

Is Soy Bad for the Environment?

In some ways, yes. But probably not for the reasons you think.

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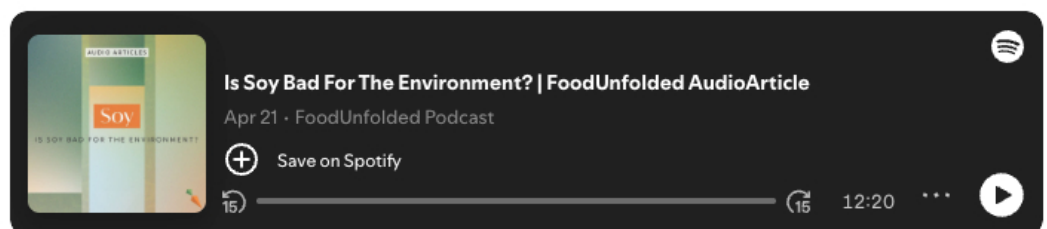
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Is soy bad for the environment? Produced on a colossal international scale, soy has a huge environmental impact - but probably not for the reasons you think. Read on to discover the hidden driving force behind soy-related deforestation and why eating plant-based alternatives like soy is still better for the planet.



The Origins Of Soybeans



The soybean, a species of legume originally native to East Asia, has held an important place in Asian cooking and culture for millennia. Only in the last hundred years has the soybean entered Western diets, and since then, the crop has become one of the world's most essential and profitable agricultural commodities. In just 50 years, soybean production has increased 15 times over, experiencing one of the greatest expansions of any global crop.^[1] Today, soy is cultivated on an immense global scale, with the US and South America dominating production (the latter produces nearly 50% of the world's share).^[2]

Unfortunately, this expansion has come at a cost. As demand soars, huge areas of natural land are converted into soy plantations, causing wide-scale deforestation and other devastating knock-on effects – from biodiversity loss and rising carbon emissions to soil erosion and water contamination.

But the damaging scale of soy production today isn't because people are suddenly eating more soy foods – the real reason is far more surprising.

So, What's *Really* Driving Soy Demand?





For years, we've seen the perpetuation of a largely false stereotype – that increased soy production reflects growth in popularity for vegan and vegetarian diets. This erroneous myth has helped spur the widespread belief that soy-based foods (and the vegans and vegetarians who eat them) are as much responsible for environmental destruction as animal-based products, like meat and dairy.

And although soy production does come with environmental costs, most of it's not grown for the reasons we think: the real driver behind excessive soybean cultivation is not ardent vegans and vegetarians, but, counterintuitively, the meat, dairy and egg industries. This is because the vast majority of the world's soybeans – between 80-90%, are fed to farmed animals. Of the soy remaining, just 6% is turned into soy products for human consumption.^[3]

Soy: The Ghost Ingredient On Our Plates



Most livestock, from pigs to cows and poultry to farmed fish, are fed soy. Why? Because it's cheap and nutritious. In fact, high-protein soy has become such a popular feed crop that each year, the average European consumes 61kg of soy indirectly through the animal products they eat.^[4] The ironic reality is that soybeans are more likely to appear on our plates as ghost ingredients in steak dinners and milkshakes than as tofu.^[5] With this in mind, it's time to set the record straight – the environmental footprint of soy grown for animal feed far surpasses that of soy grown for human consumption.

So, let's take a look at some of the most significant environmental impacts posed by industrial soy production and why soy is still an eco-friendly alternative when consumed in the right form.

1. Deforestation



As an annual crop, soy plants only produce one yield in each life cycle and are virtually unresponsive to fertilisers. What this means is simple: to increase yield and meet demand, more soy has to be planted, which requires more land. Unfortunately, in tropical countries where soy is largely produced, this results in vast areas of biodiverse habitats being cleared to grow soybeans. Worldwide, soy cultivation takes up an area the size of France, Belgium, Germany and the Netherlands combined, making it the second largest agricultural driver of deforestation, following beef.^{[3],[6]}

But it is in South America where most soy-related deforestation has been concentrated – primarily Brazil, Argentina, Bolivia and Paraguay. In 2018, the total area of land in South America dedicated to soy stood at over 57 million hectares – an area larger than France.^[7] And with production soaring, deforestation in these regions is likely to continue, with bleak implications for the plants and animals that inhabit these spaces.

2. Threatened Biodiversity



As huge swathes of land are converted, habitats are lost, and vital ecosystems are destroyed, triggering wide-scale biodiversity loss. The Cerrado Basin, Brazil's tropical savannah region, is a prime example. As the world's most biodiverse savannah, the Cerrado is home to a menagerie of wildlife, sheltering some 5% of Earth's living species.^[8]

Sadly, with a climate and terroir favourable for farming, limited conservation protection, and negligible penalties for clearing forestland, recent decades have seen nearly half of the Cerrado's native vegetation lost to intensive agribusiness – of which soy forms a central

portion.

