Our Investigations

Bill Gates' radical menu for food systems: ultra-processed foods, patents, monocrops

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By Stacy Malkan

If Bill Gates has his way, the food in our future will little resemble what's on our plates today. Gates and his agribusiness industry partners are proposing to transform our food and how it is produced.

To the techno-food industrialists, hunger and climate change are problems to be solved with data and engineering. The core ingredients of their revolutionary plan: genetic engineering — and patenting — of everything from seeds and food animals, to microbes in the soil, to the processes we use

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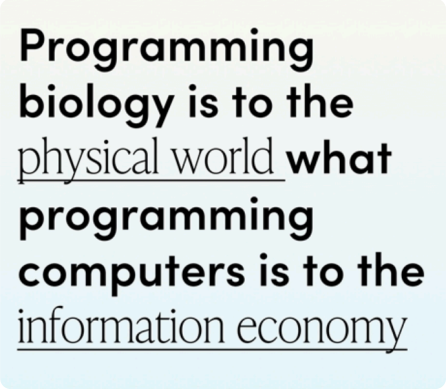
to make food. Local food cultures and traditional diets could fade away as food production moves indoors to labs that cultivate fake meat and ultra-processed foods.



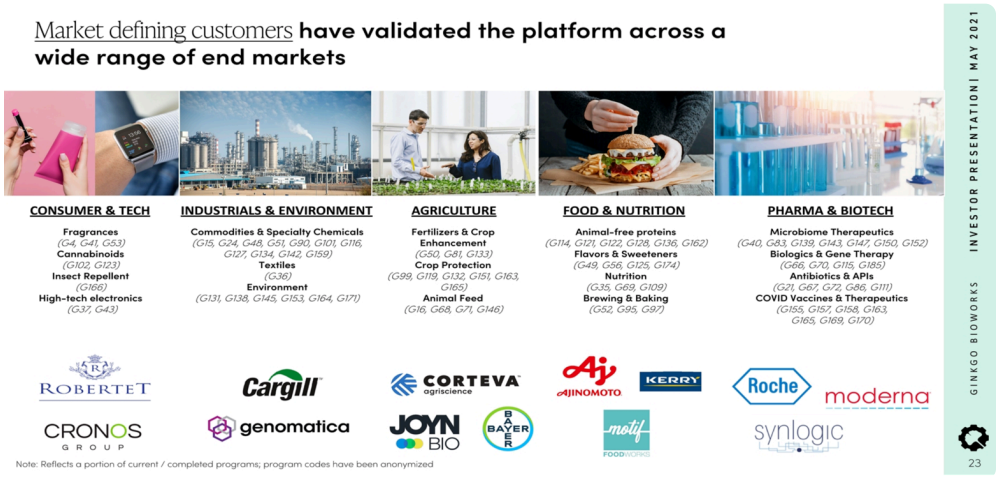
Gates says rich countries should shift entirely to synthetic beef. And he has the intellectual property rights to sell them. As a food that can help fix the climate, Gates touts the Impossible Burger, a plant-based patty made from genetically engineered soy and textured with engineered yeast. Its manufacturer, the Gates-funded Impossible Foods, has two dozen patents and more than 100 patents pending to artificially replicate cheese, beef and chicken and permeate these products with manufactured flavors, scents and textures.

Ginkgo Bioworks, a Gates-backed start-up that makes “custom organisms,” just went public in a $17.5 billion deal. The company uses its “cell programming” technology to genetically engineer flavors and scents into commercial strains of engineered yeast and bacteria to create “natural” ingredients, including vitamins, amino acids, enzymes and flavors for ultra-processed foods.

According to its investor presentation, Ginkgo plans to create up to 20,000 engineered “cell programs” (it now has five) for food products and many other uses. Axios reports that the company plans to charge customers to use its “biological platform” like Amazon charges for its data center, and will take royalties like apps in the Apple Store. Ginkgo’s customers, the investor pitch makes clear, are not consumers or farmers, but rather the world’s largest chemical, food and pharmaceutical companies.

Critiques of Gates Foundation agricultural interventions in Africa

October 13, 2021



If techno-food products are not high on most consumers' shopping lists, this is a menu investors can get behind. The market for genetically engineered products has the potential to reach $2-4 trillion in the next 20 years. And Bill and Melinda Gates are positioned to reap the rewards. The Gates back "a multitude of agrifood tech startups," reports AgFunder News, either through private investment vehicles or through the Gates Foundation Trust, which funds the foundation's charitable activities.

Gates and the tech start-ups pitch their products as solutions for our most challenging environmental and social issues. But are they really?

