# Debate on the Healthiest and most Sustainable Plant-Based Diet

A well-planned plant-based diet can offer nutritional benefits comparable to those of a healthy Mediterranean diet, while also enhancing environmental health.


## The Benefits of Plant-Based

The popularity of plant-based diets is increasing worldwide due to growing public awareness of their potential health and environmental benefits. A shift from mostly animal-based Western diets to plant-based diets has been found to significantly reduce greenhouse gas emissions as well as premature mortality due to non-communicable chronic diseases, such as diabetes and cardiovascular disease.

Plant-based diets include both vegetarian and non-vegetarian diets, as well as vegan diets, which strictly restrict the consumption of all animal-based foods. A vegetarian dietary pattern includes ovo- (and/or) lacto-vegetarian diets, which allow eggs and dairy products, and pesco-vegetarian diets, which allow fish and seafood in addition to eggs and dairy, but exclude meat and poultry. A non-vegetarian dietary pattern (Mediterranean omnivorous), on the other hand, is a plant-rich diet with a moderate level of animal-based foods, which has served as the basis for developing the other three plant-based diets

Current evidence on the nutritional content of different dietary patterns suggests that vegetarian and vegan diets provide lower intakes of protein, vitamins, minerals, and omega-3 fatty acids than non-vegetarian diets, such as the Mediterranean diet. Conversely, vegetarian and vegan diets have been found to provide adequate amounts of nutrients that are naturally present in plant-based foods, such as fiber, polyunsaturated fatty acids, vitamin E, folate, and magnesium.

Given the potential health and environmental benefits of plant-based diets, the current study was designed to compare the nutritional adequacy and environmental footprints of four types of dietary patterns: A Mediterranean omnivorous diet, two vegetarian-like diets (pesco-vegetarian and ovo-lacto-vegetarian diets), and a vegan diet.

## Diet Performance

The study analyzed four 7-day diet plans designed according to the recommendations of the Spanish Society for Community Nutrition (SENC) and the Vegetarian Union (UVE), substituting animal-based foods with plant-based alternatives. All diet plans delivered approximately 2000 kcal per day, allowing direct comparison by controlling for the common bias that lower-calorie plant-based diets can appear less nutrient-dense.

The nutritional analysis revealed that all diet plans deliver comparable amounts of macronutrients, including protein and carbohydrate. All diet plans met the daily recommended intakes of proteins and most micronutrients, except for vitamin D and iodine. Furthermore, a deficit of vitamin $B_{12}$ was observed in the vegan diet, which, on the other hand, delivered the highest amount of iron compared to the other three diets.

The intake of monounsaturated fatty acids was similar across diets. The overall quality of fat intake can be considered adequate, as extra virgin olive oil was the primary fat source in these diets.

The intake of saturated fats remained below 8 % of total energy intake in all diets, complying with dietary guidelines. The total intake of polyunsaturated fatty acids also met the dietary recommendations in all diets. However, the intake of omega-3 polyunsaturated fatty acids remained below the target level of 250 milligrams per day in all diets. The omega-6 to omega-3 ratio was markedly high across all dietary patterns.

Regarding environmental impact, the findings revealed that the mean daily environmental footprints reduced progressively from an omnivorous diet to a vegan diet. Reductions in greenhouse gas emissions ranged from approximately 15 % to 46 %, depending on the dietary pattern. Specifically, the analysis revealed that both ovo-lacto-vegetarian and vegan diets are associated with a significant reduction in climate change-related factors, including carbon dioxide ($CO_2$) emissions, ozone depletion, ionizing radiation, and the formation of photochemical ozone.

However, the pesco-vegetarian diet showed an association with increased ozone-related factors, which may be due to the high environmental costs of fish production and distribution.

Compared to the omnivorous diet, all three plant-based diets were associated with more than 20% reduction in land use. However, no significant difference in water use was observed between the four diet plans.

## Conclusion

The study finds that all four dietary patterns included in the study can deliver recommended amounts of proteins, energy, and most micronutrients when designed following dietary guidelines of a sustainable and healthy diet.

Among micronutrients, deficits have been observed for vitamin D and iodine across all diets, and for vitamin $B_{12}$ in a vegan diet. Iodine adequacy in plant-based diets can be improved by using iodized salt, consuming fortified foods such as plant-based milk or bread, and incorporating iodine-rich seaweeds into the diet.

Vitamin D is produced in the skin through exposure to sunlight and is primarily found in animal-based foods. Vitamin D deficiency in plant-based diets can be overcome through the consumption of fortified foods and supplements, especially when sun exposure is limited. In vegan diets, vitamin B12 deficiencies can be addressed through fortified cereals and appropriate supplements. Nutrient bioavailability varies between plant and animal sources, particularly for iron, calcium, and omega-3 fatty acids.

Notably, the study finds that plant-based diets are associated with lower emissions of greenhouse gases, which have been linked to an estimated 18 % to 22 % fewer premature deaths by 2030, driven mainly by reduced red meat intake and increased intake of fruits and vegetables.

Overall, the study findings support the feasibility of obtaining nutritionally adequate, environmentally sustainable plant-based diets. However, implementation of these diets requires proactive strategies to ensure sufficient intakes of essential nutrients.

**Source:**

https://www.news-medical.net/news/20251113/Which-plant-based-diet-is-healthiest-and-most-sustainable.aspx