The Veganuary experiment

Turning vegan is good for the body and the planet, but giving up all animal products can be tough. Is a short, easier stint of plant-based eating still worthwhile? New Scientist investigates

JANUARY is the time of year when many of us take a rain check on our indulgences. We politely wave away puddings, gyms heave with new recruits and plenty of us lay off the booze. This year, it is estimated that at least 1 million people will do something even more challenging: eat a vegan diet for the month.
Choose to follow suit and you can forget about that juicy bacon sandwich, say goodbye to scrambled eggs and there will be no more milk in your coffee. It is a challenge not to be sniffed at. But it is a worthy one: the evidence suggests that, done carefully, veganism is good for our health and great for the planet.
Perhaps that explains the growing trend towards part-time veganism, of which Veganuary is just one example. The vegan before 6 pm (VB6) diet is gaining popularity in the US, principally as a means of losing weight. And the meat-free Mondays campaign is also getting traction, with more restaurants offering vegan options as well as vegetarian ones. “The thought of never eating meat again is, for most people, overwhelming,” says Toni Vernelli at Veganuary, a UK charity. A part-time vegan diet is more manageable and surely offers a portion of the same benefits.
Or does it? It is conceivable that some of those who dip briefly into vegan eating might not get the right balance of nutrients. With a lack of experience in making vegan meals, it is easy to opt for pre-prepared dishes, which may cancel out the positives. Can you really be a casual vegan and still reap the benefits?

I had to go dairy free when I was breastfeeding three years ago. It sent me into a panic and I had to totally overhaul my diet. I lived off coconuts. It looks a lot easier to be dairy free now.

I'm curious how I'll survive. Confession: I made sure gin and tonic is vegan before agreeing – can't live without that!

THE VOLUNTEERS
Our 19 volunteers explain how they felt before going vegan (this page) and how they got on during the trial (page 35). Some of them ended up developing vegan habits that persisted beyond the end of the experiment (page 37).
The experiment

To find out, we teamed up with researchers from the Livestock, Environment and People (LEAP) programme at the University of Oxford to run a pilot experiment. A band of 19 New Scientist staff kept strict food diaries for a fortnight, eating their usual diet for the first week and sticking to veganism for the second. We used an app called MyFitnessPal to keep track of the food in detail. Most of the group were full-blown meat eaters, but there were three pescatarians and three vegetarians, which gave us a hint of the different benefits of swapping diet for different groups.

The LEAP researchers then analysed our diaries to see the effects on the environment (see below) and our nutrition (see page 36). More research will be needed to confirm what we found, but, as far as we know, this is the first study of its kind, involving real food diaries from people dipping their toes into veganism.

SAVING THE ENVIRONMENT

By Alison George

"I eat meat most days. I live for a well-cooked steak at the weekend and can’t imagine a life without yogurt, milk and cheese." These were the words of one volunteer just before our vegan experiment. Facing up to the reality of a meat and dairy-free existence can be daunting. But if you are concerned about the climate crisis, giving up animal products is one of the key things individuals can do to help.

It isn’t hard to see why veganism is better for the planet than other diets in principle. If you eat a plant, that is more efficient than taking a plant, feeding it to an animal—which makes tissue from it and belches out greenhouse gases in the process—and then eating the animal. "A large amount of crops are used to feed animals. It’s inefficient," says Michael Clark, who is part of the LEAP programme. This goes for dairy products too. Indeed, cheese typically has a higher carbon footprint than the equivalent weight of pork.

Calculating the carbon footprint of food is no simple matter, however. Most assessments of the impacts of our eating habits start with hypothetical diets. Once researchers have compiled a list of foods, they estimate all the carbon emissions associated with the production of each one, including the use of fertiliser, pesticides, land and fuel. This information can then be used to calculate the total environmental impact of a food.

Carbon dioxide isn’t the only greenhouse
Vegging out

We got 19 people (13 meat eaters, three pescatarians and three vegetarians) to record what they ate for one week as part of their usual diet and then for a second week eating a vegan diet.

On average, daily calorie intake went down by 10 per cent

Fibre intake was boosted, and cholesterol and trans-fatty acid consumption dropped hugely (see arrows, above), which is good, but the consumption of many important nutrients went down too.

The balance of major nutrients remained similar, but the proportion of calories coming from carbohydrates grew at the expense of fats and proteins.

The percentage of calories from proteins, fats and carbohydrates remained similar between the vegan diet and regular diet, but the distribution of fat changed a little.

