supra* note 92, at 1 (finding “in direct observations of consumers who are interested in accessing the disclosure, researchers observed key technological challenges that prevented nearly all participants from obtaining the information through electronic or digital disclosure methods”).

102. Letter from Ctr. for Food Safety et al. to the U.S. Senate, at 2 (June 27, 2016) (on file with author) (“Because of their lack of access to smart phones, more than 50% of rural and low income populations, and more than 65% of the elderly, will have no access to these labels. This impact will fall disproportionately on minority communities. Millions more that do have smart phones may not be able to access these QR codes because they cannot afford to maintain their data service or their neighborhoods do not have adequate network coverage.”). The letter was signed by over 80 organizations including non-profits, private businesses, and public interest groups. *Id.*

103. *See* Lea Kone, *Statement in Opposition to the Roberts-Stabenow*, NAT’L ORGANIC COAL. (July 11, 2016), <http://www.nationalorganiccoalition.org/organiconthehill/statement-in-opposition-to-the-roberts-stabenow-gmo-labeling-bill> [<https://perma.cc/27JV-X6JM>] (“Unfortunately, the organic community is split with regard to [the NBFDS]. Some organic organizations have expressed qualified support for the [NBFDS] because of the last-minute inclusion of provisions to make it easier for certified organic products to be labeled as non-GMO, and to ensure that meat and dairy products derived from animals fed GMO feed cannot be automatically labeled non-GMO, even though they are exempt for the ‘bioengineered’ labeling requirements of the [NBFDS].”); Letter from Organic Food Stakeholders to President Barack Obama, at 2 (July 14, 2016) (on file with author) (“The organic

undermine the organic label because the NBFDS “includes a provision that is potentially disastrous for the organic sector, by requiring USDA to consider harmonizing the new ambiguous ‘bioengineered’ definitions in the bill with USDA’s long-standing organic standards and definitions governing the prohibition on use of genetic engineering.”<sup>104</sup> The USDA will have to remedy any contention between the programs.<sup>105</sup>

In addition to the disclosure methods available to manufacturers and possible conflicts with the organic food regulations, many consumer and advocacy groups have cited concern with the level of federal preemption contained in the NBFDS that prevents states from creating additional, more stringent standards<sup>106</sup> and the lack of penalties for companies who violate the mandatory disclosure requirements.<sup>107</sup> Concerned organizations pointed out that the NBFDS “preempts states like Vermont from requiring clear, transparent and accessible labeling in the marketplace, and replaces that existing standard with an ambiguous labeling standard that will deny consumers the right of access to clear information about what’s in their food, and how it was produced.”<sup>108</sup> The preemption of any state law that may require more clear, transparent, and accessible labeling than the NBFDS is especially troublesome coupled with the lack of penalties—both civil and criminal—for companies who violate the federal law. Groups noted that the NBFDS “specifically excludes the capacity of the USDA to order any recall of misbranded food, even in cases where a product has been produced with genetic engineering,

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sector continues to be one of the fastest growing sectors of the U.S. agricultural economy, and [the NBFDS] threatens to undermine consumer confidence in the organic label.”).

104. Letter from Organic Food Stakeholders to President Barack Obama, *supra* note 103, at 2. Under the USDA’s organic regulations, certain GM food cannot be labeled as organic:

A variety of methods used to genetically modify organisms or influence their growth and development by means that are not possible under natural conditions or processes and are not considered compatible with organic production. Such methods include cell fusion, microencapsulation and macroencapsulation, and recombinant DNA technology (including gene deletion, gene doubling, introducing a foreign gene, and changing the positions of genes when achieved by recombinant DNA technology). Such methods do not include the use of traditional breeding, conjugation, fermentation, hybridization, in vitro fertilization, or tissue culture.

7 C.F.R. § 205.2 (2016). Interestingly, under the USDA’s organic regulations, the definition of GM foods prohibited in organic food seems much more stringent and encompasses many GM foods that appear to fall short of the statutory definition of GM food in the NBFDS.

105. The USDA is aware of this possible conflict and will be seeking “comment on further definitions of bioengineered foods requiring mandatory disclosure.” Memorandum from Elanor Starmer, Administrator, Agricultural Marketing Service, to AMS Deputy Administrators, at 3 (Sept. 19, 2016).

