

Quick, Cheap, Safe: Pick Two

The primary purpose of food production has shifted from health to efficiency and profit. The population is expected to rise from seven billion to more than nine billion by the year 2050 (Specter, para. 11). To keep up with the quickly growing population, and to make the most profit, the food industry has adopted several unsustainable and unhealthy practices. These production practices are dangerous to our health and the ecosystem.

Effects on the Environment

Industrial farming greatly impacts the health of our soil. Most of the blame falls on the heavy reliance on, and promotion of, monocultures--the cultivation of a single crop in a given area. Monocultures offer a quick way for farmers to produce a large supply of crops to meet the large demand, but the harsh overworking of monocultures reduces the nitrogen content in the soil, diminishing its fertility (Regoli, 2017). With the nutrients in the soil being so low, to keep up with the high production, the farmers then turn to chemical fertilizers and pesticides to improve yields (Patterson, 2018). These chemical fertilizers disrupt the natural makeup of the soil, decreasing its microbiological diversity. Some nitrogen fertilizers lead to soil acidification, and excess fertilizer use can lead to a buildup of salt, both of which impair the crop's ability to grow. Pesticides build up in the soil as well and are "affecting soil microbial health and earthworms, both of which are vitally important to soil health and fertility" (FoodPrint, 2019). The health of our soil is also harmed by the use of mechanical and heavy farm equipment, which can lead to soil compaction and soil erosion. Soil compaction, caused by heavy farm equipment, leads to "poor water absorption and poor aeration which further lead to stunted root growth in plants and smaller yields" (FoodPrint, 2019). Soil erosion has many causes; poor practices, like tilling, can cause a significant amount of erosion over time (FoodPrint, 2019). The loss of topsoil means losing the part of the soil that holds many nutrients essential for plant growth. The eroded soil can run-off into water deposits and can cause algal blooms, leading to fish die-offs. Soil stores

much of the earth's carbon. These agricultural practices are "exposing the carbon in the soil to oxygen allowing it to burn off into the atmosphere" (Renee, 2018).

Deforestation is another practice that harms our future sustainability. "Agriculture is responsible for a staggering 80 percent of deforestation..." (Pittman, 2016). Forests are being cleared to make room for cropland, most of which will be growing crops used to feed animals. Deforestation harms the planet's biodiversity and destroys the habitats of millions of species of plants and animals. Widespread deforestation is harmful to the environment because forests act as carbon sinks, absorbing much of the world's carbon dioxide that would otherwise be in the atmosphere (World Wildlife Fund). The roots of trees are also responsible for holding together soil. By removing the trees we are putting our soil at risk of water and wind erosion.

Factory-style production is also responsible for a large number of greenhouse gas emissions. The use of fertilizers and pesticides, the digestive process of livestock, operating machinery, and manure management are all sources of harmful greenhouse gases. The use of fertilizers and pesticides contribute to the production of nitrous oxide. The digestive process of the livestock is responsible for releasing large amounts of methane gas into the atmosphere. The fuel used from the operating machinery releases gases like carbon monoxide, nitrous oxide, and methane. Manure--when left in an environment without oxygen--will produce large amounts of methane and nitrous oxide (Powers, 2019).

Effects on Human Health

Poor sanitation and waste management can lead to the contamination of waterways. Pesticides that are sprayed onto crops can end up in water supplies by seeping through the ground or being carried as run-off. Drinking water that has been contaminated with pesticides can lead to several health problems. Consuming a high dose of pesticide can lead to vomiting, nausea, headaches, intestinal disorders, and even death. Being exposed to low levels of pesticides over a long period of time can lead to genetic changes, blood disorders, endocrine disruptions, and reproduction effects (Lorenz, 2017). Poor waste management can lead to

numerous harmful bacteria contaminating water supplies and infecting the livestock. Bacteria like E. Coli, salmonella, and coliform can force companies to recall millions of pounds of contaminated meat. Manure ponds can overflow into waterways and go on to infect crops, calling for massive recalls. Recently, on November 22nd, outbreaks of E. Coli found in romaine lettuce made 40 people from 16 states fall ill, and landed 28 people in the hospital (Center for Disease Control and Prevention, 2019).

The use of antibiotic drugs in livestock promotes the development of antibiotic-resistant bacteria. Over two-thirds of all antibiotics consumed in America are fed to livestock, and in most cases are used to encourage growth, not to treat the animals (Specter, para. 5). The antibiotic-resistant bacteria can be spread to humans through the consumption of tainted meat, reducing the effectiveness of our medicine (EarthWise, 2015). According to the CDC, "Each year in the U.S., at least 2.8 million people contract an antibiotic-resistant infection and more than 35,000 people die." As staggering as those statistics are, the problem does not stop there. The spread of antibiotic resistance goes beyond consumption, scientists were able to collect drug-resistant microbes from the air in their car by driving behind chicken transport trucks (Moyer, 2016).

If We Don't Act

If we continue to rely on these unsustainable practices it could lead to:

- Water shortages as we continue to meet the high demand for meat.
- Food riots as food becomes scarce for most of the world's population.
- Widespread hunger and malnutrition as food prices rise.
- Pandemics of antibiotic-resistant diseases infecting humans and water supplies as waste management becomes more difficult.
- The destruction of cropland and soil health as we continue to overproduce monocultures with heavy industrialized machinery.
- Increased global warming from widespread deforestation.