Satellite imagery taken between 2006-17 revealed 170,000 hectares of Cerrado forest was cleared to grow soybeans.^[9] And, in large part, this is legal, under Brazil's Forest Code, only 20% of privately owned Cerrado land (compared to 80% in Amazon rainforests) needs to be set aside for conservation – which means the remaining 80% can be legally deforested for soy farming.^[10] Recent research projected that if agribusiness were to continue in the Cerrado at its current pace, by 2050, this extraordinary landscape and the species within it would have largely disappeared.^[11]

3. Carbon Emissions



The global trade and production of soy don't just impact biodiversity; they also affect Earth's climate, generating significant amounts of greenhouse gases. And the conversion of native land into agricultural land – like we've seen in the Cerrado and elsewhere, appears to be the leading contributor to emissions.^[12] Since forests absorb and store mammoth quantities of carbon dioxide (the Amazon rainforest alone holds some 76 billion tonnes of CO₂ – or equivalent to 21 years of Europe's current annual carbon emissions^{[13].[14]}) when forests are cleared to grow crops like soy, detrimental amounts of CO₂ are released into our atmosphere. Furthermore, mechanised harvesting and processing of soy, coupled with export-related food miles, present another emissions burden.

That being said, it's important to note that – from an emissions perspective, eating soy-based is still the greener choice. Consuming tofu 1-2 times per week a year contributes just 12kg in carbon emissions, while the same amount of beef contributes a colossal 604kg – the same emissions required to heat a UK home for 95 days.^[15]

4. Soil Erosion

Agriculture is a leading cause of soil erosion worldwide, and soy production is no exception. Over time, practices such as ploughing and intensive irrigation and a lack of wind cover from trees disturb and deplete nutrient-rich topsoil. Brazil loses an estimated 55 million tonnes of topsoil each year to soy cultivation. The effects of this loss are sobering – as more fertile soil is lost, agricultural land decreases in productivity, threatening crop yields and long-term global

food security.^[16]

5. Strained Water Resources

Since soy requires a lot of water to grow (nearly 300L of water are needed to produce 1L of soy milk), unsustainable water use exhausts natural underground water stores. On top of this, farming vehicles like tractors compact the earth over time, preventing water from being reabsorbed back into these stores. The result is rapidly declining water availability for local communities, flora, and fauna.

Unfortunately, industrial soy cultivation degrades water quality as well. Relying on agrochemicals such as pesticides and fertilisers, soy farming contaminates surrounding water sources – like rivers and estuaries, harming wildlife and posing health problems to rural communities.^[16]

Feeding Earth's Growing Population



As populations increase and the global middle class expands, animal-based foods are on the rise. By 2025, global production of beef and pork is expected to increase by 22% compared with a decade ago, poultry by 26%, dairy by 18% and eggs by as much as 27% by 2030.^{[17], [18], [19]} As this demand climbs, more land will need to be cleared to grow soy-based animal feed.

But animal agriculture and associated soy cultivation already use a disproportionate amount of land and resources. According to the FAO, grazing land and cropland designated for animal feed comprise almost 80% of all agricultural land.^[20] To prevent further environmental damage and feed the world's growing population sustainably, we need to use arable land more efficiently.

Could Soy Be A Solution?

Ironically, embracing soy as a protein substitute could be a key solution. Soy, when consumed directly by people (rather than filtered through livestock food chains) is incredibly land-

efficient. To paint a picture, producing the same amount of protein from chicken as soy requires three times the land area. For pork, you need nine times more land, and for beef – 32 times more land. In fact, in regards to protein intake, if the world were to swap meat protein for soy protein, agricultural deforestation would decline by as much as 94%.^[21]

In other words, reducing our dependence on animal products by increasing our consumption of soy-based alternatives would help us feed more people while using dramatically less land and protect the planet in the process. But harnessing the innate sustainability of soy hinges on one crucial condition – that it is eaten by people, not livestock.

What We Can Do As Consumers



As we've seen, each time we eat animal products, we become accountable for environmental damage twofold: both directly from the negative impacts associated with animal agriculture and indirectly through driving demand for soy as a feed crop. With this in mind, choosing plant-based alternatives like soy will almost always be more sustainable than eating the equivalent in animal products – so don't denounce soy products altogether. However, eating soy foods can be even more environmentally friendly when done alongside the following:

- **Reducing Animal-Product Consumption:** the most direct way to reduce soy-related environmental damage is to reduce our consumption of animal products. For example, a report by the WWF found that if everyone reduced their meat consumption to just the nutritional guidelines, 650 million hectares – or 1.5 times the area of the EU, would be spared from agricultural production.^[4]
- **Buying Local:** most of the soy we eat is imported from abroad, contributing to carbon emissions. Where possible, try to source soy products from local producers to reduce air miles. However, it's important to be mindful of how your local soy is being grown – in some cases, research has shown that crops grown locally in heated greenhouses with artificial lighting can create more CO₂ than crops grown outside and transported long distances.^[22]
- **Buying Organic:** when buying locally isn't an option, opt for organic produce. Organic produce (under EU standards) avoids chemical fertilisers and pesticides, reducing the environmental damage caused by production. Companies such as Tofurei, Taifun, Tofu and

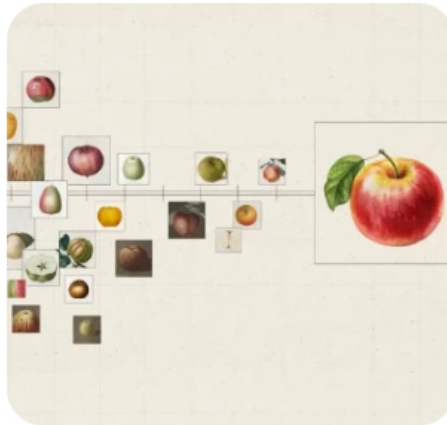
Tofoo make organic soy products, while distributors like Infinity Foods, Suma and Essential are great places to source organic, sustainable soy products.

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