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The 'Natural' Disaster: How Americans' Obsession with 'Natural' Foods Encourages Misinformation, Stifles Innovation, and Harms the Planet

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The ‘Natural’ Disaster: How Americans’ Obsession with ‘Natural’ Foods Encourages Misinformation, Stifles Innovation, and Harms the Planet

*Jillian Guernsey**

ABSTRACT

Every day, consumers are bombarded with conflicting messages about what they should and should not eat. In an effort to make healthy food choices, consumers often flock to food products that boast “organic,” “all-natural,” or “non-GMO” labels. But are all of these foods really better? In this note, I discuss the confusion surrounding “natural” food and how it has hindered progress toward more productive and sustainable food systems. First, I examine the hazy definition of “natural” foods and explain why consumers continue to demand natural foods despite their environmental impacts. Second, I discuss how consumers’ single-minded focus on natural foods has stymied scientific research and invited apathy toward unsustainable agricultural practices but has also emphasized how some new technologies may present an opportunity to improve food science literacy among consumers moving forward. Third, I outline one past attempt to legislate consumers’ fears of artificial foods (the Organic Foods Production Act of 1990) and discusses that law’s strengths and flaws. And fourth, I argue that focusing the conversation squarely on food system sustainability—and in the process, giving the word “sustainable” some legal heft—will not only force a reexamination of our broken “natural” foods narrative but will also direct our collective attention toward the current climate crisis.

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INTRODUCTION

As consumers, we think we know what “natural food” means. Or at the very least, to paraphrase Justice Potter Stewart’s famous definition of pornography: we know natural foods when we see them.¹ Not only that, but we also believe that “natural foods” are inherently better, safer, and healthier than their artificial counterparts. While that assumption—often called the “naturalistic fallacy”—is not inherently harmful, the data speak to a different reality: natural foods can be (and often are) deeply unsustainable to produce for two reasons.²

First, our false notion of what “natural” is—and our confidence that we are right—has fueled the growing global climate crisis by directing our attention away from the environmental impacts of agriculture. Instead of grappling with the negative impacts of the products we consume, we buy natural foods because they *seem* healthier and better. In the process, we turn a blind eye toward harmful agricultural practices merely because they are “natural,” and in so doing we become complacent about environmental sustainability.

Second, because we are so vehemently opposed to “unnatural” or “artificial” foods, genuine innovations are dismissed out of hand as unsafe, even if they could improve agricultural productivity, mitigate many of the harmful impacts of agriculture, and save lives. This, in turn, prevents us from considering more sustainable production methods because they go against our conception of what a “natural” food system should look like. At a time when “urgent, effective and equitable mitigation actions” are critical to prevent climate catastrophe—and when both a violent war and an ongoing global pandemic have forced us to reconsider all aspects of our food supply chain—we can ill afford to be so squeamish about technology and science.³

This note aims to demonstrate that our preoccupation with natural foods is unhealthy for both the planet and for us as consumers. The note advocates for shifting our focus from the perceived “naturalness” of particular food products to broad food system sustainability. The note then proposes new federal legislation that will allow farmers and producers to become certified as sustainable. This will have beneficial effects on not only our planet but also on consumers’ understanding of where their foods come from and how they are produced. Therefore, it is critical to dismantle the

1. *Jacobellis v. Ohio*, 378 U.S. 184, 197 (1964) (Stewart, J., concurring).

2. ENCYCLOPEDIA BRITANNICA, NATURALISTIC FALLACY (Encyclopedia Britannica eds. 2009), <https://perma.cc/NY74-SDHU>.

3. INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2022, MITIGATION OF CLIMATE CHANGE, SUMMARY FOR POLICYMAKERS 44 (2022); *see, e.g.*, Max Bearak, *Ukraine’s Wheat Harvest, Which Feeds the World, Can’t Leave the Country*, WASH. POST (Apr. 7, 2022, 7:45 PM), <https://perma.cc/AY3K-8K25>.

concept of “natural foods” and to shift our focus toward agricultural sustainability, which is a vital part of our ongoing fight against climate change.

I. THE MYTH OF NATURAL FOODS

A. ‘NATURAL’ HAS NEVER HAD A CLEAR DEFINITION

While the federal government has long urged Americans to eat (or not eat) certain foods, it was in the 1970s and 1980s that the government explicitly prioritized healthy eating.⁴ In the midst of the resulting health food boom—and in the years since—foods labeled as “natural” have enticed increasingly health-conscious American consumers. However, there remains widespread confusion as to just what “natural food” means.⁵ Although there currently seems to be some general consensus among federal agencies that “natural food” means food that is both “minimally processed” and “not artificial or synthetic,” the Food and Drug Administration (FDA) has yet to clearly define the word “natural.”⁶ This is despite the fact that the FDA has admitted that the definition of natural food is of “considerable interest” to consumers.⁷ Therefore, when courts have weighed in on the issue, they have stressed that the failure to formalize a definition is not merely an oversight, but an intentional policy decision, leaving consumers and members of the industry to interpret what “natural” means with little guidance from the government.⁸

This ambiguity was further compounded in 2015 when, in response to growing consumer demand for “all-natural” products, a spate of large food companies committed to removing all artificial colors and flavors from their products.⁹ While these pledges theoretically represented the free market at its finest (consumers asked, companies listened), in reality, the companies did little to correct the misconception that “natural” is the same as “healthy.” In fact, the companies’ statements were often carefully crafted

4. Ann F. La Berge, *How the Ideology of Low Fat Conquered America*, 63 J. OF THE HIST. OF MED. AND ALLIED SCI. 139, 148–49 (2008).

5. Food Labeling: Nutrient Content Claims, General Principles, Petitions, Definition of Terms, 56 Fed. Reg. 60421, 60466–67 (proposed Nov. 27, 1991) (to be codified at 21 C.F.R. pts. 5, 101, 105).

6. Andréa Maehara, *100% All Natural Ambiguity: A Comparative Approach to Food Labeling Requirements for the Term “Natural” by the Food and Drug Administration and the European Union*, 18 WASH. U. GLOBAL STUD. L. REV. 263, 274–75 (2018); see, e.g., *What is Natural Beef?*, U.S. DEP’T OF AGRIC. (July 17, 2019), <https://perma.cc/TYH7-AYAG> (defining natural meat as: “products containing no artificial ingredients or added colors and only minimally processed. Minimal processing means that the product was processed in a manner that does not fundamentally alter the product.”).

7. *Holk v. Snapple Beverage Corp.*, 575 F.3d 329, 340–41 (2009).

8. See *id.*

9. Alison Moodie, *No Artificial Ingredients: What it Takes to Get Synthetics out of Coke and Cheetos*, GUARDIAN (June 23, 2015, 1:14 PM), <https://perma.cc/W6GT-P7ZW>.

to avoid correcting that assumption.¹⁰ The tactic worked: a 2017 study showed that consumers not only seek out natural products but are often willing to pay a premium for foods that sport an “all-natural” label.¹¹

Furthermore, although the FDA has defined “natural flavor” with more specificity than it has “natural,” even that more robust definition has led to a host of other issues.¹² Because consumers have shown such a marked preference for products that are labeled as natural, scientists and companies have continued to find innovative ways to produce flavoring agents via natural means (as defined by the FDA).¹³ However, the ingredients themselves remain largely unchanged: they merely come from different sources.¹⁴ For instance, “natural” flavor compounds are often produced by fermentation, but if the exact same compound is made by chemical synthesis, it is deemed “artificial.”¹⁵ This allows producers to merely tweak their products (i.e., by substituting an artificial flavor with an identical natural one) to comply with the law and to appease consumers.¹⁶ This, in turn, opened the door for companies to successfully market what famed food writer Michael Pollan calls “edible oxymorons,” such as “all-natural” Cheetos and chicken nuggets.¹⁷

B. THE TRUTH ABOUT NATURAL FLAVORS

One might ask: what is the harm of allowing consumers to demand all-natural food? After all, the production of natural food is not inherently unsustainable, and it makes consumers feel better about the food that they eat. However, if done incorrectly, producing natural foods can be detrimental to both the environment and the producers. One particularly apt example is the production of the world’s most popular flavor: vanilla. Vanilla flavor (or, more correctly, its primary chemical component, vanillin) can

10. See, e.g., Press Release, Kraft Heinz, Iconic Kraft Macaroni & Cheese to Remove Synthetic Colors and Artificial Preservatives in the U.S. in 2016 (Apr. 20, 2015, 8:00 AM), <https://perma.cc/LZJ8-PWRU>.

11. INST. OF FOOD TECHNOLOGISTS, STUDY FINDS CONSUMERS WILLING TO PAY MORE FOR ‘ALL-NATURAL’ LABELED FOODS (Feb. 22, 2017), <https://perma.cc/BEV5-PFEP>.

12. 21 C.F.R. § 101.22(a)(3) (2021).