106. Begley, *supra* note 4, at 712.

107. Letter from Ctr. for Food Safety et al. to the U.S. Senate, *supra* note 102, at 3; Begley, *supra* note 4, at 711.

108. Letter from Organic Food Stakeholders to President Barack Obama, *supra* note 103, at 2.

but the corporation involved purposely decides to violate the law and not label.”<sup>109</sup>

While all of these concerns address valid deficiencies and problems with the NBFDS, the most widespread concern regarding the NBFDS is the exact scope and coverage of the new mandatory GM food labeling standard and what the GM food label would actually mean. The language of the NBFDS is broad and allows the USDA to determine the threshold level of GM material in food that would trigger the disclosure standard.<sup>110</sup> Advocacy groups are concerned that the USDA could use the ambiguity in the law to exempt a large portion of GM food, particularly commodity crops.<sup>111</sup> For example, shortly after the NBFDS passed the Senate, the National Organic Coalition published a statement in opposition to the law, explaining that its members were unanimously opposed to the NBFDS.<sup>112</sup> The statement highlighted that the NBFDS has “huge loopholes and exempts most GE foods from any labeling” because the definition of genetic modification in the NBFDS was weaker than other definitions of GM foods.<sup>113</sup>

Given the language of the NBFDS, the USDA has the authority to require the GM food labeling of all commercially grown GM corn, soybeans, sugar, and canola crops used in food and reviewed and approved by the USDA’s Biotechnology Regulatory Service.<sup>114</sup> However, this does not mean that the USDA must include all of these GM crops in the disclosure standard because NBFDS gives the USDA vast discretion in implementation of the law.<sup>115</sup> Just Label It<sup>116</sup> explained that the definition could be used to exclude “a significant number of foods or food ingredients from labeling, including foods made with GE beet sugar, GE soy oils, or even high fructose corn syrup.”<sup>117</sup>

These concerns regarding the NBFDS’s scope and coverage are not unfounded: an analysis of the statutory definition of GM foods in the

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109. Letter from Ctr. for Food Safety et al. to the U.S. Senate, *supra* note 102, at 3.

110. *See supra* Part II (discussion of the NBFDS Applicability and Scope).

111. *See, e.g.*, Memorandum from Just Label It Legal Team, at 1 (June 29, 2106) (on file with author); Letter from Ctr. for Food Safety et al. to the U.S. Senate, *supra* note 102, at 2.

112. Kone, *supra* note 103.

113. *Id.*

114. *See* Letter from Jeffrey M. Prieto, General Counsel, U.S. Dep’t of Agric., to Senator Debbie Stabenow, 114th Cong., (July 1, 2016) (on file with author). *See generally* National Bioengineered Food Disclosure Standard, Pub. L. No. 114-216, 130 Stat. 834 (2016).

115. Letter from Jeffrey M. Prieto, *supra* note 114. *See generally* National Bioengineered Food Disclosure Standard, Pub. L. No. 114-216, 130 Stat. 834 (2016).

116. Just Label It is a project of Organic Voices Action Fund and Organic Voices created to “educate and empower consumers by promoting the benefits of organic food and by advocating for mandatory GMO labeling.” *About Just Label It*, JUST LABEL IT, <http://www.justlabelit.org/about-just-label-it/> [<https://perma.cc/Y4CQ-NPQH>].

117. Memorandum from Just Label It Legal Team, *supra* note 111, at 1.

NBFDS reveals multiple ways that a food that has been genetically modified could be exempted from mandatory labelling. First, GM foods *no longer containing* the gene that was modified or no longer containing detectable amounts of the gene that was modified may not meet the requirements of Section 291(1)(A).<sup>118</sup> Additionally, GM foods that were modified through processes other than recombinant DNA techniques—including CRISPR gene editing—do not meet the second requirement of Section 291(1)(A).<sup>119</sup> Finally, foods containing a gene modification that is obtainable through conventional breeding methods or containing a gene modification that is found in nature may not meet the requirements of Subpart (B), despite the gene naturally occurring in a *different* organism, such as bacteria, and then being inserted into a new species.<sup>120</sup>

### III. FOOD JUSTICE IMPLICATIONS OF GM FOOD PRODUCTION

The concept of food justice is an outgrowth of the environmental justice movement,<sup>121</sup> so a basic understanding of environmental justice concerns is useful in understanding what food justice is and how GM food production fits into a food justice analysis. There are four distinct, but related, dimensions of environmental justice: distributive injustice,

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118. *See id.* at 1–2 (“In April 2016, the USDA approved a white button mushroom that was edited with a controversial gene-editing tool called CRISPR/Cas9 to reduce browning. The mushroom was modified, not by adding new DNA to the mushroom, but rather by small deletions of a specific gene. Because no genes were added to the food, one could argue that these mushrooms do not “contain” modified genetic material. Therefore, they might fall outside the scope of the definition and would not have to be labeled.”).

