

PLANT POWER - VS - POWER PLANT

WHAT WE CONSUME AND THE ENVIRONMENT

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Piedmont Area Vegan Educators (PAVE)

Survey

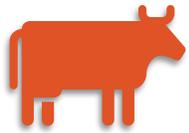
List 3 food practices that you consider to be sustainable and environmentally responsible.

1.

2.

3.

What you will come away with today:



How animal
agriculture impacts
the environment



How that impact
compares with that of
plant agriculture



How we can sustainably
feed our growing
population



How to eat, dress, and
furnish ones life in a way
that minimizes negative
environmental impact

**“THE #1 THING INDIVIDUALS CAN DO
FOR THE ENVIRONMENT IS AVOID ALL
ANIMAL PRODUCTS.”**

Alliance of World Scientists

SOME OF WHAT WE CONSUME

- ANIMAL FLESH (from a wide variety of animals)
- EGGS (from chickens and ducks)
- DAIRY PRODUCTS (from cows and goats)
- LEATHER (from cows/calves, goats/kids, dogs)
- WOOL (from sheep)
- FEATHERS (from ducks and geese)
- GELATIN (from hooves, beaks, etc.)
- ANGORA (from rabbits)
- CASHMERE (from goats)
- REPTILE SKIN (from alligators and snakes)

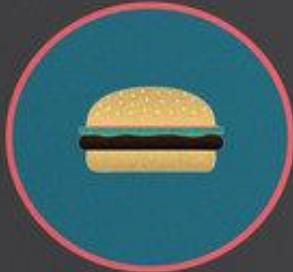


FOSSIL FUELS

- Average of 10x fossil fuels to produce 1 calorie of animal protein as compared to 1 calorie of plant protein ^{4, 5}
- IATP (Institute for Agriculture and Trade Policy) and GRAIN found that the five largest meat and *dairy* corporations combined are responsible for more annual greenhouse gas emissions than ExxonMobil, Shell or BP. ^{4, 6, 7}

HOW MUCH WATER DO WE WASTE BY EATING MEAT?

EATING
1 BURGER



=

FLUSHING THE
TOILET FOR
6 MONTHS



=

SHOWERING FOR
3 MONTHS



SOURCE: GOTDROUGHT.COM

PLANTBASEDNEWS.ORG



WATER

“Animal agriculture accounts for more than half of all US freshwater use.”^{4, 10}

WATER

Water Use by Animal Ag



- **2500** gallons of water to produce 1lb of animal flesh⁵
- $\frac{1}{2}$ of US freshwater used by animal ag^{10, 11}
- $\frac{1}{3}$ of global freshwater used by animal ag^{10, 11}

Water Use by Plant Ag



- **25** gallons of water to produce 1lb of grain⁵
- Plant-based eaters consume 600 fewer gallons of water per day.²

Water needed to produce:



1 serving almonds: **23 gallons** 

1 egg: **53 gallons** 

1 glass dairy milk: **55 gallons** 

8 oz. chicken: **234 gallons** 

8 oz. pork: **290 gallons** 

1 hamburger: **660 gallons** 

8 oz. steak: **900 gallons** 

**Convincing the public
almonds are the #1 problem:
PRICELESS**

Sources: Water Footprint Network, CA Almond Board

#SaveWaterEatPlants!

Water and Poultry ¹³



Wastewater discharges from slaughterhouses are a serious problem. High water usage for hygiene leads to high levels of wastewater generation ¹⁴. Poultry processing requires large amounts of high-quality water for process cleaning and cooling. Typical water usage in poultry slaughterhouses is between 6 and 30 cubic metres per ton of product.