13. Kate Baggaley, *What are the “Natural Flavors” in Your Food? Biotech is Making the Answer More Complicated*, POPULAR SCI. (Mar. 10, 2017, 9:33 PM), <https://perma.cc/J66Y-GG43>; CONSUMER REPORTS, CONSUMER REPORTS SURVEY SHOW 73 PERCENT OF CONSUMERS LOOK FOR ‘NATURAL’ LABELS AT GROCERY STORES—AND MANY ARE UNWITTINGLY MISLED (May 10, 2016), <https://perma.cc/UQ73-FSF3>.

14. Kate Dwyer, *The Truth About Natural and Artificial Flavors*, BON APPÉTIT (Mar. 15, 2017), <https://perma.cc/KCQ3-8JXZ>.

15. *Id.*

16. Leslie Nemo, *How the FDA’s New Definition for “Natural” Food Could Affect Your Pantry*, BON APPÉTIT (Apr. 30, 2018), <https://perma.cc/L3WT-DC5D>.

17. Michael Pollan, *Why ‘Natural’ Doesn’t Mean Anything Anymore*, N.Y. TIMES (Apr. 28, 2015), <https://perma.cc/4DRP-G97C>

be produced by either natural or artificial means, and the artificial version of the flavor is “notoriously indistinguishable” from its naturally produced counterparts.¹⁸ From the perspective of environmental sustainability, the most harmful way of producing vanilla flavor is by extracting it directly from a vanilla orchid plant. Although today, only approximately 1% of vanilla flavoring is produced in this way, due to the ubiquity of vanilla flavored (and scented) items, even that small percentage has massive environmental and economic impacts.¹⁹

There are four major adverse environmental and economic impacts of harvesting vanilla orchid plants. First, while there are many vanilla orchid species, only two closely related species are used in commercial vanilla production.²⁰ This lack of biodiversity, in conjunction with changes to the vanilla orchid’s habitat, make the vanilla orchid highly vulnerable to genetic erosion, thus diminishing the plant’s already limited gene pool.²¹

Second, vanilla orchids rely on only “a handful of bee species” for successful pollination, and those bees are also facing detrimental changes to their habitats.²² If the cultivated vanilla varieties were unable to pollinate successfully or were destroyed by disease, wild vanilla orchids—which are “in no condition to rescue their cultivated cousins” due to increased environmental pressures—would quickly become the only available source of vanilla beans.²³

Third, because vanilla is an expensive spice (second only to saffron) vanilla orchids have great economic value. Therefore, humans frequently gather the plants for personal or commercial use, further exacerbating the precarious situation by diminishing an already limited supply of vanilla orchids.²⁴

And fourth, because most of the world’s vanilla is produced on tropical islands, such as Madagascar and certain islands of Papua New Guinea, violent tropical storms frequently threaten large swaths of vanilla orchid crops.²⁵ Even in the absence of devastating rain or winds, regular storms can also disrupt the plant’s normal growing season or reduce crop yield.²⁶

18. Chris Baraniuk, *The Secrets of Fake Flavours*, BRIT. BROAD. CORP. (Aug. 28, 2014), <https://perma.cc/PDY9-DZGG>.

19. Nancy Kacungira, *Fighting the Vanilla Thieves of Madagascar*, BRIT. BROAD. CORP. (Aug. 16, 2018), <https://perma.cc/8YKS-9G3X>.

20. Michael Koziol, *The World’s Favorite Flavor at Risk*, SCI. LINE (June 15, 2016), <https://perma.cc/J6GX-57NG>.

21. FED. MINISTRY OF FOOD AND AG., CROP TR., GLOBAL STRATEGIES FOR THE CONSERVATION AND USE OF VANILLA GENETIC RESOURCES 24 (Oct. 2021).

22. Koziol, *supra* note 20

23. *Id.*

24. FED. MINISTRY OF FOOD AND AG., *supra* note 21; Koziol, *supra* note 20

25. Kamlesh Bhuckory, *Global Vanilla Prices Could Climb After Cyclones, Late Blooming in Madagascar*, BLOOMBERG (Feb. 15, 2022, 7:23 AM), <https://perma.cc/HZG8-BVX3>.

26. *See id.*

While some plants (and their farmers) can withstand minor changes in crop yield, each vanilla orchid produces only one vanilla bean per year, thus even slight decreases in yearly output can be extremely harmful.²⁷ In countries where vanilla is a critically important export, this has created a harmful boom-and-bust cycle, resulting in rampant theft and inequality when vanilla prices are high, and dramatic economic downturns when vanilla prices are low.²⁸

Although vanilla flavor is an extreme example of the impacts of natural food production, it illustrates a critical point: when it is possible—and less expensive—to obtain the exact same flavor compound without the hefty environmental impacts, producing natural flavors is difficult to defend.²⁹

C. THE NATURALISTIC FALLACY: WHY CONSUMERS CLING TO NATURAL FOODS

As demonstrated above, producing natural food can harm the environment. However, while consumers have shown concern about the environmental impacts of the foods they eat, they continue to purchase—and actively prefer—natural foods, regardless of their environmental impacts.³⁰ This marked preference for all things natural is often called the “naturalistic fallacy,” or an assumption that natural things are more *ethically* sound than unnatural things.³¹ Therefore, as consumers, we tend to assign a higher moral value to things that we perceive as “natural,” and disdain all things “unnatural.”³²

Nobel prize-winning theoretical chemist Roald Hoffmann argued that our collective distrust of all things artificial stems from decades of manmade dangers that “have a hold on our imaginations ... [b]ecause these man-provoked disasters occurred under the control of people who were supposed to be rational and expert.”³³ In other words, what is “natural” is—to our minds—safer and more wholesome because we can understand it,

27. Samanta Oon, *How Is Vanilla Grown?*, FOOD UNFOLDED (Sept. 21, 2020), <https://perma.cc/4UUC-EZPW>.

28. Monte Reel, *Vanillanomics*, BLOOMBERG (Dec. 16, 2019, 9:01 PM), <https://perma.cc/KL6Z-D3JT>; Kacungira, *supra* note 19

29. It should be noted that switching to synthetic vanilla production will require a deft hand, especially in the communities whose livelihoods depend on vanilla. But, if we could make that shift in a mindful way, we could mitigate the damage that has been done to an already vulnerable species and limit the human cost of harvesting such an unpredictable crop.

30. Alla Katsnelson, *‘Natural’ Food is Big Business; Too Bad it’s Meaningless*, GUARDIAN (July 3, 2014, 7:45 AM), <https://perma.cc/5CR3-2HTG>.

31. ENCYCLOPEDIA BRITANNICA, *supra*, note 2.

32. *See id.*

33. Roald Hoffmann, *Natural/Unnatural*, 16-2, INTERDISC. SCI. REV. 161, 166 (1991).

see it, and (to a certain extent) control it. In contrast, “artificial” things are seen as dangerous and suspicious because, if even experts are sometimes fooled, then ordinary citizens have little hope of comprehending the full breadth of potential consequences.

With food and food safety, the issue has another added layer of complexity. In many instances, it is difficult to see if something is natural or not (i.e., we cannot always tell if a sweater is made from wool or polyester), but all of us have an intuitive sense of which foods are natural and which are not. This proves useful when the content of the food we are buying is unmistakable. For instance, whole apples need not scream that they are “all-natural.” We already know.³⁴ This is one of the rare instances when a natural food is unquestionably healthy. However, the same cannot be said for apple juice: it is made from apples, but it is also packed with sugar and so heavily processed that most nutritional benefits from the apples have been stripped away. As a result, our imprecise (but occasionally accurate) intuition about natural foods leaves us ill-equipped to handle the nuances of the current food market. When unhealthy foods are marketed as “all-natural,” it gives unhealthy products an unearned aura of healthfulness.

Scholars and consumer groups have advocated for an elegant—if challenging—solution to the confusion around natural foods: either define the word “natural” more concretely or do away with it entirely.³⁵ However, because the naturalistic fallacy is so deeply ingrained in the human mind, the word “natural” must first be disentangled from its psychological moorings before it can be given a legal definition. I would argue for another approach: rather than narrowing the definition of natural—and attempting to fight millennia of mental programming that tells consumers natural things are better—accept that consumers will always prefer natural products and expand the definition of natural to include a wider array of foods. That avoids causing the cognitive dissonance of being told that “unnatural” foods are healthy and does little to disturb our already capacious conception of what “natural” means. As science and technology begin to play a bigger role in all our lives, we must revisit the age-old assumption that “natural” is always better. However, nowhere is it written that we must do away with it entirely.

34. As Michael Pollan wryly wrote: “any food product that feels compelled to tell you it’s natural in all likelihood is not.” Pollan, *supra* note 17.