119. *Id.* at 2.

The second part of subsection (A) requires that the genetic material contained in the food be modified through recombinant deoxyribonucleic acid (rDNA) techniques—a process that brings together genetic material from multiple sources. This greatly narrows the scope of genetic engineering techniques covered by the bill and excludes new technologies like CRISPR gene editing that would not be considered rDNA. It also fails to allow for potential future advances in biotechnology. If the industry shifts away from rDNA, even fewer foods derived from genetic engineering may fall under this proposal’s labeling requirements.

*Id.*

120. *See id.* at 3–4.

Because the modifications utilized in biotechnology are often found in nature, a narrow read of this provision could exempt nearly all GE foods from labeling. As the FDA points out in its technical assistance, “[i]t may be difficult to demonstrate that a particular modification could not be obtained through conventional breeding (or even that it could not occur in nature).”

*Id.* at 4 (citation omitted). The potential exemptions for disclosure resulting from Section 291(1)(B) include food containing genes that result in herbicide resistance—like the EPSPS gene—and toxin production—like Bt crops—as both genes naturally occur in nature. *Id.*

121. Gonzalez, *Food Justice*, *supra* note 26, at 403. Environmental justice movements in the United States emerged in the 1980s as a grassroots response to the disproportionate rate of polluting industries and abandoned hazardous waste sites located in low-income communities of color compared to other communities with different demographics. *Id.*

procedural injustice, corrective injustice, and social injustice.<sup>122</sup> Examples of distributive injustice in environmental issues include “disparate exposure to environmental hazards and inadequate access to environmental amenities (such as parks and open space).”<sup>123</sup> Procedural injustice in environmental issues results from the exclusion of socially and economically marginalized communities from governmental or public policy decision-making.<sup>124</sup> Corrective injustice in environmental issues occurs because of ineffective enforcement of environmental laws, and social injustice issues result because “environmental degradation is inextricably intertwined with other social ills, such as poverty and racism.”<sup>125</sup> These dimensions are useful to keep in mind when discussing implications of food systems or public food policies because they provide the context and foundation of possible systemic concerns for any given issue.

In large part, the food justice movement critiques the global industrial food system and identifies the negative impacts of the global industrial food system on human health, the environment, culture, and equity.<sup>126</sup> Some food justice frameworks focus on the barriers that inhibit low-income and marginalized groups from realizing the broad goals of the food justice movement, including access to fresh, unprocessed food.<sup>127</sup> In the United States, the food justice movement critiques and advocates against “the social and economic factors that prevent low-income communities of color from purchasing or producing healthy, nutritious, environmentally sustainable, and culturally appropriate food.”<sup>128</sup> Other food justice frameworks focus on international food sovereignty.<sup>129</sup>

This Note utilizes a food justice framework that focuses on fulfilling the right of communities to choose their food and their food and agricultural policies. The definition of food justice used in this Note is “the

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122. *Id.*

123. *Id.*

124. *Id.*

125. *Id.*

126. Danielle M. Purifoy, *Food Policy Councils: Integrating Food Justice and Environmental Justice*, 24 DUKE ENVTL. L. & POL'Y F. 375, 380 (2014).

127. Lindsay F. Wiley, *Deregulation, Distrust, and Democracy: State and Local Action to Ensure Equitable Access to Healthy, Sustainably Produced Food*, 41 AM. J.L. & MED. 284, 300 (2015) (citation omitted).

128. Gonzalez, *Food Justice*, *supra* note 121, at 404.

129. *Id.*

The international food sovereignty movement seeks to dismantle the corporate-dominated free trade policies that have devastated rural livelihoods and environments in both the North and South, promotes the redistribution of land and water rights to small-scale farmers, and advocates the right of peoples and nations to define their own food policies and control their food-producing resources.

*Id.*

right of communities to grow, sell, and consume healthy, nutritious, affordable, and culturally appropriate food produced through ecologically sustainable methods, and their right to democratically determine their own food and agriculture policies.”<sup>130</sup> The following three principles are the basis for the food justice framework: (1) ecologically sustainable food production; (2) equitable access to food and food-producing resources; and (3) democratic local and national control over food and agricultural policy.<sup>131</sup> The following sections will describe the important implications of GM food production that have bearing on food justice concerns.

#### A. *Ecologically Sustainable Food Production*

The first principle of the food justice framework requires the production of food through ecologically sustainable methods.<sup>132</sup> GM food production is not ecologically sustainable because it leads to erosion of biodiversity through monocropping;<sup>133</sup> acceleration of herbicide and insecticide resistance,<sup>134</sup> leading to increases in use of chemicals;<sup>135</sup> genetic pollution;<sup>136</sup> and harm to non-target organisms.<sup>137</sup> Two primary environmental implications of GM food production—increased use of chemical herbicides and monocropping—are discussed below.

