

Food for an Abundant Future

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Explorations



Field of ripening intermediate wheatgrass (*Thinopyrum intermedium*) at the Land Institute's research farm in Salina, Kansas. Photo by Scott Bontz, 2008. Wikimedia Commons. CC BY-SA 3.0 US.

by Pollyanna Rhee

“The future of farming. The future of food.” The website for Kernza® displays little modesty about its ambitions. It’s not a surprise that the producer of a good meant for the consumer market would be hyperbolic in their promises, but others have found the claim enticing. “Could Superwheat Kernza Save Our Soil?” asks a headline in *Food & Wine* magazine. A food writer for the *Washington Post* describes Kernza as an “ecologist’s dream” and “the leading edge of a global effort to develop perennial crops as a way to make agriculture sustainable.”¹ This is a lot of excitement to project onto Kernza, a perennial wheatgrass first developed in the US Midwest in the 1980s and trademarked with a somewhat inelegant portmanteau of kernel and Kansas.

Indeed, a straightforward description might make Kernza seem unremarkable, as it features common aspects of crop experimentation. It originates in intermediate wheatgrass (*Thinopyrum intermedium*), a relative of common wheat (*Triticum aestivum*). Its lineage can be traced to central Asia. An early strain was introduced to the US in the 1930s, when it was

mostly used as a forage grass. In the 1980s it captured the interest of crop scientists at the Land Institute, a research and advocacy organization founded in 1976 and based in Salina, Kansas, as a potential perennial, rather than annual, food source. The Land Institute's work includes breeding and developing perennial grain crops through a number of methods including creating hybrids of annual crops with perennial relatives, as well as intervening in wild perennial species to develop new crops. The quest to have perennial rather than annual grain crops runs into a familiar problem: economic viability. Kernza is the only perennial grain crop marketed in the United States.

Kernza represents a vibrant environmental future and a promise of endless abundance—available only to and for some. This abundance comes neither from fossil fuels nor from renewed innovation and deregulation, as some recent commenters advancing the so-called abundance agenda suggest.² Instead the abundance is rooted in its perennial growth and harvesting. Embracing Kernza heralds a future of environmental improvement and fine living because, according to one agronomist at the University of Minnesota who works with Kernza, simply moving from annual to perennial growing represents a “different paradigm.” New rhythms of work that result from not having to replant the crop and attendant improvements in soil health, biodiversity, and erosion control constitute this altered paradigm. Nevertheless Kernza itself has roots in industrial agriculture. But it also represents a hope that it can correct how industrial agriculture forces a utilitarian view of plants rather than appreciating them as part of a more-than-human world.

Our global food systems have much to answer for. Wes Jackson, a co-founder of the Land Institute, describes soil as a resource that is “more important than oil, and just as nonrenewable.”³ Although those living in the Global North are surrounded by plenty of agricultural and livestock production, physician and public health researcher Samuel Myers points out that humans remain “far from optimally nourished.”⁴ Some go hungry or experience malnutrition while others suffer from so-called lifestyle illnesses such as diabetes and heart disease. Added to this are the environmental tolls of food production through deforestation, diminished water resources, chemical fertilizers, erosion, and biodiversity loss. Our rapidly warming planet only compounds the challenges.



*Heads of three wild types of *Thinopyrum intermedium* and, on the right, the head of a plant with a gene that produces thicker heads. Photo by Scott Bontz taken at the Land Institute, 2008. Wikimedia Commons. CC BY 3.0.*

An estimated one quarter of greenhouse-gas emissions comes from agriculture. In contrast to nitrogen-intensive monocultures, Kernza supposedly represents an alternative. Unlike annual crops, Kernza stays in the ground for years, producing multiple harvests (thus making it less appealing in economic terms). It potentially requires less water to grow, which is especially important for locations threatened with increased droughts. In addition to potential environmental impacts, advocates for Kernza tout the fact that it is higher in fiber and protein than regular wheat flour.⁵ Kernza, like many perennials, has deep and extensive roots systems that are attractive for their ability to sequester carbon, hold soil in place to avoid erosion, and retain soil nitrates to reduce leaching into waterways.