35. CONSUMER REPORTS, PEELING BACK THE ‘NATURAL’ FOOD LABEL (Jan. 27, 2016), <https://perma.cc/NU4T-42VQ>; Robert Lustig, *Opinion, F.D.A. Must Define, and Enforce, the Term “Natural”*, N.Y. TIMES (Nov. 11, 2014, 6:19 PM), <https://perma.cc/5899-XADD>; Urvashi Rangan, *Opinion, Ban ‘Natural’ as a Marketing Label on Foods*, N.Y. TIMES (Nov. 11, 2014, 12:01 PM), <https://perma.cc/YVG4-S3CY>.

II. THE HARMS OF THE NATURALISTIC FALLACY

A. DESIRE FOR AN ‘ALL-NATURAL’ FOOD SYSTEM REINFORCES ANTI-SCIENCE RHETORIC

i. Consumer Bias Against Genetically Modified Organisms Has Halted Life-Saving Innovations

At the core of the naturalistic fallacy is the assumption that “natural” things are better or safer than their “unnatural” counterparts. However, because of that faulty assumption, consumers often downplay—or ignore entirely—the benefits of scientific innovations. While this pattern is not unique to food and agriculture, it has largely allowed consumers to overlook the climate impacts of our current food system. One example of that is the complete ban on the use of genetically modified organisms (GMOs) in organic agriculture.³⁶ Although most scientific research has shown that GMOs are not only safe to consume, but can also have unique benefits, consumers remain resolutely unconvinced. Even beyond organic farming requirements, many consumers distrust GMOs. Additionally, consumers have very little knowledge about basic genetics, thus even the idea of genetic material in their food is frightening.³⁷ For instance, a recent survey asked consumers if food containing the most basic building block of genetic code—deoxyribonucleic acid (DNA)—should require special labeling.³⁸ Eighty percent of consumers supported the label, which is “an absurd policy that would apply to the majority of foods in a grocery store.”³⁹ The same survey found that thirty-two percent of respondents thought that vegetables—whether GMOs or not—did not have DNA, and thirty-three percent thought that non-GMO produce did not contain genes.⁴⁰ If we wish to begin using GMOs to improve agricultural sustainability, consumers’ baseless fears of GMO crops must be dismantled.

One crop that embodies the need for improved consumer education around GMOs is golden rice. In an effort to combat Vitamin A deficiency in children in developing countries—which can lead to permanent blindness and death—scientists developed a strain of rice with a high concentration of Vitamin A which gives the rice a distinctive golden hue (hence the

36. See *infra* Part IV for further discussion of organic agriculture and the Organic Foods Production Act.

37. Brandon R. McFadden & Jayson L. Lusk, *What Consumers Don’t Know About Genetically Modified Food, And How That Affects Beliefs*, 30 FED’N OF AM. SOCIETIES FOR EXPERIMENTAL BIOLOGY J. 3091, 3092 (2016).

38. *Id.* at 3094.

39. *Id.*

40. *Id.* at 3093.

name “golden rice”).⁴¹ The idea was simple: make this enhanced rice available to people in developing countries and the additional Vitamin A in the rice will help children keep their vision and their lives. Although golden rice has been shown to substantially decrease Vitamin A deficiency with no deleterious effects on those who eat it, those opposed to the use of GMOs “amplif[ied] suspicion on the long-term health effects of genetically engineered crops.”⁴² Golden rice has since been approved by many food safety organizations around the globe, but in large part because consumers are so vehemently opposed to GMOs, golden rice has been met with layers and layers of heavy regulation and significant delays.⁴³ This has largely prevented the widespread use of golden rice, which by some estimates, has caused the (entirely preventable) deaths of over 100,000 children under five.⁴⁴

Beyond the potentially life-saving health benefits of GMOs, there are other significant benefits that GMO crops can provide. For instance, plants can be genetically modified to adapt to our changing climate or reduce our reliance on harmful pesticides.⁴⁵ However, consumers’ views of GMOs have remained largely static over time, with GMOs viewed as negatively now as they were a decade ago.⁴⁶ So why are consumers still so skeptical? Because of the naturalistic fallacy: GMOs do not easily fit into our definition of “natural,” so opponents of GMOs have been able to elicit disgust by tapping into our collective fear of the unnatural and accusing well-meaning scientists of playing God by creating “Frankenfoods.”⁴⁷ Because humans are primed to view the encroachment of human technology into the realm of nature as a contaminant and as an act of hubris, the crusade against

41. See generally Patrick Schaub et al., *Why is Golden Rice Golden (Yellow) Instead of Red?*, 138 *PLANT PHYSIOLOGY* 441 (2005).

42. Felicia Wu et al., *Opinion, Allow Golden Rice to Save Lives*, 118(51) *PROC. OF THE NAT’L ACAD. OF SCI.* 1, 2–3 (2021).

43. Ed Regis, *The True Story of the Genetically Modified Superfood That Almost Saved Millions*, *FOREIGN POL’Y* (Oct. 17, 2019, 10:07 AM), <https://perma.cc/MS5A-BZKS>.

44. Wu et. al, *supra* note 42, at 2.

45. Julie Cart, *Can Science Transform California Crops to Cope with Drought?*, *CAL MATTERS* (Sept. 14, 2021), <https://perma.cc/JKK5-RECE>; Natasha Gilbert, *A Hard Look at GM Crops*, 497 *NATURE* 24, 24–25 (2013). GMOs can also make some insignificant—but useful—improvements to our daily lives. For example, scientists have developed an apple that does not brown, and an onion that does not make you cry when you cut into it. Rande Dawn, *Here Comes the Sunion: An Onion That Won’t Make You Cry*, *TODAY* (Jan. 11, 2018, 10:28 AM), <https://perma.cc/D6JF-R2MC>; Caitlin Dewey, *The Apple that Never Browns Wants to Change Your Mind About Genetically Modified Foods*, *WASH. POST* (Jan. 23, 2017, 3:52 PM), <https://perma.cc/B43B-Z689>.

46. FOOD STANDARDS AGENCY, *CONSUMER ATTITUDES TOWARDS EMERGING FOOD TECHNOLOGIES, FINAL REPORT 4* (Jan. 31, 2020).

47. Stefaan Blancke, *Why People Oppose GMOs Even Though Science Says They Are Safe*, *SCI. AM.* (Aug. 18, 2015), <https://perma.cc/3US4-BKYL>.

GMOs was particularly effective at provoking widespread disgust and condemnation.⁴⁸

ii. Cultured Meats May Help Change the Narrative, But Still Face Stiff Opposition

Despite the checkered history of GMOs, a new and quickly-progressing technology—cultured meats—could both learn from past communication failures and help us expand our understanding of what “natural food” means. Over the past few years, scientists have researched and developed the technology to produce meat in laboratories from animal stem cells.⁴⁹ This “cultured meat” (otherwise called “clean meat” or “lab-grown meat”) could eliminate our reliance on livestock by growing meat in a laboratory rather than acquiring meat by raising and farming animals for food.⁵⁰ By definition, this would also eliminate all or most of the environmental impacts of raising animals. In fact, some assessments have stated that cultured meats “will use significantly less land and water, emit fewer greenhouse gases, and reduce agriculture-related pollution.”⁵¹ Additionally, because cultured meats are so much more efficient to produce than traditional meats, the technology could—once it is scaled up—significantly reduce global hunger.⁵²

While the meat has prompted some interesting philosophical debates (i.e., Is lab-grown meat halal or kosher?; or: Is cultured meat even “meat?”), the technology’s promise is clear.⁵³ However, a recent New York Times article highlighted several of the potential pitfalls of cultured meat.⁵⁴ For instance, as with GMOs before it, cultured meats face stiff opposition from those who view them as “unnatural.”⁵⁵ The United States Cattlemen’s Association—whose business, it should go without saying, depends on the failure of cultured meats—has successfully lobbied to require cultured meats sold in stores to include the disclaimer that the product is “grown in a lab.”⁵⁶ While this may seem trivial, it could deter science-averse consumers from trying this revolutionary product. And, as with GMOs, once a

48. *Id.*

49. *The Science of Cultivated Meat*, GOOD FOOD INST., <https://perma.cc/ED7N-YKT9> (last visited Mar. 13, 2022).

50. *Id.*

51. *Id.*

52. Gabby Lozano, *The Cultured Meat Solution*, WASH. SQUARE NEWS (Feb. 13, 2020), <https://perma.cc/FM36-6SXP>.

53. Bruce Einhorn et. al, *Can Lab-Grown Meat Really Be Halal or Kosher?*, BLOOMBERG (Jan. 4, 2022, 1:00 PM), <https://perma.cc/MSL6-SHBW>.

54. Kim Severson, *The New Secret Chicken Recipe? Animal Cells*, N.Y. TIMES (Feb. 15, 2022), <https://perma.cc/W3KH-RVRS>.