The primary GM crops grown today have been genetically modified for insect and herbicide resistance.<sup>138</sup> The goal of these GM crops was ultimately to reduce the amount of chemical pesticides, herbicides, and fertilizers required in crop production.<sup>139</sup> GM crops were also intended to improve yields-per-acre productivity; to reduce the need for additional agricultural land development; and to reduce reliance on chemical pesticides, herbicides, and fertilizers.<sup>140</sup> Unfortunately, GM crop production has actually increased the use of chemical herbicides, including the herbicide glyphosate.<sup>141</sup> The drastic increase in use of glyphosate has caused some weeds to develop resistance to the herbicide, causing farmers

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130. *Id.*

131. *See id.*

132. *See supra* text accompanying note 129.

133. Carmen G. Gonzalez, *Genetically Modified Organisms and Justice: The International Environmental Justice Implications of Biotechnology*, 19 *GEO. INT’L ENVTL. L. REV.* 583, 607 (2007) [hereinafter Gonzalez, *GMOs and Justice*].

134. *Id.* at 608.

135. *Id.* (“A comprehensive review of the literature on GM crops published in 2007 by Friends of the Earth International (FOEI) concluded that the cultivation of GM crops in the United States has resulted in a significant increase in herbicide use.”); Tan & Epley, *supra* note 8, at 316.

136. Gonzalez, *GMOs and Justice*, *supra* note 133, at 608–09.

137. *See id.* at 609–10.

138. *See supra* text accompanying note 19; Gonzalez, *GMOs and Justice*, *supra* note 133, at 603.

139. Tan & Epley, *supra* note 8, at 315.

140. *See id.*

141. *See* Gonzalez, *GMOs and Justice*, *supra* note 133, at 608.

to use additional chemicals.<sup>142</sup> Additionally, some GM crops that have successfully been modified for insect resistance by injecting genes that code for proteins lethal to certain insects have been shown to be toxic to unintended insects.<sup>143</sup>

In addition to increasing the use of herbicides, GM food production increases the practice of large-scale monocultures and monocropping.<sup>144</sup> Monocropping is the practice of growing only one type of crop in a large area of land, year after year.<sup>145</sup> “In industrial crop production, monocropping is used to facilitate planting and harvesting across large pieces of land (as well as the application of pesticides and fertilizers), often using specialized farm equipment.”<sup>146</sup> Two major environmental implications of monocropping are (1) soil degradation and (2) the loss of biodiversity in the crops that are produced as well as the loss of formerly “diverse habitats.”<sup>147</sup> More nuanced effects of monocropping in industrial crop production are even less ecologically sustainable:

The replacement of indigenous crop varieties and biodiverse cultivation systems with monocultures increases vulnerability to pests and disease, diminishes soil fertility, promotes dependence on toxic agrochemicals, increases the likelihood of catastrophic crop failure in the event of blight, and adversely affects human nutrition by reducing the variety of foods consumed.<sup>148</sup>

### *B. Equitable Access to Food*

The second principle of the food justice framework requires equitable access to food—food that is healthy, nutritious, affordable, and culturally appropriate—and equitable access to food-producing resources.<sup>149</sup> The production of GM food violates equitable access to food-producing resources by creating inequitable food systems. GM food production creates inequitable food systems between developed and developing nations as follows:

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142. Tan & Epley, *supra* note 8, at 317.

143. *Id.* at 318–19.

144. See Gonzalez, *Food Justice*, *supra* note 26, at 417; Gonzalez, *GMOs and Justice*, *supra* note 133, at 603 (“Most of the [biotechnology] industry’s research is devoted to export crops grown in large-scale monocultures. Despite the diversity of GM crops that could be developed, almost all of the world’s GM acreage consists of four crops (soybeans, corn, cotton, and canola), and most of these crops are engineered for herbicide tolerance or insect resistance.”).

145. *Industrial Crop Production*, GRACE COMM. FOUND., <http://www.sustainabletable.org/804/industrial-crop-production> [https://perma.cc/Z5W2-T87N].

