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Future of Food: How Food Technology Can Save the Planet

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Our world is contending with a rapidly increasing population, and greater numbers of people are going unfed. Over the next three decades, the demand for food is projected to double—an unsustainable rate, made all the more complicated by the evolving habits and preferences of consumers in today's food market. Unfortunately, many of these challenges dovetail with issues that have become hot buttons of political polarization, dividing the very people who are attempting to solve the problem.

Solving these challenges requires answering big questions about the future of food; issues including the global population, agricultural trends, environmental sustainability, consumer demands, and the role of technology. Below, we take a high-level look at the top challenges facing the global food industry.

Top Challenges in the Global Food Industry

Here are the hard numbers: A 35% increase in the global population is expected by 2050. In tandem with population growth is the fact that many developing countries are growing more prosperous—and are on the trajectory to demand more meat as a result. Feeding more mouths—mouths that are increasingly craving meat (from animals that also need feeding)—will require *double* the amount of crop production. The current agricultural system cannot keep up with that level of demand.

Even if it could keep pace, there's clear evidence that agriculture is already one of the world's biggest contributors to global warming. Climate change is a highly polarized issue, but some of the effects of industrialized farming are incontrovertible—like high water usage, pollution via fertilizer runoff, and loss of biodiversity where forests have been cleared to make space for more farms or grazing land. It's a double whammy when we're not only raising meat and crops to eat but also farming crops to feed the meat we're eating.

Outside of the issues we see in feeding the growing population, the food industry is also faced with responding to the evolution in consumer demand. More and more people are conscious of the origins of and ingredients in their food, opting for organic, local, artisanal, or plant-based foods. That's on top of general lifestyle shifts in food preferences, such as gluten-free, paleo, or vegan diets, as well as healthier convenience foods.

Unfortunately, with growing demand comes increasing prices. Inflation is causing food insecurity everywhere, exacerbated by factors like the war in Ukraine (which has impacted trade, production, and consumption) and COVID-19-related supply chain issues (which has

bumped the number of people affected by hunger by 150 million since 2019).

Finally, *waste* is a huge factor that is often forgotten when looking at the global food industry. According to estimates, 25% of food by calories—or 50% of food by weight—is wasted before it reaches human mouths. In developed countries, this most often occurs in stores, restaurants, or homes themselves. In less developed countries, it's often unreliable storage and transportation that leads to food loss.

How Technology Is Optimizing the Future of Food

Forget plant based. How about fungi based? Nature's Fynd is just one innovative example of food manufacturing that can solve many of the challenges up against the food industry, particularly in the realm of sustainability. Using cutting-edge fermentation technology, Nature's Fynd takes a fungal microbe discovered at Yellowstone National Park and uses it to create a number of highly nutritional food products. They have established that this process uses 99% less land and emits 94% less greenhouse gases than traditional food manufacturers—all with no impact on Yellowstone where the microbe was first found. The company believes this is a genuine answer to feeding the growing global population.

If you prefer a good old steak, however, there's technology for that too. Future Meat Technologies is one of a handful of "cultivated meat" companies that produce real meat from animal *cells* rather than a herd of animals. By avoiding the need for livestock, they meet the growing demand for meat without the environmental impact of conventional farming. This approach is a big deal, and Future Meat Technologies has gained record-breaking funding, including support from Big Food producers like Tyson.

No matter what you prefer, the fact is that the meat substitute market is set to grow almost $7 billion by 2027. There are reportedly four main ways technology is advancing the future of food: cell culturing (like Future Meat Technologies), 3D printing, gene editing, and the cultivation of obscure organisms (like Nature's Fynd). This is, of course, on top of the ever-popular plant-based industry, which has given us Impossible Burgers and Perfect Day's "animal-free milk."

Can Food Technologies Save the World?

There's a lot of optimism surrounding this new frontier of the food industry, particularly as the challenges facing the world become increasingly apparent. Alternative proteins appear to be one way to minimize environmental impact while filling the bellies of our growing population.

That said, there is a fair amount of criticism—or at least healthy skepticism—of food technology. Some say it circumvents small and local producers, making much of the population overly reliant on Big Food and global industrial supply chains. Additionally, there is the point that many alternative protein producers are energy-intensive in new but equally concerning ways—one study suggests that a trillion dollars of infrastructure would be required to produce alternative protein at a scale that could meet demand. Instead, there is an argument for making a shift to growing protein-rich crops like legumes in place of livestock, corn, and soy—a solution which appears both sustainable and minimally-processed, compared to alternative protein sources.

If nothing else, food technology is shining a massive spotlight on some of the most critical challenges facing the world and the food industry today. Technology and innovation are helping to shape the future of food, giving us a solution to both world hunger and environmental sustainability.

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