55. *Id.*

56. *Id.*

product evokes disgust in consumers, it is quickly and irreversibly shunned.⁵⁷

However, there are also some promising signs that cultured meats are not going the way of GMOs—if we focus on educating consumers. For instance, a 2017 Dutch study found that approximately two-thirds of consumers would be willing to try cultured meats (even if they had never heard of them).⁵⁸ Interestingly, that survey also found that, of the participants who stated that they were not willing to try cultured meats, about half changed their minds after receiving additional information.⁵⁹ By contrast, however, a 2022 study from the United Kingdom found that only one-third of participants would be willing to try cultured meats.⁶⁰ Nearly half of those who were unwilling to try cultured meat stated that they found the idea “off-putting,” and an additional 37% did not see a reason to consume cultured meats instead of traditional meats.⁶¹ While one may think that consumer education should therefore focus on the process of making cultured meats to show consumers that there is no reason to find the technology disgusting, studies have found that a different framing is more effective.⁶² For instance, one study found that “discussing product features and societal benefits”—rather than the technical aspects of how the meat is produced—was particularly effective at convincing skeptical consumers.⁶³ Therefore, broad consumer acceptance of cultured meats is possible, but consumer education (and specifically, education about the beneficial impacts of cultured meats) is paramount.

Consumer resistance to innovative technology is well documented.⁶⁴ That hesitancy is more pronounced when the innovation involves food because humans are (understandably) concerned about the long-term effects of consuming foods that have never been widely available.⁶⁵ While there are several theories as to why consumers are reluctant to embrace new technology, the two primary factors that influence consumers’ reaction to

57. See *supra* Part III(A)(i).

58. Wim Verbeke et. al, *Challenges and Prospects for Consumer Acceptance of Cultured Meat*, 14(2) J. OF INTEGRATIVE AGRIC. 285, 290 (2017).

59. *Id.*

60. Jeff Gelski, *Majority in UK Survey Say No to Lab-Grown Meat, Edible Insects*, FOOD BUS. NEWS (Jan. 13, 2022), <https://perma.cc/3KEJ-2E8P>.

61. *Id.*

62. Christopher Bryant and Courtney Dillard, *The Impact of Framing on Acceptance of Cultured Meat*, 6 FRONTIERS IN NUTRITION 1, 7 (2019).

63. *Id.*

64. See generally Viorel Cornescua and Cecilia-Roxana Adam, *The Consumer Resistance Behavior Towards Innovation*, 6 PROCEDIA ECON. AND FIN. 457, 457–65 (2013).

65. FOOD STANDARDS AGENCY, *supra* note 46, at 16; in Europe and around the world, regulatory agencies have defined “novel foods,” which are, in essence, foods that have not been consumed widely. See, e.g., EUR. FOOD SAFETY AUTH., NOVEL FOOD (last updated Jan. 2021), <https://perma.cc/3JS7-LJE6>.

change are whether the innovation would (1) require a shift in routines or behaviors, or (2) cause a psychological conflict in the consumer.⁶⁶

Because cultured meats are not yet widely available, and the technology behind it has not been tested at scale, it is almost certain that forgoing traditional meats in favor of cultured meat will—at least initially—be more expensive, be limited to only certain types of meats, or require a trip to a specialty food store.⁶⁷ This may require consumers to shift their routines or behaviors, which may, in turn, delay consumers' exposure to—and acceptance of—cultured meats. However, several unique things about cultured meats can help overcome some of the psychological conflict people experience when they are confronted with new technology.

First, people are familiar with the product: it's just meat. It may not be harvested from an animal, but it is fundamentally the same food that we have consumed all our lives. While this does not fit neatly into our vision of natural foods, one can see how that definition could stretch to accommodate cultured meat. In contrast, the negative press surrounding GMOs—images of mad scientists arbitrarily splicing genes with grotesque results—was able to take hold of the public's imagination precisely because the products were “unknown,” and often unappetizing.⁶⁸ And second, because of climate change, there will likely be a point when continuing to raise animals for food will be impossible. Cultured meats present a way for meat consumption to expand beyond the bounds of what our planet can sustain and thus allows humans to continue eating meat.⁶⁹ In other words, if consumers wish to avoid subsisting solely on veggie burgers, it is in their best interest to embrace scientific innovation.

66. Cornescua and Adam, *supra* note 64, at 461.

67. See Severson, *supra* note 54.

68. For instance, scientists made a strawberry spliced with fish genes to make it resistant to freezing temperatures. That alone was enough to turn heads (and stomachs), but the strawberry was also the subject of an internet hoax which tried to convince people that, as a result of the modification, the fruit was only available in a truly nauseating shade of blue. Maria Scinto, *The Truth About Blue Strawberries*, MASHED (Dec. 11, 2019, 11:45 AM), <https://perma.cc/3M8E-KADR>.

69. It is important to note that the same could be said of GMOs: expanding the use of GMOs in our food system would allow us to produce crops with higher yields that do not rely so heavily on pesticides or use as much water. However, as noted above, GMOs are so unpopular that they have faced strict regulations that have curtailed their use. See *supra* Part III(A)(i).

B. THE NATURALISTIC FALLACY INVITES INDIFFERENCE TO HARMFUL AGRICULTURAL PRACTICES⁷⁰

i. Modern Agriculture Relies on the Unsustainable Use of Natural Resources

Just as the naturalistic fallacy prevents us from seeing the benefits of unnatural or artificial things, so, too, does it prevent us from recognizing the harms inherent in some natural things. For instance, although agricultural water use accounts for approximately 37% of total water usage in the United States—and approximately 70% of worldwide water usage—there are few checks on how much water agriculture can use.⁷¹ This dichotomy is, at least in part, because water (and by extension water use) is natural and is therefore not subject to the same intense consumer scrutiny that plagues science-based practices.

Another particularly striking example can be found in commercial almond production: because almond trees cannot self-pollinate efficiently, bees are often brought to almond orchards by the thousands to assist. Due to exposure to pesticides and diseases in the orchards, approximately 50 billion bees died during the Winter of 2018 and 2019 alone.⁷² Considering that approximately one-third of all domestic agriculture relies on bees in some way, this mass bee death is extremely problematic.⁷³ However, as with unsustainable water use, using bees in this destructive way has not offended consumers—in fact, demand for almond milk is expected to rise significantly between 2022 and 2030, which will only compound the environmental impacts of almond production.⁷⁴ Thus, when consumers turn a blind eye toward harmful agricultural practices and instead cleave to an intuitive sense of what is “natural,” there are dire consequences for the planet.

70. While this note focuses solely on the negative environmental impacts of agriculture, many of the same concerns (i.e., overharvesting and the unsustainable use of natural resources) exist for fisheries as well. *See, e.g.*, CTR. FOR BIOLOGICAL DIVERSITY, BLUEFIN BOYCOTT: HELP SAVE BLUEFIN TUNA BEFORE IT’S TOO LATE, <https://perma.cc/H4FG-HNCG> (last visited Apr. 20, 2022).

71. ORG. FOR ECON. COOP. AND DEV., MANAGING WATER SUSTAINABLY IS KEY TO THE FUTURE OF FOOD AND AGRICULTURE, <https://perma.cc/DLA2-GUKJ> (last visited Sept. 30, 2022); U.S. GEOLOGICAL SURV., ESTIMATED USE OF WATER IN THE UNITED STATES IN 2015 p. 8 (2015), <https://perma.cc/5JDL-58V3>.

72. Annette McGivney, ‘Like Sending Bees to War’: the Deadly Truth Behind Your Almond Milk Obsession, *GUARDIAN* (Jan. 8, 2020, 1:00 PM), <https://perma.cc/TS7A-HC9V>.

73. MICH. STATE UNIV. AGBIO RSCH. NEWS, SUPPORTING POLLINATION IN AGRICULTURE (Oct. 1, 2018), <https://perma.cc/RVV8-K2EX>.

74. GLOBAL NEWS WIRE, STRAITS RESEARCH, ALMOND MILK MARKET IS EXPECTED TO GROW AT A STAGGERING CAGR OF 12.5% IN THE WAKE OF RISING HEALTH AWARENESS (Mar. 9, 2022, 12:00 AM), <https://perma.cc/9PW5-7NWU>.

ii. Monocultures Can Destroy Entire Industries—And Consumers are Unfazed

Monoculture crops (i.e., growing only one variety of a specific crop in a given area for years on end) have scant defenders—in fact, they get “universally bad press” because of their grave impacts on the environment.⁷⁵ One such impact can be particularly devastating: when a single variety of a plant is grown over a large swath of land, the presence of any pathogen can quickly spread and wipe out the entire crop.⁷⁶

One of the most infamous examples of a problematic monoculture—and of not learning from past mistakes—is the banana industry. The Gros Michel banana (affectionately known as “Big Mike”) was the first banana to be widely available in the United States.⁷⁷ Some of its physical properties—its slow ripening and its small, dense bunches—made it ideal to survive a days-long journey from the Caribbean, so the Gros Michel quickly “came to dominate the banana industry” and was grown as a monoculture.⁷⁸ The crop was hit hard by a fungal disease in the early 19th century, which quickly tore through the entire banana industry, leaving the Gros Michel “effectively extinct” by the 1950s.⁷⁹ Although the banana industry eventually rebounded, it now relies on another single variety—the Cavendish—which currently accounts for “almost all bananas traded worldwide.”⁸⁰ The Cavendish shares many of the same qualities as the Gros Michel, but it has been resistant to many of the pathogens that took down the Gros Michel—so far.⁸¹ However, some experts have warned that “a new, more virulent strain” of the pathogen has been isolated, and that “this time the Cavendish is not immune.”⁸² And while some efforts have been made to diversify banana crops, many scientists are resigned to the fact that the banana industry will collapse again (and soon).⁸³

Bananas are not the only monoculture crops in danger: staples such as soybeans, rice, wheat, and corn are routinely grown as monocultures and

75. Tamar Haspel, *Monocrops: They’re A Problem, But Farmers Aren’t the Ones Who Can Solve It*, WASH. POST (May 9, 2014), <https://perma.cc/T5QB-3QUR>.