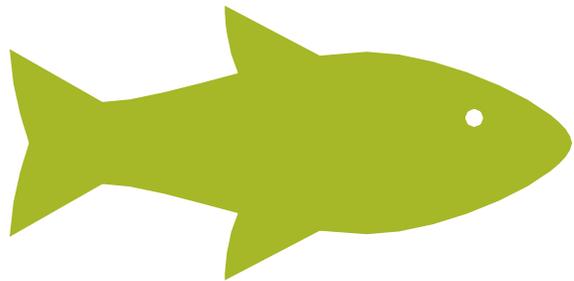
Wastewater contains:

- High levels of nitrogen, phosphorus, and residues of chlorine used for washing and disinfection
- Pathogens including Salmonella and Campylobacter¹⁵ Up to 100 different species of micro-organisms in contaminated feathers, feet and intestinal contents ¹⁶



Phosphorus and nitrogen in manure runoff causes algae blooms in fresh water. Leads to fish kills and ocean dead zones. Heavy metals and pathogenic microbes in waste cause disease in land wildlife.¹⁷

Water and Fish



- **Great Pacific Garbage Patch** - Abandoned fishing crates, ropes, nets, traps, and baskets make up most of the 79,000 metric tons of plastic rather than bottles or packaging.¹
- **Farmed Fish**
 - Pollution – Waste and uneaten food
 - Diseases and parasites
 - Pesticides and antibiotics
 - Biosecurity risk related to antibiotic resistant bacteria¹⁸
 - Inefficient due to 4kg fishes to produce 1kg of fish meal. 20 kg of feed to get 1 kg of tuna
 - About 45% of fishmeal and fish oil produced for farmed animals (mainly pigs and birds).¹⁹

STRAWs vs. FISHING

Microplastics make up only 8% of the total tonnage of the Great Pacific Garbage Patch...

In fact, straws only account for .03% of the plastic estimated to enter the oceans annually.

while fishing nets account for 46% – and the majority of the rest is other fishing gear.

So why all the pressure to ditch straws, but very little opposition to fishing & fish consumption?

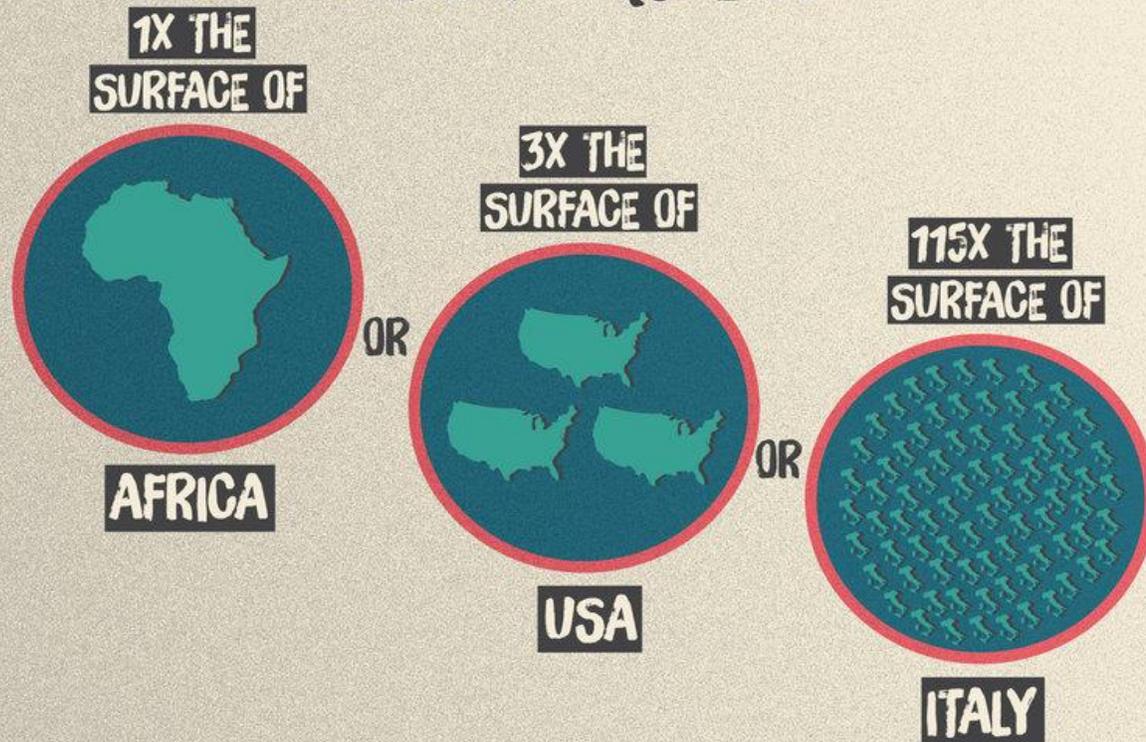
National Geographic, "The Great Pacific Garbage Patch Isn't What You Think it Is"
news.nationalgeographic.com/2018/03/great-pacific-garbage-patch-plastics-environment
Bloomberg: "Plastic Straws Aren't the Problem"
[bloomberg.com/view/articles/2018-06-07/plastic-straws-aren-t-the-problem](https://www.bloomberg.com/view/articles/2018-06-07/plastic-straws-aren-t-the-problem)
Learn more: truthordrought.com/fishing



