Why we should turn meatballs green: New research underlines significant environmental benefits

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Some of the most popular meat dishes worldwide revolve around the Swedish meatball. In 2015, for example, IKEA alone sold 2.9 million Swedish-style meatballs every single day. To many they are versatile and delicious, but are they sustainable? And how do they compare with plant-based options?

As part of a major EU study in promoting sustainable diets and food products in Europe (TRUE—www.true-project.eu), researchers at Trinity College Dublin and the University of Limerick compared the environmental impacts of plant-based and beef meat balls over 16 impact criteria.

Sophie Saget, lead author of the study which has just been published in the *Journal of Cleaner Production*, compared meat balls made with Brazilian beef to those using Irish beef to test the assumption that Irish-reared beef offered the better, more environmentally friendly option. She also compared both types of meat balls with a plant-based alternative, made from pea protein.

Brazilian beef meatballs performed poorly in terms of their impact on land use and climate change, but Irish beef meat balls performed worse in the other 14 criteria tested, and notably so in those associated with nitrogen pollution.

The plant-based alternative performed the best overall, with global warming, acidification, and land use burdens at least 80% smaller than those associated with the beef meat balls.

Using a scenario for Germany, where the plant-based 'meat' balls are produced, swapping just 5% of beef consumption to the plant-based alternative could save 8 million tons of CO_2 equivalents annually, which

equates to a not-insignificant 1% of Germany's annual greenhouse gas emissions.

Professor Mike Williams, from Trinity's School of Natural Sciences, was the lead scientist on the study. He said: "In terms of improving nutrition and the environmental sustainability of our diets, increasing the consumption of plant-protein alternatives to red meat represents a win-win scenario.

"Plant protein-based foods provide more fiber and a higher nutritional density, and—through virtue of their ability to fix atmospheric nitrogen from the atmosphere—impart a significantly lower environmental impact than animal protein products."

More information: Sophie Saget et al. Substitution of beef with pea protein reduces the environmental footprint of meat balls whilst supporting health and climate stabilization goals, *Journal of Cleaner Production* (2021). DOI: 10.1016/j.jclepro.2021.126447

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