Many important nutrients went down too. This can be seen in the table below. For example, the consumption of polyunsaturated fatty acids (PUFA) decreased by 53%.

Plants for the planet

Previous studies of long-term vegan diets have shown that they are greener than other diets. Our study of part-time veganism hinted at similar effects.

The carbon footprint of vegans was 53% lower than that of meat eaters. Would our experiment on part-time vegans back this up? In general, yes. On average, there was a 53 per cent fall in greenhouse gas emissions when participants ate a plant-based diet compared with their usual one (see “Plants for the planet,” right).

Things get more interesting when we look at the differences in carbon savings between say meat eaters going vegan and vegetarians doing so. That study of 153 Italians found no difference between the carbon footprint of a vegetarian and vegan diet. “A likely explanation might be that, while unprocessed, plant-based foodstuffs usually replace animal-based products in hypothetical vegetarian and vegan diets, real plant-based diets are instead characterised by highly processed meat and dairy substitutes,” says Francesca Scanzon at the University of Parma in Italy, who carried out the study.

Yet our three vegetarians reduced their dietary carbon footprint by 42 per cent on average, showing that serious carbon savings are possible. This aspect of our results can’t be the basis for sweeping conclusions because it only covers three people, but it is interesting nonetheless. “We don’t realise how much difference we can actually make,” says Clark.

gas emitted during these processes. There is also methane, which is 25 times as potent as CO₂ – albeit shorter-lived in the atmosphere – and nitrous oxide, which is about 300 times as potent. Studies tend to wrap these gases together in units of carbon dioxide equivalent (CO₂e), the quantity of CO₂ that would be needed to give the same greenhouse effect.

One of the most comprehensive studies of this type was conducted in 2018 by Joseph Poore at the University of Oxford and Thomas Nemecek at the Agroscope research centre in Zurich, Switzerland. They looked at a data set covering 119 countries and including products of Parma in Italy, who carried out the study.

Meat and dairy contribute about 60 per cent of agriculture's greenhouse gas emissions, and provide only 18 per cent of our calories. “We calculated that cutting out animal products would reduce the greenhouse gas emissions of food systems by 49 per cent. That's incredible cost-cutting,” says Poore. A 2016 analysis of the food diaries of 153 Italian adults reached a similar conclusion: established vegans had a dietary carbon footprint that was 34 per cent lower than that of meat eaters. Would our experiment on part-time vegans back this up?

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To put this in perspective, I worked out how much carbon each of our meat eaters would have saved if they had eaten a vegan diet for a month: 80 kilograms CO₂e. That is the equivalent of forgoing a car journey of roughly 400 kilometres or an 800 km flight, such as between Switzerland and London. Each of our vegetarians would have also saved significant quantities of carbon if they carried on eating vegan for a month, about 40 kg CO₂e or the equivalent of a 200 km drive.

I have been a pescatarian for years and had assumed that the carbon footprint of my diet would be on the smaller side already. I was gobsmacked to find that giving up fish and dairy slashed it in half.

All in, food makes up about a quarter of our carbon footprint, so reducing consumption of animal products is one of the main ways I can reduce mine. Even so – and despite the fact that I love the taste of veggie burgers, tofu and lentils – I don’t think I could commit to being a full-time vegan, mainly due to the inconvenience to others I share my meals with. But I’m certainly going to be thinking vegan when it comes to making my lunch at work.

This isn’t to say that plant-based foods aren’t damaging to the environment. Our study found going vegetarian was a doddle, so I thought it would be similarly easy going vegan. I was wrong!

I expected to really miss eating meat and cheese – I didn’t. I expected to feel tired and have less energy – if anything it was the opposite.

Animal products are hard to avoid. Some things I would have assumed were vegan were not. It’s easy to forget that something like noodles might contain egg.

Meat eaters might worry about getting less iron if they chomp down less red meat. Our volunteers’ food diaries suggested that this group got 5 milligrams a day when eating as normal and 4 mg a day during the vegan week. This suggests they managed to get about the same amount of iron.

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looked only at the carbon footprint of our diets, but food production degrades the environment in other ways, not least using up water and land. Poore’s study found that it can take more water to grow nuts or peas than to produce the equivalent weight of beef. Almonds require particularly large amounts of pesticides and fertilisers. Swathes of forest have been cleared in Asia and South America to grow oil palms.