LAND USE

- Animal ag provides 18% of calories but uses 83% of farmland²
- What about Free Range?⁸
 - We would need 5 planet Earths if all animals were raised “free range.”
 - Impossible to feed 7 billion people with free range agriculture
- New research shows that without meat and dairy consumption, global farmland use could be reduced by more than 75% – an area equivalent to the US, China, European Union and Australia combined – and still feed the world.²
- “Currently, 260 million acres (and counting) of U.S. forests have been clear-cut to create land used to produce livestock feed, and 80 percent of the deforestation in the Amazon rainforest is attributed to beef production.”³²

34,658,000 KM² OF LAND
IS USED BY THE **LIVESTOCK INDUSTRY,**
WHICH IS EQUAL TO:



“Restored forests can sequester all of the greenhouse gasses emitted during the fossil fuel age.”³³

SOURCE: MEDIGO

PLANTBASEDNEWS.ORG





OCEAN DEAD ZONES

- **Caused by runoff from animal ag⁴**
 - Manure “lagoons,” like at the hog farms in eastern NC, spill into the oceans.
 - Animal waste (including ammonia, a toxic form of nitrogen) runoff causes algal blooms. The blooms use up oxygen in the water, resulting in dead zones.
 - GHG emissions, of which animal ag is a major contributor, raise global ocean temperatures that lead to coral bleaching and reef die-off. Ocean acidification is the product of these emissions.
- **Fishing Industry:**
 - Global bycatch may be at a rate of 40%, about 63 billion pounds per year²⁴
 - Inefficient: Farmed and wild fishes are fed to land animals¹⁹

GREENHOUSE GASSES

- **ANIMAL AGRICULTURE**

- Reports range from 18-51% of all GHG Emissions
- Methane is more potent than CO₂. “Farmed animals currently account for 37% of human-related methane production. Methane is especially significant because it is a much stronger greenhouse gas; in technical terms, it has a higher global warming potential (GWP) than other greenhouse gases. Using the commonly cited 100-year time-frame to measure the harmful impacts of GHGs, methane’s warming potential is considered to be between 20-28x stronger than carbon dioxide”²⁰
- CO₂ emissions produced by burning fossil fuels²¹
 - During animal production and slaughter
 - During transport of processed and refrigerated products
 - Through land use and land-use change
 - Through the use of inputs for the production of feed

- **PLANT AGRICULTURE**

- Numbers could not be found, but they would be confounded by the large number of plants grown to feed farmed animals.