76. *Id.*

77. Johanna Meyer, *Why Don’t Banana Candies Taste Like Real Bananas?*, SCI. FRIDAY (Sept. 27, 2017), <https://perma.cc/P8MQ-N5TD>.

78. *Id.*

79. The worldwide banana shortage was so immediate and so widespread that it even inspired the 1920s novelty song “Yes! We Have No Bananas.” *Id.*

80. FOOD AND AGRIC. ORG. OF THE U.N., *THE WORLD BANANA ECONOMY*, Ch. 1 (2003), <https://perma.cc/SWB6-5378>.

81. Dan Koepfel, *Opinion, Yes, We Will Have No Bananas*, N.Y. TIMES (June 18, 2008), <https://perma.cc/8SDV-4HSM>.

82. *Id.*

83. Anna Purna Kambhampaty, *What We Can Learn from the Near-Death of the Banana*, TIME (Nov. 18, 2019, 3:29 PM), <https://perma.cc/W25T-KK9A>.

could therefore meet the same grisly end as the Gros Michel.⁸⁴ Further, because many monoculture crops are utilized for purposes other than feeding humans (i.e., for animal feed or the production of biofuels) the impacts of a crop disease could be devastating and far-reaching.⁸⁵ However, despite the threat posed by unsustainable monocultures, few large-scale farmers have committed to diversifying their crops because monoculture crops are profitable and efficient.⁸⁶ Therefore, to mitigate the threat of industry-wide collapse, consumers must demand food products that are grown sustainably. If consumers do not reject foods that are grown in an unsustainable way, farmers will have no incentive to change their production methods.⁸⁷ And, as is the case with the unsustainable use of natural resources, consumers are often apathetic to the dangers posed by monoculture crops because they only see the final products, not the impact that the products have on the environment. Therefore, consumers must not only recognize unsustainable food production practices but also actively choose products that are made in a sustainable way.⁸⁸

III. THE ORGANIC FOODS PRODUCTION ACT: LEGISLATING THE NATURALISTIC FALLACY

A. A BRIEF HISTORY OF THE ORGANIC FOODS PRODUCTION ACT

Although organic farming predates the current regulatory scheme, Rachel Carson's seminal 1962 book *Silent Spring*—which exposed the adverse environmental effects of indiscriminate pesticide use—inspired the modern organic food movement.⁸⁹ The particularly damaging effects of a synthetic insecticide called DDT (or dichloro-diphenyl-trichloroethane) sparked widespread fear, and DDT became a symbol to rally consumers against the dangers of improper pesticide use.⁹⁰ Demand for food products made with “non-chemical” farming methods skyrocketed in response to *Silent Spring*, so companies began marketing products as “organic” to satisfy

84. UNIV. OF TOR., A VERY SMALL NUMBER OF CROPS ARE DOMINATING GLOBALLY: THAT'S BAD NEWS FOR SUSTAINABLE AGRICULTURE, *SCI. DAILY* (Feb. 6, 2019), <https://perma.cc/V49P-MK9L>.

85. See, e.g., Jonathan Foley, *It's Time to Rethink America's Corn System*, *SCI. AM.* (Mar. 5, 2013), <https://perma.cc/3NHX-B4SZ>.

86. Peter Kogut, *Monoculture Farming in Agriculture Industry*, *EOS DATA ANALYTICS* (Oct. 20, 2020), <https://perma.cc/3J2C-XH7V>.

87. Haspel, *supra* note 75.

88. See *infra*, Part V, for further discussion on one potential solution.

89. Elena Conis, *Beyond Silent Spring: An Alternate History of DDT*, *SCI. HIST. INST., DISTILLATIONS* (Feb. 14, 2017), <https://perma.cc/9NW9-U5DK>; SUSTAINABLE AGRIC. AND RSCH. CTR., *TRANSITIONING TO ORGANIC PRODUCTION 3–4* (2003).

90. ENV'T PROT. AGENCY, *DDT – A BRIEF HISTORY AND STATUS*, <https://perma.cc/6434-298Y> (last visited Mar. 13, 2022).

consumers.⁹¹ This drove Congress to create the Organic Foods Production Act (OFPA) in 1990, which set national standards for the marketing of certain agricultural products.⁹² However, the legislation was built on consumers’ fears that the use of chemicals in food causes harm. Therefore, the resulting legislation—which has been described as “a messy mix of science and compromise”—only targets chemical intervention in agriculture.⁹³ According to the OFPA, chemicals are bad, full stop. But that is simply not the case. In fact, even Silent Spring’s author found organic farming’s complete ban on synthetic chemicals “needlessly strict.”⁹⁴ The perception that avoiding artificial substances altogether is the key to a safe food supply not only goes against science but also contributes to consumers’ distrust of products that they deem “unnatural.”⁹⁵

Although the word “organic” is heavily regulated by the federal government, it has lost much of its meaning because of consistent consumer misunderstanding and deliberate fear mongering. Moreover, even the imperfect definitions and concepts presented in the OFPA have been undermined by the United States Department of Agriculture (USDA)’s focus on the business of agriculture, rather than the science of it. For instance, since the passage of the OFPA, the USDA has been “accused of stacking the [federal advisory board on organic standards] with agribusiness representatives” who “consistently undermine the federal standards,” thus ensuring lively trade but undercutting the purpose of the OFPA.⁹⁶ This has diluted the definition of “organic” to such a degree that, not only are consumers (rightfully) confused, but some producers “refus[e] to display the Organic Seal on their products, even though they meet the federal criteria” because they have lost faith in the organic certification program.⁹⁷ Therefore, the USDA’s lack of internal consistency vis-à-vis the enforcement of the OFPA—as well as the USDA’s initial misconception of critical scientific truths—has degraded the organic “brand” and further reduced the law’s effectiveness.

Despite this, consumers still demand organic products (and believe in the integrity of the organic seal), so companies are incentivized to continue

91. Joseph Heckman, *A Brief History of Organics in the U.S.*, THE NATURAL FARMER (Winter 2018–2019), <https://perma.cc/E6M6-V88E>.

92. Organic Foods Production Act of 1990, 7 U.S.C. § 6501 (2022).

93. Stephanie Page Ogburn, *Would You Like Some DDT With that Organic Cucumber?*, HIGH COUNTRY NEWS (Dec. 10, 2010), <https://perma.cc/UN6L-EK88>.

94. Robert Paarlburg, *Would Rachel Carson Eat Organic?*, THE CONVERSATION (May 24, 2018, 6:27 AM), <https://perma.cc/LSH8-FR3D>.

95. See, e.g., Christie Wilcox, *Mythbusting 101: Organic Farming > Conventional Agriculture*, SCI. AM. (July 18, 2018), <https://perma.cc/NW4U-5K3R>.

96. Erin Toomey, *How Organic Is Organic? Do The USDA’s Organic Food Production Act and National Organic Program Regulations Need An Overhaul?*, 19 DRAKE J. OF AGRIC. L. 127, 138–41 (2014).

97. *Id.* at 141–42.

making organic foods—even if the products they sell are only tangentially related to the goals of the OFPA.⁹⁸ In fact, some food companies use the credibility gained from becoming certified to sell products at a premium to unwitting consumers. For instance, one company recently began marketing and selling “organic water.”⁹⁹ However, because water does not contain carbon—only hydrogen and oxygen—and is therefore not alive, “water, by definition is inorganic.”¹⁰⁰ In fact, water is explicitly excluded from the USDA’s list of products that can be certified as “organic.”¹⁰¹ So, how can this company label its water as “organic”? By exploiting a loophole: because the water is “filtered through a living thing—a maple tree—it appears to pass the USDA’s certification test.”¹⁰² This serves to illustrate how out-of-step the OFPA is, not only with science but also with common sense.

