# Eating less meat would benefit the nutrient cycle

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A new report suggests that halving our consumption of animal products could benefit the environment by improving nutrient cycles.

The report, commissioned by the United Nations Environment Programme (UNEP), analysed the problems caused by human interference in the natural cycles of nutrients like nitrogen and phosphorus.

'Just like the carbon cycle is disturbed, the nitrogen and phosphorus cycles are also disturbed. Except these are disturbed even more. We've doubled the nitrogen going into the environment over the past 100 years,' says Professor Mark Sutton, from the Centre for Ecology & Hydrology, lead author of the report.

Although our atmosphere is around 80 per cent nitrogen, it's unreactive and stabilises the atmosphere. But plants can't use this unreactive form, so in order to be useful to plants and animals it needs to be converted to compounds like nitrate and ammonia in a process that also creates the greenhouse gas nitrous oxide.

Industrial processes convert atmospheric nitrogen into reactive nitrogen for making fertilisers. But there's also nitrogen we unintentially put into circulation; through electricity generation and car emissions. This converts some of the nitrogen in the atmosphere into nitrous oxide, which although useful for plants also causes pollution in the form of ozone - a chemical that can actually reduce plant growth.

'This was great from the perspective that we needed to feed a growing population so the fertiliser had an incredible benefit,' says Sutton. 'But what we didn't plan was leaking nitrogen out into the environment.'

He explains that the more steps you have in the food chain the more opportunities you have for nutrients to be lost at each stage: from fertiliser to plant, plant to animal, a fraction of the nutrients leaks out each time. If people chose not to eat meat they would cut out one of these steps, and reduce the points in the food chain nutrients can be lost from.

Reducing personal meat consumption was just one of ten key actions the report suggested could reduce the amount of nitrogen going into the environment.

'If you analyse the numbers it's quite amazing that of the nitrogen taken up by plants, 80 per cent of the amount harvested goes to feed livestock. Only 20 per cent feeds people directly, showing the massive inefficiency.' Sutton urges, 'it's not about being vegetarian or not, but about how much meat you eat. It's about being demi-tarian.'

He explains that if you halve the amount of meat and dairy consumption, you are still a meat eater but you have reduced your impact on the environment by up to a half.

The report also showed that rapidly expanding countries like India and South-East Asia are currently raising their meat consumption as they increasingly adopt western diets. It's estimated there could be up to 50 per cent more pollution as consumption increases by 2050, and this will mostly be in developing countries. 'If Europe were to say 'hey we have a new relationship with animal products, we're eating less meat' you potentially get a feedback between continents. You affect aspirations across cultures and you might get people to aspire to this new way of thinking about animal products.'

Europe and the UK can lead the way in this. We need to challenge society to find out that it's in its own best interests not to over consume meat products. 'If we as Europe go for optimum consumption, not always the most of everything, it's going to improve health, and benefit the environment. There's an optimum to be found between what's on your plate and helping the environment.'

The report supports a 20 per cent improvement in nitrogen efficiency by 2020, which would reduce the use of nitrogen fertilizer by 20 million tonnes per year. They term this global aspiration, '20:20 for 2020'.

It's seven years and ten months until the 2020 deadline, but Sutton promises there's a lot you can do in this time. The measures listed in the report include actions which are already available, and could all make substantial contributions to nutrient management. 'There's already a big difference between countries achieving better nitrogen efficiency than others, like Denmark, where they're taking action that we in the UK haven't yet, but in principle, from a technical perspective, we can do it,' he concludes.

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