

**Dr. Jude Capper**

**@bovidiva**



**Opportunities and  
Challenges in  
Animal Protein  
Industry  
Sustainability: The  
Battle Between  
Science and  
Consumer  
Perception**

**Dr. Jude L. Capper**

***13<sup>th</sup> July 2021***

Source: Dr. Jude L. Capper, 2021

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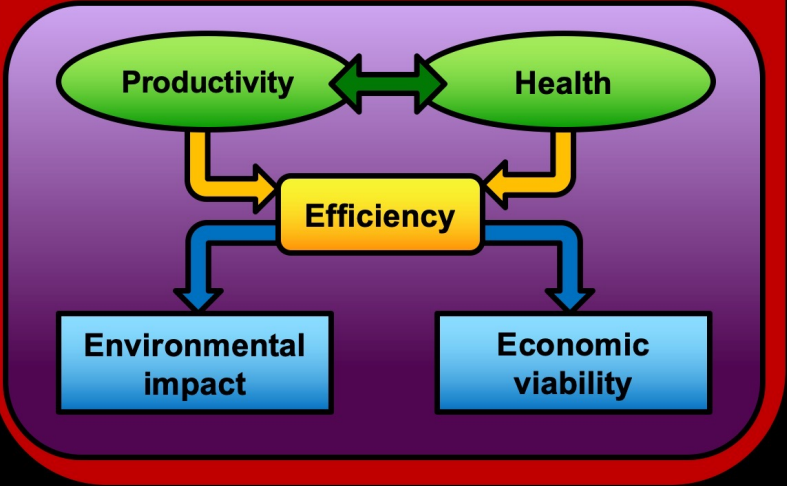
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# Social acceptability and consumer trust are vital for sustainable livestock production

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## Social Acceptability



## Sustainability



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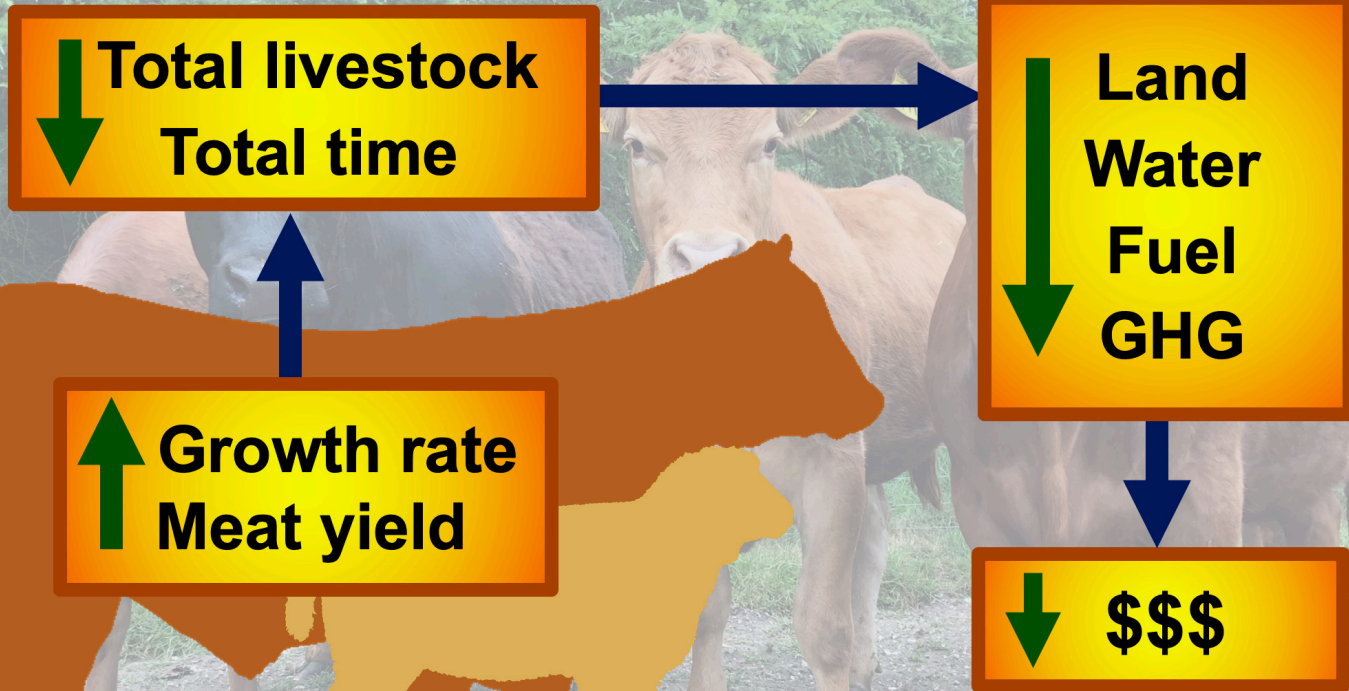


