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## Veganism

Mackenzie Bancroft  
*SUNY Geneseo*, meb39@geneseo.edu

Kelsey Klosko  
*SUNY Geneseo*

Vanessa Bonilla  
*SUNY Geneseo*

Sarah Schmitt  
*SUNY Geneseo*

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# Veganism: The Sustainable Diet



## Claim

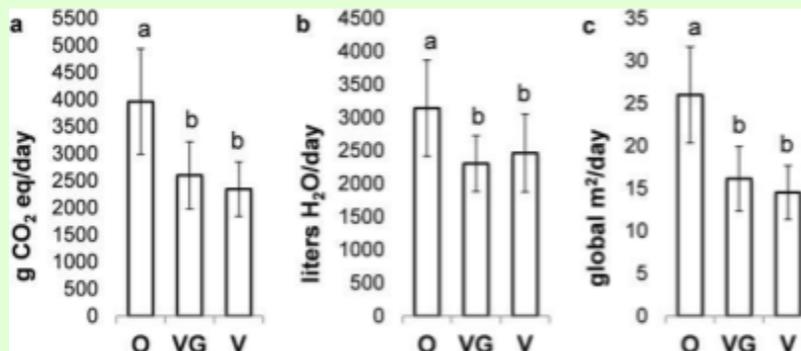
The vegan diet is one that does not include the consumption of any animal products (Ruini et al. 2015). In terms of ecological footprint, ecosystem energetics, greenhouse gas emissions, and environmental impacts, the vegan diet is the most sustainable (Chai et al. 2019)

## Definitions

- **Vegan:** someone who consumes strictly plant-based food sources
- **Ecological footprint:** impact that a person or a community has on their environment in order to sustain their lifestyle using natural resources
- **Sustainability:** meeting the needs of the present without compromising the ability of future generations to meet their needs; there are 3 pillars: social, economic, and environmental
- **Second Law of Thermodynamics:** During energy transformation, some energy is lost as heat
- **Trophic Level:** the position an organism has in a food chain, or food web in relation to other organisms
- **Primary Producer:** typically plants or other autotrophs that take nutrients from organic matter left in the soil by decomposers and solar radiation and transform it into food for themselves and other organisms
- **Ecosystem Energetics:** study of the flow of energy within an ecological system
- **Food Web:** interconnection of food chains representing flow of energy through an ecosystem



## Ecological Footprint



A study done about the environmental impacts of omnivorous (O), vegetarian (VG), and vegan (V) diet concluded that the omnivorous diet had the highest carbon, water, and ecological impact compared to vegetarian and vegan diets (Rosi *et al.* 2017). Graph C demonstrates that vegan diets emit less ecological footprints globally compared to vegetarians and omnivores.

## Ecosystem Energetics

- In accordance with the 2nd law of thermodynamics, it is more energy efficient to directly consume primary producers. When plants are used as animal feed the nutrients are transformed into animal proteins and most of the available energy from the plant material is wasted (Baroni et al. 2007).
- As energy flows through a food web, 10% of energy is lost between each trophic level. By consuming organisms as meat, we consume organisms at higher trophic levels, and we increase the amount of energy lost to the ecosystem from our food. In order to make up for this, a more abundant amount of animal food must be consumed when compared to plant-based options (Ruini et al. 2015).

## Negatives

- It would be very hard to globally shift diet consumption, but any reduction in the intake of animal products would be beneficial to the environment (Sabaté and Soret 2014).
- Concerns for vegan diets concentrate on the potential deficiencies of certain macro nutrients which are currently supplied through animal-based products, however, plants readily supply the necessary proteins for a healthy diet and lower animal-based diets have positive health impacts and decrease the adverse outcomes of many major chronic illnesses (Chen et al. 2019).

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