146. *Id.*

147. *Id.*

148. Gonzalez, *GMOs and Justice*, *supra* note 133, at 595.

149. See *supra* text accompanying note 131.



The biotechnology industry maximizes profits by marketing its products to wealthy commercial farmers in affluent countries while devoting scant resources to the needs of poor farmers in the developing world. Most of the industry's research is devoted to export crops grown in large-scale monocultures. Only one percent of the industry's research targets small-scale producers. Despite the diversity of GM crops that could be developed, almost all of the world's GM acreage consists of four crops (soybeans, corn, cotton, and canola), and most of these crops are engineered for herbicide tolerance or insect resistance. It is no coincidence that these widely commercialized GM crops are the lucrative export crops cultivated by U.S. agribusiness. Finally, because GM seeds are subject to strict intellectual property protection, farmers using these seeds must pay a higher premium for the seeds, and they must forgo their traditional rights to save, share, and modify these seed; farmers are also contractually bound to use agrochemicals of a particular seed manufacturer.<sup>150</sup>

The socioeconomic impacts of GM crops in the international context emphasize how GM crops effectively marginalize small farmers in developing nations.<sup>151</sup> Gonzalez explains that introducing GM crops “in developing countries threaten[s] to exacerbate poverty and inequality by reproducing the anti-poor bias of the Green Revolution,”<sup>152</sup> and is unlikely to “reduce poverty, promote food security, and enhance the well-being of small farmers.”<sup>153</sup> In fact, GM crops disproportionately benefit wealthy farmers because of the expensive chemical inputs and patented seeds required for GM crop production.<sup>154</sup> For example, farmers need to

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150. Gonzalez, *GMOs and Justice*, *supra* note 133, at 603–04.

151. *Id.* at 604–07. While GM food production may marginalize small farmers, Gonzalez recognizes that GM food may also increase food production, enhance nutritional quality of food, and produce crops that can withstand environmental stresses. *Id.*

152. *Id.* at 604.

[The Green Revolution] was a post-World War II philanthropic effort to reduce world hunger by increasing global crop yields. With the support of the Ford and Rockefeller Foundations, international crop breeding institutions developed new varieties of rice, wheat, and corn that were most responsive than traditional varieties to the application of synthetic fertilizers and controlled irrigation.

*Id.* at 596–97. Despite the well-intentioned goal of increased global food production to address global hunger, the Green Revolution actually “exacerbated hunger in the developing world by aggravating poverty and inequality.” *Id.* at 597. Poor farmers were unable to afford the expensive equipment and inputs for the new farming methods so wealthy farmers disproportionately benefited from the efforts. *Id.* Additionally, the increased crop yield of agricultural products flooded the market, causing prices for the agricultural products to drop, and the efforts to increase food production did not address land reform—which Gonzalez argues are the “very measures that have achieved the greatest success in alleviating poverty, promoting economic development, and enhancing food security.” *Id.* at 597–98.

153. *Id.* at 605.

154. Gonzalez, *Food Justice*, *supra* note 26, at 416 (“GM crops favor wealthy farmers because poor farmers generally lack the cash or credit necessary to purchase seeds every season as well as the

purchase new seeds every season, threatening farmers' traditional rights to save and exchange seeds; small farmers who take out loans to produce GM crops have a higher risk of bankruptcy in situations of decreased yield or low global food prices; small farmers not producing GM crops will experience decreased profits when increased yields of GM crops cause decreased prices of global food; fewer workers will be required to tend fields as more farmers switch to the more mechanized agricultural practices; and if GM crops contaminate non-GM crops, farmers may be unable to export their products to countries that restrict GM food.<sup>155</sup> In sum, the development of GM crops economically disadvantages small farmers, especially those in developing nations, while large transnational corporations—who own the patents to GM seeds, the technology for mechanized agricultural practices, and the chemicals required to grow some GM crops—gather more economic power and domination.

Finally, the production of GM food may violate the food justice requirement entitling communities to healthy, nutritious, affordable, and culturally appropriate food. The consumption of GM food has yet to provide any evidence that GM food is harmful to humans,<sup>156</sup> but as previously mentioned, scientists have not been able to conduct adequate research and testing on GM food due to intellectual property.<sup>157</sup> GM food production may increase access to nutritious food because GM food may be engineered to be more nutritious than conventionally-grown food.<sup>158</sup> GM production may also increase access to affordable food because increases in crop yields drive global food prices down.<sup>159</sup> However, GM food may not be culturally appropriate for all communities, especially for certain religious groups.<sup>160</sup>

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expensive chemical inputs necessary to cultivate these crops.” “[T]he profit-driven biotechnology industry has generally catered to the interests of large-scale commercial farmers while devoting scant resources to the needs of small-scale producers.” *Id.* at 618.

155. Gonzalez, *GMOs and Justice*, *supra* note 133, at 604–05.

156. *See supra* note 21 and accompanying text.

