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Living in a Plant-Based World



Figure 1 Food security. The Vegan Society. (n.d.). Retrieved November 21, 2021, from <https://www.vegansociety.com/go-vegan/environment/food-security>.

Abstract

A world without meat seems like such a distant idea. What about a world with meat produced in labs or a world with meat like products? A plant-based world does not mean no more burgers, it just means no burgers produced in ways that harm humanity. This essay argues that by eliminating the consumption and production of meat globally, humanity can expand lifespans and prevent future catastrophic natural disasters. The negative effects of meat production are the greenhouse gases emitted, land usage and deforestation, the water wasted, the food used for livestock that could be used for human consumption. Without meat we would live in a world of limited hunger, limited thirst, and limited antibiotic resistance. A world with heart healthy individuals and reduction of infectious diseases. As a practicing vegetarian, I have constantly been told and judged for what I eat and why I avoid meats. Our society has been brainwashed into this way of thinking that meat is the superior food, but what I have learned over the past few years of defending myself, is that this is simply not the truth. For this essay I have decided to compile all my findings and research on the meat industry and meat consumption to bring to the forefront of my readers minds. Next time someone tries to tell me that I am wrong I will send them a link to this essay.

Keywords: *plant-based, meat production, meat industry, vegan, vegetarian, livestock, climate change, emissions, antibiotic resistance, swine flu.*

Introduction

Ever thought about going vegan? Perhaps you turn an eye to the thought of not ordering your favorite all-beef burger. Maybe this will change your mind. If we were to eat the food, we feed to livestock we would be able to nourish about 3.5 billion extra humans. The world has over 26.5 billion chickens, cattle, pigs, and sheep in captivity. Feeding these animals to produce meat requires a lot of resources. It takes 26% of Earth's total land to produce livestock. This amount of land requires a large amount of freshwater, meaning 27% of all freshwater consumption is used for producing dairy and meat. Not even to mention 14.5% of all greenhouse emissions are caused by the meat industry. Our overreliance on meat is not only harming the earth, but also our health, there are scientifically proven health benefits to reducing meat consumption. Meat production is even leading to increased antibiotic resistance as we put antibiotics in livestock feed to prevent diseases. The overarching issue here is how the world we live in would be different but a good different, if we eliminated the consumption of meat.

Going plant-based is clearly more than just saving an animal, it's about saving the Earth, and even our own lives. I mean do you want to die? Research, by the World Health Organization, “estimates that climate change will result in an additional 250,000 deaths from malnutrition, malaria and heat stress between 2030 and 2050” (1). Going vegan offers the world an opportunity to end hunger, slow global warming, save resources, slow antibiotic resistance, and lower chances of infectious diseases. Why then is it so hard for you to make a change? A simple change in diet can change the life expectancy of the Earth and the future generations, perhaps now you may consider a vegan option?

If the world was to eliminate meat production and consumption, we could increase the lifespan of individual humans as well as increase the lifespan of our Earth. This

statement is supported by the depleting resources caused by the meat industry, the resources humanity gains in a plant-based society, the jobs gained/replaced, and the actual medical benefits of avoiding meat consumption. The best part is that resources to become plant-based are growing, so having a sustainable diet is easier than ever.

7 Years

In September 2020, the world Intergovernmental Panel on Climate Change (IPCC) started a movement, by bringing their findings to the forefront of society, by creating an enormous statement. This statement was in the form of a giant ticking clock in New York City seen in **Figure 2**. This clock sense has been continuing to decrease, what does this mean? It shows the “The Deadline and Lifeline” that “tell us what we need to do, by when. They are arguably the most important numbers in the world” (2), according to the official Climate Clock website.



Figure 2 Climate clock. Climate Clock. (n.d.). Retrieved November 21, 2021, from <https://climateclock.world/>.

According to IPCC, “the Clock’s Deadline tells us that, at current rates of greenhouse gas emissions, we have less than eight years left in our global “carbon budget” that gives two-thirds a chance of staying under the critical threshold of 1.5°C of global warming” (2). You may be asking what this means in relation to the burger you order when you get your favorite take-out. Ordering the vegan option, could help turn around this ticking clock. An article called *The Future of Meat?* published in the New York Times outlines the harms of meat production and the benefits of lab made meat. The author Bubar states, “livestock accounts for about 14.5 percent of

