

# Healthy plant-based diets better for the environment than less healthy plant-based diets

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Healthier plant-based dietary patterns are associated with better environmental health, while less healthy plant-based dietary patterns,

which are higher in foods like refined grains and sugar-sweetened beverages, require more cropland and fertilizer, according to a new study led by researchers at Harvard T.H. Chan School of Health and Brigham and Women's Hospital. The findings also showed that red and processed meat had the highest environmental impact out of all food groups in participants' diets, producing the greatest share of greenhouse gas emissions and requiring the most irrigation water, cropland, and fertilizer.

"The differences between plant-based diets was surprising because they're often portrayed as universally healthy and good for the environment, but it's more nuanced than that," said Aviva Musicus, postdoctoral research fellow in the Department of Nutrition at Harvard Chan School and corresponding author of the study. "To be clear, we're not asserting that less healthy plant-based diets are worse for the environment than animal-based diets. However, our findings show that plant-based diets can have different [health](#) and environmental impacts."

The study, which is one of the first to look simultaneously at the health and environmental impacts of various plant-based diets, was published in the November 2022 edition of *The Lancet Planetary Health*.

Previous research has documented that different types of plant-based diets have various health effects. For example, plant-based diets higher in whole grains, fruits, vegetables, nuts, legumes, vegetable oils, and tea/coffee are associated with reduced chronic disease risk, while plant-based diets high in fruit juices, [sugar-sweetened beverages](#), refined grains, potatoes, and sweets/desserts are associated with an increased risk of chronic disease. Yet little research has been conducted to determine the environmental impacts, such as greenhouse gas emissions, use of high-quality cropland, nitrogen from fertilizer, and irrigation water, of these dietary approaches.

Using data from the Nurses' Health Study II, the researchers analyzed the food intakes of more than 65,000 qualifying participants, and examined their diets' associations with health outcomes, including relative risks of cardiovascular disease, and with environmental impacts. To differentiate plant-based [dietary patterns](#), the researchers characterized participants' diets using various dietary indices, including the Healthy and Unhealthy Plant-based Diet Indices. Higher scores on the unhealthy plant-based diet index indicated higher consumption of refined grains, sugary drinks, fruit juice, potatoes, and sweets/desserts; while higher scores on the healthy plant-based [diet](#) index indicated higher consumption of vegetables, fruits, whole grains, nuts, legumes, vegetable oils, and tea/coffee.

Participants who consumed healthy plant-based diets had lower cardiovascular disease risk, and those diets had lower greenhouse gas emissions and use of cropland, irrigation water, and nitrogenous fertilizer than diets that were higher in unhealthy plant-based and animal-based foods. Participants who ate unhealthy plant-based diets experienced a higher risk of cardiovascular disease, and their diets required more cropland and fertilizer than diets that were higher in healthy plant-based and animal foods. The findings also reinforced earlier studies showing that diets higher in animal-based foods, especially red and processed meat, have greater adverse environmental impacts than plant-based diets.

"Because human health ultimately depends upon planetary health, future U.S. dietary guidelines should include nuanced consideration of environmental sustainability and recognize that not all plant-based diets confer the same health and environmental benefits," said Daniel Wang, assistant professor in the Department of Nutrition at Harvard Chan School, the Channing Division of Network Medicine at Brigham and Women's Hospital and Harvard Medical School and co-author of the study.

**More information:** Aviva A Musicus et al, Health and environmental impacts of plant-rich dietary patterns: a US prospective cohort study, *The Lancet Planetary Health* (2022). [DOI: 10.1016/S2542-5196\(22\)00243-1](https://doi.org/10.1016/S2542-5196(22)00243-1)

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