Source: Created by Dr. Jude L. Capper, 2020.



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# Improving animal productivity reduces the environmental impact of meat



Source: Created by Dr. Jude L. Capper, 2020. Data from: Capper, JL. 2015. Sustainability and One Health. In: Cockcroft, P. *Bovine Medicine*. Wiley-Blackwell, Oxford, UK.

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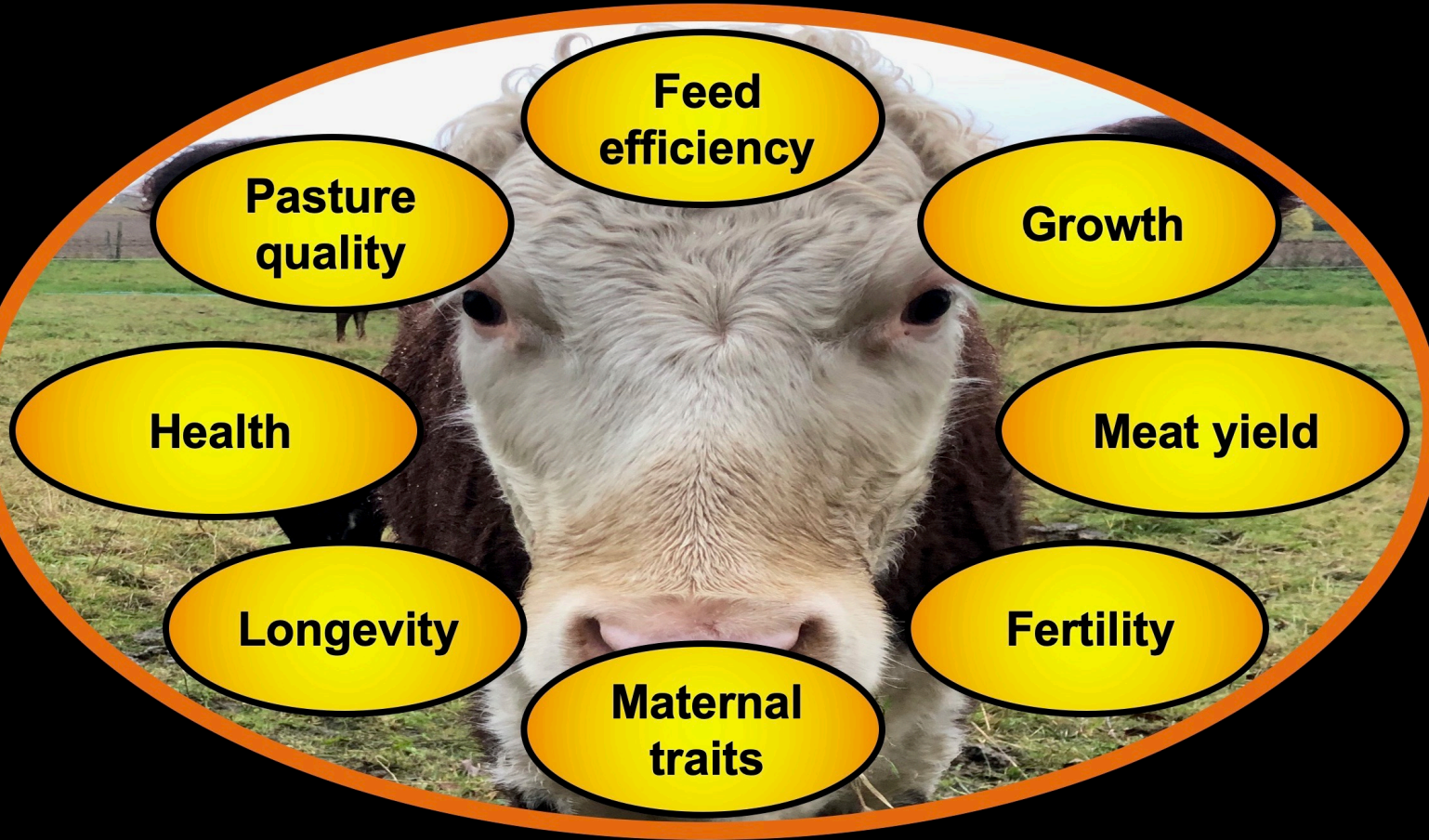