Doubling down on monocultures

Gates' "winning strategy for food and farming," according to a recent *Fortune* magazine article by Shawn Tully, "is finding ways for farmers to produce more corn and soybeans on every acre … while substantially lowering carbon emissions." Gates believes that "genetically modified seeds and chemical herbicides, in the right doses – and not land-intensive organic farming – are crucial to curbing carbon emissions."

Since 2006, the Bill & Melinda Gates Foundation has spent over $5 billion on efforts to transform African agriculture; its flagship program, the Alliance for a Green Revolution in Africa,

works to transition farmers to high-input industrial agriculture and scale up markets for commercial seeds and agrichemicals. Gates says these methods can boost production and lift farmers out of poverty.

Many critics, including African faith leaders and hundreds of civil society groups around the world, say the foundation's agricultural development strategies are failing to deliver on promises and benefitting multinational corporations over small farmers and communities in Africa. The foundation did not respond to our requests for comment.

Faiths institute asks Gates Foundation to change tactics in Africa

Feb 22, 2021

by Fredrick Nzwili, Catholic News Service | Action

A farm worker walks between rows of vegetables on a farm near Johannesburg, South Africa, in this file photo. An African faiths environmental institute is calling on the Bill and Melinda Gates Foundation to stop funding green revolution technologies and genetically modified seeds for the continent, but instead support natural methods to help Africa achieve food sufficiency and protect its environments. (CNS/Reuters/Siphiwe Sibeko)

"Gates has influenced the direction of agriculture to benefit the corporates," said Million Belay, coordinator of Alliance for Food Sovereignty in Africa (AFSA), a coalition of 50 Africa-based groups. "His foundation has contributed hugely in weakening our seed, biosafety and agrochemical related regulations … it will take years to undo what they have done."

Gates also influences how governments and academic institutions think about the future of agriculture in Africa, Belay said. "The narrative now is you need to use agrichemicals, high-yield varieties, GMOs and a host of other farm management techniques to feed yourself," he said. "It will also take years to convince our elites the future is agroecology. As one of the most rich and powerful people on the planet, the doors of our governments are open (to Gates) while it is ajar for African citizens. He has to be called out and has to change direction."

Leading experts in food security and nutrition are calling for a paradigm shift away from green revolution-style industrial agriculture and toward agroecology, which promotes biodiversity instead of monocultures, integrates animals to rebuild soils, and advocates for political and economic reforms to address inequities and social divisions. Diversified agroecological systems are more resilient, they say, and have a greater capacity to recover from disturbances including extreme weather events, pests and disease.

Recent science suggests that chemical-intensive industrial agriculture is a key driver of climate change, soil erosion and the worldwide decline of insects. Corn and soy monocultures are especially problematic; they deplete the soil and rely on synthetic fertilizers that emit nitrous oxide, a greenhouse gas 300 times more powerful than carbon dioxide at warming the atmosphere. These are problems Bill Gates is hoping technology can fix.

A climate solution?

Fortune describes Gates' plans to intensify corn and soy production as a "pivotal campaign in the war against global warming." How so? Syngenta, the world's second largest agrichemical company, is "deploying big data, gene editing, DNA analysis, and other groundbreaking technologies in pursuit of growing bumper harvests while lowering CO2." Bayer, the leading chemical and seed firm, is making a similar pitch, and claims its new sustainability technologies will "empower 100 million smallholder farmers around the world."

For 30 years, agrichemical companies promised GMOs could feed the poor and help small farmers, but it hasn't yet worked out that way. Most GMO crops in the ground today are engineered to survive weed-killing chemicals or kill insects. While these crops provided short-term benefits to farmers, they provided no benefits to consumers, nor did they deliver

on promises to boost yields, but they did increase herbicide use. Evidence now indicates the crops are failing as weeds and bugs evolve around the technology.

As a solution to meet the climate crisis, and enable "sustainable intensification" of industrial agriculture, Gates and Bayer point to experimental projects to genetically engineer microbes to fix nitrogen to plants. "If these approaches work," Gates writes in his climate book, "they'll dramatically reduce the need for fertilizer and all the emissions it's responsible for." In 2017, Ginkgo Bioworks teamed up with Bayer to launch JoynBio, a microbe company that is working to create self-fertilizing plants.

This, too, is a promise Bayer has made before. As far back as 1897, Bayer promoted a product that could reportedly assimilate atmospheric nitrogen, according to Mark Finlay, a history professor at Armstrong Atlantic State University. Bayer said its product could "conceivably make all agricultural lands permanently fertile," Finlay wrote in a 2015 book about the history of agriculture. "Although early results were disappointing, many popular press writers hailed the potential of this discovery."