Agriculture as Climate Killer

Greenhouse effect from different kinds of eating habits, per capita and per annum, presented in car kilometers*

Veganism



Vegetarianism



Diet includes Meat



* equivalent to the CO₂ emissions of a BMW 118d with 119g CO₂/km

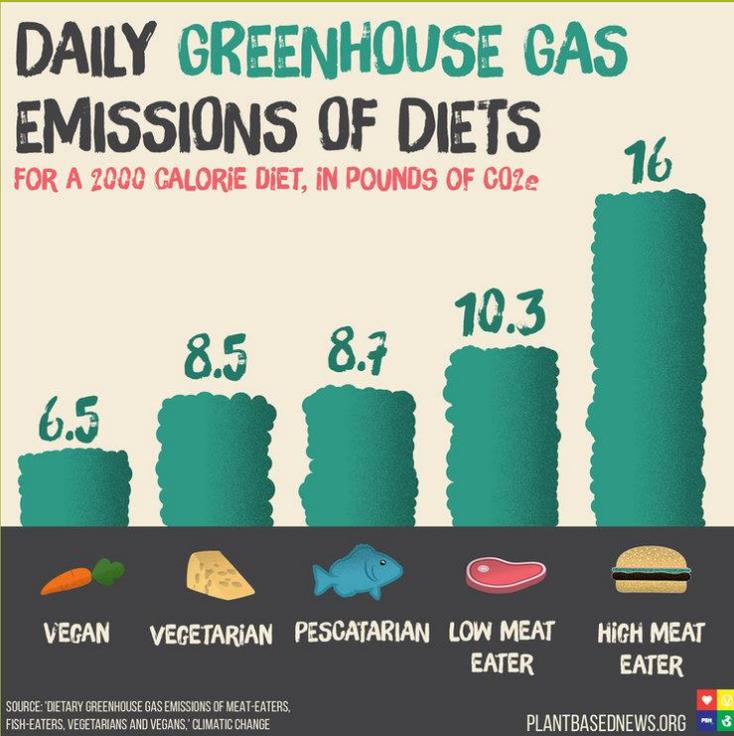
Source: Foodwatch

DER SPIEGEL

GREENHOUSE GAS EMISSIONS BY DIET

Reduction in GHG emissions compared to conventional animal ag ²⁹

- Organic Animal Ag: 8% fewer
- Vegan: 87% fewer
- Vegan Organic: 94% fewer



GHG Emissions by Diet contd.³⁰

- The diets of 2,041 vegans, 15,751 vegetarians, 8,123 fish-eaters and 29,589 meat-eaters aged 20–79 were assessed using a validated food frequency questionnaire.
- GHG emissions in kilograms of carbon dioxide equivalents per day (kgCO₂e/day)
 - 7.19 (7.16, 7.22) - high meat-eaters (≥ 100 g/d)
 - 5.63 (5.61, 5.65) - medium meat-eaters (50-99 g/d)
 - 4.67 (4.65, 4.70) - low meat-eaters (< 50 g/d)
 - 3.91 (3.88, 3.94) - fish-eaters
 - 3.81 (3.79, 3.83) - vegetarians
 - 2.89 (2.83, 2.94) - vegans

BIODIVERSITY

Sixth Mass Extinction

- Loss of wild areas to agriculture is the leading cause of the current mass extinction of wildlife²
- Spread of disease from farmed to native animals⁴
- Fences containing farmed animals⁴
- Wildlife culling⁴
- In the last 50 years alone, about half of Earth's animals have gone extinct.²⁵