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# Improving key performance indicators reduces environmental impacts



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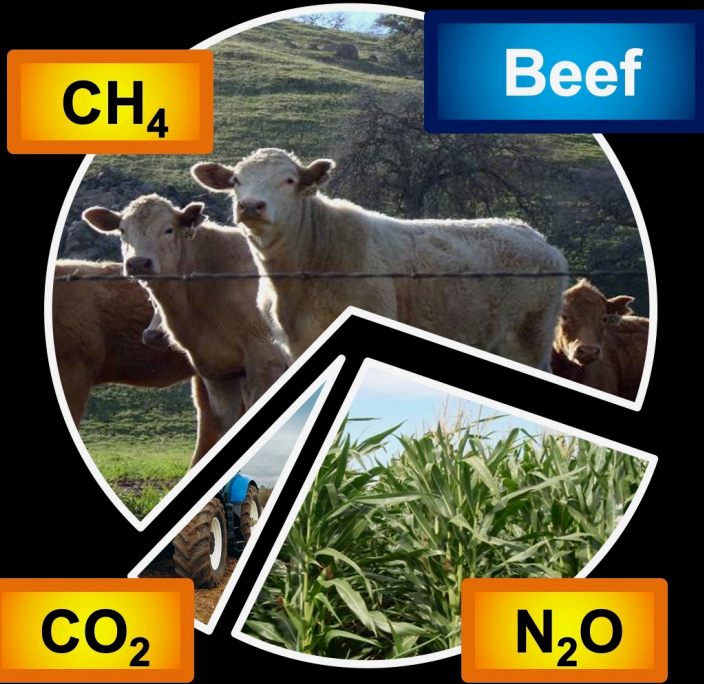


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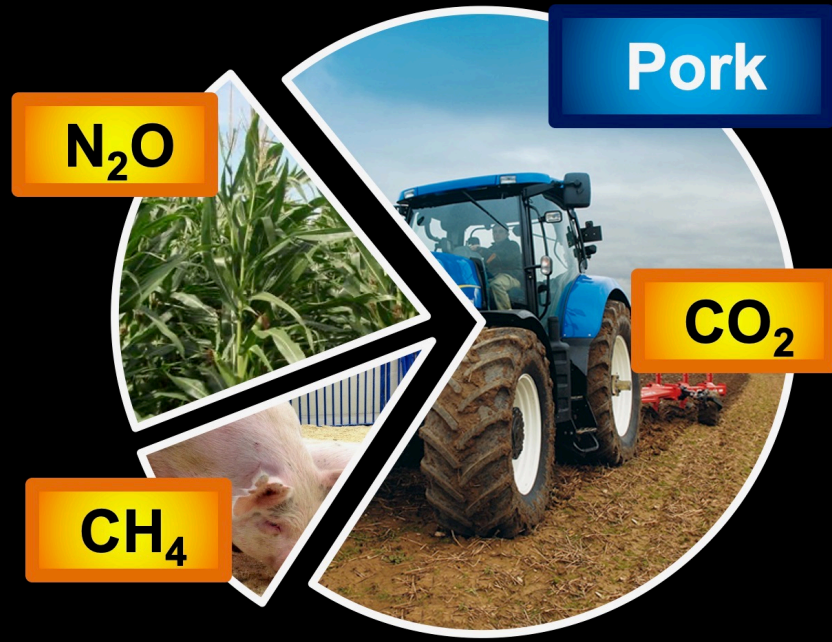
# Under GWP<sub>100</sub>, GHG emissions of meat products differ considerably