157. *See supra* text accompanying notes 24–27.

158. *See* Gonzalez, *GMOs and Justice*, *supra* note 133, at 606.

159. This occurred during the Green Revolution: increased food production led to decline in food prices. Prabhu L. Pingali, *Green Revolution: Impacts, Limits, and the Path Ahead*, 109 PROC. NAT'L ACAD. SCI. 12302, 12303 (2012).

160. *See supra* note 17 (discussing how GM food may interfere with religious beliefs of individuals who adhere to strict dietary rules). For individuals whose religious beliefs may not allow for consumption of GM food, clear and unambiguous labels are required so that these individuals can select culturally appropriate food. Additionally, labeling GM foods may cause the food industry to increase food prices to accommodate additional regulatory costs. *See* Crawford, *supra* note 97, at 61. If the price of food is increased, access to the food markets may be hindered for low-income individuals. This would violate food justice by limiting access to affordable foods.

C. *Democratic Control of Food and Agricultural Policy*

Finally, the third principle of the food justice framework provides a right for communities to democratically determine their food and agricultural policies.<sup>161</sup> Democratic control means that the people of any given community should have the power to decide their food and agricultural policies, ideally by majority vote.<sup>162</sup> GM food production violates this principle of food justice by creating a global oligopoly in the seed industry.<sup>163</sup> Oligopolies threaten democratic rule through their existence by concentrating power in large firms.<sup>164</sup> In fact: “six corporations control 66 percent of the global seed sales.”<sup>165</sup> While seeds represent just one link in the “agri-food chain,” the “importance of seeds is considerable if we take into account their role and influence on the success of crops and on food security due to their agronomic, techno-economic, environmental, and nutritional impact.”<sup>166</sup> Some of the largest seed companies today are agrichemical companies—which produce and sell GM seeds and enter into license agreements to allow smaller seed companies to sell their seeds.<sup>167</sup>

“The Big Six” are a group of six of the largest seed companies—Monsanto (USA), DuPont (USA), Syngenta (Switzerland), Dow (USA), Bayer (Germany), and BASF (Germany)<sup>168</sup>—whose sales of pesticides and seeds rank them at the top level of agricultural inputs; these companies have used their power to shape the economic and regulatory policies of

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161. See *supra* text accompanying note 131.

162. For a discussion on democracy, see *What is a Democracy?*, AM. GOV. ONLINE TEXTBOOK, <http://www.ushistory.org/gov/1c.asp> [<https://perma.cc/TDR4-AT54>].

163. Gonzalez, *Food Justice*, *supra* note 26, at 415 (“The extremely high cost of biotechnological research and development combined with intellectual property rights in GM crops, has facilitated the rise of a global oligopoly in the seed industry.”). Oligopoly in a market means that there are few sellers and numerous buyers. LIAM DOWNEY, *INEQUALITY, DEMOCRACY, AND THE ENVIRONMENT* 123 (2015).

164. See DOWNEY, *supra* note 163, at 124 (“Oligopoly and oligopsony firms tend to exert great power in commodity chains and markets, generally distorting these chains and markets to their benefit by eliminating or reducing free and fair competition between themselves and other actors.”).

165. Gonzalez, *Food Justice*, *supra* note 26, at 415 (citation omitted).

166. Sylvie Bonny, *Corporate Concentration and Technological Change in the Global Seed Industry*, SUSTAINABILITY, Sept. 14, 2017, at 4, <https://pdfs.semanticscholar.org/2ef2/753fc842cec210f6f8a17c67769977e0684e.pdf> [<https://perma.cc/8JL2-KRWN>].

Seed companies are often regarded as very large firms and powerful players in the agri-food chain. In particular, the major firms are often viewed as giant companies with considerable power. However, if one considers the size of the largest company . . . (based on total sales) of the different sectors in the agri-food chain, the one of the seed sector is the smallest within the food chain. Indeed, in the agri-food chain, the most important sectors and actors by far are food processing and large-scale distribution.

*Id.* at 3.

167. *Id.*

168. BASF invests in the seed sector without already selling seeds. *Id.* at 8.

nations.<sup>169</sup> For example, intellectual property rights in the seed sector developed as a result of their influence and has led to their increased dominance over seed production and agricultural practices.<sup>170</sup> In the international context, these agrochemical companies—in addition to other transnational grain traders, and retail supermarket chains—have derived “unprecedented market power” that enables companies to “pay farmers low prices for their agricultural output, charge high prices for agricultural inputs (such as seeds and fertilizers), and impose product quality standards that may be too onerous for many small farmers to satisfy.”<sup>171</sup> Essentially, GM food producers are able to control global, national, and local food systems without the approval of the people in those communities.

