

# A switch to plant-based protein could help tackle climate change and hunger

February 19 2018

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Agriculture – both victim and cause of climate change. New research shows moving away from animal protein towards legumes makes sense nutritionally and environmentally.

Agriculture is often thought of as being at the mercy of [climate change](#), with increasing droughts and flooding resulting in lower yields, especially across the developing world. Yet the agricultural sector also contributes significantly to greenhouse [gas emissions](#), itself exacerbating climate change. In fact, recently agriculture was identified as the second biggest emitter globally, producing around 10-13% of emissions. A substantial amount of these emissions comes from livestock farming with the production of the gas, methane.

TRUE, an EU-funded project, has found evidence that switching diets towards plants as sources of protein as opposed to meat, is much more sustainable. In a study conducted by one of the TRUE project partners, Trinity College Dublin, researchers scored legumes by their environmental cost of production (including [greenhouse gas emissions](#), groundwater pollution and land use), as well as according to their nutrient content.

### **The five-to-one benefit**

The results clearly showed that plant protein sources (legumes) had the lowest environmental production cost, while at the same time demonstrating the highest density of nutrients. Putting this finding into context with an example for "Trinity News," Assistant Professor in Botany at Trinity, Mike Williams is quoted as saying, "Peas have a nutrient density to environmental footprint ratio approximately five times higher than equivalent amounts of lamb, pork, beef or chicken."

The researchers used the environmental and nutritional criteria to test a number of dietary scenarios, which has enabled them to quantify specific environmental benefits, against instances when consumption of animal protein is decreased.

This quantification means the research has a very practical value for the development of policy and ultimately consumer education. Prof. Williams adds, "Such quantitative estimates of sustainable food and agriculture will hopefully allow a more informed choice for consumers when considering the main protein component of their diet."

### **Transition to sustainable legume consumption**

The team are working ultimately to balance social, environmental and economic needs throughout the supply chain. This includes ensuring high

nutritional standards, along with general health and wellbeing for people and animals, while minimising environmental impacts and optimising commercial diversity and efficiency.

In its quest to enable the success of future legume production systems, including for agri-feed and food chains, the TRUE (Transition paths to sustainable legume based systems in Europe) project brings together 22 partners, representing business and society interests. It is further supported by a series of 15 farm networks and includes the development of seven innovation Case Studies looking specially at supply chains. The researchers are employing [life cycle analysis](#) techniques which apply advanced mathematical analysis to fine-tune processes, as well as using modelling to design Decision Support Tools to aid the transition.

To increase the likelihood of success for these new farming, processing, manufacturing and retailing practices, the project will also make policy recommendations. Alicia Kolmans, from the Research Centre for Global Food Security and Ecosystems in Germany, says, "These first results of the TRUE Project are an important orientation for European consumers and decision makers, considering the risks to society emerging from the global increase in [animal protein](#) consumption, including growing environmental problems and increased food insecurity due to the competition between food and feed on global fields."

**More information:** Project website: [www.true-project.eu/](http://www.true-project.eu/)

Provided by CORDIS

Citation: A switch to plant-based protein could help tackle climate change and hunger (2018, February 19) retrieved 28 March 2023 from <https://phys.org/news/2018-02-plant-based-protein-tackle-climate-hunger.html>

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