B. WHY CONSUMERS CONFLATE ‘ORGANIC’ AND ‘SUSTAINABLE’

Although several studies have shown that organic agriculture has a larger environmental impact than does conventional agriculture, consumers have long believed that buying organic foods benefits the environment.¹⁰³ However, as with natural foods, there is a kernel of truth to consumers’ beliefs about the environmental impacts of organic farming. For instance, there is a common misconception that organic farms are not allowed to use any pesticides, which seems more environmentally friendly.¹⁰⁴ The truth, however, is slightly more nuanced: organic farms are not allowed to use *synthetic* pesticides, but pesticides that come from natural sources (with several important exceptions) are allowed.¹⁰⁵ As discussed above, the distinction between “natural” and “synthetic” is often hazy at best, but the naturalistic fallacy allows consumers to ignore the destructive impacts of organic pesticides merely because they are derived from nature.¹⁰⁶

Additionally, in some cases, synthetic pesticides are less harmful than their biologically derived counterparts. For instance, one study showed

98. *Id.* at 129–30.

99. Carly Ledbetter, *Organic Water is a Sign that Americans Have No Idea What ‘Organic’ Is*, HUFFINGTON POST (July 10, 2017, 11:48 AM), <https://perma.cc/RE74-Z6GA>.

100. Allison Aubrey and Jessica Goldstein, *Organic Water: A New Marketing Wave*, NAT’L. PUB. RADIO (July 13, 2011, 8:47 AM), <https://perma.cc/L5VD-8XVK>.

101. U.S. DEP’T OF AGRIC., ABOUT ORGANIC LABELING (last visited Feb. 20, 2022), <https://perma.cc/QSM7-NJJ5>.

102. Ledbetter, *supra* note 99.

103. Daniel T. Cross, *Organic Farming Isn’t All That Sustainable, A New Study Says*, SUSTAINABILITY TIMES (Dec. 17, 2018), <https://perma.cc/82C7-2K4F>; Barbara J. Goldman and Katherine L. Clancy, *A Survey of Organic Produce Purchases and Related Attitudes of Food Cooperative Shoppers*, 6(2) AM. J. OF ALTERNATIVE AGRIC. 90, 93 (1991).

104. *See, e.g.*, RODALE INST., WAIT, ORGANIC FARMERS USE PESTICIDES? (May 7, 2019), <https://perma.cc/49P7-8EU9>.

105. 7 U.S.C. § 6504 (2022); 7 C.F.R. § 250.62–66 (2022).

106. *See supra* Part III(B).

that—when compared with synthetic pesticides—natural pesticides are not only less effective but also killed beneficial insects (such as ladybugs) that help control other pests.¹⁰⁷ For this reason, scientists have argued that the decision to allow the use of a given pesticide must be “based on empirical data ... not arbitrary classifications.”¹⁰⁸ Just as with foods, the false notion that “natural” is automatically safer blinds consumers to the dangers of naturally-derived pesticides. In other words, as one commentator wrote: “a pesticide is a pesticide” and there is nothing inherently safer about organic pesticides.¹⁰⁹

Furthermore, even if an organic farmer decides not to use any pesticides, thus reducing the environmental impact of their operation, pesticides applied on nearby conventionally-farmed fields can drift and contaminate the organic crop.¹¹⁰ However, the USDA is only allowed to test organic products when they have “reason to believe that a product has been contaminated with a prohibited substance.”¹¹¹ That necessarily excludes testing if the pesticide that drifted to the organic farm happens to be naturally derived (because they are not prohibited substances), and severely curtails the USDA’s ability to test when the pesticide is synthetic (because there must be some level of proof that the contamination actually occurred). Therefore, the OFPA does little to prevent consumers from ingesting pesticides—natural or otherwise. Because consumers often mistakenly believe that organic products are free of any pesticides at all, there is a “gap between the regulatory standards and [the] consumer’s perceptions of what those standards mean,” which furthers the confusion about the environmental impacts of consuming organic produce.¹¹²

Ironically, because organic foods are not allowed to include GMOs—which can be resistant to certain pests or diseases—organic foods often require the use of *more* pesticides than conventionally farmed foods.¹¹³ That, in turn, leads to greater environmental and health consequences.¹¹⁴ Because demand for organic products has consistently shown “double-digit growth”

107. University of Guelph, *Organic Pesticides Not Always ‘Greener’ Choice, Study Finds*, SCI. DAILY (June 23, 2010), <https://perma.cc/NR7G-V5GV>.

108. Christine Bahlai et al., *Choosing Organic Pesticides Over Synthetic Pesticides May Not Effectively Mitigate Environmental Risk in Soybeans*, 5(6) PUB. LIB. OF SCI. ONE 1, 3 (2010).

109. Christie Wilcox, *Are Lower Pesticide Residues a Good Reason to Buy Organic? Probably Not*, SCI. AM. (Sept. 24, 2012), <https://perma.cc/T6PM-K7BQ>.

110. Sheila Gholkar, *Moving Beyond the Industrial Organic Food Movement: Rethinking Organic Food Regulations*, 2 ARIZ. J. ENVTL. L. & POL’Y 1, 2–3 (2012).

111. *Id.*

112. *Id.* at 3

113. Mihai Andrei, *Is Organic Food Actually Better? Here’s What the Science Says*, ZME SCI. (Feb. 21, 2021), <https://perma.cc/4TJZ-PSG2>.

114. See generally David Pimentel, *Environmental and Economic Costs of the Application of Pesticides Primarily in the United States*, 7 ENV’T, DEV. AND SUSTAINABILITY 229 (2005).

annually, the negative impacts of organic farming have grown exponentially, thus further degrading our food systems and the planet.¹¹⁵

Equally, because organic farms are prohibited from using most fertilizers, which results in significantly lower crop yields, greenhouse gas (GHG) emissions are 10.6% higher per unit for organic products than for conventionally farmed products.¹¹⁶ And, because many foreign countries can produce organic food inexpensively, domestic markets (especially supermarket chain stores) are increasingly buying produce from overseas, which impacts the overall carbon footprint of organic products because the products must travel farther to reach consumers.¹¹⁷

Where there have been opportunities to reform or expand the OFPA to make it more environmentally friendly, organic producers have fought it. For example, hydroponic farming—growing crops in nutrient-rich water instead of in soil—has myriad environmental benefits.¹¹⁸ While the current organic farming regulations do not explicitly prohibit hydroponic farming, it is also not explicitly allowed. Advocacy groups have petitioned to ban hydroponics on organic farms because, when there is no soil (as is the case with hydroponic farming), there can be no efforts to improve soil fertility, which is “the hallmark of organic farming.”¹¹⁹ In all fairness, the opponents of hydroponics are not wrong: the OFPA states that producers can only seek organic certification if their management plan includes “provisions designed to foster soil fertility.”¹²⁰ Hydroponic farmers would therefore be unable to comply with the terms of the OFPA, further demonstrating that the OFPA is not designed to improve agricultural sustainability.

Therefore, although consumers tend to purchase organic products because they are concerned about the environment and view organic foods as “greener,” the opposite is often true.¹²¹ However, producers who wish to show their commitment to environmental sustainability must—to appease consumers—contort their operations to meet the OFPA’s rigid standards. For instance, pivoting back to the example of organic water: although the very idea of organic water was roundly (and rightfully) mocked, the water

115. See U.S. DEP’T OF AGRIC., ORGANIC MARKET SUMMARY AND TRENDS 67–68, <https://perma.cc/2HMV-4HRX> (last updated Feb. 12, 2021).

116. Sean Clark, *Opinion, Organic Farming and Climate Change: The Need for Innovation*, 12 SUSTAINABILITY 7012, 7013 (2020); Cross, *supra* note 103.

117. See A. Bryan Endres, *An Awkward Adolescence in the Organics Industry: Coming to Terms with Big Organics and Other Legal Challenges For The Industry’s Next Ten Years*, 12 DRAKE J. AGRIC. L. 17, 27 (2007).

118. Ross Pomeroy, *Hydroponics Reveals That Organic Food Is About Ideology, Not Sustainability*, REALSCIENCE DIRECT (Aug. 30, 2021), <https://perma.cc/VX9L-A2SE>.

119. See, e.g., WHY HYDROPONICS SHOULD NOT BE CERTIFIED ORGANIC, CTR. FOR FOOD SAFETY (Mar. 3, 2020), <https://perma.cc/AFR5-EMHY>.

120. 7 U.S.C. § 6513(b)(1).

121. Raghava R. Gundala & Anupam Singh, *What Motivates Consumers to Buy Organic Foods? Results Of an Empirical Study in the United States*, 16(9) PUB. LIB. OF SCI. ONE 1, 2 (Sept. 10, 2021).

is produced sustainably—it is made entirely from a by-product of maple syrup production that would otherwise be discarded.¹²² However, instead of marketing this fact, the company had to rely on a significant loophole within the OFPA to prove its sustainability claims to its consumers. This speaks to not only the OFPA’s inadequacies, but also to the dire need for legislative reform, and (more specifically) for new legislation that promotes agricultural sustainability.