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GWP<sub>100</sub> = 21.3 kg CO<sub>2</sub>/kg beef



GWP<sub>100</sub> = 5.5 kg CO<sub>2</sub>/kg pork

Source: Created by Dr. Jude L. Capper, 2020. Data from: Beauchemin et al. (2010) Life cycle assessment of greenhouse gas emissions from beef production in western Canada: A case study. *Ag. Sys*; Boyd et al. (2012) A 50-Year Comparison of the Carbon Footprint and Resource Use of the US Swine Herd: 1959 – 2009. Available at: <https://www.porkcdn.com/sites/research/ResearchDocuments/10-174-Boyd-Camco-final-5-22-12.pdf> and Rotz et al. (2019) Environmental footprints of beef cattle production in the United States. *Ag. Sys*.

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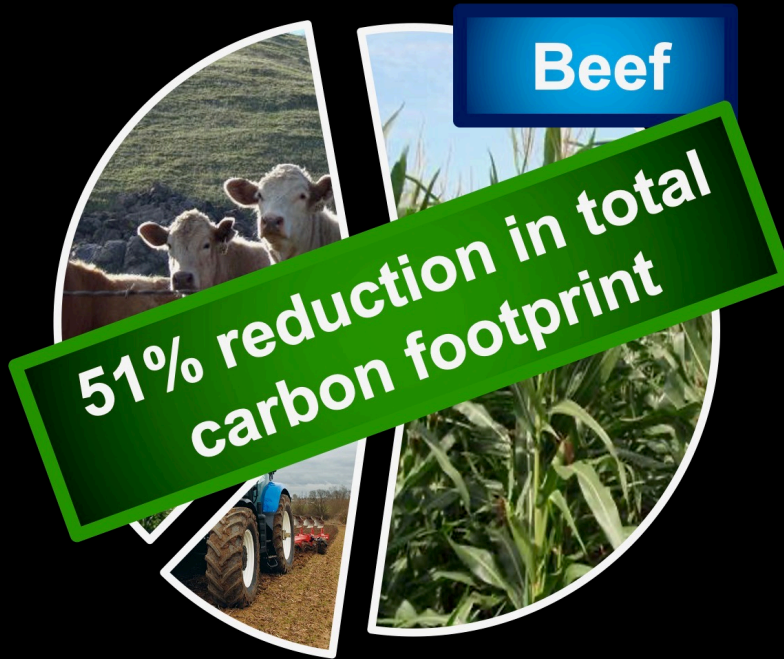


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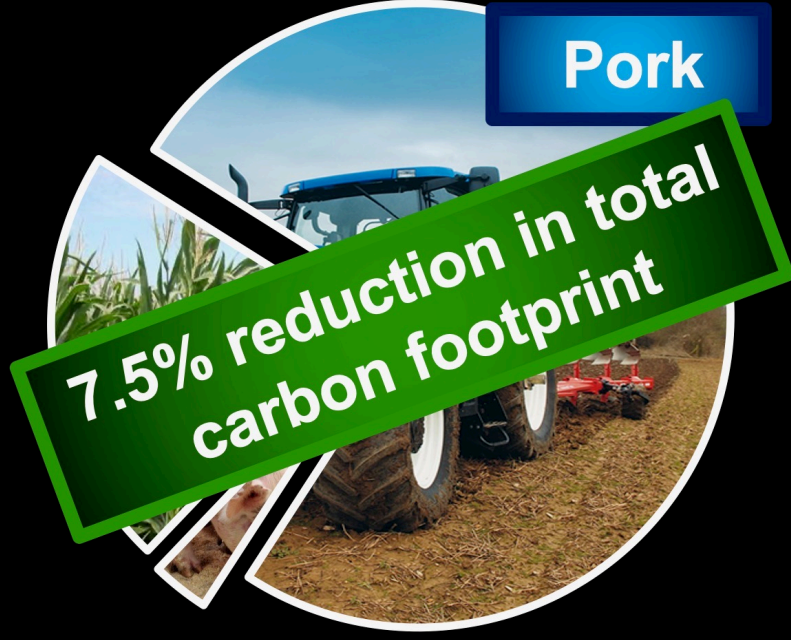
Under GWP\*, GHG emissions of different meats may be more similar