GMO 2.0: genome-editing

Gates is an evangelist for genetically engineered foods. He predicts that "GMOs will end starvation in Africa" and GMOs can "end world hunger by 2030." If the first generation of GMO crops failed to deliver on these hopes, Gates believes new genetic engineering methods will get us there.

With CRISPR-Cas9 and other "genome-editing" techniques, scientists can now add or delete strands of DNA, or turn genes on or off, to produce specific traits in plants or animals — as if writing computer code. Examples include mushrooms that are

"edited" to resist browning, "terminator cattle" bred to father only male offspring, or harmless strains of *E Coli* converted to antioxidant factories.


Biotechnology / CRISPR

Gene-edited cattle have a major screwup in their DNA

Bid for barnyard revolution is set back after regulators find celebrity "hornless" bovines contaminated by bacterial genes.

Gene-editing techniques, and especially CRISPR, are efficient but unpredictable. Studies show the CRISPR process can create unexpected mutations including DNA damage and other off-target effects. In 2019, a plan to release CRISPR-edited "hornless cows" to Brazil was scrapped after a U.S. government researcher discovered the cattle had two antibiotic-resistance genes that weren't supposed to be there. The Recombinetics, Inc. cows were the "poster animals of the gene-editing revolution," according to MIT Technology Review, until the "major screw-up in their DNA" came to light. The company's researchers missed the extra DNA in their own studies; they reported, incorrectly, that the animals were "free of off-target effects."

Genetic engineering, including genome-editing, "has unpredictable outcomes," says Michael Antoniou, a molecular geneticist at King's College in London. "You don't know in advance what the consequences are of the GM transformation process … and because you don't know, the only way to evaluate safety is generically," Antoiniou said. "You basically need to conduct a long term feeding trial in animals and see what happens … and that's just not going on anywhere in the world for regulatory purposes, at all."

Nevertheless, experiments continue on important crops and food animals. Gates Foundation has spent over $40 million on projects to genetically engineer dairy cows, with hopes of creating the "perfect" cow. Acceligen (a division of Recombinetics) is working with a Gates Foundation grant to engineer multiple traits into dairy cows to maximize productivity and durability in hot climates.

The foundation is also a leading funder of gene drive experiments that can force an engineered trait through a species. This month in the Florida Keys, the Gates Foundation-backed company Oxitec released 144,000 mosquitos engineered to eliminate females in a disease-carrying species. Proposed agricultural uses for gene drives include reversing herbicide tolerance in plants, suppressing weeds and eradicating agricultural pests. What could possibly go wrong?

Systemic risk

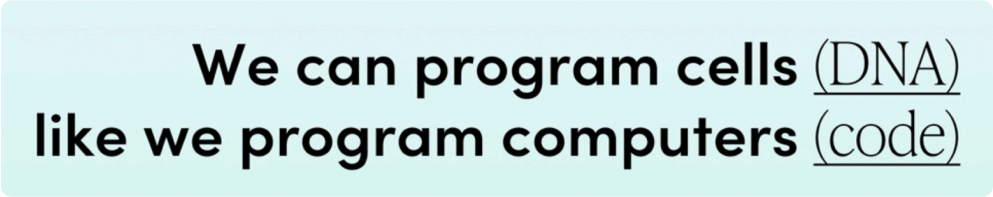
One of the world's foremost experts on probability and uncertainty, Nassim Taleb, considered that question — What could go wrong with GMOs? — for a 2014 paper he wrote with colleagues at the New York University School of Engineering. The authors analyzed GMOs in the context of what they called a "non-naive" view of the Precautionary Principle. They concluded: "GMOs represent a public risk of global harm" and should be subject to "severe limits."

The Precautionary Principle states that if an action has a suspected risk of causing severe harm to the public domain, the action should not be taken in the absence of scientific near-certainty about its safety. The authors believe it "should be evoked only in extreme situations" when the potential harm is systemic and the consequences widespread and irreversible; they said GMOs "fall squarely" within this criteria.

Among the systemic risks they cited: GMOs have the propensity to spread uncontrollably, with irreversible system-wide effects and unknown downsides. The ecological impacts are not tested empirically — and therefore not understood — before the technologies are released. The researchers noted two factors that contribute to systemic risk: the engineered genetic modifications and the monocultures in which they grow.

"Instead of a long history of evolutionary selection, these modifications rely not just on naive engineering strategies that do not appropriately consider risk in complex environments, but also explicitly reductionist approaches that ignore unintended consequences," the researchers said. "Labeling the GMO approach "scientific" betrays a very poor—indeed warped—understanding of probabilistic payoffs and risk management."

Taleb summed up their conclusions in a 2015 New York Times op-ed: "The GMO experiment, carried out in real time and with our entire food and ecological system as its laboratory, is perhaps the greatest case of human hubris ever. It creates yet another systemic, 'too big too fail' enterprise — but one for which no bailouts will be possible when it fails."



