# Study: Going vegan, America could feed an additional 390 million people

By Karen Kaplan, Los Angeles Times on 04.10.18
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Three flavors of vegan ice cream (from left) Planet Earth, Matcha Green Tea and Toasted Coconut Brownie Sundae, are on display at a Van Leeuwen shop in the Brooklyn, New York. Photo by: Michael Noble Jr./AP Photo

More than 41 million Americans find themselves at risk of going hungry at some point during the year, the U.S. Department of Agriculture says.

But it doesn't have to be this way. New research suggests the country could feed all 327 million Americans — plus roughly 390 million more — by focusing on plants.

If U.S. farmers took all the land currently devoted to raising cattle, pigs and chickens and used it to grow plants instead, they could sustain more than twice as many people as they do now, according to a report published Monday in the Proceedings of the National Academy of Sciences.

Set aside your cravings for cheeseburgers, bacon and chicken wings for a moment and consider the argument made by Ron Milo, a systems biology and sustainability researcher at the Weizmann Institute of Science in Israel, and his co-authors.

The researchers examined Americans' eating habits and agricultural production in the years 2000 to 2010. For their calculations, they used a U.S. population of 300 million (in reality, it grew from 282 million to 309 million during that period, according to the Census Bureau).

With the help of computers, they figured out how to remove beef, pork, chicken, dairy and eggs from the American diet and replace them with plant-based foods that were "nutritionally comparable." That means the replacement foods had to provide the same amount of calories, protein, fiber, vitamins and minerals without increasing fat or cholesterol — and they had to do it using the smallest amount of land possible.

Imagine an area of land that can produce 100 grams of edible protein from plants. If you take that same amount of land and use it to produce eggs instead, you would end up with only 60 grams of edible protein — an "opportunity food loss" of 40 percent, the study authors found.

And that was the best-case scenario.

If that land were used to raise chickens, it would produce 50 grams of protein in the form of poultry. If it were devoted to dairy cows, it would provide 25 grams of protein in the form of milk products. If that land became a home for pigs, they would provide 10 grams of protein in the form of pork. And if you put cattle there, you'd get just 4 grams of protein in the form of beef.

Milo and his colleagues then scaled up their results to see how many more Americans could be fed by making each of those changes.

Eliminating eggs and replacing them with plants that offer the same nutrients would make it possible to feed 1 million additional people.

At the other end of the spectrum, swapping plants for beef would result in enough food to "meet the full dietary needs" of 163 million extra people.

In the middle were dairy (getting rid of it would result in food for 25 million more people), pigs (cutting them out would feed 19 million more people) and poultry chickens (without them, farmers could feed 12 million more people).

If beef, pork, chicken, dairy and eggs all were replaced by a nutritionally equivalent combination of potatoes, peanuts, soybeans and other plants, the total amount of food available to be eaten would increase by 120 percent, the researchers calculated.

To put that in perspective, the amount of food that's currently wasted due to things such as spoilage and inefficient production methods is between 30 and 40 percent of what U.S. farmers produce.

"The effect of recovering the opportunity food loss," the authors wrote, "is larger than completely eliminating all conventional food losses in the United States."

That’s not to say there wouldn’t be a few downsides. Although a completely plant-based diet would provide more nutrients overall, consumption of vitamin B12 and a few other micronutrients would decline, the study authors noted.

The economic effects of eliminating all livestock-based agriculture are also unknown, they added. But two of the pluses include better health (which should reduce medical costs) and fewer greenhouse gas emissions, they wrote.

Even if you’re not ready to go vegan, Milo and his colleagues have certainly served up some food for thought.

## Quiz

1 Read the following sentence from the article.

> *With the help of computers, they figured out how to remove beef, pork, chicken, dairy and eggs from the American diet and replace them with plant-based foods that were "nutritionally comparable."*

Which sentence from the article BEST supports this idea?

(A) For their calculations, they used a U.S. population of 300 million (in reality, it grew from 282 million to 309 million during that period, according to the Census Bureau).

(B) If beef, pork, chicken, dairy and eggs all were replaced by a nutritionally equivalent combination of potatoes, peanuts, soybeans and other plants, the total amount of food available to be eaten would increase by 120 percent, the researchers calculated.

(C) That's not to say there wouldn't be a few downsides. Although a completely plant-based diet would provide more nutrients overall, consumption of vitamin B12 and a few other micronutrients would decline, the study authors noted.

(D) The economic effects of eliminating all livestock-based agriculture are also unknown, they added. But two of the pluses include better health (which should reduce medical costs) and fewer greenhouse gas emissions, they wrote.

2 The following evidence was gathered to support the idea that changing from a meat-based diet to a plant-based diet would feed more people in the United States.

1. *Eliminating eggs and replacing them with plants that offer the same nutrients would make it possible to feed 1 million additional people.*
2. *At the other end of the spectrum, swapping plants for beef would result in enough food to "meet the full dietary needs" of 163 million extra people.*
3. *In the middle were dairy (getting rid of it would result in food for 25 million more people), pigs (cutting them out would feed 19 million more people) and poultry chickens (without them, farmers could feed 12 million more people).*

What additional piece of evidence helps create the MOST complete argument that changing from a meat-based diet to a plant-based diet would feed more people in the United States?

(A) More than 41 million Americans find themselves at risk of going hungry at some point during the year, the U.S. Department of Agriculture says.

(B) If U.S. farmers took all the land currently devoted to raising cattle, pigs and chickens and used it to grow plants instead, they could sustain more than twice as many people as they do now, according to a report published Monday in the Proceedings of the National Academy of Sciences.

(C) That means the replacement foods had to provide the same amount of calories, protein, fiber, vitamins and minerals without increasing fat or cholesterol — and they had to do it using the smallest amount of land possible.

(D) To put that in perspective, the amount of food that's currently wasted due to things such as spoilage and inefficient production methods is between 30 and 40 percent of what U.S. farmers produce.

3 Read the following two details from the article.

> *If you take that same amount of land and use it to produce eggs instead, you would end up with only 60 grams of edible protein — an "opportunity food loss" of 40 percent, the study authors found.*
>
> *"The effect of recovering the opportunity food loss," the authors wrote, "is larger than completely eliminating all conventional food losses in the United States."*

Select the option that BEST explains how these details develop a CENTRAL idea of the article.

(A) Both details show that the opportunity food loss would be higher if plant-based food productions replaced animal-based food productions.

(B) Both details explain that the opportunity food loss would remain the same for both plant-based food productions and animal-based food productions.

(C) Both details highlight that there is a significant amount of opportunity food loss as a result of animal-based food production.

(D) Both details illustrate that conventional food losses with plant-based products have a greater effect than opportunity food loss does.

4 Which of the following statements accurately represents the relationship between the article's CENTRAL ideas?

(A) Animal-based food production is inefficient and unhealthy; plant-based food production could feed more people and have health benefits.

(B) Animal-based food production is inefficient and expensive; changing to a vegan diet in the U.S. would save businesses money in the long run.

(C) The study suggest that there are advantages to a vegan diet in the United States; the main problems with changing to a vegan diet are economic considerations.

(D) The study shows evidence that Americans would benefit from a plant-based diet; meat-based diets are killing people and causing many to starve.