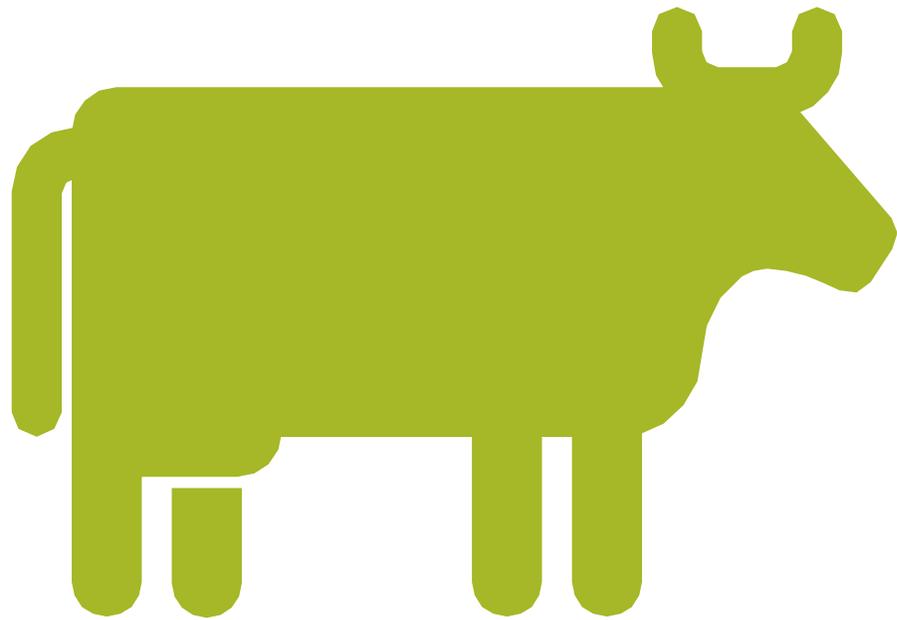


SUSTAINABILITY MYTH

- “Really it is animal products that are responsible for so much of this. Avoiding consumption of animal products delivers far better environmental benefits than trying to purchase sustainable meat and dairy”^{2, 3} The lowest impact meat and dairy are more environmentally damaging than the least sustainable plant agriculture with grains and vegetables.³
- Animal products require 4-40x the calories to produce than what they provide in nutrition when eaten^{4, 10}

Food Waste/Food Loss⁷

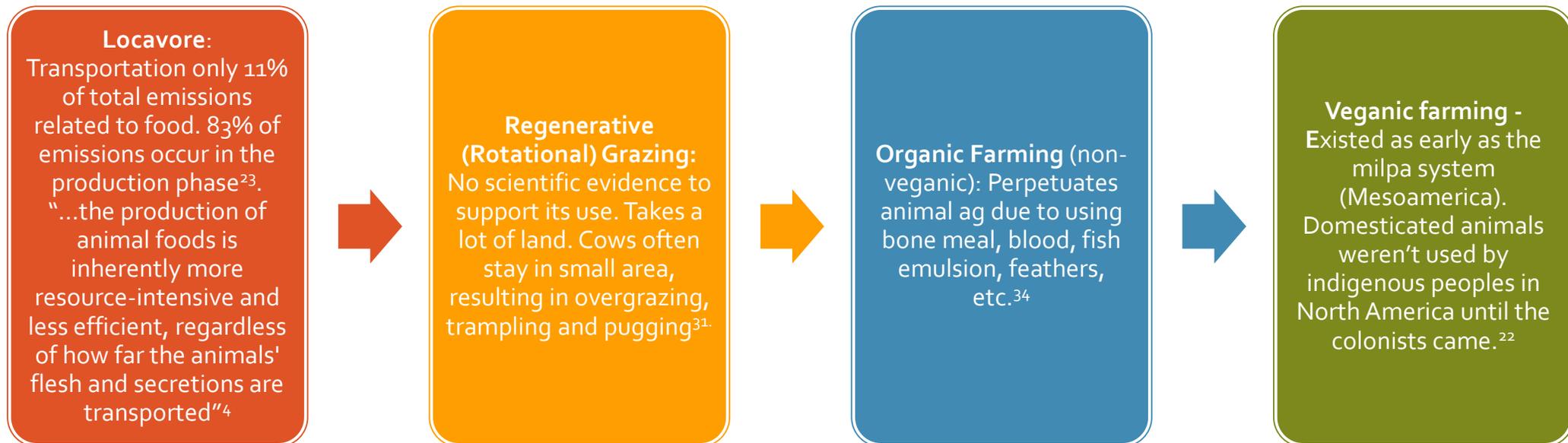
- Cereals are fed to animals who inefficiently convert them into “meat” and “dairy.”
- Only **17-30 calories** from “meat” are generated for humans for every **100 calories** from cereals fed to animals. The conversion rate for “dairy” is similar.
- “The FAO warns that further use of cereals as animal feed could threaten food security by reducing the grain available for human consumption.”
- Of **4260 kcal per day** (kcal/p/d) directly edible by humans, **1738 kcal/p/d (41%)** are fed to farmed animals.²⁶