C. DESPITE ITS FLAWS, THE OFPA CAN PROVIDE A MODEL FOR FUTURE LEGISLATION

Although the OFPA has its weaknesses, it is important to remember that the OFPA has largely accomplished its primary goal: it created nationalized standards for what is—and is not—organic.¹²³ The law was simply not designed to combat the current climate crisis, and thus it did not address issues that have considerable environmental impacts, such as how far foods travel before they reach consumers.¹²⁴ Therefore, although the OFPA is outdated, it is not without merit. On the contrary, the OFPA has several significant features that can help lawmakers draft successful food legislation in the future.

First, becoming certified under the OFPA is voluntary. If the requirements were mandatory, it would disadvantage smaller producers that are unable to make costly adjustments to become compliant.¹²⁵ Although that has created a massive incentive for large agribusiness companies to become certified organic, it is nonetheless a powerful idea that eased the burden on small producers while the program expanded. While any future legislation should be primarily concerned with mitigating the climate impacts of agriculture it should not itself become economically unsustainable.

Second, the OFPA stopped companies from using the word “organic” in their marketing materials unless they met the statutory requirements to be called organic. Similarly, moving forward, if companies can no longer call themselves “sustainable” unless they actually *are*, it would not only help consumers to better understand the environmental impacts of the products that they buy but would also give the word “sustainable” an accurate legal meaning.

And third, the OFPA *worked*. It set out to improve soil health, and it did: organically managed farms tend to have healthier soil than their

122. ASARASI SPARKLING TREE WATER, OUR ROOTS <https://perma.cc/PP2P-66FY> (last visited Apr. 20, 2022).

123. Endres, *supra* note 117, at 20–21 (2007)

124. *Id.*

125. KRISTIN KOMIVES & AMY JACKSON, VOLUNTARY STANDARD SYSTEMS, A CONTRIBUTION TO SUSTAINABLE DEVELOPMENT 13 (Carsten Schmitz-Hoffman et. al, eds., 1st ed. 2014).

conventionally managed counterparts.¹²⁶ These highly localized benefits have had an overall positive impact and helped cement people's trust in the integrity of the organic seal. If new legislation directly addressed the environmental impacts of agriculture, there could therefore be substantial improvements to the overall sustainability of our food systems.

IV. HOW NEW LEGISLATION CAN SHIFT THE FOCUS TO FOOD SYSTEM SUSTAINABILITY

A. A NOVEL VOLUNTARY SUSTAINABILITY STANDARD SYSTEM

To avoid further confusing use of the word “sustainable” and to improve consumers' understanding of agricultural sustainability, there must be new legislation that directly addresses agricultural sustainability. Namely, Congress should enact legislation that—akin to the OFPA—sets up a voluntary certification program for producers to become certified as “sustainable.” The proposed legislation will help improve agricultural sustainability in two essential ways.

First, it will avoid inconsistent private initiatives for sustainability labeling and create a concrete, legally cognizable definition of sustainable agriculture. This will, in turn, improve consumers' awareness of sustainable production methods.¹²⁷ Similar to the organic food movement, increasing consumer demand for sustainably produced food has prompted companies to begin making their products more sustainably.¹²⁸ However, without a clear definition of what “sustainable” means, a spate of private sustainability certification systems have been created, each with their own focus and goals. For instance, one of the most well-known private certification systems is the Leadership in Energy and Environmental Design (LEED) certification for buildings. To become certified under LEED, a building project must consider—and limit—carbon emissions, energy and water use, the environmental impact of the materials used, as well as other factors that impact the building's overall sustainability, such as access to public transit and protection of sensitive lands or habitats.¹²⁹ In contrast, the Fair Trade Sustainability Alliance, a global advocacy group that aims to improve farmers' quality of life by promoting fair labor practices, explicitly

126. ORGANIC REP., THE ROLE OF ORGANIC IN PROTECTING SOIL HEALTH AND WATER QUALITY (Oct. 12, 2016), <https://perma.cc/2VWH-W5C8>.

127. SCI. ADVICE FOR POL'Y BY EUR. ACAD., EVIDENCE REV. REP. NO. 7, A SUSTAINABLE FOOD SYSTEM FOR THE EUROPEAN UNION 60 (2020) (finding food labels that highlights specific agricultural practices i.e., organic certification or fair-trade certification, has “created particular visibility for these production processes.”).

128. Climate Action, Press Release, WWF: Huge Rise in Demand for Sustainable Goods During Pandemic (May 18, 2021), <https://perma.cc/P6UX-FEFR>.

129. U.S. GREEN BUILDING COUNCIL, LEED SCORECARD <https://perma.cc/653W-3HUX> (last visited Apr. 20, 2022).

states that a company can show its commitment to environmental sustainability by becoming certified as organic.¹³⁰ As discussed above, using “organic” and “sustainable” interchangeably can often worsen environmental outcomes.¹³¹ The inconsistent use of such an important word has, like the term “natural” before it, led to broad consumer misunderstanding about the environmental impacts of their food.¹³²

Second, the proposed legislation will get consumers in the habit of buying more sustainably produced products. For instance, some studies have shown that once consumers have a positive experience with “products carrying a sustainability label, they may start using the label as a simplifying choice heuristic leading to an increased likelihood of repurchasing products with this label, also in other product categories.”¹³³ In other words, when consumers buy something once and enjoy it, they are not only likely to buy it again, but will also seek out other products with the same label. While these studies have focused primarily on private sustainability labeling systems, the same phenomenon is likely to occur—or even be more pronounced—with a governmental seal.¹³⁴ More broadly, as seen with natural foods, without legislation to codify rules for how companies can market sustainable products, hazy definitions are inevitable. That, in turn, leads to confusion and widespread mistrust in marketing labels. Therefore, sustainability must not only be *clearly* defined but must also be *legally* defined. That legal definition must also be based on the most up-to-date science to reflect the best sustainable practices and not, as the OFPA did, simply reflect consumers’ fears.

B. WHY IT IS CRITICAL TO DEFINE ‘SUSTAINABLE’—AND HOW IT SHOULD BE DEFINED

As seen with the OFPA and the natural food movement, in the absence of unambiguously defined terms and a clear, science-based understanding of the issues, food legislation can quickly become difficult to enforce. If any legislation is to tackle agricultural sustainability in earnest, it is critical to not only define the word “sustainable,” but also to base that definition on the best available science. Although “sustainability” is a multifaceted

130. Fair Trade Sustainability Alliance, *Fair Trade and Social Responsibility Standard for Agricultural Products, Processed Foods, Wild Collected Plants, Textiles and Personal Care Products and Cosmetics, Version 4.11* p. 64 (Jan. 1, 2022), <https://perma.cc/DS7F-2FW9>.

131. *See supra* Part IV(B).

132. Sam Mehmet, *Research Reveals Consumer Confusion About How to Structure Diet*, NEW FOOD (Mar. 12, 2020), <https://perma.cc/9HJB-G3ZQ>.

133. SCI. ADVICE FOR POL’Y BY EUR. ACAD., *supra* note 127, at 111 (internal citations omitted).

134. *See, e.g.*, John Thøgersen et al., *Consumer Decision Making Regarding a “Green” Everyday Product*, 29(4) PSYCHOLOGY & MARKETING 187–97 (2012).

concept, in its most basic and universally accepted form, it generally means “meeting the needs of the current generation without compromising the needs of future generations.”¹³⁵ That definition generally encompasses environmental sustainability as well as social and economic equity.

In the specific context of food system sustainability, this broad definition can be further refined to create policies that foster sustainable food systems. However, because food systems touch all aspects of our lives—and therefore all aspects of what it means to be “sustainable”—legislators must consider every phase of our food chain when creating that definition. It must concretely state the primary purposes of our food system—to provide ample, safe, and nutritious food for all—and the primary purpose of sustainable agriculture—to provide that food in a way that does not threaten the long-term survival of the planet. To that end, the Science Advice for Policy by European Academies (SAPEA) has defined a “sustainable food system” as a food system that “ensures food security and nutrition for all in such a way that the economic, social and environmental bases to generate food security and nutrition of future generations are not compromised.”¹³⁶

The SAPEA also stated that “how we ‘frame’ food—as a tradable commodity, a human right or a source of social meaning associated with identity, pleasure or anxiety—has implications for how policies are formulated and how pathways to a more just and sustainable food system are identified.”¹³⁷ In other words, while it is critical to ensure that our food systems can exist within the limits of the global ecosystem, equally important is how we think about food as a concept.