the world's annual greenhouse gas emissions, according to the United Nations (U.N.). A big reason is that as the animal's digest food they belch up methane--a potent greenhouse gas that traps heat in Earth's atmosphere" (3). **Figure 3** shows visually the way meat production is creating greenhouse gases that are contributing to the depletion of the ozone layer. The ozone layer acts as metaphorically a sunscreen for the Earth, protecting us from the sun, which is why there is a direct correlation between greenhouse gases and the increase in climate change. Research from the Food and Agriculture Organization (FAO) predicts a "dramatic increase in food scarcity and malnutrition from 2050 caused by increasingly severe weather events, such as droughts and floods associated with climate change" (1). Therefore, reducing the meat, we eat is crucial. By eliminating this 14.5% of greenhouse gas emission, we can ultimately slow down the clock. Suddenly going vegan is a lifeline that can slow down the clock and save the Earth. Global warming is a huge threat to life on Earth, but the harms of the meat industry do not stop there.

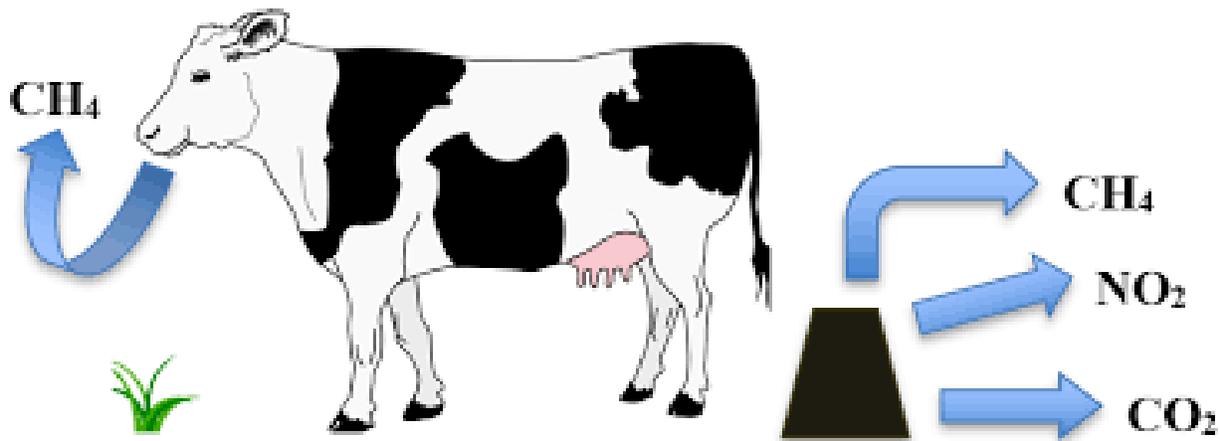


Figure 3 Reducing greenhouse gas emissions from cattle production. UNL Water. (2019, November 14). Retrieved November 21, 2021, from <https://water.unl.edu/article/animal-manure-management/reducing-greenhouse-gas-emissions-cattle-production>.

Planetary Benefits: A Plant-Based World

An informative film produced by Kurgesagt, an animation studio that stands for “In a Nutshell” in German, produces films with credibility that outline simple but pressing topics. According to their video *Why Meat is the Best Worst Thing in The World* (4). They show that living in a plant-based world would be quite different from the world we are currently living in. This is because animals are taking up 26% of total land on the Earth. The percentage of land comes from the production of feed for livestock. Livestock means 26.5 billion chickens, cattle, pigs, and sheep globally. That's a lot of mouths to feed, that's more than triple the human population. If the world eliminated meat production, we could feed 3.5 billion more humans than we are currently. A plant-based world could be and most likely would-be starvation free.

Hunger isn't the only social issue that would be fixed from the decrease in production of animal by-products. According to Worldvision.com, “785 million people lack access to clean water. That’s one in 10 people on the planet” (5). The world is in a water crisis and it's evident. Lack of water is a leading cause of death on our planet, so what can we do? Well, let's investigate the amount of freshwater being used in the meat industry. According to the video above (4), the video shows that over 27% of all global freshwater is being used to produce meat. That includes the water used to grow the crops for the animals, but it's also used to provide the animals freshwater to drink. Chances are we could provide a lot more water to those in need because, “every day, more than 800 children under 5 die from diarrhea caused by contaminated water, poor sanitation, and unsafe hygiene practices” (5).

Not only are we seeing a large waste of resources, but we are also seeing a major contributor to the increase in antibiotic resistances. Antibiotics are a key essential medicine in fighting against infectious diseases. Without antibiotics in the health system, we would see more

deaths due to a lack of cure for these infections. In 2019 the FDA, The US Food and Drug Administration, called for “‘added urgency’ in the fight against the over-use of antibiotics in the meat supply chain” (6). They called out a 9% increase in antibiotic sales in the industry from 2017 to 2018. The reason the meat industry is pouring in antibiotics in the animals feed is to prevent the livestock from gaining diseases and infections. However, the reason there is a need to prevent infections is because of the way the livestock is treated in the production process.

