



Where did we get our facts?

- **Half a million people in the UK are already vegan.**

The Vegan Society (2016) *Find out how many vegans are in Great Britain*. Available at: <https://www.vegansociety.com/whats-new/news/find-out-how-many-vegans-are-great-britain> (Accessed 20th July 2017)

- **Going vegan could reduce your food related carbon impact by up to 50%**

WWF (2017:35) *Eating for 2 degrees new and updated Livewell Plates*. Available at: https://www.wwf.org.uk/sites/default/files/2017-06/Eating%20for%20%20degrees_Full_Report.pdf (Accessed 20th July 2017)¹

- **The global livestock industry generates as much greenhouse gases as all transport combined.**

FAO (2013) *Tackling Climate Change Through Livestock: A global assessment of emissions and mitigation opportunities*. Rome: Food and Agriculture Organization of the United Nations. Available at: <http://www.fao.org/docrep/018/i3437e/i3437e00.htm> (Accessed 20th July 2017)

- **Animal agriculture is the world's biggest producer of methane: more powerful than CO₂.**

FAO (2006) *Livestock's long shadow: environmental issues and options*. Rome: Food and Agriculture Organization of the United Nations. Available at: <http://www.fao.org/docrep/010/a0701e/a0701e00.HTM> (Accessed 20th July 2017)

- **The number of vegans in the UK has risen by 260% in 10 years.**

The Vegan Society (2016) *Find out how many vegans are in Great Britain*. Available at: <https://www.vegansociety.com/whats-new/news/find-out-how-many-vegans-are-great-britain> (Accessed 20th July 2017)

- **The livestock industry is the single largest user of land and water – causing massive land degradation and pollution. It consumes a huge proportion of world fresh water resources.**

FAO (2006) *Livestock's long shadow: environmental issues and options*. Rome: Food and Agriculture Organization of the United Nations. Available at: <http://www.fao.org/docrep/010/a0701e/a0701e00.HTM> (Accessed 20th July 2017)

- **Animal agriculture is responsible for up to 91% of Amazon destruction.**

World Bank (2004) *Causes of Deforestation of the Brazilian Amazon*. World Bank working paper No. 22. Washington D.C.: U.S.A. Available at: <https://openknowledge.worldbank.org/handle/10986/15060> (Accessed 20th July 2017)

¹ See also: Hallström, E., Carlsson-Kanyama, A & Börjesson, P. (2015) 'Environmental impact of dietary change: a systematic review' *Journal of Cleaner Production*, 91, pp.1-11. Available at: <http://www.sciencedirect.com/science/article/pii/S0959652614012931> (Accessed 20th July 2017).