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GWP\* = 10.4 kg CO<sub>2</sub>/kg beef



GWP\* = 5.1 kg CO<sub>2</sub>/kg pork

Source: Created by Dr. Jude L. Capper, 2020. GWP\* cuts the GWP of CH<sub>4</sub> by 75%. Data from: Beauchemin et al. (2010) Life cycle assessment of greenhouse gas emissions from beef production in western Canada: A case study. *Ag. Sys.*; Boyd et al. (2012) A 50-Year Comparison of the Carbon Footprint and Resource Use of the US Swine Herd: 1959 – 2009. Available at: <https://www.porkcdn.com/sites/research/ResearchDocuments/10-174-Boyd-Camco-final-5-22-12.pdf> and Rotz et al. (2019) Environmental footprints of beef cattle production in the United States. *Ag. Sys.*



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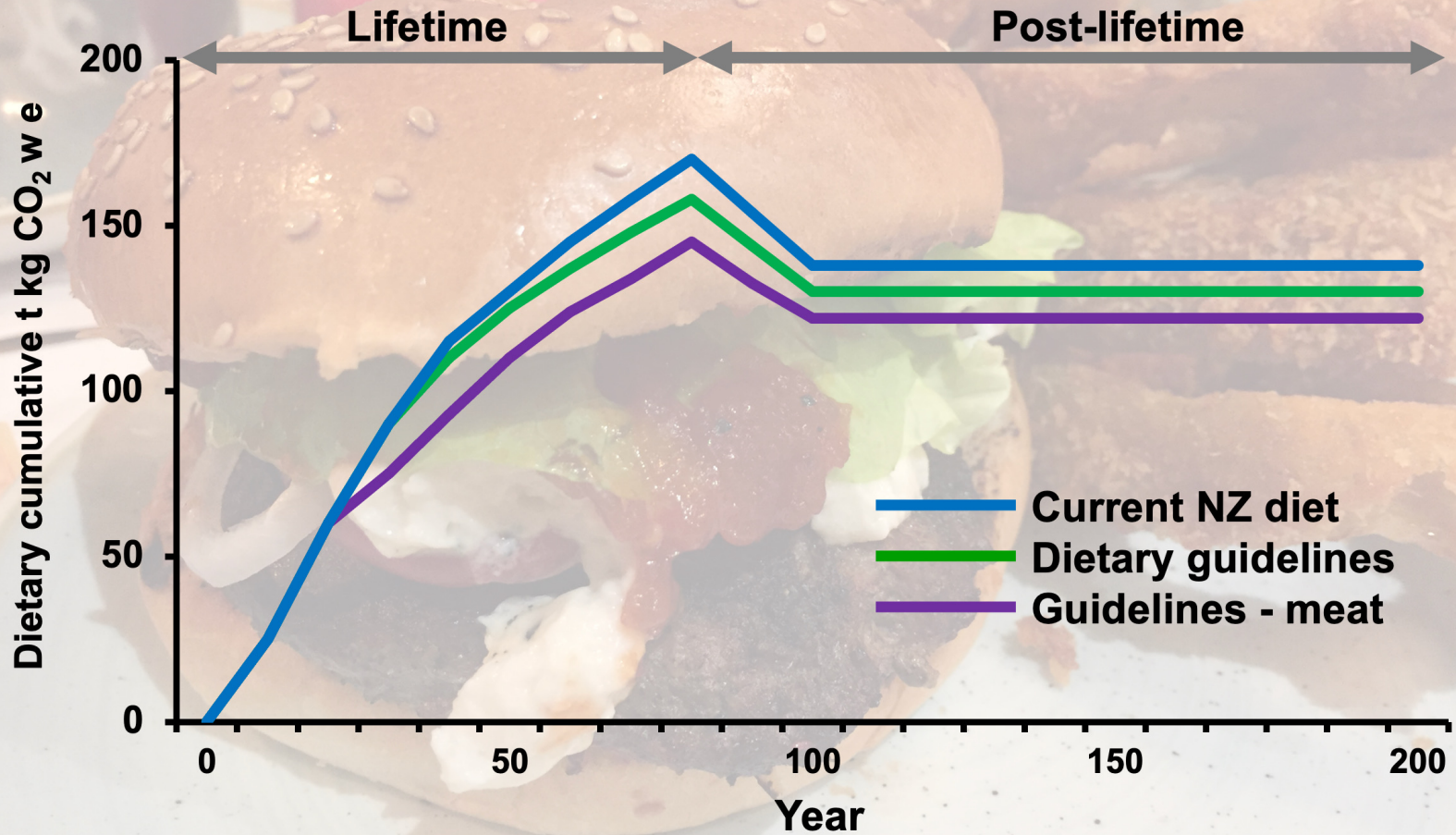