We kill about two 200 million animals everyday worldwide (4), and there are 365 days in a year. That's about 73 billion animals killed yearly. Take a moment to step into the shoes of the meat we eat and imagine if that was the number of humans killed every year. With that rate our whole human population would disappear after one and a half months. The meat industry may paint this picture of happy farmers and ranchers taking care of their livestock, however after watching the film *Food Inc.* ultimately the industry has become “enormous assembly lines where the animals and the workers are being abused, and the food has become much more dangerous in



Figure 4 Danovich, T. K. (2021, April 12). Why the US egg industry is still killing 300 million chicks a year. Vox. Retrieved November 21, 2021, from <https://www.vox.com/future-perfect/22374193/eggs-chickens-animal-welfare-culling>.

ways that are being deliberately hidden from us”

(7). These ways include the pigs being raised in enclosures with no space to move, and no windows to look through. At birth egg laying chickens are raised and are sorted by gender.

Males are deemed worthless and immediately gassed and grinded as seen in **Figure 4**. From

there the chickens are kept in close quarters.

“Everything we've done in modern industrial agriculture is to grow it faster, fatter, bigger,

cheaper. Nobody's thinking about E. coli, type 2 diabetes and the ecological health of the whole system” (7). The statement ‘faster, fatter, bigger, cheaper’ couldn't be truer, and is the reason we need antibiotics and supplements in the production process. The industry is hiding these things, but the public is being willfully blind to the truth about the food we eat. If we decide to not see what is happening then what is happening will not stop, because the more demand they get the more they produce, and that's the way the economy works.

Zoonotic Infections in Relation to Livestock Production

You may be wondering what a zoonotic infection is, by definition, “a zoonotic disease is any disease that crosses the species boundary from animals to humans” (8). “These microorganisms are typically transmitted through several routes, such as direct contact with infected persons (anthroponotic transmission) or animals (zoonotic transmission)” (9). To put this into familiar terms some zoonotic diseases include the swine flu (H1N1) and the bird flu (H5N1). These two above diseases originated in livestock production. The food we eat suffers in terrible conditions which increase the risk of infections. When these infections go unnoticed or asymptotically, the workers could easily slaughter an animal that is sick. The World Health Organization estimates that there was 150,000 to 575,000, deaths from the swine flu outbreak in 2009. The disease originated from a factory farm in central Mexico where the disease was ultimately latent in the pigs, which means it was hard to detect in the livestock.

Prevention of zoonotic infections includes the avoidance of meat consumption and the avoidance of keeping animals in situations where diseases are likely to cultivate. Factory farming may not be responsible for all zoonotic diseases, but it should be a concern for society as a starting location of multiple deadly infectious diseases. In general, any consumption of meat both domestic and wild can lead to a spread of a disease. According to the peer reviewed sources, *The*

End of Factory Farming, “slaughterhouses pose a major risk to public health from zoonotic disease transmission. 20 percent of slaughterhouse workers interviewed in Kenya admit to slaughtering sick animals, which greatly increases the risk of transmitting disease either to a worker further down the production line or a consumer at the supermarket” (8). This is a risk you take anywhere globally when you consume meat from any source, particularly because, in the global system of food production, you usually don’t know where in the world your food came from.

The Economy

A plant-based world may seem like a shocking statement to some. Especially to those heavily involved in the meat industry. The economy would most likely take quite the shock. Some may argue for the loss of jobs that the economy will take a downfall. However, I see a different story. There will be a most definite shift in job relocation and creation. Getting rid of meat in our diets means the edition of more whole foods. This means more vegetables, more grains, and more substitutes. The farmers won’t have to give up their farms or lose all their money they will need to shift to market demand and begin growing more sustainable foods. It even goes as far as reducing the amount of money spent of fodder for the animals. Livestock farmers may be able to start saving money because they are no longer needing to buy feed, and or antibiotics and housing for their animals.