- **Feeding crops to people rather than farmed animals could feed three billion more people.**
 Cassidy, E. S., West, P.C., Gerber, J.S. & Foley, J.A (2013). *Redefining agricultural yields: from tonnes to people nourished per hectare*. *Environmental Research Letters*, 8: 034015. Available at: <http://iopscience.iop.org/article/10.1088/1748-9326/8/3/034015/pdf> (Accessed 20th July 2017)
- **The predicted loss of biodiversity between now and 2050 could be reduced by 60%.**
 Netherlands Environmental Assessment Agency (PBL) (2010) *Rethinking Global Biodiversity Strategies: Exploring structural changes in production and consumption to reduce biodiversity loss*. The Hague/Bilthoven. Available at: <http://www.pbl.nl/sites/default/files/cms/publicaties/500197001.pdf> (Accessed 20th July 2017)
- **Livestock uses 30% of the Earth's entire land surface.**
 FAO (2006) *Livestock's long shadow: environmental issues and options*. Rome: Food and Agriculture Organization of the United Nations. Available at: <http://www.fao.org/docrep/010/a0701e/a0701e00.HTM> (Accessed 20th July 2017)
- **The meat and dairy industry power climate change with methane, carbon dioxide and nitrous oxide.**
 FAO (2006) *Livestock's long shadow: environmental issues and options*. Rome: Food and Agriculture Organization of the United Nations. Available at: <http://www.fao.org/docrep/010/a0701e/a0701e00.HTM> (Accessed 20th July 2017)
- **The industry is also draining a gigantic proportion of precious world water resources.**
 FAO (2006) *Livestock's long shadow: environmental issues and options*. Rome: Food and Agriculture Organization of the United Nations. Available at: <http://www.fao.org/docrep/010/a0701e/a0701e00.HTM> (Accessed 20th July 2017)
- **For every 100 calories fed to animals, we receive back only 12 calories by consuming their flesh and milk.**
 Cassidy, E. S., West, P.C., Gerber, J.S. & Foley, J.A (2013). *Redefining agricultural yields: from tonnes to people nourished per hectare*. *Environmental Research Letters*, 8: 034015. Available at: <http://iopscience.iop.org/article/10.1088/1748-9326/8/3/034015/pdf> (Accessed 20th July 2017)²
- **Growing vegan food uses 50% less land than animal agriculture.**
 Hallström, E., Carlsson-Kanyama, A & Börjesson, P. (2015) 'Environmental impact of dietary change: a systematic review' *Journal of Cleaner Production*, 91, pp.1-11. Available at: <http://www.sciencedirect.com/science/article/pii/S0959652614012931> (Accessed 20th July 2017)
- **Going vegan reduces global warming as much as cutting travel in private vehicles by 75%.**
 Hallström et al. (ibid) compared with: UK Government, Department for Transport (2015) *Total greenhouse gas emissions from transport*. Available at: <https://www.gov.uk/government/publications/total-greenhouse-gas-emissions-from-transport> (Accessed 20th July 2017)

² It is worth highlighting that Cassidy et al. give a range of 3% to 40% for individual animal products and an overall average of 12 calories from animals per 100 calories of human edible feed crops.

References for evaluation of recipes

The recipe evaluation for recipes is based mainly on:

Hoolohan, C., Berners-Lee, M., McKinstry-West, J. and Hewitt, C.N., 2013. Mitigating the greenhouse gas emissions embodied in food through realistic consumer choices. *Energy Policy*, 63, pp.1065-1074.

which covers food-related emissions in the UK up to the food being sold in a shop.

This paper lacked specific production and processing emissions for beans and tinned tomatoes which were taken from

Tilman, D. and Clark, M., 2014. Global diets link environmental sustainability and human health. *Nature*, 515(7528), pp.518-522.

and

Del Borghi, A., Gallo, M., Strazza, C. and Del Borghi, M., 2014. An evaluation of environmental sustainability in the food industry through Life Cycle Assessment: the case study of tomato products supply chain. *Journal of cleaner production*, 78, pp.121-130.

to give a more accurate picture.

Our new three course meal recipes: garden salad with apple dressing, spelt gnocchi with parsley pesto and oat thyme panna cotta have been evaluated using the carbon calculator.

Sources for the calculator are:

1. Williams, A.G., Audsley, E. and Sandars, D.L. (2006) Determining the environmental burdens and resource use in the production of agricultural and horticultural commodities. Main Report. Defra Research Project IS0205. Bedford: Cranfield University and Defra.
2. Nijdam D, Rood T, Westhoek H (2012) The price of protein: review of land use and carbon footprints from life cycle assessments of animal food products and their substitutes. Food Policy. DOI: <https://doi.org/10.1016/j.foodpol.2012.08.002>
3. Mejia, M, Fresan, U and Harwatt, H et al (2019) Life Cycle Assessment of the Production of a Large Variety of Meat Analogs by Three Diverse Factories. Journal of Hunger & Environmental Nutrition. DOI: <https://doi.org/10.1080/19320248.2019.1595251>
4. Mejia, M, Harwatt, H, Jaceldo-Siegl, K et al (2017) Greenhouse Gas Emissions Generated by Tofu Production: A Case Study. Journal of Hunger & Environmental Nutrition, DOI: 10.1080/19320248.2017.1315323
5. Clune, S, Crossin, E, and Verghese, K (2017) Systematic review of greenhouse gas emissions for different fresh food categories. Journal of Cleaner Production. DOI: <https://doi.org/10.1016/j.jclepro.2016.04.082>