Per historian Courtney Fullilove, we can think of Kernza as a plant that works both as a subject and an object of global environmental change.⁶ Kernza presents an opportunity to think through the ethics of food, land use, and technological intervention. It also provides a way of thinking about some of our most pressing and enduring environmental questions, including the consequences of how narrowly people prioritize plant life for their agricultural

and economic production, who can access Kernza and its products, and how much we should be emphasizing individual consumption when it comes to the environment.

Kernza, with its limited reach and current uses in high-end food and goods, makes questions about the scale of environmental responsibility seem especially pressing. Weighing individual behavior and actions versus structural and corporate activities provokes a good amount of discourse on environmental responsibility. Whether an individual's choice, especially given vast disparities in wealth, to drive an electric car or embrace a plant-based diet can have any effect in combatting the sheer scale of industrial and corporate polluters, the unwillingness of political leaders to act, and the lack of global enforcement for environmental regulation is up for debate. How much can we depend on a single perennial wheatgrass or any one thing or action when it comes to environmental quality? Rather than reaching for answers, psychic comforts, or monocausal rationales, we can shift the perspective about these issues. We can ask whose voices come under consideration when environmental quality, including access to clean water, air, and food, is discussed. What is the scope of concern? Whose voices are prioritized, and where are they coming from? How much should we think about the carbon footprint of our diets?

Given the fact that so much of the 1.87 billion acres of the contiguous United States is given over to just a few crops, creating an annual monoculture, it is unsurprising that the scientist and writer Jared Diamond has attracted followers in proclaiming agriculture the “Worst Mistake in the History of the Human Race”—the title of an article he published in *Discovery* in 1987.⁷ In the 10–12,000 years since agriculture's development, Diamond sees humanity's gradual but persistent downfall. Agriculture and the sedentary and urban life that followed it often act as convenient culprits in diagnosing civilizational ills. Similarly, Wes Jackson asserts that “the plow has destroyed more options for future generations than the sword.”⁸ Nostalgia for a deep past and jeremiads against the excesses of technology and the enervating force of urban civilization offer compelling theories of decline, but not a guide to possible action.

But action is necessary. Agricultural land use in the United States reveals some of the scale of the issue. The United States Department of Agriculture reported in 2019 that about 90 million acres were annually devoted to corn, mostly used for livestock feed and ethanol production.⁹ In 2024, about 86 million acres are planted with soybeans, 47 million acres are reserved for wheat, and just under 12 million acres are used for cotton.¹⁰ These crops are grown continuously on the same land or rotated with just one other type of plant. The land is left bare between growing seasons, which makes it susceptible to erosion and reduced water absorption.

Doomsday warnings about humanity's future due to industrial agriculture follow a familiar narrative: The global population is growing. Greater demand is leading to the

cultivation of marginal lands, which are less productive and more quickly exhausted. Overfarming causes erosion and the degradation of even high-quality soil. Conventional wheat fields, for example, are now only productive with the aid of large amounts of chemical fertilizers produced in part from fossil fuels. Nitrogen runoff from high concentrations of fertilizers expands dead zones in rivers and oceans.



*Soil erosion at Sudeley in the UK. Photo by Philip Halling, 2008.
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Enter Kernza, which its supporters and developers argue carries the promise of atoning for some of the worst mistakes of agriculture. Yet, despite the fact that the amount of Kernza grown in the United States has tripled since 2019, that amount is only 4,000 acres.

With that number in mind, it's worth asking whose abundant future is envisioned with Kernza. What is the notion of the public good at play here? Despite the heroic language associated with Kernza, questions arise regarding intellectual property, marketing, access, and how much the seed challenges the existing organization of industrial agriculture. To grow Kernza (a trademarked name), one must obtain a license from the Land Institute, which is subject to approval and quality controls. Products made from Kernza including bread and beer are obtained at high-end restaurants for premium prices. For the moment, Kernza's audience is affluent and of a modest size.