Their also happens to be another sector of the industrialized meat industry, this is the factories and slaughterhouses involved in production. This part of the industry is quite hard to defend as the working conditions and practices are not of the best standard. The article, *The End of Factory Farming*, written by Rory Cockshaw, outlines the harsh conditions and aspects of the production process. He states, “injuries are very common in the fast-moving conveyor belt

environment with sharp knives, machinery, and a crowd of workers. OSHA found 17 cases of hospitalizations, two body part amputations per week, and loss of an eye every month in the American industrial meat industry” (8). These conditions that include fast moving production lines, and slaughtering tools that pose a threat to these workers. “The staff of slaughterhouses in the US is almost exclusively people with low socioeconomic status, ethnic minorities, and migrants” (8). Not only are the working conditions unsafe they are also targeted towards the minorities in our country who are already posed with hard living conditions. They may initially lose their jobs, but jobs will be created in the production of more substitute products such as beyond meats and the new arising industry of lab produced meat. The market size for substitute products is growing rapidly, as of 2019 the market was valued at \$4,500 million. In 2020 the market jumped to a valuation of \$8,500 million. The fact that the market almost doubled in one year shows the arising economy and the likely gradual shift we will see in jobs and revenues.

Benefits of Being Plant-Based

It was July 13th, 2015, when ultramarathoner Scott Jurek beat the world record by 3 hours becoming the world’s fastest supported Appalachian Trail thru-hiker. Jurek had hiked through 14 states, 2,168 miles, with over 515,000 feet of ascent in only 46 days, 11 hours, and 20 minutes. Jurek averaged 50 miles every day, a feat that seems almost inhuman. And to the public’s awe, Jurek did it all on a plant-based diet. Surprised? Jurek went on to write an autobiography called *Eat & Run*, a New York Times bestseller, a memoir featuring his life as a vegan athlete (10). Jurek isn’t alone. A multitude of olympians, professionals, and college-level athletes are all taking a turn towards veganism, and plant-based performance. A plant-based diet is advantageous for the average human as well, however, the meat industry has been telling us for years that meat makes us more manly. Let me give you a further look into going plant-based.

According to Joel Fuhrman, and Deana M. Ferreri authors of *Fueling the Vegetarian (Vegan) Athlete*, “vegetarian diets are associated with a number of health benefits: lower risk of death from heart disease, lower low-density lipoprotein (LDL) cholesterol levels, lower blood pressure, lower rates of type 2 diabetes, lower body mass index, and lower rates of cancers” (11). These benefits are due to the addition of whole foods and the subtraction of processed animal products. Student-athlete and journalist Johannes Motschmann states that “in fact, a vegan diet has been proven to be the healthiest diet. Nowadays, animal products are the number one cause of coronary heart diseases and cause cancer because they contain such high amounts of fats and cholesterol” (12). By eliminating certain food groups and adding healthy whole foods, the average person will have a healthier lifestyle and more energy throughout their day-to-day life.

In the documentary, *Game Changers* they conducted an interesting scientific study with Dr. Robert Vogel, co-chair of the NFL subcommittee on Cardiovascular Health, the study consisted of three NFL players that are given burritos on the first day they had chicken, beef, or beans, and the second day they all had bean burritos. The scientist then drew their blood and according to the



Figure 5 Eduard Varnham. Published on March 20, 2021.

documentary, “Dr. Vogel finds that the players had higher endothelium function when eating plant-based. In other words, eating animal-based food prior to games *slows down* performances because it impairs blood flow, but in contrast, plant-based foods help the body sustain energy by expanding the vein walls and increasing blood flow to muscles” (13). The study conducted on the endothelium helps support the claim that a plant-based diet is beneficial to vascular health.

The participants could see the cloudiness of their blood when they ate an animal byproduct versus eating the bean burrito. My favorite athlete featured in **figure 5** is Serena Williams. She attributes her high success in athletics to her diet which is completely vegan. She walks among a growing group of professional athletes that are changing the game and performing better due to their completely plant-based diet. Another study found that the addition of just a glass of beetroot juice allowed athletes to cycle 22% longer and bench press 19% more total weight. That study was found in a journal called, *Effects of Beetroot Juice Supplementation on Intermittent High-Intensity Exercise Efforts*, put on by Domínguez R and his research colleagues.