#### IV. FOOD JUSTICE & THE NBFDS: WHY PROPER LABELING MATTERS

As explained in the prior section, the production of GM food implicates food justice concerns by violating the principles of ecologically sustainable food production, equitable access to food, and democratic control of food and agricultural policy.<sup>172</sup> Notwithstanding these food justice concerns inherent in GM food production, the way in which a government chooses to regulate the labeling of GM food can create additional layers of food justice implications by reducing transparency. This section will explain the food justice implications of GM food labeling and the food justice implications of the NBFDS.

In general, labeling of food can violate or enhance the principles of food justice—primarily the principles of equitable access to food and democratic control of food and agricultural policy—depending on the degree of transparency and the depth of information provided on the labels. For example, by providing consumers with information related to the genetic modification of food, food labels can assist consumers in democratically *selecting* the food they buy and supporting specific food production systems.<sup>173</sup> By differentiating between GM food and food produced by conventional or traditional methods, GM food labels allow consumers the opportunity to select (1) food produced by ecologically sustainable means;<sup>174</sup> (2) food that is culturally appropriate;<sup>175</sup> and (3) food that is produced in a system that does not further perpetuate global inequality.<sup>176</sup>

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169. *See id.*

170. *Id.*

171. Gonzalez, *Food Justice*, *supra* note 26, at 414.

172. *See supra* Part III.

173. *See supra* note 8 and accompanying text.

174. GM food is not ecologically sustainable. *See supra* Part III.

175. GM food may not be culturally appropriate for all communities. *See Bloom, supra* note 17.

176. GM food production creates inequitable food systems. *See supra* Part III.

When mandatory GM food labeling laws require food produced through genetic modification processes and food containing GM materials to be labeled as such, the GM food label alerts consumers who wish to have this information—allowing them the opportunity to choose what food production processes or food systems they want to support with their purchase.<sup>177</sup> However, if GM food labeling regulations set a high threshold for the amount of GM material in food that triggers disclosure or exempts food produced using some genetic modification processes from mandatory disclosure, then the GM food labeling law does not uphold the principles of food justice because many foods that were produced through the GM food system would not be labeled as such. Consumers are unaware if they are purchasing food produced using a genetic modification process or food produced through conventional processes. The ability of GM food labeling laws to uphold the food justice principles requires high levels of transparency and trust (or validity) in the label itself.<sup>178</sup> Given the broad level of agency discretion in the NBFDS, the USDA could establish a regulatory scheme for the mandatory labeling of GM food that fails to provide the high level of transparency required to fulfill the requirements food justice in three important ways.<sup>179</sup>

First, the NBFDS decreases transparency by allowing the GM food disclosure to be digital. Digital disclosures in GM food labeling require consumers to scan a barcode, call a telephone number, or use their smartphone to access information regarding a food's genetic modification.<sup>180</sup> In addition to removing the disclosure of GM information on food packages, this feature also places a disproportionate burden on low-income and elderly individuals who may have limited access to smartphones.<sup>181</sup>

Second, the NBFDS decreases transparency by providing the USDA with the discretion to solely require labeling for food that *contains* GM material in the final product, rather than require labeling for any food that

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177. See *supra* note 8 and accompanying text.

178. An analysis of a food labeling law's ability to uphold food justice principles is comparable to an analysis of a food labeling law's ability to uphold the Consumer's Right to Know Policy because both concepts focus on the degree of transparency and the depth of information that is conveyed to consumers in GM food labeling. Therefore, in determining whether the NBFDS upholds food justice, any concerns or deficiencies of the NBFDS to fulfill the Consumer's Right to Know Policy potentially invoke concerns that food justice principles may be violated. This is important because many reactions from scholars and advocacy groups to the NBFDS have used the Consumer's Right to Know Policy as the foundation of their analysis. See, e.g., Begley, *supra* note 4 at 732–43. Therefore, a large portion of the literature currently available on the NBFDS identifies weakness based on this policy.

179. See *id.*

180. *Id.* at 733.

181. See *supra* note 102 and accompanying text.

was produced using any genetic modification process.<sup>182</sup> Arguably, a labeling distinction that requires disclosure for food containing GM material in the final food product may provide consumers with sufficient information about GM food if consumers were *solely* concerned with the consumption of food containing GM material due to potential human health impacts or moral/religious concerns regarding cross breeding of genetic material. This labeling distinction fails to provide consumers with sufficient information about GM food if their concerns are based on: (1) the environmental impacts of GM food production processes; (2) the socioeconomic impacts of GM food production; (3) the moral or religious concerns regarding production of GM food; or (4) the food justice issues associated with GM food production.