Solutions

With no intervention, the problem of food sustainability will spiral out of control. It is imperative that we adopt solutions to fix the problems that these practices have caused, and the number of plausible solutions is vast. Simple solutions would be to use integrated pest management instead of pesticides--to reduce the number of toxic chemicals that we are exposed to--and to install riparian buffers--to protect water quality (Modern Pest, 2017)(Ridlington, 2018).

The most blaring solution is to cut down on meat production. If we produce less meat, more cropland can be used to grow food for human consumption and more freshwater would be given to humans. Around 33% of cropland is used solely to feed animals (Pittman, 2016). If we continue to produce meat, we need to do it in a better and more sustainable way. Improving the diet of livestock “can cut enteric methane by half” (Niman, para. 13). Let animals free-roam and eat grass along with other crops that offer little nutritional value to humans. Livestock grazing can increase vegetation and carbon count in soil, while also decreasing soil erosion and reducing the need for fertilizers and the fuel used by farming machinery (Niman, para. 16).

We should also focus on restoring the health of our soil. Farmers should use crop rotation to return nutrients into the soil. Crop rotation is the practice of growing different crops in the same area in sequenced seasons. Crop rotation can help prevent the loss of soil fertility, pest infestations, and erosion (Slavikova, 2018). Different crops draw different nutrients from the soil and attract different pests. If we continue to plant the same crop repeatedly we deplete those nutrients in the soil and allow for those pests to thrive.

We should change federal policy to make it easier for farmers to adopt sustainable practices. Currently, federal policies, like crop insurance, encourage risky practices like specialization and planting crops on land that they are not suited for (Dolan, 2018). As Will Allen suggests, in *A Good Food Manifesto for America*, we need to “start subsidizing health and well-being by rewarding sustainable practices in agriculture...” (Allen, para. 12). We should base premiums on the average yields without exclusions, put stricter caps on subsidies, focus

protection on yields instead of revenue, and eliminate the Harvest-Price Option which bases compensation on the higher price between when the crops were planted or when they were harvested (Dolan, 2018). Nothing will change if we continue to reward large companies for their unsustainable practices and make it harder for farmers to become more sustainable.

Works Cited

Allen, Will. "A Good Food Manifesto for America." *The Language of Composition*, edited by Renee Shea, Lawrence Scanlon, and Robin Aufses, 2nd ed., Boston, Bedford/St. Martin's, 2013, pp. 976-80.

"Antibiotic / Antimicrobial Resistance." *Centers for Disease Control and Prevention*, Centers for Disease Control and Prevention, 5 Nov. 2019, www.cdc.gov.

Cho, Renee. "Can Soil Help Combat Climate Change?" *State of the Planet*, 21 Feb. 2018, blogs.ei.columbia.edu.

Dolan, Ed. "The Strange Economics of Crop Insurance." *Niskanen Center*, 15 May 2018, www.niskanencenter.org.

EarthWise. "Factory Farming And Human Health." *Earth Wise*, 19 Feb. 2015, earthwiseradio.org.

"Forest Habitat." *WWF*, World Wildlife Fund, www.worldwildlife.org.

Lorenz, Eric. "Potential Health Effects of Pesticides." *Penn State Extension*, 13 Sept. 2017, extension.psu.edu.

Moyer, Melinda. "How Drug-Resistant Bacteria Travel from the Farm to Your Table." *Scientific American*, 1 Dec. 2016, www.scientificamerican.com.

Niman, Nicolette. "The Carnivore's Dilemma." *The Language of Composition*, edited by Renee Shea, Lawrence Scanlon, and Robin Aufses, 2nd ed., Boston, Bedford/St. Martin's, 2013, pp. 973-76.

“Outbreak of E. Coli Infections Linked to Romaine Lettuce.” *Centers for Disease Control and Prevention*, Centers for Disease Control and Prevention, 22 Nov. 2019, www.cdc.gov.

Patterson, Susan. “What Is Monocropping: Disadvantages Of Monoculture In Gardening.” *Gardening Know-How*, 5 Apr. 2018, www.gardeningknowhow.com.

Pittman, Arianna. “How Planting Crops Used to Feed Livestock Is Contributing to Habitat Destruction.” *One Green Planet*, One Green Planet, 2016, www.onegreenplanet.org.

Powers, Crystal. “Sources of Agricultural Greenhouse Gases.” *Livestock and Poultry Environmental Learning Community*, 5 Mar. 2019, lpehc.org.

Regoli, Natalie. “6 Pros and Cons of Monoculture.” *Green Garage*, 30 June 2017, greengarageblog.org/6-pros-and-cons-of-monoculture.

Ridlington, Elizabeth. “The Problems of Industrial Agriculture, Now and for the Future.” *Frontier Group*, 7 Feb. 2018, frontiergroup.org.

Slavikova, Sara. “10 Benefits of Crop Rotation in Agriculture.” *Greentumble*, 27 Mar. 2018, greentumble.com.

“Soil Health Is Affected by Industrial Agriculture.” *FoodPrint*, 13 Mar. 2019, foodprint.org.

Specter, Michael. “Test-Tube Burgers.” *The Language of Composition*, edited by Renee Shea, Lawrence Scanlon, and Robin Aufses, 2nd ed., Boston, Bedford/St. Martin's, 2013, pp. 982-85.

“What Are Natural Pesticides?” *Modern Pest*, 18 July 2017, www.modernpest.com.