Nevertheless, the seeds don't have to simply represent a more environmentally friendly direction for existing conditions. In spite of the economic and social imperatives, both political and transformative, Kernza and similar species in development can be used to rethink

abundance and plenty, the role of environmental technologies, and the politics of this knowledge and who has access to it. Rather than simply building a new market for grains, we should take their example as an opportunity to project different futures of farming, food, and living in abundance. Although at present the perennials are still bound by constraints, this condition is contingent on an admittedly enormous network of agricultural, chemical, and economic interests. But that is no reason to simply see business as usual as the final word in perpetuity.

A story similar to this one centered in the United States can be told throughout the world where agriculture and other forms of food production have transformed landscapes. A planetary perspective can begin in small spaces throughout the globe. A commitment to planetary well-being insists that human well-being shouldn't always take a primary position. Asking questions about who and what benefits from the status quo helps us think about who we are acting for. Those who are already comfortable, or those who are not? If the future isn't just ours, we should act like it.

1. Jane Black, "Perennial Wheat Is an Ecologist's Dream: Soon It May Be What's for Dinner," *Washington Post*, 2 October 2016, https://www.washingtonpost.com/lifestyle/food/perennial-wheat-is-an-ecologists-dream-soon-it-may-be-whats-for-dinner/2016/10/02/0533bb7e-84f3-11e6-92c2-14b64f3d453f_story.html; Tamara Palmer, "Could Superwheat Kernza Save Our Soil?" *Food and Wine*, February 2016, <https://web.archive.org/web/20230330054645/https://www.foodandwine.com/news/could-superwheat-kernza-save-our-soil>. ↩
2. For some examples of recent commentary on "abundance," see Samuel Moyn, "Can Democrats Learn to Dream Big Again?," *New York Times Book Review*, 30 March 2025, <https://www.nytimes.com/2025/03/18/books/review/abundance-ezra-klein-derek-thompson.html>; Timothy Noah, "The Inadequacy of the Abundance Agenda," *The New Republic*, 27 March 2025, <https://newrepublic.com/article/193227/abundance-agenda-robert-moses-economy>; Waleed Shahid, "The Abundance Debate is Broken. Here's How to Fix It," *The Nation*, 11 June 2025, <https://www.thenation.com/article/politics/abundance-populism-debate>; Sandeep Vaheesan, "The Real Path to Abundance," *Boston Review* (22 May 2025), <https://www.bostonreview.net/articles/the-real-path-to-abundance>. ↩
3. Quoted in Mark Bittman, "Now This Is Natural Food," *New York Times*, 22 October 2013, <https://www.nytimes.com/2013/10/23/opinion/bittman-now-this-is-natural-food.html>. ↩
4. Samuel Myers and Howard Frumkin, *Planetary Health: Protecting Nature to Protect Ourselves* (Island Press, 2020), 114. ↩

5. Devorah Lev-Tov, “Your Guide to Kernza: A Super Grain That’s Good for You and the Planet,” *Martha Stewart Living*, January 2022, <https://landinstitute.org/media-coverage/your-guide-to-kernza-a-super-grain-thats-good-for-you-and-the-planet>. ↩
6. Courtney Fullilove, *The Profit of the Earth: The Global Seeds of American Agriculture* (University of Chicago Press, 2017). ↩
7. Jared Diamond, “The Worst Mistake in the History of the Human Race,” *Discover Magazine*, May 1987, 64-66. ↩
8. Quoted in Bittman, “Now This Is Natural Food.” ↩
9. Tom Capeheart and Susan Proper, “Corn Is America’s Largest Crop in 2019,” 29 July 2019, <https://www.usda.gov/about-usda/news/blog/corn-americas-largest-crop-2019>. ↩
10. “US Acreage Report for 2024,” University of Nebraska–Lincoln Institute of Agriculture and Natural Resources CropWatch, 2 July 2024, <https://cropwatch.unl.edu/2024/corn-planted-acreage-down-3-2023-soybean-acreage-3-last-year>. ↩

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Planetary health has so far been predominantly studied by natural scientists and medical experts. Over the next few months we will publish a series of essays that illuminate different aspects of the planetary-health concept from a decidedly environmental-humanities perspective. The entries have their origin in the contributions of international scholars who attended the Rachel Carson Center workshop “Imagining Planetary Health, Well-Being, and Habitability,” convened by Lijuan Klassen and Christof Mauch and sponsored by the Volkswagen Foundation.

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