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**B**

Eliminating meat from the diet cuts total cumulative global warming by only 2-4%



Source: Created by Dr. Jude L. Capper, 2021; data from Barnsley et al. (2021). Sustainability. <https://doi.org/10.3390/su13105568>

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Animal disease losses are significant and preventable, but not quantified re: sustainability



At the worldwide level, average losses due to animal diseases are more than 20% (OIE, 2008)

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Source: Created by Dr. Jude L. Capper, 2020. Data from: World Organization for Animal Health. 2008. <http://www.oie.int/for-the-media/editorials/detail/article/feeding-the-world-better-by-controlling-animal-diseases>

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# Sustainability indices will be increasingly present on meat labels in future

## Beef (animal-based) patty

**Nutritional value\***

Serving size: 227 g (8 oz) steak

# 78%

Pure beef protein  
– contains no  
lab-based  
ingredients!

**Sustainability index**



**Carbon footprint (under GWP\*)**



**Water footprint**



**Antibiotic footprint**



**Community support rating**



**Farm webcam and sustainability assessment data**



\*compared to ideal protein



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Source: Created by Dr. Jude L. Capper, 2020.

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# Guilt is a primary motivator for people considering going vegetarian or vegan

*"I sometimes feel guilty when consuming meat and dairy products"*

**66% of meat-eaters and flexitarians thinking of giving up meat said "yes" compared to 25% of national population**

**No guilt  
34%**

**Feel guilty  
66%**



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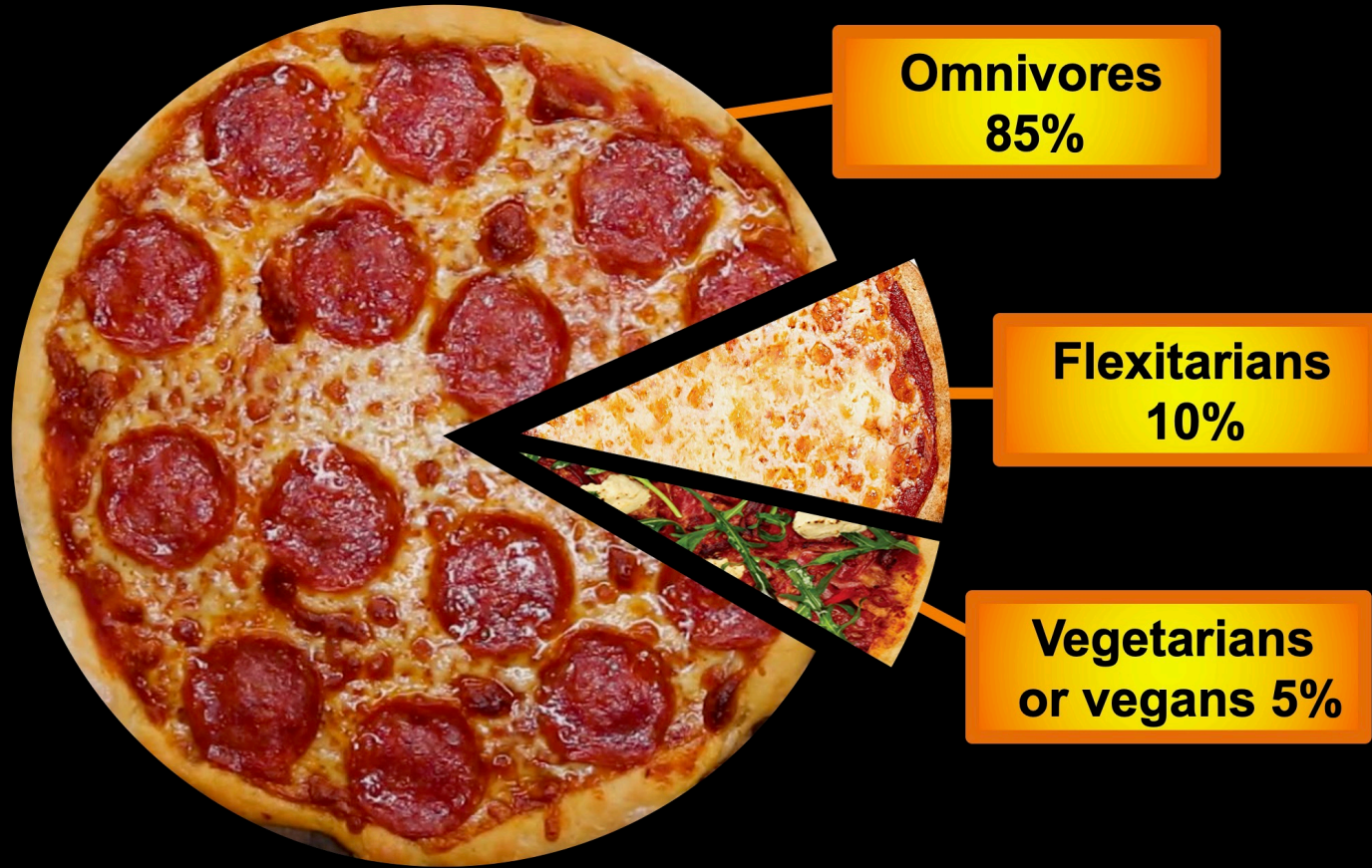
Source: Created by Dr. Jude L. Capper, 2020. Information from: YouGov (2019) Is the future of food flexitarian?  
<https://yougov.co.uk/topics/resources/articles-reports/2019/03/18/future-food-flexitarian>

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The future probably isn't vegan, but it may be flexitarian?



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Source: Created by Dr. Jude L. Capper, 2020. Data from: FMI and Foundation for Meat & Poultry Education & Research (2019) The Power of Meat 2019. Available at: <https://www.fmi.org/forms/store/ProductFormPublic/power-of-meat-2019>

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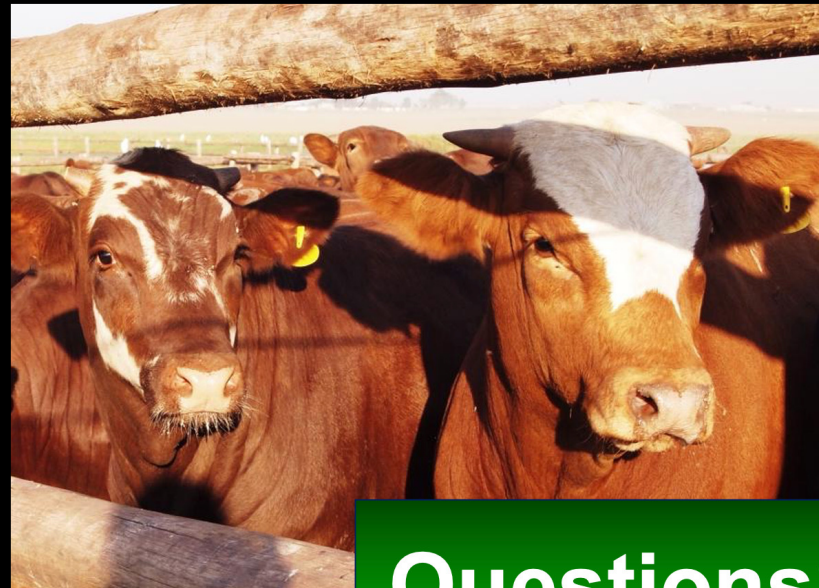


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# Thank you!

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<http://bovidiva.com/presentationlinks>

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## Questions?



Source: Created by Dr. Jude L. Capper, 2021. Cartoon from: <http://RubesCartoons.com>

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