What about Grass-Fed Animals? ^{20, 27}

- “Even “grass-fed” cows are often fed imported grain some portion of the year when weather is not conducive to grazing...” ³¹
- Moving to Grass-Fed requires 30% more cows to keep up with current demand.
- Average methane footprint would increase by 43% due to (1) increased length of time to achieve slaughter size and (2) higher methane conversion from grass-fed animals. Total methane emissions would increase by 8%.
- Habitat loss for wildlife due to increased land use
- Overgrazing causes suppression of native vegetation
- Increased emissions of nitrous oxide. Produce about 4x more methane. ³¹
- Fresh water eutrophication
- Soil erosion
- Consume more water due to higher level of activity³¹

How Do Other Food Production Practices Hold Up Under Scrutiny?



What about eggs?

- “Opportunity Food Loss” (Weizmann Institute of Science): Eggs involve a loss of 40% of protein due to the amount of plant protein input needed to produce eggs. Note that the Opportunity Food Loss of “dairy” is 75%.⁴
- Dozen eggs²⁸
 - 4 pounds of feed
 - 636 gallons of water
 - Antibiotics
 - Salmonella and other diseases

**“THE MOST COMPREHENSIVE
ANALYSIS TO DATE OF THE DAMAGE
FARMING DOES TO THE PLANET
FOUND THAT GOING VEGAN IS THE
SINGLE BIGGEST WAY TO REDUCE
YOUR IMPACT ON THE PLANET.”**

“Reducing food’s environmental impacts through producers and consumers” (Science, June, 2018)

RESOURCES

- WEBSITES

- Truth or Drought: <https://www.truthordrought.com/>
- The Elephant in the Room is a Cow: <https://www.facebook.com/groups/515390858491078/>
- Climate Healers: <http://www.climatehealers.org/>
- Seed the Commons: <https://seedthecommons.org/>
- A Well-Fed World: <https://awfw.org/>
- Earthsave: <http://www.earthsavve.org/pdf/ofof2006.pdf>
- FAO (Food and Agriculture Organization)
- UN (United Nations)

RECOMMENDED MOVIES and VIDEOS

- MOVIES

- Cowspiracy: Available on Netflix
- Seaspiracy: <https://www.youtube.com/watch?v=ESao1rvNAio>
- Racing Extinction: <https://racingextinction.com/film/>
- H.O.P.E. Project: <https://www.hope-theproject.com/the-film/>
- Meat the Truth

- VIDEOS

- Phillip Wollen: https://www.youtube.com/watch?time_continue=1&v=uQCe4qEexjc

RECOMMENDED BOOKS

- [The Ultimate Betrayal: Is There Happy Meat? \(2013\)](#), by Hope Bohanec
- [Farm to Fable: The Fictions of Our Animal Consuming Culture \(2016\)](#), by Robert Grillo
- [Eat for the Planet: Saving the World One Bite at a Time \(2018\)](#), by Nil Zacharias
- [The Mad Cowboy: Plain Truth from the Cattle Rancher Who Won't Eat Meat \(2001\)](#), by Howard Lyman
- [Food Choice and Sustainability \(2013\)](#), Dr. Richard Oppenlander
- [Comfortably Unaware \(2012\)](#) , Dr. Richard Oppenlander

HOW TO MAKE THE SHIFT

- Vegankit.com
- Veganeasy.com
- Howdoigovegan.com
- [21daykickstart](http://21daykickstart.com)
- PAVE Handout "How to Be Vegan in a Grocery Store"

SUPPORT & SOLUTIONS FOR FARMERS

Organizations that will help farmers transition to plant farming:

- <https://farmtransformers.org/>
- <https://www.vegansociety.com/take-action/campaigns/grow-green/farmers>
- <https://rowdygirlsanctuary.org/ranchers-advocacy-program/>

QUESTIONS



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