Still, even the lowest-impact animal products, such as poultry and eggs, tend to be more damaging overall than substitute vegetable proteins such as pulses and nuts. This is also true of the carbon footprint of plant-based milks, made from soya, oats, rice and more. “Even if we could reduce all animal protein products to their lowest impact, it would still be better for the environment to stop eating meat as a protein source,” says Poore.

One possible benefit of going vegan part-time could be that it influences people’s habits even after they return to omnivorous eating. There is some evidence that abstaining from animal products for a while brings about long-term changes. Unpublished research from consultancy Kantar on the supermarket till receipts of more than 600 people in the UK who gave up meat for January in 2018 found that a year later they purchased less meat and eggs (although their milk and cheese consumption slightly increased).

What of our staff guinea pigs? Did their dalliance with veganism inspire them or send them running to the nearest steakhouse? An informal survey two months after our trial found that many had largely returned to their former eating habits, but there were lasting impacts to the benefit of the planet, as the quotes sprinkled around these pages show.

In future, it might be even easier to reduce the carbon footprint of our diet, with the advent of new foods that bypass the farmyard and field. Milk alternatives might be brewed from yeast in a similar way to beer, real meat could be created through tissue-culture techniques and tasty proteins might be created from thin air using bacteria that suck up CO₂ as they grow. These methods could, in theory, produce meat and dairy products with a fraction of the carbon footprint of those made from plants. Can’t imagine going vegan? One day you might not have to.

Alison George is a features editor at New Scientist

**What makes a vegan?**

**Veganism is far more than a diet.** It is often founded on a deep-seated belief that it is wrong to exploit animals in any way. Still, people draw the line at different points. Some vegans avoid wearing leather, silk or wool. Honey is controversial because some vegans consider it exploitative. Some vegans avoid food grown on animal products, such as mushrooms harvested from chicken manure. Bivalve vegans, however, consider it acceptable to eat oysters and mussels on the grounds that they don’t feel pain.

In our trial, volunteers refrained from eating any animal product, including all meat, fish, dairy and honey, but weren’t expected to take on the entire lifestyle.

**NUTRITION BOOST?**

By Helen Thomson

As I was chewing on my third vegan ready meal of the week – BBQ “ribs” made from wheat protein (a mistake) – it occurred to me that I probably wasn’t doing this right. I had assumed that going vegan, even for a short period, would mean eating a healthier diet. That, after all, is what studies on full-time vegan diets proclaim. The plant-based diet can help you lose weight, lower your cholesterol, reduce your risk for certain cancers, even add a few years to your life. But it seemed it was all too possible to take unhealthy shortcuts. I swallowed my ribs and wondered how the others were getting on.

To get to the bottom of all this, LEAP researcher Cristina Stewart went through our food diaries with a fine-tooth comb. She calculated our total daily nutrients and worked out what percentage of our calories came from what kinds of foods. It was immediately apparent that our diets changed significantly. In the vegan week, we consumed fewer calories and less saturated fat, carbohydrate and cholesterol, while significantly increasing our fibre intake (see “Vegging out”, page 34). This seems like generally good news. In the 20th century, researchers discovered a link between high cholesterol and the furring of arteries that causes heart attacks. Although we now know that some kinds of cholesterol are bad, and others help build lean muscle and actually clean artery walls, doctors still lean towards keeping your overall cholesterol levels low.

What’s more, reducing your saturated fat intake has been firmly linked to a decreased risk of heart disease and lung, colon and breast cancers. The important detail here is what you replace those fats with. If you are swapping them for carbohydrates like white bread and low-fat dairy products, you are less likely to see those benefits, probably because of the increased sugar intake. But if you are replacing them with plant-based products such as leafy vegetables, beans and oats, the health benefits soar.

Another benefit of the vegan week was a boost to fibre consumption from around 21 grams a day to about 30g, which is the recommended daily target in the UK. Our group swapped meat for fibre-rich foods such as beans, lentils, whole grains and vegetables. A high-fibre diet can decrease risk for type 2 diabetes, cardiovascular disease and colon cancer by speeding up the passage of potential carcinogens through the gut and feeding “good bacteria”. Emerging evidence has even suggested that a high-fibre diet can help prevent infections and improve mood and memory.

But does a week of vegan eating really make any difference? Probably not, if it is just a week, says Keren Papier, part of the LEAP team. We know that it takes more than a week to change your body mass index and blood pressure, for instance. “That said, most of the changes were really positive, and similar to the dietary changes that we’re seeing in long-term vegans,” she says. That suggests that regular forays into veganism could put you on the right track for long-term health benefits.