For instance, by framing food as a commodity, we can encourage action by educating consumers or by supporting producers when they make changes to become more sustainable.¹³⁸ This framing is apparent in the push for agricultural sustainability in Costa Rica. In 2007, Costa Rica set the ambitious goal of becoming carbon-neutral by 2021.¹³⁹ And, because coffee production is responsible for nearly 10% of Costa Rica’s total emissions, there was a great incentive to begin producing coffee more sustainably.¹⁴⁰ The government began encouraging coffee farmers to reduce their carbon emissions and, in response, many private sector actors—including one of Costa Rica’s largest coffee cooperatives—invested in research, and produced the world’s first carbon-neutral coffee in 2012.¹⁴¹ The country now has three zero-emission coffee companies as well as zero-emissions

135. SCI. ADVICE FOR POL’Y BY EUR. ACAD., *supra* note 127, at 19.

136. *Id.* at 66

137. *Id.* at 19

138. *Id.* at 60

139. Sophia Hares, *Costa Rica Coffee Farmers Brew up a Carbon Neutral Future*, REUTERS, <https://perma.cc/2EWZ-XZNK> (last visited Apr. 20, 2022).

140. *Id.*

141. FOOD & AGRIC. ORG. OF THE U.N., WAGENINGEN UNIV. & RSCH., COSTA RICA’S JOURNEY TOWARDS SUSTAINABLE FOOD SYSTEMS 19 (2021).

banana, pineapple, and cattle producers, which has “[put] the nation at the forefront of a movement that is slowly growing.”¹⁴²

In contrast, when we frame food as a human right, it necessarily foregrounds continued access to healthy food, and thus financial resources will likely shift to support the most vulnerable consumer groups and provide long-term solutions to global food security issues.¹⁴³ For instance, in the wake of the 1994 genocide of the Tutsi people, Rwanda undertook a massive overhaul of its food systems to combat rampant food insecurity.¹⁴⁴ Because food supply was the most pressing issue, the government initially focused on increasing food availability by raising production levels and, in turn, increasing socio-economic stability.¹⁴⁵ However, the agricultural sector in Rwanda is “the single most important sector in terms of employment” and irrigation of agricultural land is limited, making the country particularly vulnerable to the devastating impacts of climate change, such as unpredictable rainfall patterns.¹⁴⁶ As a result, environmental sustainability “became a more serious focus” for the Rwandan government in the late 2000s.¹⁴⁷ In fact, in 2011, Rwanda became the first African nation to pledge to restore land as part of the Bonn challenge—a global initiative to restore 350 hectares of degraded and deforested land before 2030.¹⁴⁸

Although each way of framing food is initially focused on a different problem, the different approaches to framing food (and their associated policy implications) are “complementary, rather than competing.”¹⁴⁹ They can thus be successfully employed in different scenarios—either together or on their own—to best effectuate change and make our food systems more sustainable.

That said, scholars have advocated for food legislation that “exercise[s] control at all stages from production to consumption” to allow our food systems to better adapt to our changing climate.¹⁵⁰ Studies have shown that adopting system-wide sustainable food policies would “enable more sustainable land-use management, enhanced food security, and low

142. Hares, *supra* note 139

143. SCI. ADVICE FOR POL’Y BY EUR. ACAD., *supra* note 127, at 60 (2020).

144. FOOD AND AGRIC. ORG. OF THE U.N., WAGENINGEN UNIV. & RSCH., RWANDA’S JOURNEY TOWARDS SUSTAINABLE FOOD SYSTEMS 10 (2021).

145. *Id.*

146. *Id.* at 16.

147. *Id.* at 2.

148. *How Rwanda Became a Restoration Leader*, INT’L UNION FOR CONSERVATION OF NATURE (Mar. 31, 2020), <https://perma.cc/XZ48-XHZZ>.

149. SCI. ADVICE FOR POL’Y BY EUR. ACAD., *supra* note 127, at 65.

150. JESSICA VAPNEK & MELVIN SPREIJ FOR THE DEVELOPMENT LAW OFFICE OF THE FOOD AND AGRIC. ORG. OF THE U.N., PERSPECTIVES AND GUIDELINES ON FOOD LEGISLATION, WITH A NEW MODEL FOOD LAW 119 (2005).

emissions trajectories.”¹⁵¹ Furthermore, some have argued that using a holistic food systems approach—which focuses on food security and food justice as well as the climate impacts of food production—is the most effective way to ensure that there is a sufficient supply of food and that the food is produced sustainably.¹⁵² Therefore, it is critical for any legislation to apply to the whole food system comprehensively in order to emphasize and encourage sustainability. Policymakers should use all the tools at their disposal to build robust and far-reaching legislation that can improve sustainability throughout our entire food system.

C. WHY CONSUMER ADVOCACY IS IMPORTANT FOR AGRICULTURAL SUSTAINABILITY

While this note has argued for the creation of new food sustainability legislation, there is one potential concern that must be addressed. The success of the proposed legislation is dependent on consumers’ continued demand for sustainably produced products: if consumers do not care about the sustainable seal, companies will not be incentivized to become certified, and the program will fail. And although consumer demand for sustainably-produced products has shown no signs of slowing—and has in fact increased in recent years—consistent and clear messaging about the environmental impacts of agriculture is key to maintaining that level of consumer awareness.¹⁵³ As mentioned previously, without such messaging, the idea of “natural foods” became a mere marketing tool designed to make unwitting consumers pay more for foods with no additional nutritional benefits by feeding into our “intense desire for salvation from modernity’s perceived sins.”¹⁵⁴ To avoid that particular pitfall and encourage more informed buying habits, the sustainable food movement must not only unambiguously outline the contours of what sustainable agriculture looks like but also present that idea to consumers clearly and succinctly.

As discussed above, consumers may be tempted to become complacent about agricultural sustainability because any environmental impacts are perceived as “natural.”¹⁵⁵ For instance, recent studies indicate that

151. INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE AND LAND, IPCC SPECIAL REPORT ON CLIMATE CHANGE, DESERTIFICATION, LAND DEGRADATION, SUSTAINABLE LAND MANAGEMENT, FOOD SECURITY, AND GREENHOUSE GAS FLUXES IN TERRESTRIAL ECOSYSTEMS, SUMMARY FOR POLICYMAKERS 32 (2019).

152. SIEMEN VAN BERKUM ET AL., WAGENINGEN UNIV. & RSCH., THE FOOD SYSTEMS APPROACH: SUSTAINABLE SOLUTIONS FOR A SUFFICIENT SUPPLY OF HEALTHY FOOD 6 (2018) (defining “food system approach” as a system that “describes the different elements in our food system and the relationships between them”).

153. Sam Danley, *Consumer Interest in Sustainability is Still Growing*, FOOD BUS. NEWS (Feb. 19, 2021), <https://perma.cc/46B5-SVXR>.

154. Alan Levinovitz, *What is ‘Natural’ Food? A Riddle Wrapped in Notions of Good and Evil*, NAT’L PUB. RADIO (May 8, 2016, 7:00 AM), <https://perma.cc/TJ33-PX9L>.

155. See *supra* Part III(B).

consumers may be willing to pay more for sustainably produced foods, but there is also evidence to suggest that—beyond acceptance of a modest increase in cost—consumers are unwilling to change their eating habits to support sustainable agriculture.¹⁵⁶ In short, it seems that consumers are aware of the environmental impacts of our current food system but have largely responded with a resounding “meh.”¹⁵⁷ However, as we saw with cultured meats, people are responsive to messaging that highlights the societal benefits of sustainable products, rather than just a dry recitation of scientific facts.¹⁵⁸ Therefore, consumers can—and likely will—continue to demand sustainable food, but only if we continue to emphasize how much it matters.

CONCLUSION

Natural foods often do not hold the meaning that consumers ascribe to them. In fact, although natural foods are ostensibly healthier, they can often be harmful to the overall health of the planet. Although there is a legal definition for organic foods, that definition has eroded over time, leaving consumers increasingly confused about the health and environmental impacts of the foods that they eat. The increasing industrialization of agriculture has intensified its environmental impacts, but consumers are often unwilling—or are unaware of how—to change their buying habits to make more sustainable food choices.

Because innovations that could reduce our reliance on unsustainable practices are met with intense skepticism (or worse, disgust), there has been little progress in addressing agricultural sustainability. Therefore, as consumers, we must allow new technology into our food systems, which will require us to expand our definition of what “natural food” means. Only then will agriculture evolve and become more sustainable.

Finally, because food laws (including the Organic Foods Production Act) are not designed to tackle climate change, the existing laws are of little help. Therefore, this note has argued for the creation of legislation to establish a voluntary food sustainability standard system, which will allow consumers to make more informed purchasing decisions and force food producers to stop marketing their products as “sustainable” unless those products are truly made sustainably.

156. Katy Askew, *European Consumers Reluctant to Change Eating Habits for Greener Food System*, FOOD NAVIGATOR (Feb. 25, 2022, 2:18 PM), <https://perma.cc/UE6C-FKGS>.

157. *Id.*

158. *See supra* Part III(A)(ii)