The Plant-Based Diet

By now I hope you see the benefits to your health and the planet you are living on. Eliminating meat from your diet can seem scary if it's been the main food group in every meal you have eaten up until now. Making the change is becoming increasingly easier as awareness for the movement grows. Going plant-based is all about the addition of whole foods into your lifestyle. According to the source above (*Fueling the Vegan Athlete*), “Processed foods and animal products account for 90% of calories consumed in the typical American diet, and these foods lack antioxidants and supportive phytochemicals

Vegetables	
Vegetable (Portion Size)	Protein Content (g)
Broccoli rabe (3 cups, cooked)	15
Spinach (3 cups, cooked)	15
Asparagus (3 cups, cooked)	12
Bok choy (3 cups, cooked)	9
Swiss chard (3 cups, cooked)	9
Broccoli (3 cups, cooked)	6
Mushrooms (3 cups, cooked)	6
Cauliflower (3 cups, cooked)	6
Kale (3 cups, cooked)	6
Spirulina (100 g)	6
Watercress (3 cups, raw)	3
Oats (1/2 cup dry)	13
Beans, various (1 cup, cooked)	13
Whole wheat pasta (2 servings – 4 oz. dry)	12
Hemp seeds (1/4 cup)	10
Pignolia ^a (1/4 cup)	9.5
Pumpkin seeds (1/4 cup)	8.5
Quinoa (1 cup cooked)	8
Almonds (1/4 cup)	7
Wild rice (1 cup cooked)	7
Sunflower seeds (1/4 cup, hulled)	7
Sprouted grain bread (Manna brand, 1-inch slice)	8
Unhulled sesame seeds (1/4 cup)	6

^aFigure 6 Fuhrman, Joel, and Deana M. Ferreri. “Fueling the Vegetarian (Vegan) Athlete.” *Current Sports Medicine Reports*, vol. 9, no. 4, 2010.

abundant in unrefined plant foods” (11). By eliminating these foods, it creates room in your diet for more whole foods (fruits, vegetables, whole grains, seeds, nuts, beans). The benefits are proven however there are certain guidelines to follow in order to still get important nutrients.

So, what should a plant-based eater be aware of when they are making the change? There are certain supplements you should be aware of. These supplements range from Zinc, Iodine, Vitamin B12, Docosahexaenoic Acid, Vitamin D, and Taurine. Along with these supplements, **figure 6** helps show the ingredients that should be added to the diet to help replace the animal by-product and to assure that the athlete does not have a protein deficiency. These tables were provided by the source, *Fueling the Vegan Athlete*. It also ranks each food by how much protein is contained in each of the certain foods. The journal also gave some examples of meal plans, and statistics on the results of one following the plan. The using the journals meal plans trialists were able to consume 140 grams of protein per day from plant-based foods alone. Surprised? This meal plan shows that it is feasible for humans to consume plant-based diets, and still live life at the highest level. Not to mention the increase of products like Beyond Meat that are continuously hitting the market.

As a practicing vegan, I decided it was crucial to add one of my favorite meals. I enjoy making easy grain bowls. The grain bowls include heating up rice, quinoa, and beans. I add them to a bowl and top it with avocado, mango salsa, fresh tomatoes, and spinach. The fun part of this meal is it takes only a minute to prepare and has loads of taste, and whole foods that pack protein and Iron. The list of meals and options goes on and on, so really making the change should be simple, not easy, but achievable.

How to Make an Impact

Looking up how to slow down climate change. May result in a suggestion to reduce fossil fuel reliance, which is great and truly can make quite the impact. However, listening to the podcast *How I Built This with Guy Raz* on my way to class I heard a different story on what solution has a bigger impact on climate change. This specific episode featured the founder and CEO of Impossible Foods, Pat Brown. “Agriculture and forestry and particularly livestock production is responsible for more greenhouse gas emissions than all the emissions from transportation. All the emissions from cars, planes, ships, and trucks combined” (15). Making an impact can be as simple as skipping meat in one meal a day or finding substitute products like Impossible Foods or even Beyond Burgers. By not being a part of the demand for meat-based products you can ultimately send a message to the industry to slow production.

Next time you reach for a burger, or decide to order a burger remember, “an average quarter-pound hamburger uses up to six kilograms of feed, causes 66 square feet of deforestation, and uses up to 65 liters of water, with around 4kg of carbon emissions to boot” (8). Making decisions like not ordering steak or a burger, can change the outcome of the earth, and that's the type of change that truly can make an impact.

Conclusion

The depleting resources caused by the meat industry, the resources humanity gains in a plant-based society, the jobs gained/replaced, and the actual medical benefits of avoiding meat consumption prove nonetheless that, **by eliminating meat in our diets we can increase the predicted lifespan of our Earth and our own lives.** Social issues revolve around us constantly. Our main issue in society is the willingness of our societies to turn an eye to the actual solutions to our problems. Our society could change the prospective of multiple social issues by simply

changing a small part of our daily life, which is the consumption of meat. If you aren't convinced, perhaps this paper will find its way into your mind every time you eat a piece of meat, because I know, and you know what you're doing to the Earth in that exact moment.

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