Ginkgo Bioworks investor pitch

Monopoly Bill

If Gates' plans for the food system make little sense from an equity or ecological perspective, they are logical from the point of view of an economic monopolist.

"As the former CEO and largest shareholder of Microsoft, you might think that Bill Gates is a capitalist, but that's not exactly the case," Megan Tompkins-Stange, a scholar of philanthropy at University of Michigan, told The Ink. "Gates' version of capitalism would better be called monopolistic. He has consistently sought to distort free markets in order to advance his own corporation's accumulation of wealth, power, and preeminence."

These ideologies led to the recent controversy over Covid-19 vaccines, in which Gates' insistence on patents may have impeded vaccine access for the world's poor. The incident raised concerns about the powerful influence Gates wields over vital issues involving public health. As Timothy Schwab wrote in The Nation,"It is increasingly urgent to ask if Gates's multiple roles in the pandemic — as a charity, a business, an investor, and a lobbyist — are about philanthropy and giving away money, or about taking control and exercising power — monopoly power."

Gates is playing all the same roles in our food system. "Gates has placed his investment bets in many of the key places in this emerging corporate narrative about what the food system needs: gene drives, geoengineering, fake meat, digital agriculture, carbon sequestration," says Jim Thomas from the ETC Group, which investigates corporate concentration in the food industry. "Clearly he is set to benefit from these changes, plus his Foundation funding supports all this."

Agribusiness companies are deploying digital apps on farms around the world to gather data on all aspects of farming: soil health, product inputs, weather, cropping patterns and more, including genetic information on the world's most important seeds and livestock and knowledge indigenous farmers have developed over thousands of years. All this data to be owned and controlled by corporations, run through AI algorithms, and sold back to farmers with "prescriptions" for how to farm and which corporate products to buy, with little transparency or explanation.

The hyper-consolidated food and agriculture system has already brought numerous negative consequences to farmers and consumers. A 2019 report by the International Panel of Experts on Sustainable Food Systems documents how corporate concentration has squeezed farmer incomes, eroded their choices, narrowed the scope of innovation and escalated public health and environmental risks. The

corporate drive to control Big Data, IPES said, “stands to exacerbate existing power imbalances, dependencies, and barriers to entry across the agri-food sector.”

Gates Ag One

Impatient with the creeping progress of the techno-food revolution, the Gates Foundation last year launched a new tax-exempt nonprofit that “seeks to accelerate the development of innovations supported by the foundation’s Agricultural Development team” in two of the fastest-growing regions in the world: sub-Saharan Africa and South Asia.

The new “ag tech startup” will “work with partners from the public and private sector to commercialize resilient, yield-enhancing seeds and traits.” It is located in St. Louis, Missouri, former home of Monsanto and current hub of leading chemical and seed firms, and headed up by Joe Cornelius, the former managing director of Agriculture, Food and Nutrition at Bayer CropSciences. As if to underscore that uniformity and centralized control are core goals of the effort, the new nonprofit is called “Gates Ag One.”

Farm of the future?

In 2019, Cargill (a partner of Ginkgo Bioworks) opened a $50 million factory in Lincoln, Nebraska. The plant manufactures EverSweet, a substance that tastes like the sweetener stevia. To produce it, Cargill combines genetically engineered yeast with sugar molecules to mimic the taste of stevia.

Consumers would not know this by reading the website or looking at the package; the company artfully describes the process as a “centuries-old technique” involving “fermentation.” It markets EverSweet as “non-artificial.”

Cargill also pitches the product as “sustainably produced,” presumably because it moves stevia production off the land, in places like Paraguay where small farmers have been cultivating stevia for generations. But the feedstock for engineered foods made in Cargill’s new plant has to come from somewhere. Cargill would not tell us what it uses for feedstock, but the factory’s’ location in Nebraska offers a clue: it is surrounded by monocrops of GMO corn and soy.

Read more at USRTK:

- What’s the controversy over the 2021 UN Food Systems Summit?
- The Gates Foundation’s “failing” green revolution in Africa
- Is Cargill’s new GMO stevia plant the “farm” of the future?
- Why is the Gates Foundation funding propaganda campaign at Cornell?

More info:

- The Long Food Movement: Transforming Food Systems by 2045, report by International Panel of Experts on Sustainable Food Systems and ETC Group (3.30.21)

Bill Gates Food Tracker, Our Investigations Bayer, Bill Gates, climate, Gates Foundation, gene drives, genome editing, Ginkgo Bioworks, GMO, JoynBio, monopoly, systemic risk

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