Finally, the NBFDS decreases transparency in GM food labeling by providing the USDA with the discretion to choose the threshold level that triggers mandatory disclosure. If the USDA chooses a high threshold level to trigger mandatory GM labeling, the majority of food containing GM materials could be exempt from the mandatory disclosure program.<sup>183</sup>

While these characteristics of the NBFDS threaten food justice by reducing transparency in a mandatory GM food labeling program, the USDA has the ability to uphold food justice by establishing a regulatory program that is transparent and clear. The next Part of this Note provides recommendations based on food justice for the USDA to consider as it develops its regulatory program.

#### V. FOOD JUSTICE RECOMMENDATIONS FOR GM FOOD LABELING UNDER THE NBFDS

As explained in Part IV, in order to satisfy the principles of food justice, the NBFDS should result in a GM food labeling program that is transparent and clear. The USDA only has the authority to clarify the definition of GM food, rather than changing the congressional definition, and the USDA will engage in public notice and comment in order to determine how it will set up the regulatory scheme for GM food disclosure in the United States.<sup>184</sup> While critics of the NBFDS see the broad language of the federal statute as a source of weakness,<sup>185</sup> the USDA could use both the broad language and its authority to establish a regulatory scheme that is stringent in its GM food disclosure requirements. Therefore, to uphold food justice, the NBFDS can increase transparency by requiring disclosure

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182. Begley, *supra* note 4, at 735.

183. *Id.*

184. See generally National Bioengineered Food Disclosure Standard, Pub. L. No. 114-216, 130 Stat. 834 (2016).

185. See, e.g., Begley, *supra* note 4, at 732-43.

labels for as many GM foods as practicable. As explained below, the USDA can increase transparency by setting a low “triggering” threshold for GM material in food and by including as food produced with all genetic modification processes that fit within the NBFDS definition.

First, in order to ensure that the mandatory GM labeling program in the United States addresses the food justice implications of GM food production by increasing transparency, the USDA should promulgate a regulatory program that indicates a low threshold of GM material in food—a value close to the EU’s 0.9%—that triggers mandatory labeling.<sup>186</sup> The 0.9% threshold allows the food industry to produce “non-GM” food with negligible levels of GM material, which may be unavoidable given the widespread use of GM ingredients in the food industry.<sup>187</sup> Alternatively, the USDA could set a threshold level of GM material that triggers mandatory labeling equivalent to the requirements in current organic food regulation.<sup>188</sup>

Second, the USDA should require GM food labels for all foods produced with as many genetic modification processes that fit within the NBFDS definition. The NBFDS requires disclosure for food that contains GM material produced through recombinant DNA techniques that are not possible in nature or obtainable through conventional breeding techniques.<sup>189</sup> In establishing the GM food labeling regulatory program, the USDA should follow the EU’s example and include all genetic modification techniques under the mandatory labeling requirement except for in vitro fertilization, natural processes (conjugation, transduction, and transformation), polyploidy induction, as well as mutagenesis and cell fusion of plant cells that exchange GM material through traditional breeding methods.

#### CONCLUSION

The mandatory labeling of GM food in the United States will not solve the violations of food justice principles inherent in the current food system of GM food production. The mandatory labeling of GM food, however, could increase transparency and provide opportunities for consumers to select their food and select their food systems, which is key

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186. *See supra* notes 70–73 and accompanying text.

187. *Id.*

188. This would remedy any contentions in the programs. *See supra* note 104 and accompanying text.

189. *See supra* Part II, Section A, *NBFDS Applicability and Scope*. The NBFDS uses a “novel” definition of biotechnology, which means that the processes included may differ from other definitions like the EU and the definition in organic food regulation. *See* Letter from organic food stakeholders to President Barack Obama, *supra* note 103.

to food justice. The USDA has the opportunity to align the NBFDS with the principles of food justice or further perpetuate food justice violations.

Depending on the regulatory scheme that the USDA promulgates, the NBFDS may not actually require the labeling of foods that either contain GM material or are produced with genetic modification processes. If the USDA chooses a regulatory scheme that does not provide high degrees of transparency, it will violate principles of food justice. To meet the food justice requirement that consumers must be able to select the food of their choosing, the USDA must choose a low threshold of GM material—preferably 0.9%—to trigger mandatory labeling disclosures and must include the same genetic modification techniques that the EU identifies in its labeling laws in the definition of genetic modification.