So far, so healthy. But meat, fish and dairy provide essential nutrients. Without these staples, covering all your nutritional bases takes effort. It is recommended that 10 to 15 per cent of our diet is protein, for instance. Without it, we can suffer muscle wastage, find it more difficult to fight infections and be at greater risk of high blood pressure.

Most meat eaters in the Western world get plenty of protein, but it is more complicated for vegans. The proteins in meat are known as “perfect proteins” because they can be broken down into all the essential amino acids that the body can’t produce itself. Certain vegetable
“Many no longer see veganism as an all-or-nothing proposition”

I now try to eat less fish and dairy products than I did. So I use more non-dairy milk in tea and adhere loosely to a VB6 regime – vegan before 6 pm.

I’ve stayed vegan. It’s actually much easier than anticipated, once you have changed your mindset about what you can’t eat to what you can.

I got into the habit of making vegan sandwiches and it has stuck.

New Scientist wishes to thank all of those in the LEAP programme who gave up their time to work on this project.

proteins such as those in soya and gluten fit the same bill. But those from whole grains and legumes are harder to digest, and sometimes certain amino acids are missing altogether from rice, nuts and some cereal crops. However, Stewart points out that our participants were still getting the recommended amount of protein. In general, she says, as long as you eat plant-based protein from a variety of sources this shouldn’t be anything to worry about.

Calcium intake also decreased, which over time can lead to brittle bones, tooth decay, cataracts and fatigue. Another potential concern is with omega-3 fatty acids, which keep our cells and cardiovascular system tip-top. Although it wasn’t possible to identify this from our food diaries, without meat, vegans can lack these fatty acids. Vegans can find them in chia and flax seeds, and some nuts and leafy veg, but often take supplements to top up. Vitamin B12 is vital to our health too – potentially protecting us from stroke – and because it is made by the bacteria in animals, omnivores don’t have to give it much thought. Vegans need to look to fortified breakfast cereals and nutritional yeast to get their supply.

Choline is also an essential nutrient critical to brain health, especially in developing fetuses, but it is found mainly in beef, eggs and fish. Surveys in many European countries show that our choline intake falls short of recommended levels, which is particularly concerning in light of current accelerated trends towards plant-based diets, says Emma Derbyshire at consultancy Nutritional Insight.

There are ways of getting all these nutrients on a vegan diet and you would know them with experience. But that is just what our part-time vegans didn’t have. A straw poll showed that our motley crew were aware they would need to find replacements for some of their nutrients, but didn’t give it much more thought. “I was aware that getting adequate protein is an issue for vegans, but as it wasn’t a permanent lifestyle change, I didn’t go all in and make the necessary dietary changes,” said one participant.

Part-time vegans might not give as much thought to their diet as full-time vegans, but that may not be a problem if they are likely to be topping up any missing nutrients on non-vegan days, says Papier. A bigger issue might be that as veganism grows in popularity, so too do vegan ready meals – like my cheeky BBQ ribs – and vegan versions of unhealthy snacks. Like their non-vegan counterparts, these can be high in sugar and salt.

Speaking earlier this year, Roger Whiteside, chief executive of UK bakery chain Greggs, whose vegan sausage rolls have become a hit, admitted to trialling veganism for its health benefits, but said he was finding it difficult to make things from scratch. “It would be OK if I had time to cook,” he said, “but I don’t, so I have to have things that are quick and easy.” Many of our part-time vegans also said they turned to quick, unhealthy ready meals instead of making the effort to find new recipes to cook at home.

Not everyone is on board with part-time veganism. The Vegan Society recognises that cutting down on our consumption of animal products can have a lot of positive benefits. However, Dominika Piasecka, a spokesperson for the charity, says that veganism is a deeply seated ethical conviction that killing and using animals is wrong. “It isn’t something people can do part-time,” she says.

Largely driven by the health and environmental benefits, many people no longer see the issue as an all-or-nothing proposition. If you are one of those thinking about being vegan-ish, you can rest assured that it probably has positive health benefits – particularly if you pay attention to what you might be missing.

For Papier, flexi-vegan eating has got to be a good thing. “If you’re doing it for a day each week or one month each year, over time you will have consumed fewer meat-based products, which might have beneficial health effects.” Our small trial also suggests that being a part-time vegan might lead to unexpected long-term changes. Many of our participants said they ended up being more thoughtful about what they ate, cut down their meat intake or, in one person’s case, “at least stopped putting cheese on everything”.

New Scientist consultant Helen Thomson is author of Unthinkable: An extraordinary journey through the world’s strangest brains.